

**UNITED STATES SECURITIES AND EXCHANGE COMMISSION**  
**Washington, D.C. 20549**

**Form 10-K**

(Mark One)  **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended  
**December 31, 2019**

Or

**TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from \_\_\_\_\_ to \_\_\_\_\_

Commission file number: **000-22339**

**RAMBUS INC.**

(Exact name of registrant as specified in its charter)

**Delaware**

(State or other jurisdiction of  
incorporation or organization)

**94-3112828**

(I.R.S. Employer  
Identification Number)

**1050 Enterprise Way**

**Suite 700**

**Sunnyvale**

(Address of principal executive offices)

, **California**

**94089**

(Zip Code)

Registrant's telephone number, including area code:  
**(408) 462-8000**

Securities registered pursuant to Section 12(b) of the Act:

<b>Title of Each Class</b>	<b>Trading Symbol(s)</b>	<b>Name of Each Exchange on Which Registered</b>
Common Stock, \$.001 Par Value	RMBS	The NASDAQ Stock Market LLC (The NASDAQ Global Select Market)

Securities registered pursuant to Section 12(g) of the Act:

**None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes  No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes  No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes  No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes  No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer  Accelerated filer  Non-accelerated filer  Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes  No

The aggregate market value of the Registrant's Common Stock held by non-affiliates of the Registrant as of June 30, 2019 was approximately \$1.1 billion based upon the closing price reported for such date on The NASDAQ Global Select Market. For purposes of this disclosure, shares of Common Stock held by officers and directors of the Registrant and persons that may be deemed to be affiliates under the Act have been excluded. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

The number of outstanding shares of the Registrant's Common Stock, \$.001 par value, was 112,429,523 as of January 31, 2020.

#### **DOCUMENTS INCORPORATED BY REFERENCE**

Certain information is incorporated into Part III of this report by reference to the Proxy Statement for the Registrant's annual meeting of stockholders to be held on or about April 30, 2020 to be filed with the Securities and Exchange Commission pursuant to Regulation 14A not later than 120 days after the end of the fiscal year covered by this Form 10-K.

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## NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K (“Annual Report on Form 10-K”) contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. These forward-looking statements include, without limitation, predictions regarding the following aspects of our future:

- Success in the markets of our products and services or our customers’ products;
- Sources of competition;
- Research and development costs and improvements in technology;
- Sources, amounts and concentration of revenue, including royalties;
- Success in signing and renewing license agreements;
- Terms of our licenses and amounts owed under license agreements;
- Technology product development;
- Dispositions, acquisitions, mergers or strategic transactions and our related integration efforts;
- Impairment of goodwill and long-lived assets;
- Pricing policies of our customers;
- Changes in our strategy and business model, including the expansion of our portfolio of inventions, products, software, services and solutions to address additional markets in memory, chip and security;
- Deterioration of financial health of commercial counterparties and their ability to meet their obligations to us;
- Effects of security breaches or failures in our or our customers’ products and services on our business;
- Engineering, sales and general and administration expenses;
- Contract revenue;
- Operating results;
- International licenses, operations and expansion;
- Effects of changes in the economy and credit market on our industry and business;
- Ability to identify, attract, motivate and retain qualified personnel;
- Effects of government regulations on our industry and business;
- Manufacturing, shipping and supply partners and/or sale and distribution channels;
- Growth in our business;
- Methods, estimates and judgments in accounting policies;
- Adoption of new accounting pronouncements;
- Effective tax rates, including as a result of the new U.S. tax legislation;
- Restructurings and plans of termination;
- Realization of deferred tax assets/release of deferred tax valuation allowance;
- Trading price of our common stock;
- Internal control environment;
- The level and terms of our outstanding debt and the repayment or financing of such debt;
- Protection of intellectual property;
- Any changes in laws, agency actions and judicial rulings that may impact the ability to enforce intellectual property rights;
- Indemnification and technical support obligations;
- Equity repurchase plans;
- Issuances of debt or equity securities, which could involve restrictive covenants or be dilutive to our existing stockholders;
- Effects of fluctuations in currency exchange rates;
- Outcome and effect of potential future intellectual property litigation and other significant litigation; and

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You can identify these and other forward-looking statements by the use of words such as “may,” “future,” “shall,” “should,” “expects,” “plans,” “anticipates,” “believes,” “estimates,” “predicts,” “intends,” “potential,” “continue,” “projecting” or the negative of such terms, or other comparable terminology. Forward-looking statements also include the assumptions underlying or relating to any of the foregoing statements.

Actual results could differ materially from those anticipated in these forward-looking statements as a result of various factors, including those set forth under Item 1A, “Risk Factors.” All forward-looking statements included in this document are based on our assessment of information available to us at this time. We assume no obligation to update any forward-looking statements.

## PART I

Rambus is a trademark of Rambus Inc. Other trademarks or copyrights that may be mentioned in this Annual Report on Form 10-K are the property of their respective owners.

### Item 1. *Business*

#### Overview

Rambus is a premier Silicon IP and Chip provider, delivering high-speed interface and embedded security solutions to make data faster and safer. With 30 years of innovation, we also continue to develop and license the foundational technology essential to all modern system on chips (SoCs) and computing systems. The Company delivers a broad range of semiconductor solutions including architecture licenses, high-speed physical and digital controller interface IP cores, Security IP cores and protocols, and memory interface Chips.

Our strategic objectives are to focus our product portfolio and research around our core strength in semiconductor technologies, optimize the Company for operational efficiency, and leverage our strong cash generation to re-invest for growth. We continue to maximize synergies across our businesses and customer base, leveraging the significant overlap in our ecosystem of customers, partners and influencers. By delivering comprehensive solutions for secure, connected semiconductors, we bring better value to our customers and improved profitability for the Company.

In 2019, we redefined our perimeter through the successful divestiture of our Payments and Ticketing businesses, which allowed us to focus the Company on providing leading solutions for the semiconductor market thus becoming a single reportable segment. The Rambus product and technology roadmap, as well as our go-to-market strategy, is driven by the application-specific requirements of our focus markets. This not only allows us to better serve our traditional data center and communications markets, but also to expand into new, fast-growing markets that demand the highest levels of performance and security, including automotive, artificial intelligence (AI), Internet of Things (IoT) and government.

We demonstrated continued execution and success across our product lines throughout the past year, with combined annual revenue from our Memory Interface Chips and Silicon IP businesses up 64% year over year to \$114.5 million. Memory Interface Chips was the fastest growing portion of the business with revenue almost doubling year over year, and Silicon IP drove sustained revenue growth with multiple design wins at tier-1 SoC customers across our target markets. Patent Licensing remains stable following the structural step down in 2019, with the decline offset by growth in product revenue. Revenue from products accounted for 33%, 17%, and 9% of our consolidated revenue for the years ended December 31, 2019, 2018 and 2017, respectively.

#### Memory Interface Chips

Made for high speed, reliability and power efficiency, our DDR memory interface Chips for registered, load-reduced and non-volatile dual in-line memory modules (RDIMM, LRDIMM and NVDIMM, respectively) deliver top-of-the-line performance and capacity to the next wave of enterprise and data center servers. Rambus offers DDR5, DDR4 and DDR3 memory interface Chips to enable increased memory capacity, while maintaining peak performance for data-intensive work loads.

We sell our memory interface chips directly and indirectly to module manufacturers and OEMs worldwide through multiple channels, including our direct sales force and distributors. We operate direct sales offices in the United States, Japan, Korea, Taiwan and China, where we employ sales personnel who serve our direct customers and manage our channel partners.

We operate a fabless business model and use third-party foundries and manufacturing contractors to fabricate, assemble and test our memory interface Chips. We also inspect and test parts in our US-based facilities. This outsourced manufacturing approach allows us to focus our investment and resources on the research, development, design, sale and marketing of our products. Outsourcing also allows us the flexibility needed to respond to new market opportunities, simplifies our operations and significantly reduces our capital requirements.

#### Silicon IP

Rambus' Silicon IP business offers both Interface and Security IP solutions. Our Interface IP solutions feature both high-speed memory and chip-to-chip interconnect technologies. With the acquisition of Northwest Logic in August of 2019, Rambus now offers a complementary portfolio of physical interface (PHY) and companion digital controller IPs to create a one-stop-shop for SoC designers. These silicon-proven solutions are critical to high performance data center, networking, AI, Machine

Learning (ML) and automotive applications because they enable and optimize the transfer of data between chips and electronic devices. The chip-to-chip IP portfolio is comprised of industry-standard interface solutions including 28G, 32G, 56G and 112G SerDes, as well as the recently announced PCIe 5.0 offering. Rambus' leading-edge memory Interface solutions include HBM Gen2 and the world's fastest, silicon-proven GDDR6 solution, capable of running at data rates up to 18 Gbps.

The Rambus Security IP solutions include secure cores, protocols and chip provisioning technologies. Following the acquisition of the Secure Silicon IP and Protocols business from Verimatrix in December 2019, Rambus now offers the industry's most comprehensive portfolio of silicon-proven Security IP and chip provisioning solutions. With the growing threat environment, posed by malicious actors, we believe it is imperative to protect complex electronic systems at their silicon foundation with hardware-based security IP solutions, including crypto cores, hardware roots of trust, and high-speed protocol engines. As a result, our hardware-based, embedded security solutions are mission-critical for data center, AI, networking, IoT, automotive and government applications. In addition to augmenting the portfolio through acquisitions, Rambus organically expanded its family of fully-programmable root of trust cores to offer tailored configurations that address the specific security needs of our various target markets leading to design wins with tier-1 cloud and AI SoC providers.

### **Architecture Licenses**

Rambus patented inventions are foundational to the semiconductor industry and licenses of our portfolio to our customers represent a significant portion of our revenue. The Company is committed to continuing to innovate and invent, thereby advancing semiconductor technology. With a broad worldwide portfolio of patents covering memory architecture, high-speed serial links, and security, we enhance our value and relevance in our target markets and create a platform for investment in product development.

Our Architecture Licenses enable our customers to use specified portions of our portfolio of patented inventions in the customer's own digital electronics products, systems or services. These licenses may also define the specific field of use where our customers may use or employ our inventions in their products. License agreements are structured with fixed or variable, or a hybrid of fixed and variable royalty payments over certain periods ranging up to ten years. Leading consumer product, semiconductor and system companies such as AMD, Broadcom, Cisco, Freescale, Fujitsu, GE, IBM, Intel, Micron, Nanya, NVIDIA, Panasonic, Qualcomm, Renesas, Samsung, SK hynix, STMicroelectronics, Toshiba, Western Digital, Winbond and Xilinx have licensed our patents for use in their own products.

### **Competition**

The semiconductor industry is intensely competitive and is characterized by rapid technological change, short product life cycles, cyclical market patterns, price erosion, increasing foreign and domestic competition and market consolidation. Rambus competes with product offerings from various companies depending upon the particular Rambus product line. In the market for memory interface Chips, we compete with international semiconductor companies including IDT, now part of Renesas, and Montage Technology. In the Silicon IP market, Rambus competes with the in-house design teams at our potential customers, as well as with third party IP suppliers such as Arm, Cadence and Synopsys. Many of our competitors are larger and have better access to financial, technical, sales and marketing resources than we possess.

To the extent that alternative technologies, which might provide comparable system performance at lower or similar cost to our patented technologies, are perceived to require the payment of no or lower fees or royalties, or to the extent other factors influence the industry, our customers and prospective customers may adopt and promote such alternative technologies. Even to the extent we determine that such alternative technologies infringe our patents, there can be no assurance that we would be able to negotiate agreements that would result in royalties being paid to us without litigation, which could be costly and the results of which would be uncertain. As in the past, litigation may be required to enforce and protect our intellectual property rights, as well as the substantial investments undertaken to research and develop our innovations and technologies.

### **Research, Development and Employees**

Building upon our foundation of core semiconductor technologies, we aligned our research priorities to focus on innovation and patent development in order to enhance the value of our patent portfolio and differentiate our product offerings in the market. Key to our efforts is continuing to hire and retain world-class inventors, scientists and engineers to lead the development and deployment of inventions and technology solutions for our intended markets.

To foster our research and development efforts, we assembled a team of highly skilled inventors, engineers and scientists whose activities are focused on continually developing new innovations within our chosen technology fields, and thereby securing the intellectual property rights and legal protections for these ground-breaking inventions. Using this foundation of innovation, our technical teams develop new semiconductor solutions that enable increased performance, greater power efficiency and increased levels of security, as well as other improvements and benefits. Our solution design and development process is a multi-disciplinary effort requiring expertise in multiple fields across all of our operational units.

As of December 31, 2019, we had approximately 480 employees in our engineering departments, representing approximately 70% of our total number of 685 employees. None of our employees are covered by collective bargaining agreements. As noted, we believe our future success is dependent on our continued ability to identify, attract, motivate and retain qualified personnel. In order to attract qualified employees, we created a work environment and culture that encourages, fosters and supports research, development and innovation in breakthrough technologies with significant opportunities for broad industry adoption. To date, we believe we have been successful in recruiting qualified employees and that we have a good relationship with our employees.

A significant number of our scientists and engineers spend all or a portion of their time on research and development. For the years ended December 31, 2019, 2018 and 2017, research and development expenses were \$156.8 million, \$158.3 million and \$149.1 million, respectively. We expect to continue to invest substantial funds in research and development activities. In addition, because our customer agreements often call for us to provide engineering support, a portion of our total engineering costs are allocated to the cost of contract and other revenue.

### **Intellectual Property**

We maintain and support an active program to protect our intellectual property, primarily through the filing of patent applications and the defense of issued patents against potential infringement. As of December 31, 2019, our technologies are covered by 2,339 U.S. and foreign patents, having expiration dates ranging from 2020 to 2038. Additionally, we have 589 patent applications pending. Some of the patents and pending patent applications are derived from a common parent patent application or are foreign counterpart patent applications. We believe our patented innovations provide our customers with the legal rights and licenses to use our inventions to achieve improved performance, greater cost-effectiveness and other technological benefits in their own products and services. We intend to continue our innovation efforts and allocate significant investment in our intellectual property development programs.

We have a program to file applications for and obtain patents in the United States and in selected foreign countries where we believe filing for such protection is appropriate and would further our overall business strategy and objectives. In some instances, obtaining appropriate levels of protection may involve prosecuting continuation and counterpart patent applications based on a common parent application. In addition, we attempt to protect our trade secrets and other proprietary information through agreements with current and prospective customers, and confidentiality agreements with employees and consultants and other security measures. We also rely on copyright, trademarks and trade secret laws to protect our intellectual property and other proprietary assets.

### **Backlog**

Our sales of Memory Interface Chips are generally made pursuant to short-term purchase orders. These purchase orders are made without deposits and may be, and often are, rescheduled, canceled or modified on relatively short notice, without substantial penalty. Therefore, we believe that purchase orders or backlog are not necessarily a reliable indicator of our future product sales.

### **Corporate and Other Information**

Rambus Inc. was founded in 1990 and reincorporated in Delaware in March 1997. Our principal executive offices are located at 1050 Enterprise Way, Suite 700, Sunnyvale, California. Our website is [www.rambus.com](http://www.rambus.com). The inclusion of our website address in this report does not include or incorporate by reference into this report any information on our website. You can obtain copies of our Forms 10-K, 10-Q, 8-K, and other filings with the SEC, and all amendments to these filings, free of charge, from our website as soon as reasonably practicable following our filing of any of these reports with the SEC. In addition, you may read and copy any material we file with the SEC at the SEC's Public Reference Room at 100 F Street NE, Room 1580, Washington, D.C. 20549. You may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC also maintains a website that contains reports, proxy, and information statements, and other information regarding registrants that file electronically with the SEC at [www.sec.gov](http://www.sec.gov).

Information concerning our revenue, results of operations and revenue by geographic area is set forth in Item 6, "Selected Financial Data," in Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," and in Note 7, "Segments and Major Customers," of Notes to Consolidated Financial Statements of this Form 10-K, all of which are incorporated herein by reference. Information concerning identifiable assets and segment reporting is also set forth in Note 7, "Segments and Major Customers," of Notes to Consolidated Financial Statements of this Form 10-K. Information on customers that comprise 10% or more of our consolidated revenue and risks attendant to our foreign operations is set forth below in Item 1A, "Risk Factors."



## Our Named Executive Officers

Information regarding our named executive officers and their ages and positions as of February 26, 2020, is contained in the table below. Our named executive officers are appointed by, and serve at the discretion of, our Board of Directors. There is no family relationship between any of our named executive officers.

Name	Age	Position and Business Experience
Luc Seraphin	56	<p>Mr. Seraphin is President &amp; Chief Executive Officer. With over 20 years of experience managing global businesses, Mr. Seraphin brings the overall vision and leadership necessary to drive future growth for the company. Prior to this role, Mr. Seraphin was the senior vice president and general manager of the Memory and Interface Division, leading the development of the company's innovative memory architectures and high-speed serial link solutions. Mr. Seraphin also served as the senior vice president of Worldwide Sales and Operations where he oversaw sales, business development, customer support and operations across the various business units within Rambus.</p> <p>Mr. Seraphin started his career as a field application engineer at NEC and later joined AT&amp;T Bell Labs, which became Lucent Technologies and Agere Systems (now Broadcom Inc.). During his 18 years at Agere, Mr. Seraphin held several senior positions in sales, marketing and general management, culminating in his last position as executive vice president and general manager of the Wireless Business Unit. Following this, Mr. Seraphin held the position of general manager of a GPS startup company in Switzerland and was vice president of Worldwide Sales and Support at Sequans Communications. During his career, Mr. Seraphin has advised and supported companies in both the product and IP markets.</p> <p>Mr. Seraphin holds a bachelor's degree in Mathematics and Physics and a master's degree in Electrical Engineering from Ecole Superieure de Chimie, Physique, Electronique, based in Lyon, France where he majored in Computer Architecture. Mr. Seraphin also holds an MBA from the University of Hartford and has completed the senior executive program of Columbia University.</p>
Rahul Mathur	46	<p>Senior Vice President, Finance and Chief Financial Officer. Mr. Mathur joined us in his current position in October 2016. Prior to joining us, Mr. Mathur served as senior vice president of finance at Cypress Semiconductor Corp., a provider of embedded memory, microcontroller, and analog semiconductor system solutions, from March 2015 to September 2016, where he was responsible for financial planning and investor relations. From August 2012 to March 2015, Mr. Mathur served as vice president of finance at Spansion, Inc. (later acquired by Cypress Semiconductor Corp.). Mr. Mathur served as vice president of finance at Picaboo Corporation from January 2012 to August 2012 and vice president of finance at CDNetworks Inc. from January 2011 to December 2011. Prior to January 2011, Mr. Mathur held senior finance positions at Telesis Technologies, Inc., NetSuite Inc. and KLA Corporation. Mr. Mathur holds a Bachelor of Arts in applied mathematics from Dartmouth College and an M.B.A. from the Wharton School of Business at the University of Pennsylvania.</p>
Jae Kim	49	<p>Senior Vice President, General Counsel and Secretary. Mr. Kim has served as the senior vice president, general counsel and secretary since February 2013 and as our vice president, corporate legal since July 2010. Prior to his tenure at Rambus, Mr. Kim held senior legal positions at Aricent Inc., a privately-held communications technology company and Electronics for Imaging Inc., a digital printing technology company. Mr. Kim has also had significant experience in private practice with the law firm of Wilson Sonsini Goodrich &amp; Rosati, P.C., where he advised high technology and emerging growth companies on mergers and acquisitions, private financings, public offerings, securities compliance, public company reporting and corporate governance. Mr. Kim began his legal career as an attorney with the United States Securities and Exchange Commission, Division of Corporation Finance, in Washington, D.C. Mr. Kim is a member of both the California State Bar and New York State Bar, and received a J.D. from the American University, Washington College of Law, and his bachelor's degree from Boston University.</p>
Sean Fan	54	<p>Senior Vice President, Chief Operating Office. Mr. Fan has served as the senior vice president, chief operating office since August 2019. Prior to Rambus from March 2019 to June 2019 he served as Vice President and General Manager at Renesas Electronics Corporation, responsible for the datacenter business unit, a premier supplier of advanced semiconductor solutions. Prior to his role at Renesas, Mr. Fan was Senior Vice President and Corporate General Manager of the Computing and Communications Group at Integrated Device Technology, Inc. ("IDT"), a leading supplier of analog mixed-signal products including sensors, connectivity and wireless power, from May 2017 until March 2019 when IDT was acquired by Renesas Electronics Corporation. Mr. Fan joined IDT in 1999 and held various management roles at IDT, including Vice President and General Manager of the Computing and Communications Division, Vice President and General Manager of the Interface Connectivity Division, Vice President of China Operations, Vice President and General Manager of the Memory Interface Division, General Manager of Standard Product Operations, and Senior Director of Silicon Timing Solutions. Prior to joining IDT, Mr. Fan served in various engineering and management roles with Lucent Microelectronics, Mitel Semiconductor, and the National Lab of Telecom Research in China.</p>

**Item 1A. Risk Factors**

**RISK FACTORS**

Because of the following factors, as well as other variables affecting our operating results, past financial performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results or trends in future periods. See also “Note Regarding Forward-Looking Statements” at the beginning of this report.

## **Risks Associated With Our Business, Industry and Market Conditions**

***The success of our business depends on sustaining or growing our licensing revenue and the failure to achieve such revenue would lead to a material decline in our results of operations.***

Our revenue consists largely of patent and technology license fees paid for access to our patented technologies, existing technology and other development and support services we provide to our customers. Our ability to secure and renew the licenses from which our revenues are derived depends on our customers adopting our technology and using it in the products they sell. Once secured, license revenue may be negatively affected by factors within and outside our control, including reductions in our customers' sales prices, sales volumes, our failure to timely complete engineering deliverables, and the actual terms of such licenses themselves. In addition, our licensing cycle for new licensees as well as for renewals for existing licensees is lengthy, costly and unpredictable. We cannot provide any assurance that we will be successful in signing new license agreements or renewing existing license agreements on equal or favorable terms or at all. If we do not achieve our revenue goals, our results of operations could decline.

***Our licensing cycle is lengthy and costly, and our marketing and licensing efforts may be unsuccessful.***

The process of persuading customers to adopt and license our Chip interface, data Security IP, and other technologies can be lengthy. Even if successful, there can be no assurance that our technologies will be used in a product that is ultimately brought to market, achieves commercial acceptance or results in significant royalties to us. We generally incur significant marketing and sales expenses prior to entering into our license agreements, generating a license fee and establishing a royalty stream from each customer. The length of time it takes to establish a new licensing relationship can take many months or even years. We may incur costs in any particular period before any associated revenue stream begins, if at all. If our marketing and sales efforts are very lengthy or unsuccessful, then we may face a material adverse effect on our business and results of operations as a result of failure to obtain or an undue delay in obtaining royalties.

***Some of our license agreements may convert to fully paid-up licenses at the expiration of their terms, or upon certain milestones, and we may not receive royalties after that time.***

From time to time, we enter into license agreements that automatically convert to fully paid-up licenses upon expiration or upon reaching certain milestones. We may not receive further royalties from customers for any licensed technology under those agreements if they convert to fully paid-up licenses because such customers will be entitled to continue using some, if not all, of the relevant intellectual property or technology under the terms of the license agreements without further payment, even if relevant patents or technologies are still in effect. If we cannot find another source of royalties to replace the royalties from these license agreements converting to fully paid-up licenses, our results of operations following such conversion could be adversely affected.

***Future revenue is difficult to predict for several reasons, and our failure to predict revenue accurately may result in our stock price declining.***

Our lengthy license negotiation cycles could make our future revenue difficult to predict because we may not be successful in entering into or renewing licenses with our customers on our anticipated timelines. As we commercially launch each of our products, the sales volume of and resulting revenue from such products in any given period will be difficult to predict.

In addition, while some of our license agreements provide for fixed, quarterly royalty payments, many of our license agreements provide for volume-based royalties and may also be subject to caps on royalties in a given period. The sales volume and prices of our customers' products in any given period can be difficult to predict. In addition, we began applying the new revenue recognition standard (ASC 606) during the first quarter of 2018, as required, and we anticipate that our revenue will vary greatly from quarter to quarter. As a result of the foregoing items, our actual results may differ substantially from analyst estimates or our forecasts in any given quarter.

Also, a portion of our revenue comes from development and support services provided to our customers. Depending upon the nature of the services, a portion of the related revenue may be recognized ratably over the support period, or may be recognized according to contract revenue accounting. Contract revenue accounting may result in deferral of the service fees to the completion of the contract, or may result in the recognition of service fees over the period in which services are performed on a percentage-of-completion basis.

***Our revenue is concentrated in a few customers, and if we lose any of these customers through contract terminations or acquisitions, our revenue may decrease substantially.***

We have a high degree of revenue concentration. Our top five customers for each reporting period represented approximately 46%, 49% and 55% of our revenue for the years ended December 31, 2019, 2018 and 2017, respectively. For 2019, revenue from Broadcom and SK hynix each accounted for 10% or more of our total revenue. For 2018, revenue from Broadcom and NVIDIA each accounted for 10% or more of our total revenue. For 2017, revenue from Micron, Samsung and SK hynix each accounted for 10% or more of our total revenue. We expect to continue to experience significant revenue concentration for the foreseeable future.

In addition, our license agreements are complex and some contain terms that require us to provide certain customers with the lowest royalty rate that we provide to other customers for similar technologies, volumes and schedules. These clauses may limit our ability to effectively price differently among our customers, to respond quickly to market forces, or otherwise to compete on the basis of price. These clauses may also require us to reduce royalties payable by existing customers when we enter into or amend agreements with other customers. Any adjustment that reduces royalties from current customers or licensees may have a material adverse effect on our operating results and financial condition.

We continue to negotiate with customers and prospective customers to enter into license agreements. Any future agreement may trigger our obligation to offer comparable terms or modifications to agreements with our existing customers, which may be less favorable to us than the existing license terms. We expect licensing fees will continue to vary based on our success in renewing existing license agreements and adding new customers, as well as the level of variation in our customers' reported shipment volumes, sales price and mix, offset in part by the proportion of customer payments that are fixed. In particular, under our license agreement with Samsung, the license fees payable by Samsung are subject to certain adjustments and conditions, and we therefore cannot provide assurances that the revenues generated by this license will not decline in the future. In addition, some of our material license agreements may contain rights by the customer to terminate for convenience, or upon certain other events, such as change of control, material breach, insolvency or bankruptcy proceedings. If we are unsuccessful in entering into license agreements with new customers or renewing license agreements with existing customers, on favorable terms or at all, or if they are terminated, our results of operations may decline significantly.

***Some of our revenue is subject to the pricing policies of our customers over which we have no control.***

We have no control over our customers' pricing of their products and there can be no assurance that licensed products will be competitively priced or will sell in significant volumes. Any premium charged by our customers in the price of memory and controller chips or other products over alternatives must be reasonable. If the benefits of our technology do not match the price premium charged by our customers, the resulting decline in sales of products incorporating our technology could harm our operating results.

***We have traditionally operated in, and may enter other, industries that are highly cyclical and competitive.***

Our target customers are companies that develop and market high volume business and consumer products in semiconductors, computing, data centers, networks, tablets, handheld devices, mobile applications, gaming and graphics, high-definition televisions, cryptography and data security. The electronics industry is intensely competitive and has been impacted by rapid technological change, short product life cycles, cyclical market patterns, price erosion and increasing foreign and domestic competition. We are subject to many risks beyond our control that influence whether or not we are successful in winning target customers or retaining existing customers, including, primarily, competition in a particular industry, market acceptance of such customers' products and the financial resources of such customers. In particular, DRAM manufacturers, which such customers make up a significant part of our revenue, are prone to significant business cycles and have suffered material losses and other adverse effects to their businesses, leading to industry consolidation from time-to-time that may result in loss of revenues under our existing license agreements or loss of target customers. As a result of ongoing competition in the industries in which we operate and volatility in various economies around the world, we may achieve a reduced number of licenses or may experience tightening of customers' operating budgets, difficulty or inability of our customers to pay our licensing fees, lengthening of the approval process for new licenses and consolidation among our customers. All of these factors may adversely affect the demand for our technology and may cause us to experience substantial fluctuations in our operating results.

We face competition from semiconductor and digital electronics products and systems companies, and other semiconductor intellectual property companies that provide security cores that are available to the market. We believe the principal competition

for our technologies may come from our prospective customers, some of which are evaluating and developing products based on technologies that they contend or may contend will not require a license from us. Some of our competitors use a system-level design approach similar to ours, including activities such as board and package design, power and signal integrity analysis, and thermal management. Many of these companies are larger and may have better access to financial, technical and other resources than we possess.

To the extent that alternative technologies might provide comparable system performance at lower or similar cost to our technologies, or are perceived to require the payment of no or lower royalties, or to the extent other factors influence the industry, our customers and prospective customers may adopt and promote such alternative technologies. Even to the extent we determine that such alternative technologies infringe our patents, there can be no assurance that we would be able to negotiate agreements that would result in royalties being paid to us without litigation, which could be costly and the results of which would be uncertain.

In addition, our expansion into new markets subjects us to additional risks. We may have limited or no experience in new products and markets, and our customers may not adopt our new offerings. These and other new offerings may present new and difficult challenges, which could negatively affect our operating results.

***Our customers often require our products to undergo a lengthy and expensive qualification process which does not assure product sales. If we are unsuccessful or delayed in qualifying any of our products with a customer, our business and operating results would suffer.***

Prior to purchasing our products, our customers often require that our products undergo extensive qualification processes, which involve testing of our products in the customers' systems, as well as testing for reliability. This qualification process may continue for several months. However, qualification of a product by a customer does not assure any sales of the product to that customer. Even after successful qualification and sales of a product to a customer, a subsequent revision in third party manufacturing processes may require a new qualification process with our customers, which may result in delays and in our holding excess or obsolete inventory. After our products are qualified, it can take several months or more before the customer commences volume production of components or systems that incorporate our products. Despite these uncertainties, we devote substantial resources, including design, engineering, sales, marketing and management efforts, to qualify our products with customers in anticipation of sales. If we are unsuccessful or delayed in qualifying any of our products with a customer, sales of those products to the customer may be precluded or delayed, which may impede our growth and cause our business to suffer.

***We may have to invest more resources in research and development than anticipated, which could increase our operating expenses and negatively impact our operating results.***

If new competitors, technological advances by existing competitors, and/or development of new technologies or other competitive factors require us to invest significantly greater resources than anticipated in our research and development efforts, our operating expenses could increase. If we are required to invest significantly greater resources than anticipated in research and development efforts without an increase in revenue, our operating results would decline. We expect these expenses to increase in the foreseeable future as our technology development efforts continue.

***Our business and operations could suffer in the event of security breaches.***

Attempts by others to gain unauthorized access to our information technology systems are becoming more sophisticated. These attempts, which might be related to industrial or other espionage, include covertly introducing malware to our computers and networks and impersonating authorized users, among others. We seek to detect and investigate all security incidents and to prevent their recurrence, but in some cases, we might be unaware of an incident or its magnitude and effects. While we have not identified any material incidents of unauthorized access to date, the theft, unauthorized use or publication of our intellectual property and/or confidential business information could harm our competitive position and reputation, reduce the value of our investment in research and development and other strategic initiatives or otherwise adversely affect our business. To the extent that any future security breach results in inappropriate disclosure of our customers' confidential information or any personally-identifiable information of our employees, we may incur liability.

***Failures in our products and services or in the products of our customers, including those resulting from security vulnerabilities, defects, bugs or errors, could harm our business.***

Our products and services are highly technical and complex, and among our various businesses our products and services are crucial to providing security and other critical functions for our customers' operations. Our products and services have from

time to time contained and may in the future contain undetected errors, bugs, defects or other security vulnerabilities. Some errors in our products and services may only be discovered after a product or service has been deployed and used by customers, and may in some cases only be detected under certain circumstances or after extended use. In addition, because the techniques used by hackers to access or sabotage our products and services and other technologies change and evolve frequently and generally are not recognized until launched against a target, we may be unable to anticipate, detect or prevent these techniques and may not address them in our data security technologies. Any errors, bugs, defects or security vulnerabilities discovered in our solutions after commercial release could adversely affect our revenue, our customer relationships and the market's perception of our products and services. We may not be able to correct any errors, bugs, defects, security flaws or vulnerabilities promptly, or at all. Any breaches, defects, errors or vulnerabilities in our products and services could result in:

- expenditure of significant financial and research and development resources in efforts to analyze, correct, eliminate or work around breaches, errors, bugs or defects or to address and eliminate vulnerabilities;
- financial liability to customers for breach of certain contract provisions, including indemnification obligations;
- loss of existing or potential customers;
- product shipment restrictions or prohibitions to certain customers;
- delayed or lost revenue;
- delay or failure to attain market acceptance;
- negative publicity, which would harm our reputation; and
- litigation, regulatory inquiries or investigations that would be costly and harm our reputation.

***We may fail to meet our publicly announced guidance or other expectations about our business, which would likely cause our stock price to decline.***

We provide guidance regarding our expected financial and business performance including our anticipated future revenues, operating expenses and other financial and operation metrics. We enhanced our guidance following implementation of Accounting Standards Update (ASU) No. 2014-09, Revenue from Contracts with Customers in Accounting Standards Codification (ASC) Topic 606 ("ASC 606", "the New Revenue Standard") in the first quarter of 2018.

Correctly identifying the key factors affecting business conditions and predicting future events is an inherently uncertain process. Any guidance that we provide may not always be accurate, or may vary from actual results, due to our inability to correctly identify and quantify risks and uncertainties to our business and to quantify their impact on our financial performance. We offer no assurance that such guidance will ultimately be accurate, and investors should treat any such guidance with appropriate caution. If we fail to meet our guidance or if we find it necessary to revise such guidance, even if such failure or revision is seemingly insignificant, investors and analysts may lose confidence in us and the market value of our common stock could be materially adversely affected.

***Changes in accounting principles and guidance could result in unfavorable accounting charges or effects.***

We prepare our financial statements in accordance with accounting principles generally accepted in the United States and these principles are subject to interpretation by the SEC and various bodies. A change in these principles or application guidance, or in their interpretations, may have a material effect on our reported results, as well as our processes and related controls, and may retroactively affect previously reported results. For instance, we adopted ASC 842, the New Leasing Standard, effective for us on January 1, 2019, using the alternative transition method and recognized a cumulative-effect adjustment to the opening balance of accumulated deficit on January 1, 2019. We also adopted ASC 606, the New Revenue Standard, effective for us on January 1, 2018, on a modified retrospective basis, with a cumulative-effect adjustment to the opening balance of accumulated deficit on January 1, 2018. The New Revenue Standard materially impacted the timing of revenue recognition for our fixed-fee intellectual property (IP) licensing arrangements (including certain fixed-fee agreements that license our existing IP portfolio as well as IP added to our portfolio during the license term) as a majority of such revenue would be recognized at inception of the license term, as opposed to over time as is the case under prior U.S. GAAP, and we are required to compute and recognize interest income over time for certain licensing arrangements as control over the IP generally transfers significantly in advance of cash being received from customers. The impact of the adoption of the New Revenue Standard did not have a material impact on our other revenue streams. We have also enhanced the form and content of some of our guidance metrics that we provide following implementation of the New Revenue Standard. We expect that any change to current revenue recognition practices may significantly increase volatility in our quarterly revenue, financial results and trends, and may impact our stock price.

***We have in the past made and may in the future make acquisitions or enter into mergers, strategic investments, sales of assets, divestitures or other arrangements that may not produce expected operating and financial results.***

From time to time, we engage in acquisitions, strategic transactions, strategic investments, divestitures and potential discussions with respect thereto. Many of our acquisitions or strategic investments entail a high degree of risk, including those involving new areas of technology and such investments may not become liquid for several years after the date of the investment, if at all. Our acquisitions or strategic investments may not provide the advantages that we anticipated or generate the financial returns we expect, including if we are unable to close any pending acquisitions. For example, for any pending or completed acquisitions, we may discover unidentified issues not discovered in due diligence, and we may be subject to regulatory approvals or liabilities that are not covered by indemnification protection or become subject to litigation. Achieving the anticipated benefits of business acquisitions depends in part upon our ability to integrate the acquired businesses in an efficient and effective manner. The integration of companies that have previously operated independently may result in significant challenges, including, among others: retaining key employees; successfully integrating new employees, business systems and technology; retaining customers of the acquired business; minimizing the diversion of management's and other employees' attention from ongoing business matters; coordinating geographically separate organizations; consolidating research and development operations; and consolidating corporate and administrative infrastructures.

Our strategic investments in new areas of technology may involve significant risks and uncertainties, including distraction of management from current operations, greater than expected liabilities and expenses, inadequate return of capital, and unidentified issues not discovered in due diligence. These investments are inherently risky and may not be successful.

In addition, we may record impairment charges related to our acquisitions or strategic investments. Any losses or impairment charges that we incur related to acquisitions, strategic investments or sales of assets will have a negative impact on our financial results and the market value of our common stock, and we may continue to incur new or additional losses related to acquisitions or strategic investments.

We may have to incur debt or issue equity securities to pay for any future acquisitions, which debt could involve restrictive covenants or which equity security issuance could be dilutive to our existing stockholders. We may also use cash to pay for any future acquisitions which will reduce our cash balance.

From time to time, we may also divest certain assets. These divestitures or proposed divestitures may involve the loss of revenue and/or potential customers, and the market for the associated assets may dictate that we sell such assets for less than what we paid. In addition, in connection with any asset sales or divestitures, we may be required to provide certain representations, warranties and covenants to buyers. While we would seek to ensure the accuracy of such representations and warranties and fulfillment of any ongoing obligations, we may not be completely successful and consequently may be subject to claims by a purchaser of such assets.

***A substantial portion of our revenue is derived from sources outside of the United States and this revenue and our business generally are subject to risks related to international operations that are often beyond our control.***

For the years ended December 31, 2019, 2018 and 2017, revenues received from our international customers constituted approximately 40%, 44% and 58%, respectively, of our total revenue. We expect that future revenue derived from international sources will continue to represent a significant portion of our total revenue.

To the extent that customer sales are not denominated in U.S. dollars, any royalties which are based on a percentage of the customers' sales that we receive as a result of such sales could be subject to fluctuations in currency exchange rates. In addition, if the effective price of licensed products sold by our foreign customers were to increase as a result of fluctuations in the exchange rate of the relevant currencies, demand for licensed products could fall, which in turn would reduce our royalties. We do not use financial instruments to hedge foreign exchange rate risk.

Trade-related government actions, whether implemented by the US government, China or other countries, that impose barriers or restrictions that would impact our ability to sell or ship products to certain customers may have a negative impact on our financial condition and results of operations. We cannot predict the actions government entities may take in this context and may be unable to quickly offset or effectively react to government actions that restrict our ability to sell to certain customers or in certain jurisdictions. Government actions that affect our customers' ability to sell products or access critical elements of their supply chains may result in a decreased demand for their products, which may consequently reduce their demand for our products.

We currently have international business operations in the United Kingdom, France and the Netherlands, international design operations in Canada, India and Finland, and business development operations in China, Japan, Korea, and Taiwan. Our international operations and revenue are subject to a variety of risks which are beyond our control, including:

- hiring, maintaining and managing a workforce and facilities remotely and under various legal systems, including compliance with local labor and employment laws;
- non-compliance with our code of conduct or other corporate policies;
- natural disasters, acts of war, terrorism, widespread global pandemics or illness, such as the current Coronavirus (COVID-19), or security breaches;
- export controls, tariffs, import and licensing restrictions and other trade barriers;
- profits, if any, earned abroad being subject to local tax laws and not being repatriated to the United States or, if repatriation is possible, limited in amount;
- adverse tax treatment of revenue from international sources and changes to tax codes, including being subject to foreign tax laws and being liable for paying withholding, income or other taxes in foreign jurisdictions;
- unanticipated changes in foreign government laws and regulations;
- increased financial accounting and reporting burdens and complexities;
- lack of protection of our intellectual property and other contract rights by jurisdictions in which we may do business to the same extent as the laws of the United States;
- potential vulnerability to computer system, internet or other systemic attacks, such as denial of service, viruses or other malware which may be caused by criminals, terrorists or other sophisticated organizations;
- social, political and economic instability;
- geopolitical issues, including changes in diplomatic and trade relationships, in particular with China; and
- cultural differences in the conduct of business both with customers and in conducting business in our international facilities and international sales offices.

We and our customers are subject to many of the risks described above with respect to companies which are located in different countries. There can be no assurance that one or more of the risks associated with our international operations will not result in a material adverse effect on our business, financial condition or results of operations.

***Weak global economic conditions may adversely affect demand for the products and services of our customers.***

Our operations and performance depend significantly on worldwide economic conditions. Future uncertainty about global or regional economic and political conditions poses a risk as consumers and businesses may postpone spending in response to tighter credit, negative financial news and declines in income or asset values, which could have a material negative effect on the demand for the products of our customers in the foreseeable future. If our customers experience reduced demand for their products as a result of global or regional economic conditions or otherwise, this could result in reduced royalty revenue and our business and results of operations could be harmed.

***If our counterparties are unable to fulfill their financial and other obligations to us, our business and results of operations may be affected adversely.***

Any downturn in economic conditions or other business factors could threaten the financial health of our counterparties, including companies with which we have entered into licensing and/or settlement agreements, and their ability to fulfill their financial and other obligations to us. Such financial pressures on our counterparties may eventually lead to bankruptcy proceedings or other attempts to avoid financial obligations that are due to us. Because bankruptcy courts have the power to modify or cancel contracts of the petitioner which remain subject to future performance and alter or discharge payment obligations related to pre-petition debts, we may receive less than all of the payments that we would otherwise be entitled to receive from any such counterparty as a result of bankruptcy proceedings.

***If we are unable to attract and retain qualified personnel, our business and operations could suffer.***

Our success is dependent upon our ability to identify, attract, compensate, motivate and retain qualified personnel, especially engineers, senior management and other key personnel. The loss of the services of any key employees could be disruptive to our development efforts, business relationships and strategy, and could cause our business and operations to suffer.

Recently, we have experienced significant changes in our management team, including in the role of chief executive officer and other senior executives. Our future success depends in large part upon the continued service and enhancement of our



management team and our employees. If there are further changes in management, such changes could be disruptive and could negatively affect our sales, operations, culture, future recruiting efforts and strategic direction. Competition for qualified executives is intense and if we are unable to compensate our key talent appropriately and continue expanding our management team, or successfully integrate new additions to our management team in a manner that enables us to scale our business and operations effectively, our ability to operate effectively and efficiently could be limited or negatively impacted. In addition, changes in key management positions may temporarily affect our financial performance and results of operations as new management becomes familiar with our business, processes and strategy. The loss of any of our key personnel, or our inability to attract, integrate and retain qualified employees, could require us to dedicate significant financial and other resources to such personnel matters, disrupt our operations and seriously harm our operations and business.

***We are subject to various government restrictions and regulations, including on the sale of products and services that use encryption technology and those related to privacy and other consumer protection matters.***

Various countries have adopted controls, license requirements and restrictions on the export, import and use of products or services that contain encryption technology. In addition, governmental agencies have proposed additional requirements for encryption technology, such as requiring the escrow and governmental recovery of private encryption keys. Restrictions on the sale or distribution of products or services containing encryption technology may impact our ability to license data security technologies to the manufacturers and providers of such products and services in certain markets or may require us or our customers to make changes to the licensed data security technology that is embedded in such products to comply with such restrictions. Government restrictions, or changes to the products or services our customers to comply with such restrictions, could delay or prevent the acceptance and use of such customers' products and services. In addition, the United States and other countries have imposed export controls that prohibit the export of encryption technology to certain countries, entities and individuals. Our failure to comply with export and use regulations concerning encryption technology could subject us to sanctions and penalties, including fines, and suspension or revocation of export or import privileges.

We are subject to a variety of laws and regulations in the United States, the European Union and other countries that involve, for example, user privacy, data protection and security, content and consumer protection. A number of proposals are pending before federal, state, and foreign legislative and regulatory bodies that could significantly affect our business. For example, in 2016, a new EU data protection regime, the General Data Protection Regulation ("GDPR") was adopted, with it fully effective on May 25, 2018, and California enacted the California Consumer Privacy Act as of January 1, 2020 ("CCPA"). The GDPR and CCPA may require us to modify our existing practices with respect to the collection, use, and disclosure of data. In particular, the GDPR provides for significant penalties in the case of non-compliance of up to €20 million or four percent of worldwide annual revenues, whichever is greater. The GDPR, CCPA and other existing and proposed laws and regulations can be costly to comply with and can delay or impede the development of new products, result in negative publicity, increase our operating costs and subject us to claims or other remedies.

In accordance with the Dodd-Frank Wall Street Reform and Consumer Protection Act, the SEC established new disclosure and reporting requirements for those companies that use "conflict" minerals mined from the Democratic Republic of Congo and adjoining countries in their products, whether or not these products are manufactured by third parties. These requirements could affect the sourcing and availability of minerals that are used in the manufacture of our products. We have to date incurred costs and expect to incur significant additional costs associated with complying with the disclosure requirements, including for example, due diligence in regard to the sources of any conflict minerals used in our products, in addition to the cost of remediation and other changes to products, processes, or sources of supply as a consequence of such verification activities. Additionally, we may face reputational challenges with our customers and other stakeholders if we are unable to sufficiently verify the origins of all minerals used in our products through the due diligence procedures that we implement. We may also face challenges with government regulators and our customers and suppliers if we are unable to sufficiently verify that the metals used in our products are conflict free.

***Participation in standards setting organizations may subject us to intellectual property licensing requirements or limitations that could adversely affect our business and prospects.***

In the course of our participation in the development of emerging standards for some of our present and future products, we may be obligated to grant to all other participants a license to our patents that are essential to the practice of those standards on reasonable and non-discriminatory, or RAND, terms. If we fail to limit to whom we license our patents, or fail to limit the terms of any such licenses, we may be required to license our patents or other intellectual property to others in the future, which could limit the effectiveness of our patents against competitors.

***Our operations are subject to risks of natural disasters, acts of war, terrorism, widespread illness or security breach at our domestic and international locations, any one of which could result in a business stoppage and negatively affect our operating results.***

Our business operations depend on our ability to maintain and protect our facilities, computer systems and personnel, which are primarily located in the San Francisco Bay Area in the United States, the United Kingdom, the Netherlands and India. The San Francisco Bay Area is in close proximity to known earthquake fault zones. Our facilities and transportation for our employees are susceptible to damage from earthquakes and other natural disasters such as fires, floods and similar events. Should a catastrophe disable our facilities, we do not have readily available alternative facilities from which we could conduct our business, so any resultant work stoppage could have a negative effect on our operating results. We also rely on our network infrastructure and technology systems for operational support and business activities which are subject to physical and cyber damage, and also susceptible to other related vulnerabilities common to networks and computer systems. Acts of terrorism, widespread illness, or global pandemics, including the current Coronavirus (COVID-19), war and any event that causes failures or interruption in our network infrastructure and technology systems could have a negative effect at our international and domestic facilities and could harm our business, financial condition, and operating results.

***We do not have extensive experience in manufacturing and marketing products and, as a result, may be unable to sustain and grow a profitable commercial market for new and existing products.***

We do not have extensive experience in creating, manufacturing and marketing products. Our product offerings may present new and difficult challenges, and we may be subject to claims if customers of our offerings experience delays, failures, non-performance or other quality issues. In particular, we may experience difficulties with product design, qualification, manufacturing, marketing or certification that could delay or prevent our development, introduction or marketing and sales of products. Although we intend to design our products to be fully compliant with applicable industry standards, proprietary enhancements may not in the future result in full conformance with existing industry standards under all circumstances.

If we fail to introduce products that meet the demand of our customers, penetrate new markets in which we expend significant resources, or our marketing and sales cycles that we experience are longer than we anticipate, our revenues will be difficult to predict, may decrease over time and our financial condition could suffer. Additionally, if we concentrate resources on a new market that does not prove profitable or sustainable, it could damage our reputation and limit our growth, and our financial condition could decline.

***We rely upon the accuracy of our customers' recordkeeping, and any inaccuracies or payment disputes for amounts owed to us under our licensing agreements may harm our results of operations.***

Many of our license agreements require our customers to document the manufacture and sale of products that incorporate our technology and report this data to us on a quarterly basis. While licenses with such terms give us the right to audit books and records of our customers to verify this information, audits rarely are undertaken because they can be expensive, time consuming, and potentially detrimental to our ongoing business relationship with our customers. Therefore, we typically rely on the accuracy of the reports from customers without independently verifying the information in them. Our failure to audit our customers' books and records may result in our receiving more or less royalty revenue than we are entitled to under the terms of our license agreements. If we conduct royalty audits in the future, such audits may trigger disagreements over contract terms with our customers and such disagreements could hamper customer relations, divert the efforts and attention of our management from normal operations and impact our business operations and financial condition.

We are subject to increased inventory risks and costs because we build our products based on forecasts provided by customers before receiving purchase orders for the product.

***We rely on a number of third-party providers for data center hosting facilities, equipment, maintenance and other services, and the loss of, or problems with, one or more of these providers may impede our growth or cause us to lose customers.***

We rely on third-party providers to supply data center hosting facilities, equipment, maintenance and other services in order to enable us to provide some of our services, and have entered into various agreements for such services. The continuous availability of our services depends on the operations of those facilities, on a variety of network service providers and on third-party vendors. In addition, we depend on our third-party facility providers' ability to protect these facilities against damage or interruption from natural disasters, power or telecommunications failures, criminal acts, cyber-attacks and similar events. If there are any lapses of service or damage to a facility, we could experience lengthy interruptions in our service as well as delays and additional expenses in arranging new facilities and services. Even with current and planned disaster recovery arrangements, our business could be harmed. Any interruptions or delays in our service, whether as a result of third-party error, our own error, natural disasters, criminal acts, security breaches or other causes, whether accidental or willful, could harm our relationships with customers, harm our reputation and cause our revenue to decrease and/or our expenses to increase. Also, in the event of damage or interruption, our insurance policies may not adequately compensate us for any losses that we may incur. These factors in turn could further reduce our revenue, subject us to liability and cause us to issue credits or cause us to lose customers, any of which could materially adversely affect our business.

***We rely on third parties for a variety of services, including manufacturing, and these third parties' failure to perform these services adequately could materially and adversely affect our business.***

We rely on third parties for a variety of services, including our manufacturing supply chain partners and third parties within our sales and distribution channels. Certain of these third parties are, and may be, our sole manufacturer or sole source of certain production materials. If we fail to manage our relationships with these manufacturers and suppliers effectively, or if they experience delays, disruptions, capacity constraints or quality control problems in their operations, our ability to ship products to our customers could be impaired and our competitive position and reputation could be harmed. In addition, any adverse change in any of our manufacturers and suppliers' financial or business condition could disrupt our ability to supply quality products to our customers. If we are required to change our manufacturers, we may lose revenue, incur increased costs and damage our end-customer relationships. In addition, qualifying a new manufacturer and commencing production can be an expensive and lengthy process. If our third-party manufacturers or suppliers are unable to provide us with adequate supplies of high-quality products for any other reason, we could experience a delay in our order fulfillment, and our business, operating results and financial condition would be adversely affected. In the event these and other third parties we rely on fail to provide their services adequately, including as a result of errors in their systems or events beyond their control, or refuse to provide these services on terms acceptable to us or at all, and we are not able to find suitable alternatives, our business may be materially and adversely affected. In addition, our orders may represent a relatively small percentage of the overall orders received by our manufacturers from their customers. As a result, fulfilling our orders may not be considered a priority in the event our manufacturers are constrained in their ability to fulfill all of their customer obligations in a timely manner. If our manufacturers are unable to provide us with adequate supplies of high-quality products, or if we or our manufacturers are unable to obtain adequate quantities of components, it could cause a delay in our order fulfillment, in which case our business, operating results and financial condition could be adversely affected.

***Warranty, service level agreement and product liability claims brought against us could cause us to incur significant costs and adversely affect our operating results as well as our reputation and relationships with customers.***

We may from time to time be subject to warranty, service level agreement and product liability claims with regard to product performance and our services. We could incur material losses as a result of warranty, support, repair or replacement costs in response to customer complaints or in connection with the resolution of contemplated or actual legal proceedings relating to such claims. In addition to potential losses arising from claims and related legal proceedings, warranty and product liability claims could affect our reputation and our relationship with customers. We generally attempt to limit the maximum amount of indemnification or liability that we could be exposed to under our contracts, however, this is not always possible.

***Any failure in our delivery of high-quality technical support services may adversely affect our relationships with our customers and our financial results.***

Our customers depend on our support organization to resolve technical issues and provide ongoing maintenance relating to our products and services. We may be unable to respond quickly enough to accommodate short-term increases in customer demand for support services. Increased customer demand for these services, without corresponding revenues, could increase costs and adversely affect our operating results. In addition, our sales process is highly dependent on our offerings and business reputation and on positive recommendations from our existing customers. Any failure to maintain high-quality technical support, or a market perception that we do not maintain high-quality support, could adversely affect our reputation, our ability to sell our solutions to existing and prospective customers, and our business, operating results and financial position.

***Certain software that we use in certain of our products is licensed from third parties and, for that reason, may not be available to us in the future, which has the potential to delay product development and production or cause us to incur additional expense, which could materially adversely affect our business, financial condition, operating results and cash flow.***

Some of our products and services contain software licensed from third parties. Some of these licenses may not be available to us in the future on terms that are acceptable to us or allow our products to remain competitive. The loss of these licenses or the inability to maintain any of them on commercially acceptable terms could delay development of future offerings or the enhancement of existing products and services. We may also choose to pay a premium price for such a license in certain circumstances where continuity of the licensed product would outweigh the premium cost of the license. The unavailability of these licenses or the necessity of agreeing to commercially unreasonable terms for such licenses could materially adversely affect our business, financial condition, operating results and cash flow.

***Certain software we use is from open source code sources, which, under certain circumstances, may lead to unintended consequences and, therefore, could materially adversely affect our business, financial condition, operating results and cash flow.***

We use open source software in our services, including our advanced mobile payment platform and smart ticketing platform, and we intend to continue to use open source software in the future. From time to time, there have been claims challenging the ownership of open source software against companies that incorporate open source software into their products or alleging that these companies have violated the terms of an open source license. As a result, we could be subject to lawsuits by parties claiming ownership of what we believe to be open source software or alleging that we have violated the terms of an open source license. Litigation could be costly for us to defend, have a negative effect on our operating results and financial condition or require us to devote additional research and development resources to change our solutions. In addition, if we were to combine our proprietary software solutions with open source software in certain manners, we could, under certain open source licenses, be required to publicly release the source code of our proprietary software solutions. If we inappropriately use open source software, we may be required to re-engineer our solutions, discontinue the sale of our solutions, release the source code of our proprietary software to the public at no cost or take other remedial actions. There is a risk that open source licenses could be construed in a way that could impose unanticipated conditions or restrictions on our ability to commercialize our solutions, which could adversely affect our business, operating results and financial condition.

***Our business and operating results could be harmed if we undertake any restructuring activities.***

From time to time, we may undertake restructurings of our business, including discontinuing certain products, services and technologies and planned reductions in force. There are several factors that could cause restructurings to have adverse effects on our business, financial condition and results of operations. These include potential disruption of our operations, the development of our technology, the deliveries to our customers and other aspects of our business. Loss of sales, service and engineering talent, in particular, could damage our business. Any restructuring would require substantial management time and attention and may divert management from other important work. Employee reductions or other restructuring activities also would cause us to incur restructuring and related expenses such as severance expenses. Moreover, we could encounter delays in executing any restructuring plans, which could cause further disruption and additional unanticipated expense.

***Problems with our information systems could interfere with our business and could adversely impact our operations.***

We rely on our information systems and those of third parties for fulfilling licensing and contractual obligations, processing customer orders, delivering products, providing services and support to our customers, billing and tracking our customer orders, performing accounting operations and otherwise running our business. If our systems fail, our disaster and data recovery planning and capacity may prove insufficient to enable timely recovery of important functions and business records. Any disruption in our information systems and those of the third parties upon whom we rely could have a significant impact on our business. Additionally, our information systems may not support new business models and initiatives and significant investments could be required in order to upgrade them. Delays in adapting our information systems to address new business models and accounting standards could limit the success or result in the failure of such initiatives and impair the effectiveness of our internal controls. Even if we do not encounter these adverse effects, the implementation of these enhancements may be much more costly than we anticipated. If we are unable to successfully implement the information systems enhancements as planned, our operating results could be negatively impacted.

## Risks Related to Capitalization Matters and Corporate Governance

### *The price of our common stock may continue to fluctuate.*

Our common stock is listed on The NASDAQ Global Select Market under the symbol “RMBS.” The trading price of our common stock has at times experienced price volatility and may continue to fluctuate significantly in response to various factors, some of which are beyond our control. Some of these factors include:

- any progress, or lack of progress, real or perceived, in the development of products that incorporate our innovations and technology companies’ acceptance of our products, including the results of our efforts to expand into new target markets;
- our signing or not signing new licenses or renewing existing licenses, and the loss of strategic relationships with any customer;
- announcements of technological innovations or new products by us, our customers or our competitors;
- changes in our strategies, including changes in our licensing focus and/or acquisitions or dispositions of companies or businesses with business models or target markets different from our core;
- positive or negative reports by securities analysts as to our expected financial results and business developments;
- developments with respect to patents or proprietary rights and other events or factors;
- new litigation and the unpredictability of litigation results or settlements;
- repurchases of our common stock on the open market;
- issuance of additional securities by us, including in acquisitions, or large cash payments, including in acquisitions; and
- changes in accounting pronouncements, including the effects of ASC 606 and ASC 842.

In addition, the stock market in general, and prices for companies in our industry in particular, have experienced extreme volatility that often has been unrelated to the operating performance of such companies. These broad market and industry fluctuations may adversely affect the price of our common stock, regardless of our operating performance.

We have outstanding senior convertible notes in an aggregate principal amount totaling \$172.5 million. Because these notes are convertible into shares of our common stock, volatility or depressed prices of our common stock could have a similar effect on the trading price of such notes. In addition, the existence of these notes may encourage short selling in our common stock by market participants because the conversion of the notes could depress the price of our common stock.

### *We have been party to, and may in the future be subject to, lawsuits relating to securities law matters which may result in unfavorable outcomes and significant judgments, settlements and legal expenses which could cause our business, financial condition and results of operations to suffer.*

We and certain of our current and former officers and directors, as well as our current auditors, were subject from 2006 to 2011 to several stockholder derivative actions, securities fraud class actions and/or individual lawsuits filed in federal court against us and certain of our current and former officers and directors. The complaints generally alleged that the defendants violated the federal and state securities laws and stated state law claims for fraud and breach of fiduciary duty. Although to date these complaints have either been settled or dismissed, the amount of time to resolve any future lawsuits is uncertain, and these matters could require significant management and financial resources. Unfavorable outcomes and significant judgments, settlements and legal expenses in litigation related to any future securities law claims could have material adverse impacts on our business, financial condition, results of operations, cash flows and the trading price of our common stock.

### *We are leveraged financially, which could adversely affect our ability to adjust our business to respond to competitive pressures and to obtain sufficient funds to satisfy our future research and development needs, to protect and enforce our intellectual property, and to meet other needs.*

We have material indebtedness. In November 2017, we issued \$172.5 million aggregate principal amount of our 2023 Notes, the entire amount of which remains outstanding. The degree to which we are leveraged could have negative consequences, including, but not limited to, the following:

- we may be more vulnerable to economic downturns, less able to withstand competitive pressures and less flexible in responding to changing business and economic conditions;
- our ability to obtain additional financing in the future for working capital, capital expenditures, acquisitions, litigation, general corporate or other purposes may be limited;
- a substantial portion of our cash flows from operations in the future may be required for the payment of interest and principal when due at maturity in February 2023; and

- we may be required to make cash payments upon any conversion of the 2023 Notes, which would reduce our cash on hand.

A failure to comply with the covenants and other provisions of our debt instruments could result in events of default under such instruments, which could permit acceleration of all of our outstanding 2023 Notes. Any required repurchase of the 2023 Notes as a result of a fundamental change or acceleration of the 2023 Notes would reduce our cash on hand such that we would not have those funds available for use in our business.

If we are at any time unable to generate sufficient cash flows from operations to service our indebtedness when payment is due, we may be required to attempt to renegotiate the terms of the instruments relating to the indebtedness, seek to refinance all or a portion of the indebtedness or obtain additional financing. There can be no assurance that we will be able to successfully renegotiate such terms, that any such refinancing would be possible or that any additional financing could be obtained on terms that are favorable or acceptable to us.

***Compliance with changing regulation of corporate governance and public disclosure may result in additional expenses.***

Changing laws, regulations and standards relating to corporate governance and public disclosure have historically created uncertainty for companies such as ours. Any new or changed laws, regulations and standards are subject to varying interpretations due to their lack of specificity, and as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices.

***Our certificate of incorporation and bylaws, Delaware law, our outstanding convertible notes and certain other agreements contain provisions that could discourage transactions resulting in a change in control, which may negatively affect the market price of our common stock.***

Our certificate of incorporation, our bylaws and Delaware law contain provisions that might enable our management to discourage, delay or prevent a change in control. In addition, these provisions could limit the price that investors would be willing to pay in the future for shares of our common stock. Pursuant to such provisions:

- our board of directors is authorized, without prior stockholder approval, to create and issue preferred stock, commonly referred to as “blank check” preferred stock, with rights senior to those of common stock, which means that a stockholder rights plan could be implemented by our board;
- our board of directors is staggered into two classes, only one of which is elected at each annual meeting;
- stockholder action by written consent is prohibited;
- nominations for election to our board of directors and the submission of matters to be acted upon by stockholders at a meeting are subject to advance notice requirements;
- certain provisions in our bylaws and certificate of incorporation such as notice to stockholders, the ability to call a stockholder meeting, advance notice requirements and action of stockholders by written consent may only be amended with the approval of stockholders holding 66 2/3% of our outstanding voting stock;
- our stockholders have no authority to call special meetings of stockholders; and
- our board of directors is expressly authorized to make, alter or repeal our bylaws.

We are also subject to Section 203 of the Delaware General Corporation Law, which provides, subject to enumerated exceptions, that if a person acquires 15% or more of our outstanding voting stock, the person is an “interested stockholder” and may not engage in any “business combination” with us for a period of three years from the time the person acquired 15% or more of our outstanding voting stock.

Certain provisions of our outstanding Notes could make it more difficult or more expensive for a third party to acquire us. Upon the occurrence of certain transactions constituting a fundamental change, holders of such Notes will have the right, at their option, to require us to repurchase, at a cash repurchase price equal to 100% of the principal amount plus accrued and unpaid interest on such Notes, all or a portion of their Notes. We may also be required to increase the conversion rate of such Notes in the event of certain fundamental changes.

***Unanticipated changes in our tax rates or in the tax laws and regulations could expose us to additional income tax liabilities which could affect our operating results and financial condition.***

We are subject to income taxes in both the United States and various foreign jurisdictions. Significant judgment is required in determining our worldwide provision for income taxes and, in the ordinary course of business, there are many transactions and calculations where the ultimate tax determination is uncertain. Our effective tax rate could be adversely affected by changes

in the mix of earnings in countries with differing statutory tax rates, changes in the valuation of deferred tax assets and liabilities, changes in tax laws and regulations as well as other factors. Our tax determinations are regularly subject to audit by tax authorities and developments in those audits could adversely affect our income tax provision, and we are currently undergoing such audits of certain of our tax returns. Although we believe that our tax estimates are reasonable, the final determination of tax audits or tax disputes may be different from what is reflected in our historical income tax provisions which could affect our operating results.

#### **Litigation, Regulation and Business Risks Related to our Intellectual Property**

***Adverse litigation results could affect our business.***

We may be subject to legal claims or regulatory matters involving consumer, stockholder, employment, competition, intellectual property and other issues on a global basis. Litigation can be lengthy, expensive and disruptive to our operations, and results cannot be predicted with certainty. An adverse decision could include monetary damages or, in cases for which injunctive relief is sought, an injunction prohibiting us from manufacturing or selling one or more of our products or technologies. If we were to receive an unfavorable ruling on a matter, our business, operating results or financial condition could be materially harmed.

***We have in the past, and may in the future, become engaged in litigation stemming from our efforts to protect and enforce our patents and intellectual property and make other claims, which could adversely affect our intellectual property rights, distract our management and cause substantial expenses and declines in our revenue and stock price.***

We seek to diligently protect our intellectual property rights and will continue to do so. While we are not currently involved in intellectual property litigation, any future litigation, whether or not determined in our favor or settled by us, would be expected to be costly, may cause delays applicable to our business (including delays in negotiating licenses with other actual or potential customers), would be expected to discourage future design partners, would tend to impair adoption of our existing technologies and would divert the efforts and attention of our management and technical personnel from other business operations. In addition, we may be unsuccessful in any litigation if we have difficulty obtaining the cooperation of former employees and agents who were involved in our business during the relevant periods related to our litigation and are now needed to assist in cases or testify on our behalf. Furthermore, any adverse determination or other resolution in litigation could result in our losing certain rights beyond the rights at issue in a particular case, including, among other things: our being effectively barred from suing others for violating certain or all of our intellectual property rights; our patents being held invalid or unenforceable or not infringed; our being subjected to significant liabilities; our being required to seek licenses from third parties; our being prevented from licensing our patented technology; or our being required to renegotiate with current customers on a temporary or permanent basis.

***From time to time, we are subject to proceedings by government agencies that may result in adverse determinations against us and could cause our revenue to decline substantially.***

An adverse resolution by or with a governmental agency could result in severe limitations on our ability to protect and license our intellectual property, and could cause our revenue to decline substantially. Third parties have and may attempt to use adverse findings by a government agency to limit our ability to enforce or license our patents in private litigations, to challenge or otherwise act against us with respect to such government agency proceedings.

Further, third parties have sought and may seek review and reconsideration of the patentability of inventions claimed in certain of our patents by the U.S. Patent and Trademark Office (“USPTO”) and/or the European Patent Office (the “EPO”). Any re-examination or inter parties review proceedings may be initiated by the USPTO’s Patent Trial and Appeal Board (“PTAB”). The PTAB and the related former Board of Patent Appeals and Interferences have previously issued decisions in a few cases, finding some challenged claims of Rambus’ patents to be valid, and others to be invalid. Decisions of the PTAB are subject to further USPTO proceedings and/or appeal to the Court of Appeals for the Federal Circuit. A final adverse decision, not subject to further review and/or appeal, could invalidate some or all of the challenged patent claims and could also result in additional adverse consequences affecting other related U.S. or European patents, including in any intellectual property litigation. If a sufficient number of such patents are impaired, our ability to enforce or license our intellectual property would be significantly weakened and could cause our revenue to decline substantially.

The pendency of any governmental agency acting as described above may impair our ability to enforce or license our patents or collect royalties from existing or potential customers, as any litigation opponents may attempt to use such proceedings to delay or otherwise impair any pending cases and our existing or potential customers may await the final outcome of any proceedings before agreeing to new licenses or to paying royalties.

***Litigation or other third-party claims of intellectual property infringement could require us to expend substantial resources and could prevent us from developing or licensing our technology on a cost-effective basis.***

Our research and development programs are in highly competitive fields in which numerous third parties have issued patents and patent applications with claims closely related to the subject matter of our programs. We have also been named in the past, and may in the future be named, as a defendant in lawsuits claiming that our technology infringes upon the intellectual property rights of third parties. As we develop additional products and technology, we may face claims of infringement of various patents and other intellectual property rights by third parties. In the event of a third-party claim or a successful infringement action against us, we may be required to pay substantial damages, to stop developing and licensing our infringing technology, to develop non-infringing technology, and to obtain licenses, which could result in our paying substantial royalties or our granting of cross licenses to our technologies. We may not be able to obtain licenses from other parties at a reasonable cost, or at all, which could cause us to expend substantial resources, or result in delays in, or the cancellation of, new products. Moreover, customers and/or suppliers of our products may seek indemnification for alleged infringement of intellectual property rights. We could be liable for direct and consequential damages and expenses including attorneys' fees. A future obligation to indemnify our customers and/or suppliers may harm our business, financial condition and operating results.

***If we are unable to protect our inventions successfully through the issuance and enforcement of patents, our operating results could be adversely affected.***

We have an active program to protect our proprietary inventions through the filing of patents. There can be no assurance, however, that:

- any current or future U.S. or foreign patent applications will be approved and not be challenged by third parties;
- our issued patents will protect our intellectual property and not be challenged by third parties;
- the validity of our patents will be upheld;
- our patents will not be declared unenforceable;
- the patents of others will not have an adverse effect on our ability to do business;
- Congress or the U.S. courts or foreign countries will not change the nature or scope of rights afforded patents or patent owners or alter in an adverse way the process for seeking or enforcing patents;
- changes in law will not be implemented, or changes in interpretation of such laws will occur, that will affect our ability to protect and enforce our patents and other intellectual property;
- new legal theories and strategies utilized by our competitors will not be successful;
- others will not independently develop similar or competing chip interfaces or design around any patents that may be issued to us; or
- factors such as difficulty in obtaining cooperation from inventors, pre-existing challenges or litigation, or license or other contract issues will not present additional challenges in securing protection with respect to patents and other intellectual property that we acquire.

If any of the above were to occur, our operating results could be adversely affected.

Furthermore, patent reform legislation, such as the Leahy-Smith America Invents Act, could increase the uncertainties and costs surrounding the prosecution of any patent applications and the enforcement or defense of our licensed patents. The federal courts, the USPTO, the Federal Trade Commission, and the U.S. International Trade Commission have also recently taken certain actions and issued rulings that have been viewed as unfavorable to patentees. While we cannot predict what form any new patent reform laws or regulations may ultimately take, or what impact recent or future reforms may have on our business, any laws or regulations that restrict or negatively impact our ability to enforce our patent rights against third parties could have a material adverse effect on our business.

In addition, our patents will continue to expire according to their terms, with expected expiration dates ranging from 2020 to 2038. Our failure to continuously develop or acquire successful innovations and obtain patents on those innovations could significantly harm our business, financial condition, results of operations, or cash flows.

***Our inability to protect and own the intellectual property we create would cause our business to suffer.***

We rely primarily on a combination of license, development and nondisclosure agreements, trademark, trade secret and copyright law and contractual provisions to protect our non-patentable intellectual property rights. If we fail to protect these intellectual property rights, our customers and others may seek to use our technology without the payment of license fees and



royalties, which could weaken our competitive position, reduce our operating results and increase the likelihood of costly litigation. The growth of our business depends in part on the use of our intellectual property in the products of third-party manufacturers, and our ability to enforce intellectual property rights against them to obtain appropriate compensation. In addition, effective trade secret protection may be unavailable or limited in certain foreign countries. Although we intend to protect our rights vigorously, if we fail to do so, our business will suffer.

Effective protection of trademarks, copyrights, domain names, patent rights, and other intellectual property rights is expensive and difficult to maintain, both in terms of application and maintenance costs, as well as the costs of defending and enforcing those rights. The efforts we have taken to protect our intellectual property rights may not be sufficient or effective. Our intellectual property rights may be infringed, misappropriated, or challenged, which could result in them being narrowed in scope or declared invalid or unenforceable. In addition, the laws or practices of certain countries do not protect our proprietary rights to the same extent as do the laws of the United States. Significant impairments of our intellectual property rights, and limitations on our ability to assert our intellectual property rights against others, could have a material and adverse effect on our business.

***Third parties may claim that our products or services infringe on their intellectual property rights, exposing us to litigation that, regardless of merit, may be costly to defend.***

Our success and ability to compete are also dependent upon our ability to operate without infringing upon the patent, trademark and other intellectual property rights of others. Third parties may claim that our current or future products or services infringe upon their intellectual property rights. Any such claim, with or without merit, could be time consuming, divert management's attention from our business operations and result in significant expenses. We cannot assure you that we would be successful in defending against any such claims. In addition, parties making these claims may be able to obtain injunctive or other equitable relief affecting our ability to license the products that incorporate the challenged intellectual property. As a result of such claims, we may be required to obtain licenses from third parties, develop alternative technology or redesign our products. We cannot be sure that such licenses would be available on terms acceptable to us, if at all. If a successful claim is made against us and we are unable to develop or license alternative technology, our business, financial condition, operating results and cash flows could be materially adversely affected.

***Any dispute regarding our intellectual property may require us to indemnify certain customers, the cost of which could severely hamper our business operations and financial condition.***

In any potential dispute involving our patents or other intellectual property, our customers could also become the target of litigation. While we generally do not indemnify our customers, some of our agreements provide for indemnification, and some require us to provide technical support and information to a customer that is involved in litigation involving use of our technology. In addition, we may be exposed to indemnification obligations, risks and liabilities that were unknown at the time that we acquired assets or businesses for our operations. Any of these indemnification and support obligations could result in substantial and material expenses. In addition to the time and expense required for us to indemnify or supply such support to our customers, a customer's development, marketing and sales of licensed semiconductors, mobile communications and data security technologies could be severely disrupted or shut down as a result of litigation, which in turn could severely hamper our business operations and financial condition as a result of lower or no royalty payments.

**Item 1B. *Unresolved Staff Comments***

None.

**Item 2. Properties**

As of December 31, 2019, we occupied offices in the leased facilities described below:

<b>Number of Offices Under Lease</b>	<b>Location</b>	<b>Primary Use</b>
7	United States	
	Sunnyvale, CA (Corporate Headquarters)	Executive and administrative offices, research and development, sales and marketing and service functions
	San Jose, CA (Future Corporate Headquarters - expected move in date is mid-2020)	Executive and administrative offices, research and development, sales and marketing and service functions
	Chapel Hill, NC	Research and development
	San Francisco, CA	Research and development
	Beaverton, OR	Research and development
	Agoura Hills, CA	Research and development
	Westminster, CA	Research and development
1	Bangalore, India	Administrative offices, research and development and service functions
1	Tokyo, Japan	Business development
1	Yokohama, Japan	Business development
1	Seoul, Korea	Business development
1	Shanghai, China	Business development
2	Taipei, Taiwan	Business development
1	Rotterdam, The Netherlands	Research and development
1	Vught, The Netherlands	Research and development
1	Glasgow, United Kingdom	Research and development
1	Toronto, Canada	Research and development
1	Espoo, Finland	Research and development

**Item 3. Legal Proceedings**

We are not currently a party to any material pending legal proceeding; however, from time to time, we may become involved in legal proceedings or be subject to claims arising in the ordinary course of our business. Although the results of litigation and claims cannot be predicted with certainty, we currently believe that the final outcome of these ordinary course matters will not have a material adverse effect on our business, operating results, financial position or cash flows. Regardless of the outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management attention and resources and other factors.

**Item 4. Mine Safety Disclosures**

Not applicable.

**PART II**

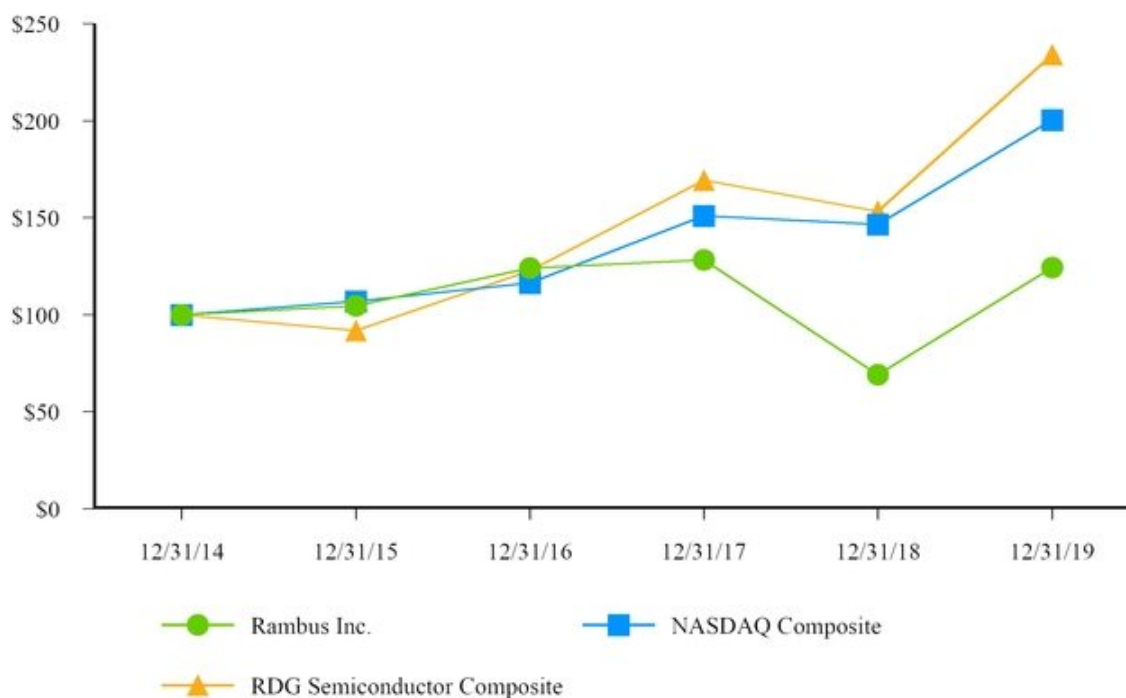
**Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities**

Our Common Stock is listed on The NASDAQ Global Select Market under the symbol "RMBS." The following table sets forth for the periods indicated the high and low sales price per share of our common stock as reported on The NASDAQ Global Select Market.

	Year Ended December 31, 2019		Year Ended December 31, 2018	
	High	Low	High	Low
First Quarter	\$ 10.93	\$ 7.55	\$ 14.63	\$ 11.85
Second Quarter	\$ 12.24	\$ 10.50	\$ 14.30	\$ 12.54
Third Quarter	\$ 14.29	\$ 11.23	\$ 13.61	\$ 10.76
Fourth Quarter	\$ 14.83	\$ 12.45	\$ 10.99	\$ 7.17

The graph below compares the cumulative 5-year total return of holders of Rambus Inc.'s common stock with the cumulative total returns of the NASDAQ Composite index and the RDG Semiconductor Composite index. The graph tracks the performance of a \$100 investment in our common stock and in each index (with the reinvestment of all dividends) from December 31, 2014 to December 31, 2019.

**COMPARISON OF 5-YEAR CUMULATIVE TOTAL RETURN  
Among Rambus Inc, the NASDAQ Composite Index  
and the RDG Semiconductor Composite Index**



Fiscal years ending:

	Base Period 12/31/14	12/31/15	12/31/16	12/31/17	12/31/18	12/31/19
Rambus Inc.	\$100.00	\$104.51	\$124.17	\$128.22	\$69.16	\$124.21
NASDAQ Composite	\$100.00	\$106.96	\$116.45	\$150.96	\$146.67	\$200.49
RDG Semiconductor Composite	\$100.00	\$91.76	\$122.76	\$169.41	\$153.35	\$234.06

*The stock price performance included in this graph is not necessarily indicative of future stock price performance.*

Information regarding our securities authorized for issuance under equity compensation plans will be included in Item 12, "Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters," of this report on Form 10-K.

As of January 31, 2020, there were 454 holders of record of our common stock. Since many of the shares of our common stock are held by brokers and other institutions on behalf of stockholders, we are unable to estimate the total number of beneficial stockholders represented by these record holders.

We have never paid or declared any cash dividends on our common stock or other securities.

**Share Repurchase Program**

During the year ended December 31, 2019, we did not repurchase any shares of our common stock under our share repurchase program.

On January 21, 2015, our Board approved a share repurchase program authorizing the repurchase of up to an aggregate of 20.0 million shares. Share repurchases under the plan may be made through the open market, established plans or privately negotiated transactions in accordance with all applicable securities laws, rules, and regulations. There is no expiration date applicable to the plan. As part of the broader share repurchase program previously authorized by our Board on January 21, 2015, we initiated an accelerated share repurchase program with Citibank, N.A. on March 5, 2018 which was completed in the second quarter of 2018. After giving effect to such accelerated share repurchase program, we had remaining authorization to repurchase approximately 3.6 million shares.

**Item 6. Selected Financial Data**

The following selected consolidated financial data as of and for the years ended December 31, 2019, 2018, 2017, 2016 and 2015 was derived from our consolidated financial statements. The following selected consolidated financial data should be read in conjunction with Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” and Item 8, “Financial Statements and Supplementary Data,” and other financial data included elsewhere in this report. Our historical results of operations are not necessarily indicative of results of operations to be expected for any future period.

	Years Ended December 31,				
	2019 (6)	2018 (3) (4) (5)	2017 (3) (4)	2016 (1) (2)	2015 (2) (3) (4)
	(In thousands, except per share amounts)				
Total revenue	\$ 224,027	\$ 231,201	\$ 393,096	\$ 336,597	\$ 296,278
Net income (loss)	\$ (90,419)	\$ (157,957)	\$ (22,862)	\$ 6,820	\$ 211,388
Net income (loss) per share:					
Basic	\$ (0.81)	\$ (1.46)	\$ (0.21)	\$ 0.06	\$ 1.84
Diluted	\$ (0.81)	\$ (1.46)	\$ (0.21)	\$ 0.06	\$ 1.80
<b>Consolidated Balance Sheet Data:</b>					
Cash, cash equivalents and marketable securities	\$ 407,664	\$ 277,764	\$ 329,376	\$ 172,182	\$ 287,706
Total assets	\$ 1,338,986	\$ 1,361,155	\$ 891,072	\$ 783,496	\$ 718,021
Convertible notes	\$ 148,788	\$ 141,934	\$ 213,898	\$ 126,167	\$ 119,418
Stockholders’ equity	\$ 970,918	\$ 1,012,112	\$ 571,584	\$ 552,782	\$ 526,533

- (1) The net income for the year ended December 31, 2016 included \$18.3 million of impairment of in-process research and development intangible asset and a reduction of operating expenses due to the change in our contingent consideration liability of \$6.8 million.
- (2) The net income for the years ended December 31, 2016 and 2015 included \$0.6 million and \$2.0 million, respectively, of gain from settlement which was reflected as a reduction of operating costs and expenses.
- (3) The net loss for the year ended December 31, 2018 included a \$113.7 million impact of an increase in our deferred tax asset valuation allowance. The net loss for the year ended December 31, 2017 included a \$21.5 million impact due to the recording of a deferred tax asset valuation allowance and \$20.7 million related to re-measurement of deferred tax assets as a result of the tax law changes. The net income for the year ended December 31, 2015 included \$174.5 million related to the reversal of the deferred tax asset valuation allowance.
- (4) Stockholders’ equity includes \$50.0 million paid under the accelerated share repurchase program initiated in both March 2018 and May 2017, and \$100.0 million paid under the accelerated share repurchase program initiated in October 2015 as well as the \$174.5 million net impact of the reversal of the deferred tax asset valuation allowance.
- (5) Reflects the impact from the adoption of ASC 606 in 2018. Refer to Note 2, “Summary of Significant Accounting Policies,” of Notes to Consolidated Financial Statements of this Form 10-K for further discussion.

- (6) The net loss for the year ended December 31, 2019 included \$7.4 million of impairment of assets held for sale related to the Company's Payments and Ticketing businesses, which was included in operating costs and expenses. Refer to Note 17, "Divestiture," of Notes to Consolidated Financial Statements of this Form 10-K for further discussion.

## **Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations**

*This report contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 as described in more detail under "Note Regarding Forward-Looking Statements." Our forward-looking statements are based on current expectations, forecasts and assumptions and are subject to risks, uncertainties and changes in condition, significance, value and effect. As a result of the factors described herein, and in the documents incorporated herein by reference, including, in particular, those factors described under "Risk Factors," we undertake no obligation to publicly disclose any revisions to these forward-looking statements to reflect events or circumstances occurring subsequent to filing this report with the Securities and Exchange Commission.*

*The following discussion and analysis should be read in conjunction with the consolidated financial statements and related notes that are included elsewhere in this report.*

### **Executive Summary**

Highlights from our annual results were as follows:

- Revenue of \$224.0 million;
- Operating costs and expenses of \$328.6 million;
- GAAP diluted net loss per share of \$0.81;
- Net cash provided by operating activities of \$128.5 million

We redefined our perimeter in 2019 with significant merger and acquisition activity throughout the year and focused the Company on Memory Interface Chips and Silicon IP solutions for the semiconductor market. We closed the sale of our Payments and Ticketing businesses to Visa and completed two silicon IP acquisitions, Northwest Logic for digital controllers, and the Secure Silicon IP and Protocols businesses of Verimatrix, formerly Inside Secure. Further, we delivered the second consecutive year of record revenue from products, with combined results from our Memory Interface Chips and Silicon IP businesses.

### **Business Overview**

Rambus is a premier Silicon IP and Chip provider, delivering high-speed interface and embedded security solutions to make data faster and safer. With 30 years of innovation, we continue to develop and license the foundational technology essential to all modern system on chips (SoCs) and computing systems. The Company delivers a broad range of semiconductor solutions including architecture licenses, high-speed physical and digital controller Interface IP cores, Security IP cores and protocols, and memory interface Chips.

Our strategic objectives are to focus our product portfolio and research around our core strength in semiconductor technologies, optimize the Company for operational efficiency, and leverage our strong cash generation to re-invest for growth. We continue to maximize synergies across our businesses and customer base, leveraging the significant overlap in our ecosystem of customers, partners and influencers. By delivering comprehensive solutions for secure, connected semiconductors, we are able to bring better value to our customers and improved profitability for the Company.

In 2019, we redefined our perimeter through the successful divestiture of our Payments and Ticketing businesses, which allowed us to focus the Company on providing leading solutions for the semiconductor market. The Rambus product and technology roadmap, as well as our go-to-market strategy, is driven by the application-specific requirements of our focus markets. This not only allows us to better serve our traditional data center and communications markets, but also to expand into new, fast-growing markets that demand the highest levels of performance and security, including automotive, artificial intelligence (AI), Internet of Things (IoT) and government.

### *Revenue Sources*

Our patented inventions are offered to our customers through patent, technology, software and IP core licenses, as well as product sales and services. Today, a primary source of revenue is derived from our Architecture Licenses, through which we

provide our customers a license to use a certain portion of our broad worldwide portfolio of patented inventions. Our Architecture Licenses enable our customers to use the licensed portion of our portfolio of patented inventions in the customer's own digital electronics products, systems or services. The licenses may also define the specific field of use where our customers may use or employ our inventions in their products. License agreements are structured with fixed or variable or a hybrid of fixed and variable royalty payments over certain defined periods ranging for periods of up to ten years. Leading consumer product, industrial, semiconductor and system companies such as AMD, Broadcom, Cisco, Freescale, Fujitsu, GE, IBM, Intel, Micron, Nanya, NVIDIA, Panasonic, Qualcomm, Renesas, Samsung, SK hynix, STMicroelectronics, Toshiba, Western Digital and Xilinx have licensed our patents. The vast majority of our patents were secured through our internal research and development efforts.

We also offer our customers technology licenses to support the implementation and adoption of our technology in their products or services. Our customers include leading companies such as IBM, Panasonic, Qualcomm, Samsung, Sony and Toshiba. Our technology license offerings include a range of technologies for incorporation into our customers' products and systems. We also offer a range of services as part of our technology licenses which can include know-how and technology transfer, product design and development, system integration, and other services. These technology license agreements may have both a fixed price (non-recurring) component and ongoing use fees and in some cases, royalties. Further, under technology licenses, our customers typically receive licenses to our patents necessary to implement these solutions in their products with specific rights and restrictions to the applicable patents elaborated in their individual contracts with us.

Revenues from royalties accounted for 41%, 56% and 74% of our consolidated revenue for the years ended December 31, 2019, 2018 and 2017, respectively.

The remainder of our revenue is product revenue, contract services and other revenue, which includes our product sales, IP core licenses, software licenses and related implementation, support and maintenance fees, and engineering services fees. The timing and amounts invoiced to customers can vary significantly depending on specific contract terms and can therefore have a significant impact on deferred revenue or account receivables in any given period. Product revenue accounted for 33%, 17% and 9% of our consolidated revenue for the years ended December 31, 2019, 2018 and 2017, respectively. Contract and other revenue accounted for 27%, 27% and 17% of our consolidated revenue for the years ended December 31, 2019, 2018 and 2017, respectively.

### *Expenses*

Cost of product revenue for 2019 increased approximately \$8.9 million to \$27.2 million from \$18.3 million as compared to 2018 primarily due to increased cost of sales associated with higher sales of memory products.

Engineering expenses continue to play a key role in our efforts to maintain product innovations. Our engineering expenses for 2019 decreased \$12.7 million as compared to 2018 primarily due to decreased amortization costs of \$9.4 million, headcount related expenses of \$3.9 million, allocated information technology costs of \$1.6 million and stock-based compensation expense of \$1.5 million, offset by increased facilities costs of \$2.1 million (primarily due to the adoption of the New Leasing Standard beginning in 2019 as discussed below), retention bonus accrual related to acquisitions of \$2.0 million and engineering development tool costs of \$1.2 million.

Sales, general and administrative expenses for 2019 increased \$0.2 million as compared to 2018 primarily due to increased stock-based compensation expense of \$6.3 million primarily due to the termination of the former chief executive officer at the end of June 2018, acquisition and divestiture related costs of \$5.2 million and facilities costs of \$2.6 million (primarily due to the adoption of the New Leasing Standard beginning in 2019 as discussed below), offset by decreased headcount related expenses of \$3.8 million, amortization cost of \$2.9 million, depreciation expense of \$1.8 million, sales and marketing costs of \$1.2 million, travel expenses of \$1.2 million, consulting costs of \$1.0 million, bonus accrual expense of \$1.0 million and recruiting costs of \$0.6 million.

### **Trends**

There are a number of trends that may have a material impact on us in the future, including but not limited to, the evolution of memory and SerDes technology, adoption of security solutions, the use and adoption of our inventions or technologies generally, industry consolidation, and global economic conditions with the resulting impact on sales of consumer electronic systems. In addition, as discussed under "Results of Operations" below, our adoption of the New Revenue Standard will have a significant impact on our revenue trends as compared to periods prior to 2018 in which we reported revenue under ASC 605.

We have a high degree of revenue concentration. Our top five customers for each reporting period represented approximately 46% of our revenue for 2019 as compared to 49% in 2018 and 55% in 2017. The particular customers that account for such revenue concentration have varied from period-to-period as a result of the addition of new contracts, expiration of existing contracts, renewals of existing contracts, industry consolidation and the volumes and prices at which the customers have recently sold to their customers. These variations are expected to continue in the foreseeable future.

Our revenue from companies headquartered outside of the United States accounted for approximately 40% in 2019 as compared to 44% in 2018 and 58% in 2017. We expect that revenue derived from international customers will continue to represent a significant portion of our total revenue in the future. To date, the majority of the revenue from international customers has been denominated in U.S. dollars. However, to the extent that such customers' sales to their customers are not denominated in U.S. dollars, any revenue that we receive as a result of such sales could be subject to fluctuations in currency exchange rates. In addition, if the effective price of licensed products sold by our foreign customers were to increase as a result of fluctuations in the exchange rate of the relevant currencies, demand for licensed products could fall, which in turn would reduce our revenue. We do not use financial instruments to hedge foreign exchange rate risk. For additional information concerning international revenue, refer to Note 7, "Segments and Major Customers," of Notes to Consolidated Financial Statements of this Form 10-K.

Our licensing cycle for new licensees as well as renewals for existing licensees is lengthy, costly and unpredictable without any degree of certainty. We may incur costs in any particular period before any associated revenue stream begins, if at all. Our lengthy license negotiation cycles could make our future revenue difficult to predict because we may not be successful in entering into licenses with our customers in the amounts projected, or on our anticipated timelines.

The semiconductor industry is intensely competitive and highly cyclical, limiting our visibility with respect to future sales. To the extent that macroeconomic fluctuations negatively affect our principal customers, the demand for our products and technology may be significantly and adversely impacted and we may experience substantial period-to-period fluctuations in our operating results.

The royalties we receive from our semiconductor customers are partly a function of the adoption of our technologies by systems companies. Many systems companies purchase semiconductors containing our technologies from our customers and do not have a direct contractual relationship with us. Our customers generally do not provide us with details as to the identity or volume of licensed semiconductors purchased by particular system companies. As a result, we face difficulty in analyzing the extent to which our future revenue will be dependent upon particular system companies.

Cost of product revenue as well as sales, general and administrative expenses in the aggregate and as a percentage of revenue increased in 2019 as compared to the prior year. Engineering costs in the aggregate and as a percentage of revenue decreased in 2019 as compared to the prior year. In the near term, we expect these costs in the aggregate to be higher as we intend to continue to make investments in the infrastructure and technologies required to increase our product innovation in semiconductor, security and other technologies. In addition, while we have not been involved in material litigation since 2014, to the extent litigation is again necessary, our expectations on the amount and timing of any future general and administrative costs are uncertain.

As a part of our overall business strategy, from time to time, we evaluate businesses and technologies for potential acquisition that are aligned with our core business and designed to supplement our growth, including the 2019 acquisitions of Northwest Logic and the Secure Silicon IP and Protocols business from Verimatrix, formerly Inside Secure. Similarly, we evaluate our current businesses and technologies that are not aligned with our core business for potential divestiture, such as the sale of our Payments and Ticketing businesses to Visa International Service Association in 2019. We expect to continue to evaluate and potentially enter into strategic acquisitions or divestitures which may adversely impact our business and operating results.



## Results of Operations

On January 1, 2018, we adopted ASC 606. Consistent with the modified retrospective adoption method, our results of operations for the period prior to our adoption of ASC 606 remain unchanged as revenue for the year ended December 31, 2017 was recognized under ASC 605. Therefore, the period is not directly comparable.

The adoption of ASC 606 limits the comparability of revenue and certain expenses presented in the results of operations for the years ended December 31, 2019 and 2018, when compared to the same period in 2017.

The following table sets forth, for the periods indicated, the percentage of total revenue represented by certain items reflected in our consolidated statements of operations:

	Years Ended December 31,		
	2019	2018	2017
Revenue:			
Royalties	40.5 %	56.4 %	73.7 %
Product revenue	32.6 %	16.7 %	9.3 %
Contract and other revenue	26.9 %	26.9 %	17.0 %
Total revenue	100.0 %	100.0 %	100.0 %
Operating costs and expenses:			
Cost of product revenue*	12.1 %	7.9 %	6.1 %
Cost of contract and other revenue	10.8 %	15.3 %	14.1 %
Research and development*	70.0 %	68.5 %	37.9 %
Sales, general and administrative*	46.5 %	44.9 %	28.2 %
Restructuring and other charges	3.9 %	1.0 %	— %
Loss on divestiture	3.3 %	— %	— %
Gain from sale of intellectual property	— %	— %	(0.1)%
Total operating costs and expenses	146.6 %	137.6 %	86.2 %
Operating income (loss)	(46.6)%	(37.6)%	13.8 %
Interest income and other income (expense), net	12.2 %	14.1 %	0.4 %
Loss on extinguishment of debt	— %	— %	(0.3)%
Interest expense	(4.4)%	(7.0)%	(3.5)%
Interest and other income (expense), net	7.8 %	7.1 %	(3.4)%
Income (loss) before income taxes	(38.8)%	(30.5)%	10.4 %
Provision for income taxes	1.5 %	37.8 %	16.2 %
Net loss	(40.3)%	(68.3)%	(5.8)%

\* Includes stock-based compensation:

Cost of product revenue	0.0%	0.0%	0.0%
Research and development	4.9%	5.4%	3.1%
Sales, general and administrative	6.9%	4.0%	3.9%

	Years Ended December 31,			2018 to 2019	2017 to 2018
	2019	2018	2017	Change	Change
(Dollars in millions)					
<b>Total Revenue</b>					
Royalties	\$ 90.8	\$ 130.5	\$ 289.6	(30.4)%	(55.0)%
Product revenue	73.0	38.7	36.5	88.6 %	6.0 %
Contract and other revenue	60.2	62.0	67.0	(2.9)%	(7.4)%
Total revenue	<u>\$ 224.0</u>	<u>\$ 231.2</u>	<u>\$ 393.1</u>	(3.1)%	(41.2)%

#### ***Royalty Revenue***

Our royalty revenue, which includes patent and technology license royalties, decreased approximately \$39.7 million to \$90.8 million for the year ended December 31, 2019 from \$130.5 million for 2018. The decrease was due primarily to the timing of renewals and the related structure of architecture license agreements which include both fixed and variable components.

Our royalty revenue decreased approximately \$159.1 million to \$130.5 million for the year ended December 31, 2018 from \$289.6 million for 2017. The decrease was due primarily to the change in revenue recognition whereby we no longer recognize revenue at the time billings become due and collectable. Upon adoption of ASC 606 in the first quarter of 2018, we now recognize revenue at the inception of certain fixed-fee licensing arrangements when our performance obligations are met. Under the previous revenue recognition standard (ASC 605), our revenue for the year ended would have been higher.

With changes in revenue recognition due to the adoption of ASC 606 in 2018, our royalty revenue for 2018 was significantly lower than that for 2017 primarily due to the change from the adoption of ASC 606 as noted above. This accounting change will not impact billings or the cash flow from these arrangements. Furthermore, we may experience greater variability in quarterly and annual revenue in future periods as a result of the revenue accounting treatment applied to future fixed-fee licensing arrangements.

We are continuously in negotiations for licenses with prospective customers. We expect patent royalties will continue to vary from period to period based on our success in adding new customers, renewing or extending existing agreements, as well as the level of variation in our customers' reported shipment volumes, sales price and mix, offset in part by the proportion of customer payments that are fixed or hybrid in nature. We also expect that our technology royalties will continue to vary from period to period based on our customers' shipment volumes, sales prices, and product mix.

#### ***Product Revenue***

Product revenue consists of revenue from the sale of memory and security products in 2019. Product revenue increased approximately \$34.3 million to \$73.0 million for the year ended December 31, 2019 from \$38.7 million for 2018. The increase was primarily due to greater market share gains of our memory interface chips.

Product revenue consisted of revenue from the sale of memory, security and lighting products in 2018 and 2017. Product revenue increased approximately \$2.2 million to \$38.7 million for the year ended December 31, 2018 from \$36.5 million for 2017. The increase was primarily due to higher sales of memory products, partially offset by lower sales of lighting products, as a result of closing our lighting division in the first quarter of 2018.

We believe that product revenue will increase in 2020, mainly from the sale of our memory products. Our ability to continue to grow product revenue is dependent on, among other things, our ability to continue to obtain orders from customers and our ability to meet our customers' demands.

#### ***Contract and Other Revenue***

Contract and other revenue consists of revenue from technology development projects. Contract and other revenue decreased approximately \$1.8 million to \$60.2 million for the year ended December 31, 2019 from \$62.0 million for 2018. The decrease was primarily due to lower revenue associated with our Payments and Ticketing businesses, which was divested in the fourth quarter of 2019, offset by growth experienced in our Silicon IP business.

Contract and other revenue decreased approximately \$5.0 million to \$62.0 million for the year ended December 31, 2018 from \$67.0 million for 2017. The decrease was primarily due to lower revenue from various memory and lighting technology development projects, partially offset by higher revenue from various security technology development projects.

We believe that contract and other revenue will fluctuate over time based on our ongoing technology development contractual requirements, the amount of work performed, the timing of completing engineering deliverables, and the changes to work required, as well as new technology development contracts booked in the future.

**Cost of product revenue:**

	Years Ended December 31,			2018 to 2019	2017 to 2018
	2019	2018	2017	Change	Change
(Dollars in millions)					
Cost of product revenue	\$ 27.2	\$ 18.3	\$ 23.8	48.4%	(23.1)%

Cost of product revenue are costs attributable to the sale of memory and security products. Cost of product revenue also included costs attributable to the sale of lighting products in 2018 and 2017.

For the year ended December 31, 2019 as compared to 2018, cost of product revenue increased 48.4% primarily due to increased cost of sales associated with higher sales of memory products.

For the year ended December 31, 2018 as compared to 2017, cost of product revenue decreased 23.1% primarily due to decreased cost of sales associated with the closure of the lighting division announced in the first quarter of 2018, offset by increased cost of sales associated with higher sales of memory products.

In the near term, we expect costs of product revenue to be higher as we expect higher sales of our various products in 2020 as compared to 2019.

**Engineering costs:**

	Years Ended December 31,			2018 to 2019	2017 to 2018
	2019	2018	2017	Change	Change
(Dollars in millions)					
<b>Engineering costs</b>					
Cost of contract and other revenue	\$ 9.9	\$ 11.7	\$ 20.3	(15.4)%	(42.1)%
Amortization of intangible assets	14.3	23.7	35.1	(39.6)%	(32.4)%
Total cost of contract and other revenue	24.2	35.4	55.4	(31.6)%	(36.1)%
Research and development	145.8	145.7	136.9	0.0 %	6.4 %
Stock-based compensation	11.0	12.6	12.2	(12.3)%	3.3 %
Total research and development	156.8	158.3	149.1	(1.0)%	6.2 %
Total engineering costs	\$ 181.0	\$ 193.7	\$ 204.5	(6.6)%	(5.3)%

Engineering costs are allocated between cost of contract and other revenue and research and development expenses. Cost of contract and other revenue reflects the portion of the total engineering costs which are specifically devoted to individual customer development and support services as well as amortization expense related to various acquired intellectual property for patent licensing. The balance of engineering costs, incurred for the development of applicable technologies, is charged to research and development. In a given period, the allocation of engineering costs between these two components is a function of the timing of the development and implementation schedules of individual customer contracts.

For the year ended December 31, 2019 as compared to 2018, total engineering costs decreased 6.6% primarily due to decreased amortization costs of \$9.4 million, headcount related expenses of \$3.9 million, allocated information technology costs of \$1.6 million and stock-based compensation expense of \$1.5 million, offset by increased facilities costs of \$2.1 million as discussed below, retention bonus accrual related to acquisitions of \$2.0 million and engineering development tool costs of \$1.2 million.

On January 1, 2019, we adopted the New Leasing Standard using the alternative transition method. In accordance with the New Leasing Standard, we were required to derecognize the Sunnyvale and Ohio facilities as imputed facility obligations (as accounted for under the previous leasing guidance) and recognize these facilities as operating leases. This change resulted in no longer recognizing interest expense associated with these imputed facility lease obligations, but instead, recognizing lease expense that was included in operating costs and expenses. For additional information on the impact of the new accounting standard on our leases, see Note 3, "Recent Accounting Pronouncements" and Note 10, "Leases," of Notes to Consolidated Financial Statements of this Form 10-K.

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For the year ended December 31, 2018 as compared to 2017, total engineering costs decreased 5.3% primarily due to decreased amortization costs of \$11.4 million, prototyping costs of \$1.8 million and depreciation expense of \$1.4 million, offset by increased consulting expenses of \$1.2 million, engineering development tool costs of \$1.0 million, allocated information technology costs of \$1.1 million and stock-based compensation expense of \$0.4 million.

In the near term, we expect engineering costs to be higher as we continue to make investments in the infrastructure and technologies required to maintain our product innovation in semiconductor, security and other technologies.

**Sales, general and administrative costs:**

	Years Ended December 31,			2018 to 2019	2017 to 2018
	2019	2018	2017	Change	Change
(Dollars in millions)					
<b>Sales, general and administrative costs</b>					
Sales, general and administrative costs	\$ 88.7	\$ 94.8	\$ 95.8	(6.4)%	(1.1)%
Stock-based compensation	15.4	9.1	15.1	68.8 %	(39.6)%
Total sales, general and administrative costs	<u>\$ 104.1</u>	<u>\$ 103.9</u>	<u>\$ 110.9</u>	0.2 %	(6.3)%

Sales, general and administrative expenses include expenses and costs associated with trade shows, public relations, advertising, litigation, general legal, insurance and other sales, marketing and administrative efforts. Consistent with our business model, our licensing, sales and marketing activities aim to develop or strengthen relationships with potential new and current customers. In addition, we work with current customers through marketing, sales and technical efforts to drive adoption of their products that use our innovations and solutions, by system companies. Due to the long business development cycles we face and the semi-fixed nature of sales, general and administrative expenses in a given period, these expenses generally do not correlate to the level of revenue in that period or in recent or future periods.

For the year ended December 31, 2019 as compared to 2018, total sales, general and administrative costs increased 0.2% primarily due to increased stock-based compensation expense of \$6.3 million primarily due to the termination of the former chief executive officer at the end of June 2018, acquisition and divestiture related costs of \$5.2 million and facilities costs of \$2.6 million (primarily due to the adoption of the New Leasing Standard beginning in 2019 as discussed above), offset by decreased headcount related expenses of \$3.8 million, amortization cost of \$2.9 million, depreciation expense of \$1.8 million, sales and marketing costs of \$1.2 million, travel expenses of \$1.2 million, consulting costs of \$1.0 million, bonus accrual expense of \$1.0 million and recruiting costs of \$0.6 million.

For the year ended December 31, 2018 as compared to 2017, total sales, general and administrative costs decreased 6.3% primarily due to decreased stock-based compensation expense of \$6.0 million primarily due to the termination of the former chief executive officer at the end of June 2018, consulting costs of \$1.1 million and sales and marketing costs of \$1.2 million, offset by increased facilities costs of \$1.0 million and recruiting costs of \$0.6 million.

In the future, sales, general and administrative costs will vary from period to period based on the trade shows, advertising, legal, acquisition and other sales, marketing and administrative activities undertaken, and the change in sales, marketing and administrative headcount in any given period. In the near term, we expect our sales, general and administrative costs to remain relatively flat.

**Restructuring and other charges:**

	Years Ended December 31,			2018 to 2019	2017 to 2018
	2019	2018	2017	Change	Change
(Dollars in millions)					
Restructuring and other charges	<u>\$ 8.8</u>	<u>\$ 2.2</u>	<u>\$ —</u>	NM*	100.0%

\* NM — percentage is not meaningful

During 2019, we initiated a restructuring program to reduce overall expenses which is expected to improve future profitability by reducing spending on research and development efforts and sales, general and administrative programs (the “2019 Plan”). Additionally, we recorded other severance related charges of \$1.4 million during the third quarter of 2019.

During 2018, we closed our lighting division and manufacturing operations in Brecksville, Ohio. We believed that such business was not core to our strategy and growth objectives. As a result, we recorded a charge of \$2.2 million related to employee terminations and severance costs, and facility related costs.

During 2017, we did not initiate any restructuring programs.

Refer to Note 18, “Restructuring and Other Charges,” of Notes to Consolidated Financial Statements of this Form 10-K for further discussion.

***Loss on divestiture:***

	Years Ended December 31,			2018 to 2019	2017 to 2018
	2019	2018	2017	Change	Change
	(Dollars in millions)				
Loss on divestiture	\$ 7.4	\$ —	\$ —	100.0%	—%

During the second quarter of 2019, we entered into a share purchase agreement with Visa International Service Association (the “Purchaser”), pursuant to which the Purchaser had agreed to acquire all of the outstanding shares of our subsidiary, Smart Card Software Limited, which was comprised of our Payments and Ticketing businesses. The decision to sell these businesses reflects our ongoing review of our business to focus on products and offerings that are core to our semiconductor business.

Consequently, we measured these businesses at the lower of their carrying value or fair value less any costs to sell, and subsequently recognized a loss of approximately \$7.4 million during the year ended December 31, 2019.

During 2018 and 2017, we did not record a charge for loss on divestiture.

Refer to Note 17, “Divestiture,” of Notes to Consolidated Financial Statements of this Form 10-K for further discussion.

***Interest and other income (expense), net:***

	Years Ended December 31,			2018 to 2019	2017 to 2018
	2019	2018	2017	Change	Change
	(Dollars in millions)				
Interest income and other income (expense), net	\$ 27.4	\$ 32.6	\$ 1.4	(16.1)%	NM*
Loss on extinguishment of debt	—	—	(1.1)	0.0 %	(100.0)%
Interest expense	(9.9)	(16.3)	(13.7)	(39.5)%	18.7 %
Interest and other income (expense), net	\$ 17.5	\$ 16.3	\$ (13.4)	7.2 %	NM*

\* NM — percentage is not meaningful

Interest income and other income (expense), net, consists primarily of interest income of \$20.4 million and \$27.2 million for the years ended December 31, 2019 and 2018, respectively, due to the significant financing component of licensing agreements as a result of the adoption of the New Revenue Standard as of January 1, 2018. Interest income and other income (expense), net, also includes interest income generated from investments in high quality fixed income securities and any gains or losses from the re-measurement of our monetary assets or liabilities denominated in foreign currencies.

Loss on extinguishment of debt relates to the extinguishment of a portion of the 2018 Notes during 2017. Refer to Note 12, “Convertible Notes,” of Notes to Consolidated Financial Statements of this Form 10-K for additional details.

Beginning January 1, 2019, interest expense for all periods disclosed primarily consists of interest expense associated with the non-cash interest expense related to the amortization of the debt discount and issuance costs on the 1.375% convertible senior notes due 2023 (the “2023 Notes”) and the 1.125% convertible senior notes due 2018 (the “2018 Notes”), as well as the coupon interest related to these notes. Interest expense decreased in 2019 as compared to the same period in 2018 primarily due to the 2018 Notes maturing in the third quarter of 2018. Interest expense increased in 2018 as compared to the same period in 2017 primarily due to the full year of interest expense related to the 2023 Notes offset by the maturing of the 2018 Notes in the third quarter of 2018. We expect our non-cash interest expense to increase steadily as the notes reach maturity. Refer to Note 12, “Convertible Notes,” of Notes to Consolidated Financial Statements of this Form 10-K for additional details.

Prior to 2019, interest expense also included the interest expense associated with our imputed facility lease obligations on the Sunnyvale and Ohio facilities. For the years ended December 31, 2018 and 2017, we recognized \$4.3 million and \$4.4 million, respectively, of interest expense in connection with the imputed financing obligations in our statements of operations. In accordance with the New Leasing Standard, we were required to derecognize the Sunnyvale and Ohio facilities as imputed facility obligations (as accounted for under the previous leasing standard) and recognize these facilities as operating leases. This change resulted in no longer recognizing interest expense associated with these imputed facility lease obligations, but instead,

recognizing lease expense which would be included in operating costs and expenses. For additional information on the impact of the new accounting standard on our leases, see Note 3, "Recent Accounting Pronouncements" and Note 10, "Leases," of Notes to Consolidated Financial Statements of this Form 10-K.

**Provision for income taxes:**

	Years Ended December 31,			2018 to 2019	2017 to 2018
	2019	2018	2017	Change	Change
	(Dollars in millions)				
Provision for income taxes	\$ 3.4	\$ 87.3	\$ 63.9	(96.1)%	36.8%
Effective tax rate	(3.9)%	(123.6)%	155.8%		

Our effective tax rate for the year ended December 31, 2019 was different from the U.S. statutory rate primarily due to the full valuation allowance on the current year tax loss. Our effective tax rate for the year ended December 31, 2018 was different from the U.S. statutory rate primarily due to the establishment of a full valuation allowance on U.S. federal deferred tax assets. Our effective tax rate for the year ended December 31, 2017 was different from the U.S. statutory rate primarily due to the valuation allowance on expiring 2010 foreign tax credits and certain federal research and development credits, and the remeasurement of deferred taxes from 35% to 21% due to U.S. federal tax reform.

We recorded a provision for incomes taxes of \$3.4 million for the year ended December 31, 2019, which was primarily comprised of taxes on foreign earnings, the full valuation allowance on U.S. federal deferred tax assets, withholding tax expense, and acquisition-related impacts. For the year ended December 31, 2019, we paid withholding taxes of \$17.1 million. We recorded a provision for incomes taxes of \$87.3 million for the year ended December 31, 2018, which was primarily comprised of the full valuation allowance on U.S. federal deferred tax assets. For the year ended December 31, 2018, we paid withholding taxes of \$20.4 million. We recorded a provision for incomes taxes of \$63.9 million for the year ended December 31, 2017, which was primarily comprised of our valuation allowance on unused 2010 foreign tax credits and certain federal research and development credits, and our deferred remeasurements following U.S. federal tax reform. For the year ended December 31, 2017, we paid withholding taxes of \$20.5 million.

The Company periodically evaluates the realizability of its net deferred tax assets based on all available evidence, both positive and negative. During the third quarter of 2018, the Company assessed the changes in its underlying facts and circumstances and evaluated the realizability of its existing deferred tax assets based on all available evidence, both positive and negative, and the weight accorded to each, and concluded a full valuation allowance associated with U.S. federal and California deferred tax assets was appropriate. As such, the Company has set up and continues to maintain a full valuation allowance against its U.S. federal deferred tax assets.

**Liquidity and Capital Resources**

	December 31, 2019	December 31, 2018
	(In millions)	
Cash and cash equivalents	\$ 102.2	\$ 115.9
Marketable securities	305.5	161.9
Total cash, cash equivalents, and marketable securities	\$ 407.7	\$ 277.8

	Years Ended December 31,		
	2019	2018	2017
	(In millions)		
Net cash provided by operating activities	\$ 128.5	\$ 87.1	\$ 117.4
Net cash used in investing activities	\$ (141.5)	\$ (68.0)	\$ (75.5)
Net cash provided by (used in) financing activities	\$ (0.3)	\$ (127.7)	\$ 46.5

**Liquidity**

We currently anticipate that existing cash, cash equivalents and marketable securities balances and cash flows from operations will be adequate to meet our cash needs for at least the next 12 months. Additionally, the majority of our cash and cash equivalents is in the United States. Our cash needs for the year ended December 31, 2019 were funded primarily from cash collected from our customers.

We do not anticipate any liquidity constraints as a result of either the current credit environment or investment fair value fluctuations. Additionally, we have the intent and ability to hold our debt investments that have unrealized losses in accumulated other comprehensive gain (loss) for a sufficient period of time to allow for recovery of the principal amounts invested. Further, we have no significant exposure to European sovereign debt. We continually monitor the credit risk in our portfolio and mitigate our credit risk exposures in accordance with our policies.

As a part of our overall business strategy, from time to time, we evaluate businesses and technologies for potential acquisitions that are aligned with our core business and designed to supplement our growth.

To provide us with more flexibility in returning capital back to our stockholders, on January 21, 2015, our Board authorized a share repurchase program authorizing the repurchase of up to an aggregate of 20.0 million shares. During 2019, we did not repurchase any shares of our common stock under our share repurchase program.

As of December 31, 2019, there remained an outstanding authorization to repurchase approximately 3.6 million shares of our outstanding common stock under the current share repurchase program. Refer to “Share Repurchase Program” below.

### ***Operating Activities***

Cash provided by operating activities of \$128.5 million for the year ended December 31, 2019 was primarily attributable to the cash generated from customer licensing billings, technology and software licenses and related implementation, support and maintenance fees, product sales, and engineering services fees. Changes in operating assets and liabilities for the year ended December 31, 2019 primarily included decreases in accounts receivable, unbilled receivables and deferred revenue, offset by increases in prepaids and other current assets, inventories and accrued salaries and benefits.

Cash provided by operating activities of \$87.1 million for the year ended December 31, 2018 was primarily attributable to the cash generated from customer licensing billings, technology and software licenses and related implementation, support and maintenance fees, product sales and engineering services fees. Changes in operating assets and liabilities for the year ended December 31, 2018 primarily included increases in unbilled receivables, accounts receivable and prepaids and other current assets, offset by decreases in accounts payable and accrued salaries and benefits and other liabilities.

Cash provided by operating activities of \$117.4 million for the year ended December 31, 2017 was primarily attributable to cash generated from customer licensing billings, technology and software licenses and related implementation, support and maintenance fees, product sales and engineering services fees. Changes in operating assets and liabilities for the year ended December 31, 2017 primarily included increases in accounts receivable and accrued salaries and benefits and other liabilities as well as decreases in prepaids and other current assets.



### ***Investing Activities***

Cash used in investing activities of \$141.5 million for the year ended December 31, 2019 primarily consisted of purchases of available-for-sale marketable securities of \$657.4 million, \$21.9 million paid for the acquisition of Northwest Logic, net of cash acquired of \$0.1 million, \$45.0 million paid for the acquisition of the Secure Silicon IP and Protocols business from Verimatrix, formerly Inside Secure, and \$6.5 million paid to acquire property, plant and equipment, offset by proceeds from the maturities and sale of available-for-sale marketable securities of \$507.4 million and \$6.8 million, respectively, and net proceeds of \$76.0 million from the divestiture of the Company's Payments and Ticketing businesses.

Cash used in investing activities of \$68.0 million for the year ended December 31, 2018 primarily consisted of purchases of available-for-sale marketable securities of \$282.1 million, \$10.8 million paid to acquire property, plant and equipment and \$3.0 million paid for investment in a privately held company, offset by proceeds from the maturities of available-for-sale marketable securities of \$223.1 million, proceeds from the sale of assets held for sale of \$3.8 million and proceeds from the sale of an equity security of \$1.3 million.

Cash used in investing activities of \$75.5 million for the year ended December 31, 2017 primarily consisted of cash paid for purchases of available-for-sale marketable securities of \$102.5 million and \$9.4 million paid to acquire property, plant and equipment, offset by proceeds from the maturities and sales of available-for-sale marketable securities of \$32.0 million and \$4.5 million, respectively.

### ***Financing Activities***

Cash used in financing activities was \$0.3 million for the year ended December 31, 2019 and was primarily due to \$8.4 million in payments under installment payment arrangements to acquire fixed assets and \$7.0 million in payments of taxes on restricted stock units, offset by \$15.1 million proceeds from the issuance of common stock under equity incentive plans.

Cash used in financing activities was \$127.7 million for the year ended December 31, 2018 and was primarily due to the repayment of the remaining aggregate principal of the 2018 Notes amounting to \$81.2 million, which became due in August 2018, an aggregate payment of \$50.0 million to Citibank N.A., as part of our accelerated share repurchase program, and \$6.8 million in payments of taxes on restricted stock units, offset by \$11.4 million proceeds from the issuance of common stock under equity incentive plans.

Cash provided by financing activities was \$46.5 million for the year ended December 31, 2017 and was primarily due to \$172.5 million from the issuance of the 2023 Notes, \$23.2 million from the issuance of warrants and \$15.8 million proceeds from the issuance of common stock under equity incentive plans, offset by \$72.3 million paid for the repurchase of \$56.8 million aggregate principal amount of the 2018 Notes and \$15.5 million paid primarily for the conversion feature of the repurchased 2018 Notes, an aggregate payment of \$50.0 million to Barclays Bank PLC, as part of our accelerated share repurchase program, \$33.5 million related to the purchase of the Convertible Note Hedge Transactions, \$5.1 million in payments of taxes on restricted stock units and \$3.3 million in issuance costs related to the issuance of the 2023 Notes.

### **Contractual Obligations**

On December 15, 2009, we entered into a lease agreement for approximately 125,000 square feet of office space located at 1050 Enterprise Way in Sunnyvale, California commencing on July 1, 2010 and expiring on June 30, 2020. The office space is used for our corporate headquarters, as well as engineering, sales, marketing and administrative operations and activities. We have two options to extend the lease for a period of 60 months each and a one-time option to terminate the lease after 84 months in exchange for an early termination fee. Pursuant to the terms of the lease, the landlord agreed to reimburse us approximately \$9.1 million, which was received by the year ended December 31, 2011. On November 4, 2011, to better plan for future expansion, we entered into an amended lease for our Sunnyvale facility for approximately an additional 31,000 square feet of space commencing on March 1, 2012 and expiring on June 30, 2020. Additionally, a tenant improvement allowance to be provided by the landlord was approximately \$1.7 million. On September 29, 2012, we entered into a second amended Sunnyvale lease to reduce the tenant improvement allowance to approximately \$1.5 million. On January 31, 2013, we entered into a third amendment to the Sunnyvale lease to surrender the 31,000 square-foot space from the first amendment back to the landlord and recorded a total charge of \$2.0 million related to the surrender of the amended lease.

On March 8, 2010, we entered into a lease agreement for approximately 25,000 square feet of office and manufacturing areas, located in Brecksville, Ohio. The office space was used for our lighting division's engineering activities while the manufacturing space was used for the manufacturer of prototypes. This lease was amended on September 29, 2011 to expand the facility to approximately 51,000 total square feet and the amended lease expired on July 31, 2019. We had an option to extend the lease for a period of 60 months. During 2018, we closed our lighting division and manufacturing operations in

Brecksville, Ohio, and sold the related equipment. Refer to Note 18, “Restructuring Charges,” of Notes to Consolidated Financial Statements of this Form 10-K for additional details.

We undertook a series of structural improvements to ready the Sunnyside and Brecksville facilities for our use. Since certain improvements to be constructed by us were considered structural in nature and we were responsible for any cost overruns, for accounting purposes, we were treated in substance as the owner of the construction project during the construction period. At the completion of each construction, we concluded that we retained sufficient continuing involvement to preclude de-recognition of the building under the FASB authoritative guidance applicable to the sale leasebacks of real estate. As such, prior to January 1, 2019 when the New Leasing Standard became effective for us, we accounted for the buildings as owned real estate and recorded an imputed financing obligation for our obligations to the legal owners. Upon adoption of the New Leasing Standard, these leases were treated as operating leases.

Prior to the adoption of the New Leasing Standard, monthly lease payments on the facility were allocated between the land element of the lease (which was accounted for as an operating lease) and the imputed financing obligation. The imputed financing obligation was amortized using the effective interest method and the interest rate was determined in accordance with the requirements of sale leaseback accounting. For the years ended December 31, 2018 and 2017, we recognized in our Consolidated Statements of Operations \$4.3 million and \$4.4 million, respectively, of interest expense in connection with the imputed financing obligation on these facilities. At December 31, 2018, the imputed financing obligation balance in connection with these facilities was \$37.6 million, which was primarily classified under long-term imputed financing obligation.

On July 8, 2019, we entered into a definitive triple net space lease agreement with 237 North First Street Holdings, LLC (the “Landlord”), whereby we will lease approximately 90,000 square feet of office space located at 4453 North First Street in San Jose, California (the “Lease”). The office space will serve as our corporate headquarters and include engineering, marketing and administrative functions. We expect to move to the new premises during the summer of 2020. The Lease has a term of 128 months from the commencement date in October 2019. The starting rent of the Lease is approximately \$3.26 per square foot on a triple net basis. The annual base rent increases each year to certain fixed amounts over the course of the term as set forth in the Lease and will be \$4.38 per square foot in the eleventh year. In addition to the base rent, we will also pay operating expenses, insurance expenses, real estate taxes, and a management fee. The Lease also allows for an option to expand, wherein we have the right of first refusal to rent additional space in the building. We have a one-time option to extend the Lease for a period of 60 months and may elect to terminate the Lease, via written notice to the Landlord, in the event the office space is damaged or destroyed. Total future required payments under the Lease are approximately \$41.0 million.

On November 17, 2017, we entered into an Indenture with U.S. Bank, National Association, as trustee, relating to the issuance by us of \$172.5 million aggregate principal amount of the 2023 Notes. The aggregate principal amount of the 2023 Notes as of December 31, 2019 was \$172.5 million, offset by unamortized debt discount and unamortized debt issuance costs of \$22.2 million and \$1.5 million, respectively, on the accompanying consolidated balance sheets. The unamortized discount related to the 2023 Notes is being amortized to interest expense using the effective method over the remaining 3.1 years until maturity of the 2023 Notes on February 1, 2023. Refer to Note 12, “Convertible Notes,” of Notes to Consolidated Financial Statements of this Form 10-K for additional details.

As of December 31, 2019, our material contractual obligations are as follows (in thousands):

	Total	2020	2021	2022	2023	2024
<b>Contractual obligations (1) (2)</b>						
Other contractual obligations	\$ 468	\$ 234	\$ 234	\$ —	\$ —	\$ —
Software licenses (3)	31,530	13,525	11,977	6,028	—	—
Acquisition retention bonuses (4)	9,998	3,499	3,499	3,000	—	—
Convertible notes	172,500	—	—	—	172,500	—
Interest payments related to convertible notes	8,308	2,372	2,372	2,372	1,192	—
<b>Total</b>	<b>\$ 222,804</b>	<b>\$ 19,630</b>	<b>\$ 18,082</b>	<b>\$ 11,400</b>	<b>\$ 173,692</b>	<b>\$ —</b>

- (1) The above table does not reflect possible payments in connection with unrecognized tax benefits of approximately \$24.6 million including \$22.8 million recorded as a reduction of long-term deferred tax assets and \$1.8 million in long-term income taxes payable, as of December 31, 2019. As noted in Note 19, “Income Taxes,” of Notes to Consolidated Financial Statements of this Form 10-K, although it is possible that some of the unrecognized tax benefits could be settled within the next 12 months, we cannot reasonably estimate the outcome at this time.

- (2) For our lease commitments as of December 31, 2019, refer to Note 10, “Leases,” of Notes to Consolidated Financial Statements of this Form 10-K.
- (3) We have commitments with various software vendors for agreements generally having terms longer than one year.
- (4) In connection with the acquisitions of Northwest Logic in August 2019 and the Secure Silicon IP and Protocols business in December 2019, we are obligated to pay retention bonuses to certain employees subject to certain eligibility and acceleration provisions including the condition of employment.

### **Share Repurchase Program**

During 2019, we did not repurchase any shares of our common stock under our share repurchase program.

On January 21, 2015, our Board approved a share repurchase program authorizing the repurchase of up to an aggregate of 20.0 million shares. Share repurchases under the plan may be made through the open market, established plans or privately negotiated transactions in accordance with all applicable securities laws, rules, and regulations. There is no expiration date applicable to the plan.

On March 5, 2018, we initiated an accelerated share repurchase program with Citibank N.A. The accelerated share repurchase program is part of the broader share repurchase program previously authorized by the Company’s Board on January 21, 2015. Under the accelerated share repurchase program, we pre-paid to Citibank N.A., the \$50.0 million purchase price for our common stock and, in turn, we received an initial delivery of approximately 3.1 million shares of our common stock from Citibank N.A., in the first quarter of 2018, which were retired and recorded as a \$40.0 million reduction to stockholders’ equity. The remaining \$10.0 million of the initial payment was recorded as a reduction to stockholders’ equity as an unsettled forward contract indexed to our stock. During the second quarter of 2018, the accelerated share repurchase program was completed and we received an additional 0.7 million shares of our common stock as the final settlement of the accelerated share repurchase program. There were no other repurchases of our common stock during 2018.

On May 1, 2017, we initiated an accelerated share repurchase program with Barclays Bank PLC. The accelerated share repurchase program is part of the broader share repurchase program previously authorized by our Board on January 21, 2015. Under the accelerated share repurchase program, we pre-paid to Barclays Bank PLC, the \$50.0 million purchase price for our common stock and, in turn, we received an initial delivery of approximately 3.2 million shares of our common stock from Barclays Bank PLC, in the second quarter of 2017, which were retired and recorded as a \$40.0 million reduction to stockholders’ equity. The remaining \$10.0 million of the initial payment was recorded as a reduction to stockholders’ equity as an unsettled forward contract indexed to our stock. The number of shares to be ultimately purchased by us was determined based on the volume weighted average price of the common stock during the terms of the transaction, minus an agreed upon discount between the parties. During the fourth quarter of 2017, the accelerated share repurchase program was completed and we received an additional 0.8 million shares of our common stock as the final settlement of the accelerated share repurchase program. There were no other repurchases of our common stock during 2017.

As of December 31, 2019, there remained an outstanding authorization to repurchase approximately 3.6 million shares of our outstanding common stock under the current share repurchase program.

We record stock repurchases as a reduction to stockholders’ equity. We record a portion of the purchase price of the repurchased shares as an increase to accumulated deficit when the price of the shares repurchased exceeds the average original proceeds per share received from the issuance of common stock.

### **Warrants**

In connection with the 2023 Notes, we separately entered into privately negotiated warrant transactions, whereby we sold to the Counterparties warrants (the “Warrants”) to acquire, collectively, subject to anti-dilution adjustments, approximately 9.1 million shares of our common stock at an initial strike price of approximately \$23.30 per share, which represents a premium of 60% over the last reported sale price of our common stock of \$14.56 on November 14, 2017. We received aggregate proceeds of approximately \$23.2 million from the sale of the Warrants to the Counterparties. The Warrants are separate transactions and are not part of the 2023 Notes or Convertible Note Hedge Transactions. Holders of the 2023 Notes and Convertible Note Hedge Transactions will not have any rights with respect to the Warrants. Refer to Note 12, “Convertible Notes,” of Notes to Consolidated Financial Statements of this Form 10-K for additional details.

## Critical Accounting Policies and Estimates

The discussion and analysis of our financial condition and results of operations are based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue and expenses, and related disclosure of contingent assets and liabilities. On an ongoing basis, we evaluate our estimates, including those related to revenue recognition, investments, income taxes, litigation and other contingencies. We base our estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

We believe the following critical accounting policies affect our more significant judgments and estimates used in the preparation of our consolidated financial statements.

### **Revenue Recognition**

#### *Overview*

We adopted the New Revenue Standard on January 1, 2018 and all the related amendments using the modified retrospective method. We recognized the cumulative effect of initially applying the new revenue standard as an adjustment to the opening balance of accumulated deficit as of January 1, 2018. The comparative information for 2017 has not been recast and continues to be reported under the accounting standards in effect for that period.

We recognize revenue upon transfer of control of promised goods and services in an amount that reflects the consideration we expect to receive in exchange for those goods and services. Unless indicated otherwise below, all of the goods and services are distinct and are accounted for as separate performance obligations.

Where an arrangement includes multiple performance obligations, the transaction price is allocated to these on a relative standalone selling prices basis. We have established standalone selling prices for all of our offerings - specifically, a same pricing methodology is consistently applied to all licensing arrangements; all services offerings are priced within tightly controlled bands and all contracts that include support and maintenance state a renewal rate or price that is systematically enforced.

Our revenue consists of royalty, product and contract and other revenue. Royalty revenue consists of patent and technology license royalties. Products consist of memory interface chips sold directly and indirectly to module manufacturers and OEMs worldwide through multiple channels, including our direct sales force and distributors. Contract and other revenue consists of software license fees, engineering fees associated with integration of our technology solutions into our customers' products and support and maintenance fees.

#### *Royalty Revenue*

Our patent and technology licensing arrangements generally range between 1 and 7 years in duration and generally grant the licensee the right to use our entire IP portfolio as it evolves over time. These arrangements do not typically grant the licensee the right to terminate for convenience and where such rights exist, termination is prospective, with no refund of fees already paid by the licensee. There is no interdependency or interrelation between the IP included in the portfolio licensed upon contract inception and any IP subsequently made available to the licensee, and we would be able to fulfill our promises by transferring the portfolio and the additional IP use rights independently. However, the numbers of additions to, and removals from the portfolio (for example when a patent expires and renewal is not granted to us) in any given period have historically been relatively consistent; as such, we do not allocate the transaction price between the rights granted at contract inception and those subsequently granted over time as a function of these additions.

Patent and technology licensing arrangements result in fixed payments received over time, with guaranteed minimum payments on occasion, variable payments calculated based on the licensee's sale or use of the IP, or a mix of fixed and variable payments.

- For fixed-fee arrangements (including arrangements that include minimum guaranteed amounts), variable royalty arrangements that we have concluded are fixed in substance and the fixed portion of hybrid fixed/variable arrangements, we recognize revenue upon control over the underlying IP use right transferring to the licensee, net of the effect of significant financing components calculated using customer-specific, risk-adjusted lending rates ranging between 3% and 6%, with the related interest income being recognized over time on an effective rate basis. Where a licensee has the contractual right to terminate a fixed-fee arrangement for convenience without any substantive penalty

payable upon such termination, we apply the guidance in the New Revenue Standard to the duration of the contract in which the parties have present enforceable rights and obligations and only recognizes revenue for amounts that are due and payable.

- For variable arrangements, we recognize revenue based on an estimate of the licensee's sale or usage of the IP during the period of reference, typically quarterly, with a true-up being recorded when we receive the actual royalty report from the licensee.

#### *Product Revenue*

Product revenue is recognized upon shipment of product to customers, net of accruals for estimated sales returns and allowances, and to distributors, net of accruals for price protection and rights of return on products unsold by the distributors. To date, none of these accruals have been significant. We transact with direct customers primarily pursuant to standard purchase orders for delivery of products and generally allow customers to cancel or change purchase orders within limited notice periods prior to the scheduled shipment date.

#### *Contract and Other Revenue*

Contract and other revenue consists of software license fees and engineering fees associated with integration of our technology solutions into our customers' solutions (or products) and related support and maintenance.

An initial software arrangement generally consists of a term-based or perpetual license, significant software customization services and support and maintenance services that include post-implementation customer support and the right to unspecified software updates and enhancements on a when and if available basis. We recognize license and customization services revenue based on an over time model, measured using the input method. Due to the nature of the work performed in these arrangements, the estimation of the over time model is complex and involves significant judgment. The key factor reviewed by us to estimate costs to complete each contract is the estimated man-months necessary to complete the project. We recognize license renewal revenue at the beginning of the renewal period. We recognize revenue from professional services purchased in addition to an initial software arrangement on a cumulative catch-up basis if these services are not distinct from the services provided as part of the initial software arrangement, or as a separate contract if these services are distinct.

Prior to the divestiture of our Payments and Ticketing businesses in 2019, our Payment Product Group derived a significant portion of its revenue from heavily customized software in the mobile market, whereby the Payment Product Group's software solution interacts with third-party solutions and other payment platforms to provide the functionality the customer requires. Historically, these third-party solutions have evolved at a rapid pace, with the Payment Product Group being required to deliver as part of its support and maintenance services the patches and updates needed to maintain the functionality of its own software offering. As the utility of the solution to the end customer erodes very quickly without these updates, these were viewed as critical and the customized software solution and updates were not separately identifiable. As such, these arrangements were treated as a single performance obligation; revenue was deferred until completion of the customization services, and recognized ratably over the committed support and maintenance term.

Prior to the divestiture of our Payments and Ticketing businesses in 2019, our Ticketing Products Group primarily derived revenue from ticketing services arrangements that systematically consist of a software component, support and maintenance, managed services and hosting services. The software could be hosted by third-party hosting service providers or us. All arrangements entered into subsequent to the acquisition (we had originally acquired our Payments and Ticketing businesses in 2016) precluded customers from taking possession of the software at any time during the hosting term and we had concluded that should a customer that was under contract as of the acquisition date ever request possession of the software, the Ticketing Products Group would have the ability to charge the customer, and enforce a claim to payment of a substantive fee in exchange for such right, and that the costs of setting up the environment needed to run the software would act as a significant disincentive to the customer taking possession of the software. Based on the above, we concluded that these services were a single performance obligation, with customers simultaneously receiving and consuming the benefits provided by the Ticketing Products Group's performance, and recognized ticketing services revenue ratably over the term, commencing upon completion of setup activities. We recognized setup fees upon completion. While these activities did not transfer a service to the customer, we elected not to defer and amortized these fees over the expected duration of the customer relationship owing to the immateriality of the amounts charged.

#### **Significant Judgments**

Historically and with the exceptions noted below, no significant judgment has generally been required in determining the amount and timing of revenue from our contracts with customers.

- For our contract and other revenue, revenue is recognized as services are performed on a percentage-of-completion basis, measured using the input method. Due to the nature of the work performed in these arrangements, the estimation of percentage-of-completion is complex and involves significant judgment. The key factor reviewed by us to estimate costs to complete each contract is the estimated man-months necessary to complete the project. If circumstances arise that change the original estimates of extent of progress toward completion, revisions to the estimates are made that may result in increases or decreases in estimated revenues or costs. Revisions are reflected in revenue on a cumulative catch-up basis in the period in which the circumstances that gave rise to the revision become known. We have adequate tools and controls in place, and substantial experience and expertise in timely and accurately tracking man-months incurred in completing customization and other professional services, and quantifying changes in estimates.

Key estimates used in recognizing revenue predominantly consist of the following:

- All fixed-fee arrangements result in cash being received after control over the underlying IP use right has transferred to the licensee, and over a period exceeding a year. As such, all these arrangements include a significant financing component. We calculate a customer-specific lending rate using a Daily Treasury Yield Curve Rate that changes depending on the date on which the licensing arrangement was entered into and the term (in years) of the arrangement, and take into consideration a licensee-specific risk profile determined based on a review of the licensee's "Full Company View" Dun & Bradstreet report obtained on the date the licensing arrangement was signed by the parties, with a risk premium being added to the Daily Treasury Yield Curve Rate considering the overall business risk, financing strength and risk indicators, as listed.
- We recognize revenue on variable fee licensing arrangements on the basis of estimates. In connection with the adoption of the New Revenue Standard, we have set up specific procedures and controls to ensure timely and accurate quantification of variable royalties, and implemented new systems to enable the preparation of the estimates and reporting of the financial information required by the New Revenue Standard.

### ***Goodwill***

Goodwill represents the excess of the purchase price over the fair value of the net tangible and identifiable intangible assets acquired in each business combination. Goodwill is not subject to amortization, but is subject to at least an annual assessment for impairment, applying a fair-value based test. We perform our impairment analysis of goodwill on an annual basis during the fourth quarter of the year unless conditions arise that warrant a more frequent evaluation.

When goodwill is assessed for impairment, we have the option to perform an assessment of qualitative factors of impairment (optional assessment) prior to necessitating a quantitative impairment test. Should the optional assessment be used for any given year, qualitative factors to consider for a reporting unit include: cost factors; financial performance; legal, regulatory, contractual, political, business, or other factors; entity specific factors; industry and market considerations; macroeconomic conditions; and other relevant events and factors affecting the reporting unit. If we determine in the qualitative assessment that it is more likely than not that the fair value of the reporting unit is less than its carrying value, a quantitative test is then performed. Otherwise, no further testing is required. For a reporting unit tested using a quantitative approach, we compare the fair value of the reporting unit with the carrying amount of the reporting unit, including goodwill. The fair value of the reporting unit is estimated using an income approach.

Under the income approach, we measure fair value of the reporting unit based on a projected cash flow method using a discount rate determined by our management which is commensurate with the risk inherent in its current business model. Our discounted cash flow projections are based on its annual financial forecasts developed internally by management for use in managing our business. If the fair value of the reporting unit exceeds its carrying value, goodwill is not impaired and no further testing is required. If the fair value of the reporting unit is less than the carrying value, then the amount of goodwill impairment will be the amount by which the reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill.

### ***Intangible Assets***

Intangible assets are comprised of existing technology, customer contracts and contractual relationships, and other definite-lived and indefinite-lived intangible assets. Identifiable intangible assets resulting from the acquisitions of entities accounted for using the purchase method of accounting are estimated by management based on the fair value of assets received. Identifiable definite-lived intangible assets are being amortized over the period of estimated benefit using the straight-line method and estimated useful lives ranging from six months to ten years.

We amortize definite-lived assets over their estimated useful lives. We evaluate definite-lived and indefinite-lived assets for impairment whenever events or changes in circumstances indicate the carrying value of an asset may not be recoverable. The carrying value is not recoverable if it exceeds the undiscounted cash flows resulting from the use of the asset and its eventual disposition. Our estimates of future cash flows attributable to our assets require significant judgment based on our historical and anticipated results and are subject to many factors. Factors we consider important which could trigger an impairment review include significant negative industry or economic trends, significant loss of clients, and significant changes in the manner of our use of the acquired assets or the strategy for our overall business.

When we determine that the carrying value of the assets may not be recoverable based upon the existence of one or more of the above indicators of impairment, we measure the potential impairment based on a projected discounted cash flow method using a discount rate determined by our management to be commensurate with the risk inherent in our current business model. An impairment loss is recognized only if the carrying amount of the asset is not recoverable and exceeds its fair value. Different assumptions and judgments could materially affect the calculation of the fair value of our assets.

Acquired indefinite-lived intangible assets related to our in-process research and development (“IPR&D”) are capitalized and subject to impairment testing until completion or abandonment of the projects. Upon successful completion of each project, we make a separate determination of useful life of the acquired indefinite-lived intangible assets and the related amortization is recorded as an expense over the estimated useful life of the specific projects. Indefinite-lived intangible assets are subject to at least an annual assessment for impairment, applying a fair-value based test. Under the income approach, we measure fair value of the indefinite-lived intangible assets based on a projected cash flow method using a discount rate determined by our management which is commensurate with the risk inherent in our current business model. Our discounted cash flow projections are based on our annual financial forecasts developed internally by our management for use in managing our business. If the fair value of the indefinite-lived intangible assets exceeds its carrying value, the indefinite-lived intangible assets are not impaired and no further testing is required. If the implied fair value of the indefinite-lived intangible assets is less than the carrying value, the difference is recorded as an impairment loss.

### ***Income Taxes***

As part of preparing our consolidated financial statements, we are required to calculate the income tax expense (benefit) which relates to the pretax income or loss for the period. In addition, we are required to assess the realization of the deferred tax asset or liability to be included on the consolidated balance sheet as of the reporting dates.

As of December 31, 2019, our consolidated balance sheet included net deferred tax assets, before valuation allowance, of approximately \$187.7 million, which consists of net operating loss carryovers, tax credit carryovers, amortization, employee stock-based compensation expenses and certain liabilities, partially reduced by deferred tax liabilities associated with the ASC 606 adoption and certain assets. As of December 31, 2019, we have a valuation allowance of \$197.0 million resulting in net deferred tax liabilities of \$9.3 million.

We maintain liabilities for uncertain tax positions within our long-term income taxes payable accounts and as a reduction to existing deferred tax assets or other refundable taxes to the extent tax attributes are available to offset such liabilities. These liabilities involve judgment and estimation and are monitored by us based on the best information available including changes in tax regulations, the outcome of relevant court cases and other information.

The calculation of our tax liabilities involves uncertainties in the application of complex tax law and regulations in a multitude of jurisdictions. Although ASC 740, “Income Taxes,” provides further clarification on the accounting for uncertainty in income taxes, significant judgment is required by us. If the ultimate resolution of tax uncertainties is different from what is currently estimated, it could materially affect income tax expense.

### ***Stock-Based Compensation***

We maintained stock plans covering a broad range of potential equity grants including stock options, nonvested equity stock and equity stock units and performance based instruments. In addition, we sponsor an Employee Stock Purchase Plan (“ESPP”), whereby eligible employees are entitled to purchase Common Stock semi-annually, by means of limited payroll deductions, at a 15% discount from the fair market value of the Common Stock as of specific dates.

The accounting guidance for share-based payments requires the measurement and recognition of compensation expense in our statement of operations for all share-based payment awards made to our employees, directors and consultants including employee stock options, nonvested equity stock and equity stock units, and employee stock purchase grants. Stock-based compensation expense is measured at grant date, based on the estimated fair value of the award, reduced by an estimate of the annualized rate of expected forfeitures, and is recognized as expense over the employees’ expected requisite service period, generally using the straight-line method. In addition, the accounting guidance for share-based payments requires the benefits of tax deductions in excess of recognized compensation expense to be reported as a financing cash flow. Our forfeiture rate

represents the historical rate at which our stock-based awards were surrendered prior to vesting. The accounting guidance for share-based payments requires forfeitures to be estimated at the time of grant and revised on a cumulative basis, if necessary, in subsequent periods if actual forfeitures differ from those estimates. Refer to Note 14, "Equity Incentive Plans and Stock-Based Compensation," of Notes to Consolidated Financial Statements of this Form 10-K for more information regarding the valuation of stock-based compensation.

### ***Business Combinations***

We account for acquisitions of businesses using the purchase method of accounting, which requires us to recognize separately from goodwill the assets acquired and the liabilities assumed at their acquisition date fair values. While we use our best estimates and assumptions to accurately value assets acquired and liabilities assumed at the acquisition date as well as contingent consideration, where applicable, the estimates are inherently uncertain and subject to refinement. As a result, during the measurement period, which may be up to one year from the acquisition date, we may record adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill. Upon the conclusion of the measurement period or final determination of the values of assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments are recorded to our consolidated statements of operations.

Accounting for business combinations requires us to make significant estimates and assumptions, especially at the acquisition date including our estimates for intangible assets, contractual obligations assumed and pre-acquisition contingencies where applicable. Although we believe the assumptions and estimates made in the past have been reasonable and appropriate, they are based in part on historical experience and information obtained from the management of the acquired companies and are inherently uncertain. Significant estimates and assumptions made by us in estimating the fair value of the existing technologies included revenue growth rates, operating expense margins, technology obsolescence rates and discount rates. Unanticipated events and circumstances may occur that may affect the accuracy or validity of such assumptions, estimates or actual results.

### ***Recent Accounting Pronouncements***

Refer to Note 3, "Recent Accounting Pronouncements," of Notes to Consolidated Financial Statements of this Form 10-K for a full description of recent accounting pronouncements including the respective expected dates of adoption.

### **Item 7A. *Quantitative and Qualitative Disclosures About Market Risk***

We are exposed to financial market risks, primarily arising from the effect of interest rate fluctuations on our investment portfolio. Interest rate fluctuation may arise from changes in the market's view of the quality of the security issuer, the overall economic outlook, and the time to maturity of our portfolio. We mitigate this risk by investing only in high quality, highly liquid instruments. Securities with original maturities of one year or less must be rated by two of the three industry standard rating agencies as follows: A1 by Standard & Poor's, P1 by Moody's and/or F-1 by Fitch. Securities with original maturities of greater than one year must be rated by two of the following industry standard rating agencies as follows: AA- by Standard & Poor's, Aa3 by Moody's and/or AA- by Fitch. By corporate investment policy, we limit the amount of exposure to \$15.0 million or 10% of the portfolio, whichever is lower, for any single non-U.S. Government issuer. A single U.S. Agency can represent up to 25% of the portfolio. No more than 20% of the total portfolio may be invested in the securities of an industry sector, with money market fund investments evaluated separately. Our policy requires that at least 10% of the portfolio be in securities with a maturity of 90 days or less. We may make investments in U.S. Treasuries, U.S. Agencies, corporate bonds and municipal bonds and notes with maturities up to 36 months. However, the bias of our investment portfolio is shorter maturities. All investments must be U.S. dollar denominated. Additionally, we have no significant exposure to European sovereign debt.

We invest our cash equivalents and marketable securities in a variety of U.S. dollar financial instruments such as U.S. Treasuries, U.S. Government Agencies, commercial paper and corporate notes. Our policy specifically prohibits trading securities for the sole purposes of realizing trading profits. However, we may liquidate a portion of our portfolio if we experience unforeseen liquidity requirements. In such a case, if the environment has been one of rising interest rates we may experience a realized loss, similarly, if the environment has been one of declining interest rates we may experience a realized gain. As of December 31, 2019, we had an investment portfolio of fixed income marketable securities of \$363.5 million including cash equivalents. If market interest rates were to increase immediately and uniformly by 1.0% from the levels as of December 31, 2019, the fair value of the portfolio would decline by approximately \$0.5 million. Actual results may differ materially from this sensitivity analysis.



The fair value of our convertible notes is subject to interest rate risk, market risk and other factors due to the convertible feature. The fair value of the convertible notes will generally increase as interest rates fall and decrease as interest rates rise. In addition, the fair value of the convertible notes will generally increase as our common stock price increases and will generally decrease as our common stock price declines in value. The interest and market value changes affect the fair value of our convertible notes but do not impact our financial position, cash flows or results of operations due to the fixed nature of the debt obligation.

We invoice the majority of our customers in U.S. dollars. Although the fluctuation of currency exchange rates may impact our customers, and thus indirectly impact us, we do not attempt to hedge this indirect and speculative risk. Our overseas operations consist primarily of international business operations in the Netherlands and the United Kingdom, design centers in Canada, India and Finland and small business development offices in Australia, China, Japan, Korea, Singapore and Taiwan. We monitor our foreign currency exposure; however, as of December 31, 2019, we believe our foreign currency exposure is not material enough to warrant foreign currency hedging.

**Item 8. *Financial Statements and Supplementary Data***

Refer to Item 15, “Exhibits and Financial Statement Schedules,” of this Form 10-K for required financial statements and supplementary data.

**Item 9. *Changes in and Disagreements with Accountants on Accounting and Financial Disclosure***

None.

**Item 9A. *Controls and Procedures***

**Evaluation of Disclosure Controls and Procedures**

We maintain disclosure controls and procedures designed to ensure that information required to be disclosed in the reports we file or submit pursuant to the Securities and Exchange Act of 1934 as amended (“Exchange Act”) is recorded, processed, summarized and reported within the time periods specified in the rules and forms of the Securities and Exchange Commission, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

Management, with the participation of the Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of the design and operation of our disclosure controls and procedures as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act as of the end of the period covered by this report. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that, as of December 31, 2019, our disclosure controls and procedures were effective.

**Management’s Report on Internal Control over Financial Reporting**

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Our internal control over financial reporting is the process designed by, or under the supervision of, our Chief Executive Officer and Chief Financial Officer, and effected by our board of directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles, and includes those policies and procedures that:

- (i) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect our transactions and dispositions of assets;
- (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with the authorization of our management and directors; and
- (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an assessment of the effectiveness of our internal control over financial reporting as of December 31, 2019. In making this assessment, our management used the criteria set forth in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”). Based on the results of this assessment, management has concluded that, as of December 31, 2019, our internal control over financial reporting was effective based on the criteria in *Internal Control — Integrated Framework (2013)* issued by the COSO.

Under guidelines established by the SEC, companies are permitted to exclude acquisitions from their assessment of internal control over financial reporting during the first year of an acquisition while integrating the acquired company. We have excluded Northwest Logic, Inc. and the Secure Silicon IP and Protocols businesses of Verimatrix (the “acquired entities”) from our assessment of internal control over financial reporting as of December 31, 2019 because they were acquired by us in purchase business combinations during 2019. The acquired entities are wholly-owned subsidiaries whose total assets and total revenues excluded from our assessment of internal control over financial reporting collectively represent approximately 1% and 1%, respectively, of the related consolidated financial statement amounts as of and for the year ended December 31, 2019.

The effectiveness of our internal control over financial reporting as of December 31, 2019 has been audited by PricewaterhouseCoopers, LLP, an independent registered public accounting firm, as stated in their report which appears herein.

#### **Changes in Internal Control Over Financial Reporting**

There were no changes in internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act) during the last fiscal quarter that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

#### **Item 9B. Other Information**

None.

**PART III**

**Item 10. *Directors, Executive Officers and Corporate Governance***

The information responsive to this item is incorporated herein by reference to our Proxy Statement for our 2020 annual meeting of stockholders to be filed with the Securities and Exchange Commission pursuant to Regulation 14A not later than 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K. The information under the heading “Our Executive Officers” in Part I, Item 1 of this Annual Report on Form 10-K is also incorporated herein by reference.

We have a Code of Business Conduct and Ethics for all of our directors, officers and employees. Our Code of Business Conduct and Ethics is available on our website at <http://investor.rambus.com/default.aspx?SectionId=7d08773c-336a-43c5-b0ff-5b190f1901eb&LanguageId=1>. To date, there have been no waivers under our Code of Business Conduct and Ethics. We will post any amendments or waivers, if and when granted, of our Code of Business Conduct and Ethics on our website.

**Item 11. *Executive Compensation***

The information responsive to this item is incorporated herein by reference to our Proxy Statement for our 2020 annual meeting of stockholders to be filed with the Securities and Exchange Commission pursuant to Regulation 14A not later than 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

**Item 12. *Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters***

The information responsive to this item is incorporated herein by reference to our Proxy Statement for our 2020 annual meeting of stockholders to be filed with the Securities and Exchange Commission pursuant to Regulation 14A not later than 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

**Item 13. *Certain Relationships and Related Transactions, and Director Independence***

The information responsive to this item is incorporated herein by reference to our Proxy Statement for our 2020 annual meeting of stockholders to be filed with the Securities and Exchange Commission pursuant to Regulation 14A not later than 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

**Item 14. *Principal Accountant Fees and Services***

The information responsive to this item is incorporated herein by reference to our Proxy Statement for our 2020 annual meeting of stockholders to be filed with the Securities and Exchange Commission pursuant to Regulation 14A not later than 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

**PART IV**

**Item 15. Exhibits and Financial Statement Schedules**

**(a) (1) Financial Statements**

The following consolidated financial statements of the Registrant and Report of PricewaterhouseCoopers LLP, Independent Registered Public Accounting Firm, are included herewith:

	<b>Page</b>
<a href="#">Report of Independent Registered Public Accounting Firm</a>	<u>51</u>
<a href="#">Consolidated Balance Sheets as of December 31, 2019 and 2018</a>	<u>55</u>
<a href="#">Consolidated Statements of Operations for the years ended December 31, 2019, 2018 and 2017</a>	<u>56</u>
<a href="#">Consolidated Statements of Comprehensive Income (Loss) for the years ended December 31, 2019, 2018 and 2017</a>	<u>57</u>
<a href="#">Consolidated Statements of Stockholders' Equity for the years ended December 31, 2019, 2018 and 2017</a>	<u>58</u>
<a href="#">Consolidated Statements of Cash Flows for the years ended December 31, 2019, 2018 and 2017</a>	<u>59</u>
<a href="#">Notes to Consolidated Financial Statements</a>	<u>60</u>
<a href="#">Consolidated Supplementary Financial Data (unaudited)</a>	<u>99</u>

**(a) (2) Financial Statement Schedule**

All schedules are omitted because they are not applicable or the required information is shown in the Consolidated Financial Statements or the notes thereto.

## Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Rambus Inc.

### ***Opinions on the Financial Statements and Internal Control over Financial Reporting***

We have audited the accompanying consolidated balance sheets of Rambus Inc. and its subsidiaries (the “Company”) as of December 31, 2019 and 2018, and the related consolidated statements of operations, of comprehensive income (loss), of stockholders’ equity and of cash flows for each of the three years in the period ended December 31, 2019, including the related notes (collectively referred to as the “consolidated financial statements”). We also have audited the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

### ***Changes in Accounting Principles***

As discussed in Notes 3 and 2 to the consolidated financial statements, respectively, the Company changed the manner in which it accounts for leases in 2019 and the manner in which it accounts for revenues from contracts with customers in 2018.

### ***Basis for Opinions***

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management’s Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As described in Management’s Report on Internal Control over Financial Reporting, management has excluded Northwest Logic, Inc. and the Secure Silicon IP and Protocols businesses of Verimatrix (the “acquired entities”) from its assessment of internal control over financial reporting as of December 31, 2019 because they were acquired by the Company in purchase business combinations during 2019. We have also excluded the acquired entities from our audit of internal control over financial reporting. The acquired entities are wholly-owned subsidiaries whose total assets and total revenues excluded from management’s assessment and our audit of internal control over financial reporting collectively represent approximately 1% and 1%, respectively, of the related consolidated financial statement amounts as of and for the year ended December 31, 2019.

### ***Definition and Limitations of Internal Control over Financial Reporting***

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

### ***Critical Audit Matters***

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that (i) relate to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

### ***Valuation of Existing Technology Intangible Assets Acquired from the Northwest Logic, Inc. and Secure Silicon IP and Protocols acquisitions***

As described in Notes 2 and 21 to the consolidated financial statements, during the year ended December 31, 2019, the Company completed the acquisitions of Northwest Logic, Inc. and Secure Silicon IP and Protocols businesses for total considerations of \$21.9 million and \$46.8 million, respectively, of which \$8.1 million and \$21.6 million, respectively, of existing technology intangible assets were recorded. The fair value of the assets acquired was determined by management primarily by using the multi-period excess earnings method under the income approach. This method reflects the present value of the projected cash flows that are expected to be generated by the existing technologies less charges representing the contribution of other assets to those cash flows. Significant estimates and assumptions in estimating the fair value of the existing technologies include revenue growth rates, operating expense margins, technology obsolescence rates, and discount rates.

The principal considerations for our determination that performing procedures relating to the valuation of the existing technology intangible assets acquired in the acquisitions of Northwest Logic, Inc. and Secure Silicon IP and Protocols businesses is a critical audit matter are there was significant judgment by management when determining the valuation of the existing technology intangibles assets, which in turn led to a high degree of auditor judgment, subjectivity and effort in performing procedures and evaluating audit evidence related to the revenue growth rates, operating expense margins, technology obsolescence rates, and discount rate assumptions used in the valuation of the existing technology intangible assets. In addition, the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the acquisition accounting, including controls over management's valuation of the existing technologies intangible assets acquired in the acquisitions of Northwest Logic, Inc., and Secure Silicon IP and Protocols businesses. These procedures also included, among others, reading the purchase agreements and testing management's process for determining the fair value of the existing technology intangible assets, including evaluating the appropriateness of the valuation method, testing the completeness and accuracy of underlying data used in the estimate, and evaluating the reasonableness of the significant assumptions, including revenue growth rates, operating expense margins, technology obsolescence rates, and discount rates. Evaluating the reasonableness of the revenue growth rates and the operating expense margins involved considering the past performance of the acquired businesses, actual arrangements subsequent to the acquisitions and industry data. Professionals with specialized skill and knowledge were used to assist in evaluating the appropriateness of valuation method and the reasonableness of the technology obsolescence rates and the discount rates.

*Revenue Recognition - License and Customization Services Revenue*

As described in Note 4 to the consolidated financial statements, the Company recognizes license and customization services revenue based on an over time model, measured using the input method. License and customization services revenue is reported as part of contract and other revenue which was \$28 million for the year ended December 31, 2019. Due to the nature of the work performed in these arrangements, the estimation of the over time model is complex and involves significant judgment. The key factor reviewed by management to estimate costs to complete each contract is the estimated man-months necessary to complete the project.

The principal considerations for our determination that performing procedures relating to revenue recognition for license and customization revenue is a critical audit matter are there was significant judgment made by management to determine the estimated man-months necessary to contract completion for each contract, which in turn led to a high degree of auditor judgment, subjectivity and effort in performing procedures and evaluating audit evidence related to management's estimate of man-months necessary to complete each project.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the Company's license and customization services revenue recognition process, including controls over management's determination of the estimate of total man-months to complete each contract. The procedures also included, among others, for a sample of contracts, testing management's process for determining the estimate of total man-months. Evaluating management's assumption related to the estimate of man-months involved (i) performing a comparison of the estimated man-months to completed projects of similar size and (ii) evaluating the timely identification of circumstances which may warrant a modification to a previous cost estimate, including an assessment of total man-months.

*Relative Fair Value Measurement Related to the Goodwill Allocation of the Payments and Ticketing Businesses and the Retained Business.*

As described in Notes 6 and 17 to the consolidated financial statements, the Company entered into a share purchase agreement with Visa International Service Association (the "Purchaser"), pursuant to which the Purchaser agreed to acquire all of the outstanding shares of the Company's subsidiary, Smart Card Software Limited, which comprises the Company's Payments and Ticketing businesses, which was part of the Company's former Rambus Security Division ("RSD") segment. The Company measured these businesses at the lower of their carrying value or fair value less any costs to sell, and recognized a cumulative impairment of approximately \$7.4 million during the year ended December 31, 2019. In the second quarter of 2019, in order to determine the impairment loss, the Company performed a relative fair value measurement to allocate goodwill to the business units between the disposed Payments and Ticketing businesses and the retained business, which includes Cryptography Research, Inc ("CRI"), which was part of the former RSD segment. The goodwill allocated to the disposed Payments and Ticketing businesses was \$54.5 million. The fair value of the retained business was estimated by management using a discounted cash flow model. The Company's cash flow projections for the retained business included significant judgments and assumptions relating to revenue growth rates, projected operating income and the discount rate.

The principal considerations for our determination that performing procedures relating to the fair value measurement of the retained business unit is a critical audit matter are there was significant judgment made by management when developing the fair value measurement of the retained business unit, which in turn led to a high degree of auditor judgment, subjectivity and effort in performing procedures and evaluating audit evidence related to management's cash flow projections, including significant assumptions relating to revenue growth rates, projected operating income, and the discount rate.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's assessment of the relative fair value measurement of the retained business unit. The procedures also included, among others, testing management's process for developing the fair value measurement for the retained business unit; evaluating the appropriateness of the discounted cash flow model; testing the completeness, accuracy, and relevance of underlying data used in the model; and evaluating the reasonableness of the significant assumptions used by management, including revenue growth rates, projected operating income and the discount rate. Evaluating management's assumptions related to revenue growth rates and projected operating income involved evaluating whether the assumptions used by management were reasonable considering (i) the current and past performance of the retained business unit, (ii) the consistency with external market and industry data, and (iii) whether these assumptions were consistent with evidence obtained in other areas of the audit and the prior year audit.

/s/ PricewaterhouseCoopers LLP  
San Jose, California  
February 26, 2020

We have served as the Company's auditor since 1991.



**RAMBUS INC.**  
**CONSOLIDATED BALANCE SHEETS**

	December 31,	
	2019	2018
	(In thousands, except shares and per share amounts)	
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$ 102,176	\$ 115,924
Marketable securities	305,488	161,840
Accounts receivable	44,039	50,863
Unbilled receivables	184,366	176,613
Inventories	10,086	6,772
Prepays and other current assets	18,524	15,738
Total current assets	664,679	527,750
Intangible assets, net	54,900	59,936
Goodwill	183,465	207,178
Property, plant and equipment, net	44,714	57,028
Operating lease right-of-use assets	37,020	—
Deferred tax assets	4,574	4,435
Unbilled receivables, long-term	343,703	497,003
Other assets	5,931	7,825
Total assets	\$ 1,338,986	\$ 1,361,155
<b>LIABILITIES &amp; STOCKHOLDERS' EQUITY</b>		
Current liabilities:		
Accounts payable	\$ 9,549	\$ 7,392
Accrued salaries and benefits	20,291	16,938
Deferred revenue	11,947	19,374
Income taxes payable, short-term	19,142	16,390
Operating lease liabilities	6,357	—
Other current liabilities	18,893	9,191
Total current liabilities	86,179	69,285
Convertible notes, long-term	148,788	141,934
Long-term imputed financing obligation	—	36,297
Long-term operating lease liabilities	39,889	—
Long-term income taxes payable	60,094	77,280
Deferred tax liabilities	13,846	18,960
Other long-term liabilities	19,272	5,287
Total liabilities	368,068	349,043
Commitments and contingencies (Notes 10, 13 and 20)		
Stockholders' equity:		
Convertible preferred stock, \$.001 par value:		
Authorized: 5,000,000 shares; Issued and outstanding: no shares at December 31, 2019 and December 31, 2018	—	—
Common Stock, \$.001 par value:		
Authorized: 500,000,000 shares; Issued and outstanding: 112,131,352 shares at December 31, 2019 and 109,017,708 shares at December 31, 2018	112	109
Additional paid in capital	1,261,142	1,226,588
Accumulated deficit	(290,244)	(204,294)
Accumulated other comprehensive loss	(92)	(10,291)
Total stockholders' equity	970,918	1,012,112
Total liabilities and stockholders' equity	\$ 1,338,986	\$ 1,361,155

See Notes to Consolidated Financial Statements



**RAMBUS INC.**  
**CONSOLIDATED STATEMENTS OF OPERATIONS**

	Years Ended December 31,		
	2019	2018	2017
(In thousands, except per share amounts)			
<b>Revenue:</b>			
Royalties	\$ 90,785	\$ 130,452	\$ 289,594
Product revenue	72,972	38,690	36,509
Contract and other revenue	60,270	62,059	66,993
Total revenue	<u>224,027</u>	<u>231,201</u>	<u>393,096</u>
<b>Operating costs and expenses:</b>			
Cost of product revenue*	27,156	18,299	23,783
Cost of contract and other revenue	24,219	35,402	55,364
Research and development*	156,815	158,339	149,135
Sales, general and administrative*	104,116	103,911	110,940
Restructuring and other charges	8,821	2,217	—
Loss on divestiture	7,439	—	—
Gain from sale of intellectual property	—	—	(533)
Total operating costs and expenses	<u>328,566</u>	<u>318,168</u>	<u>338,689</u>
Operating income (loss)	<u>(104,539)</u>	<u>(86,967)</u>	<u>54,407</u>
Interest income and other income (expense), net	27,375	32,621	1,384
Loss on extinguishment of debt	—	—	(1,082)
Interest expense	(9,852)	(16,282)	(13,720)
Interest and other income (expense), net	<u>17,523</u>	<u>16,339</u>	<u>(13,418)</u>
Income (loss) before income taxes	(87,016)	(70,628)	40,989
Provision for income taxes	3,403	87,329	63,851
Net loss	<u>\$ (90,419)</u>	<u>\$ (157,957)</u>	<u>\$ (22,862)</u>
<b>Net loss per share:</b>			
Basic	<u>\$ (0.81)</u>	<u>\$ (1.46)</u>	<u>\$ (0.21)</u>
Diluted	<u>\$ (0.81)</u>	<u>\$ (1.46)</u>	<u>\$ (0.21)</u>
<b>Weighted average shares used in per share calculations:</b>			
Basic	<u>110,948</u>	<u>108,450</u>	<u>110,198</u>
Diluted	<u>110,948</u>	<u>108,450</u>	<u>110,198</u>

\* Includes stock-based compensation:

Cost of product revenue	\$ 4	\$ 8	\$ 78
Research and development	\$ 11,032	\$ 12,582	\$ 12,185
Sales, general and administrative	\$ 15,440	\$ 9,146	\$ 15,140

See Notes to Consolidated Financial Statements

**RAMBUS INC.****CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)**

	Years Ended December 31,		
	2019	2018	2017
	(In thousands)		
Net loss	\$ (90,419)	\$ (157,957)	\$ (22,862)
Other comprehensive income (loss):			
Foreign currency translation adjustment	10,145	(4,447)	7,798
Unrealized gain (loss) on marketable securities, net of tax	54	(747)	613
Total comprehensive loss	<u>\$ (80,220)</u>	<u>\$ (163,151)</u>	<u>\$ (14,451)</u>

See Notes to Consolidated Financial Statements

**RAMBUS INC.**
**CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY**

	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Gain (Loss)	Total
	Shares	Amount				
(In thousands)						
Balances at December 31, 2016	111,054	\$ 111	\$ 1,181,230	\$ (615,051)	\$ (13,508)	\$ 552,782
Net loss	—	—	—	(22,862)	—	(22,862)
Foreign currency translation adjustment	—	—	—	—	7,798	7,798
Unrealized gain on marketable securities, net of tax	—	—	—	—	613	613
Issuance of common stock upon exercise of options, equity stock and employee stock purchase plan	2,727	3	10,730	—	—	10,733
Repurchase and retirement of common stock under repurchase plan	(4,017)	(4)	(13,477)	(36,557)	—	(50,038)
Stock-based compensation	—	—	27,403	—	—	27,403
Equity component of 1.375% convertible notes, net	—	—	33,913	—	—	33,913
Purchase of convertible note hedges	—	—	(33,523)	—	—	(33,523)
Issuance of warrants	—	—	23,173	—	—	23,173
Repurchase of 1.125% convertible notes	—	—	(16,651)	—	—	(16,651)
Cumulative effect adjustment from adoption of ASU 2016-09	—	—	—	38,243	—	38,243
Balances at December 31, 2017	109,764	110	1,212,798	(636,227)	(5,097)	571,584
Net loss	—	—	—	(157,957)	—	(157,957)
Foreign currency translation adjustment	—	—	—	—	(4,447)	(4,447)
Unrealized loss on marketable securities, net of tax	—	—	—	—	(747)	(747)
Issuance of common stock upon exercise of options, equity stock and employee stock purchase plan	2,616	3	4,627	—	—	4,630
Repurchase and retirement of common stock under repurchase plan	(3,786)	(4)	(12,573)	(37,456)	—	(50,033)
Stock-based compensation	—	—	21,736	—	—	21,736
Issuance of common stock in connection with the maturity of the 2018 Notes related to the settlement of the in-the-money conversion feature of the 2018 Notes	424	—	—	—	—	—
Cumulative effect adjustment from adoption of ASU 2016-01	—	—	—	1,058	—	1,058
Cumulative effect adjustment from the adoption of ASC 606	—	—	—	626,288	—	626,288
Balances at December 31, 2018	109,018	109	1,226,588	(204,294)	(10,291)	1,012,112
Net loss	—	—	—	(90,419)	—	(90,419)
Foreign currency translation adjustment	—	—	—	—	10,145	10,145
Unrealized gain on marketable securities, net of tax	—	—	—	—	54	54
Issuance of common stock upon exercise of options, equity stock and employee stock purchase plan	3,113	3	8,078	—	—	8,081
Stock-based compensation	—	—	26,476	—	—	26,476
Cumulative effect adjustment from the adoption of ASC 842	—	—	—	4,469	—	4,469
Balances at December 31, 2019	112,131	\$ 112	\$ 1,261,142	\$ (290,244)	\$ (92)	\$ 970,918

See Notes to Consolidated Financial Statements



**RAMBUS INC.**  
**CONSOLIDATED STATEMENTS OF CASH FLOWS**

	Years Ended December 31,		
	2019	2018	2017
	(In thousands)		
Cash flows from operating activities:			
Net loss	\$ (90,419)	\$ (157,957)	\$ (22,862)
Adjustments to reconcile net loss to net cash provided by operating activities:			
Stock-based compensation	26,476	21,736	27,403
Depreciation	23,507	10,745	13,275
Amortization of intangible assets	17,058	29,341	41,962
Non-cash interest expense and amortization of convertible debt issuance costs	6,854	9,243	7,578
Loss on extinguishment of debt	—	—	1,082
Deferred tax (benefit) provision	(1,816)	79,954	39,535
Non-cash restructuring	—	670	—
Loss on divestiture	7,439	—	—
Gain from sale of assets held for sale	—	(1,266)	—
Gain from sale of marketable equity security	—	(291)	—
Loss on equity investment	696	67	—
Loss from disposal of property, plant and equipment	157	395	227
Change in operating assets and liabilities, net of effects of acquisitions and divestiture:			
Accounts receivable	4,994	(24,933)	(1,110)
Unbilled receivables	151,513	145,164	—
Prepaid expenses and other assets	4,064	(4,084)	4,354
Inventories	(3,353)	(1,856)	473
Accounts payable	2,934	(2,268)	(651)
Accrued salaries and benefits and other accrued liabilities	7,135	(3,221)	4,703
Income taxes payable	(15,925)	(14,550)	861
Deferred revenue	(3,497)	228	607
Operating lease liabilities	(9,282)	—	—
Net cash provided by operating activities	128,535	87,117	117,437
Cash flows from investing activities:			
Purchases of property, plant and equipment	(6,472)	(10,762)	(9,385)
Acquisition of intangible assets	—	(350)	(120)
Purchases of marketable securities	(657,433)	(282,117)	(102,497)
Maturities of marketable securities	507,385	223,079	32,048
Proceeds from sale of marketable securities	6,758	—	4,450
Proceeds from sale of property and property, plant and equipment	29	10	33
Proceeds from divestiture, net of cash disposed	76,039	—	—
Proceeds from sale of assets held for sale	—	3,754	—
Proceeds from sale of equity security	—	1,350	—
Investment in privately-held company	(1,000)	(3,000)	—
Acquisitions of businesses, net of cash acquired	(66,780)	—	—
Net cash used in investing activities	(141,474)	(68,036)	(75,471)
Cash flows from financing activities:			
Proceeds from issuance of 1.375% convertible notes	—	—	172,500
Issuance costs related to issuance of 1.375% convertible notes	—	—	(3,277)
Payments for convertible note hedges	—	—	(33,523)
Proceeds from issuance of warrants	—	—	23,173
Repayment of 1.125% convertible notes	—	(81,207)	(72,257)
Proceeds received from issuance of common stock under employee stock plans	15,104	11,402	15,826

Payments under installment payment arrangement	(8,379)	—	—
Principal payments against financing lease obligation	—	(1,080)	(860)
Repurchase and retirement of common stock, including prepayment under accelerated share repurchase program	—	(50,033)	(50,038)
Payments of taxes on restricted stock units	(7,023)	(6,766)	(5,099)
Net cash provided by (used in) financing activities	(298)	(127,684)	46,445
Effect of exchange rate changes on cash and cash equivalents	(497)	(989)	2,139
Net increase (decrease) in cash, cash equivalents and restricted cash	(13,734)	(109,592)	90,550
Cash, cash equivalents and restricted cash at beginning of year	116,252	225,844	135,294
Cash, cash equivalents and restricted cash at end of year	\$ 102,518	\$ 116,252	\$ 225,844

The following table provides a reconciliation of the cash, cash equivalents and restricted cash balances as of December 31, 2019, December 31, 2018 and December 31, 2017:

	December 31, 2019	December 31, 2018	December 31, 2017
Cash and cash equivalents	\$ 102,176	\$ 115,924	\$ 225,844
Restricted cash	342	328	—
Cash, cash equivalents and restricted cash	\$ 102,518	\$ 116,252	\$ 225,844

Supplemental disclosure of cash flow information:

Cash paid during the period for:

Interest	\$ 2,372	\$ 3,044	\$ 1,553
Income taxes, net of refunds	\$ 17,835	\$ 23,581	\$ 22,733

Non-cash investing and financing activities:

Property, plant and equipment received and accrued in accounts payable and other accrued liabilities	\$ 29,844	\$ 8,225	\$ 1,092
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See Notes to Consolidated Financial Statements



**RAMBUS INC.**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**

**1. Formation and Business of the Company**

Rambus Inc. (the “Company” or “Rambus”) was incorporated in California in March 1990 and reincorporated in Delaware in March 1997. In addition to licensing, the Company is creating new business opportunities through offering products and services where its goal is to perpetuate strong company operating performance and long-term stockholder value. The Company generates revenue by licensing its inventions and solutions, selling its semiconductor products and providing services to market-leading companies.

Rambus is a premier Silicon IP and Chip provider, delivering high-speed interface and embedded security solutions to make data faster and safer. With 30 years of innovation, the Company continues to develop and license the foundational technology essential to all modern system on chips (SoCs) and computing systems. The Company delivers a broad range of semiconductor solutions including architecture licenses, high-speed physical and digital controller Interface IP cores, Security IP cores and protocols, and memory interface Chips.

**2. Summary of Significant Accounting Policies**

*Financial Statement Presentation*

The accompanying consolidated financial statements include the accounts of Rambus and its wholly owned subsidiaries. All intercompany accounts and transactions have been eliminated in the accompanying consolidated financial statements. Investments in entities with more than 20% ownership by Rambus and in which Rambus has the ability to significantly influence the operations of the investee (but not control) are accounted for using the equity method and are included in other assets.

*Use of Estimates*

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates.

*Reclassifications*

Certain prior year balances were reclassified to conform to the current year’s presentation. None of these reclassifications had an impact on reported net income or cash flows for any of the periods presented.

*Revenue Recognition*

The Company adopted the New Revenue Standard on January 1, 2018 and all the related amendments using the modified retrospective method. The Company recognized the cumulative effect of initially applying the new revenue standard as an adjustment to the opening balance of accumulated deficit as of January 1, 2018. The comparative information for 2017 has not been recast and continues to be reported under the accounting standards in effect for that period.

The Company recognizes revenue upon transfer of control of promised goods and services in an amount that reflects the consideration it expects to receive in exchange for those goods and services. Substantially all of the goods and services are distinct and are accounted for as separate performance obligations.

Where an arrangement includes multiple performance obligations, the transaction price is allocated to these on a relative standalone selling price basis. The Company has established standalone selling prices for all of its offerings - specifically, the same pricing methodology is consistently applied to all licensing arrangements; all services offerings are priced within tightly controlled bands and all contracts that include support and maintenance state a renewal rate or price that is systematically enforced.

*Cost of Revenue*

Cost of revenue includes cost of professional services, materials, including cost of wafers processed by third-party foundries, cost associated with packaging and assembly, test and shipping, cost of personnel, including stock-based compensation, and equipment associated with manufacturing support, logistics and quality assurance, warranty cost,

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

amortization of existing technology, write-down of inventories, amortization of production mask costs, overhead and an allocated portion of occupancy costs.

### *Leases*

The Company leases office space, domestically and internationally, under operating leases. The Company's leases have remaining lease terms between one year and ten years. Operating leases are included in operating lease right-of-use ("ROU") assets, operating lease liabilities, and long-term operating lease liabilities in the Company's consolidated balance sheets. The Company does not have any finance leases. The Company determines if an arrangement is a lease, or contains a lease, at inception. The Company assesses all relevant facts and circumstances in making the determination of the existence of a lease. For leases with terms greater than 12 months, the Company records the related asset and obligation at the present value of lease payments over the term. Many of the Company's leases include rental escalation clauses, renewal options and/or termination options that are factored into the determination of lease payments when appropriate. Leases with an initial term of 12 months or less are not recorded on the balance sheet, and the Company does not separate non-lease components from lease components. Operating lease costs are included in research and development and selling, general and administrative costs on the statement of operations.

### *Goodwill*

Goodwill represents the excess of the purchase price over the fair value of the net tangible and identifiable intangible assets acquired in each business combination. Goodwill is not subject to amortization, but is subject to at least an annual assessment for impairment. The Company performs its impairment analysis of goodwill on an annual basis during the fourth quarter of the year unless conditions arise that warrant a more frequent evaluation.

When goodwill is assessed for impairment, the Company has the option to perform an assessment of qualitative factors of impairment (optional assessment) prior to necessitating a quantitative impairment test. Should the optional assessment be used for any given year, qualitative factors to consider for a reporting unit include: cost factors; financial performance; legal, regulatory, contractual, political, business, or other factors; entity specific factors; industry and market considerations; macroeconomic conditions; and other relevant events and factors affecting the reporting unit. If the Company determines in the qualitative assessment that it is more likely than not that the fair value of the reporting unit is less than its carrying value, a quantitative test is then performed. Otherwise, no further testing is required. For a reporting unit tested using a quantitative approach, the Company compares the fair value of the reporting unit with the carrying amount of the reporting unit, including goodwill. The fair value of the reporting unit is estimated using an income approach.

Under the income approach, the Company measures fair value of the reporting unit based on a projected cash flow method using a discount rate determined by its management which is commensurate with the risk inherent in its current business model. The Company's discounted cash flow projections are based on its annual financial forecasts developed internally by management for use in managing its business. If the fair value of the reporting unit exceeds its carrying value, goodwill is not impaired and no further testing is required. If the fair value of the reporting unit is less than the carrying value, then the amount of goodwill impairment will be the amount by which the reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill.

The Company performed its annual goodwill impairment analysis as of December 31, 2019 and determined that there was no impairment of its goodwill. For the years ended December 31, 2018 and 2017, the Company did not recognize any goodwill impairment charges.

### *Intangible Assets*

Intangible assets are comprised of existing technology, customer contracts and contractual relationships, and other definite-lived and indefinite-lived intangible assets. Identifiable intangible assets resulting from the acquisitions of entities accounted for using the purchase method of accounting are estimated by management based on the fair value of assets received. Identifiable definite-lived intangible assets are being amortized over the period of estimated benefit using the straight-line method and estimated useful lives ranging from six months to ten years.

Acquired indefinite-lived intangible assets related to the Company's in-process research and development ("IPR&D") are capitalized and subject to impairment testing until completion or abandonment of the projects. Upon successful completion of each project, the Company makes a separate determination of the useful life of the acquired indefinite-lived intangible assets and the related amortization is recorded as an expense over the estimated useful life of the specific projects. Indefinite-lived intangible assets are subject to at least an annual assessment for impairment, applying a fair-value based test. Under the income

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

approach, the Company measures fair value of the indefinite-lived intangible assets based on a projected cash flow method using a discount rate determined by its management which is commensurate with the risk inherent in its current business model. The Company's discounted cash flow projections are based on its annual financial forecasts developed internally by management for use in managing its business. If the fair value of the indefinite-lived intangible assets exceeds its carrying value, the indefinite-lived intangible assets are not impaired and no further testing is required. If the implied fair value of the indefinite-lived intangible assets is less than the carrying value, the difference is recorded as an impairment loss.

### *Inventories*

Inventories are stated at the lower of cost or net realizable value. Cost is computed using standard cost, which approximates actual cost, on a first-in, first-out basis. Inventories are reduced for write-downs based on periodic reviews for evidence of slow-moving or obsolete parts. The write-down is based on comparison between inventory on hand and estimated future sales for each specific product. Once written down, inventory write-downs are not reversed until the inventory is sold or scrapped. Inventory write-downs are also established when conditions indicate that the net realizable value is less than cost due to physical deterioration, obsolescence, changes in price level or other causes.

### *Property, Plant and Equipment*

Property, plant and equipment include computer equipment, computer software, machinery, leasehold improvements, furniture and fixtures and buildings. Computer equipment, computer software, machinery, and furniture and fixtures are stated at cost and generally depreciated on a straight-line basis over an estimated useful life of three years, three years to five years, two years or seven years, and three years, respectively. The buildings were depreciated on a straight-line basis over an estimated useful life of approximately 39 years. Refer to Note 11, "Balance Sheet Details," and Note 13, "Commitments and Contingencies," for additional details. Leasehold improvements are amortized on a straight-line basis over the shorter of their estimated useful lives or the initial terms of the leases. Upon disposal, assets and related accumulated depreciation are removed from the accounts and the related gain or loss is included in the results from operations.

### *Definite-Lived and Indefinite-Lived Asset Impairment*

The Company evaluates definite-lived and indefinite-lived assets (including property, plant and equipment and intangible assets) for impairment whenever events or changes in circumstances indicate the carrying value of an asset group may not be recoverable. The carrying value is not recoverable if it exceeds the undiscounted cash flows resulting from the use of the asset group and its eventual disposition. The Company's estimates of future cash flows attributable to its asset groups require significant judgment based on its historical and anticipated results and are subject to many factors. Factors that the Company considers important which could trigger an impairment review include significant negative industry or economic trends, significant loss of clients, and significant changes in the manner of its use of the acquired assets or the strategy for its overall business.

When the Company determines that the carrying value of the asset groups may not be recoverable based upon the existence of one or more of the above indicators of impairment, the Company measures the potential impairment based on a projected discounted cash flow method using a discount rate determined by the Company to be commensurate with the risk inherent in the Company's current business model. An impairment loss is recognized only if the carrying amount of the asset group is not recoverable and exceeds its fair value. The impairment charge is recorded to reduce the pre-impairment carrying amount of the assets based on the relative carrying amount of those assets, though not to reduce the carrying amount of an asset below its fair value. Different assumptions and judgments could materially affect the calculation of the fair value of the assets. During 2019, 2018 and 2017, the Company did not recognize any impairment of its definite-lived and indefinite-lived assets.

### *Income Taxes*

Income taxes are accounted for using an asset and liability approach, which requires the recognition of deferred tax assets and liabilities for expected future tax events that have been recognized differently in Rambus' consolidated financial statements and tax returns. The measurement of current and deferred tax assets and liabilities is based on provisions of the enacted tax law and the effects of future changes in tax laws or rates are not anticipated. A valuation allowance is established when necessary to reduce deferred tax assets to amounts expected to be realized based on available evidence.

In addition, the calculation of the Company's tax liabilities involves dealing with uncertainties in the application of complex tax regulations. As a result, the Company reports a liability for unrecognized tax benefits resulting from uncertain tax positions taken or expected to be taken in its tax return. The Company considers many factors when evaluating and estimating its tax positions and tax benefits, which may require periodic adjustments and which may not accurately anticipate actual outcomes.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

### ***Stock-Based Compensation and Equity Incentive Plans***

The Company maintained stock plans covering a broad range of equity grants including stock options, nonvested equity stock and equity stock units and performance based instruments. In addition, the Company sponsors an Employee Stock Purchase Plan (“ESPP”), whereby eligible employees are entitled to purchase Common Stock semi-annually, by means of limited payroll deductions, at a 15% discount from the fair market value of the Common Stock as of specific dates.

The Company determines compensation expense associated with restricted stock units based on the fair value of its common stock on the date of grant. The Company determines compensation expense associated with stock options based on the estimated grant date fair value method using the Black-Scholes Merton valuation model. The Company generally recognizes compensation expense using a straight-line amortization method over the respective vesting period for awards that are ultimately expected to vest. Stock-based compensation expense for 2019, 2018 and 2017 has been reduced for estimated forfeitures. When estimating forfeitures, the Company considers voluntary termination behaviors as well as trends of actual option forfeitures.

### ***Cash and Cash Equivalents***

Cash equivalents are highly liquid investments with original maturity of three months or less at the date of purchase. The Company maintains its cash balances with high quality financial institutions. Cash equivalents are invested in highly-rated and highly-liquid money market securities and certain U.S. government sponsored obligations.

### ***Marketable Securities***

Available-for-sale securities are carried at fair value, based on quoted market prices, with the unrealized gains or losses reported, net of tax, in stockholders’ equity as part of accumulated other comprehensive income (loss). The amortized cost of debt securities is adjusted for amortization of premiums and accretion of discounts to maturity, both of which are included in interest and other income, net. Realized gains and losses are recorded on the specific identification method and are included in interest and other income, net. The Company reviews its investments in marketable securities for possible other than temporary impairments on a regular basis. If any loss on investment is believed to be a credit loss, a charge will be recognized in operations. In evaluating whether a credit loss on a debt security has occurred, the Company considers the following factors: 1) the Company’s intent to sell the security, 2) if the Company intends to hold the security, whether or not it is more likely than not that the Company will be required to sell the security before recovery of the security’s amortized cost basis and 3) even if the Company intends to hold the security, whether or not the Company expects the security to recover the entire amortized cost basis. Due to the high credit quality and short term nature of the Company’s investments, there have been no material credit losses recorded to date. The classification of funds between short-term and long-term is based on whether the securities are available for use in operations or other purposes.

### ***Fair Value of Financial Instruments***

The carrying value of cash equivalents, accounts receivable and accounts payable approximate their fair values due to their relatively short maturities as of December 31, 2019 and 2018. Marketable securities are comprised of available-for-sale securities that are reported at fair value with the related unrealized gains and losses included in accumulated other comprehensive income (loss), a component of stockholders’ equity, net of tax. Fair value of the marketable securities is determined based on quoted market prices. The fair value of the Company’s convertible notes fluctuates with interest rates and with the market price of the common stock, but does not affect the carrying value of the debt on the balance sheet.

### ***Research and Development***

Costs incurred in research and development, which include engineering expenses, such as salaries and related benefits, stock-based compensation, depreciation, professional services and overhead expenses related to the general development of Rambus’ products, are expensed as incurred. Software development costs are capitalized beginning when a product’s technological feasibility has been established and ending when a product is available for general release to customers. Rambus has not capitalized any software development costs since the period between establishing technological feasibility and general customer release is relatively short and as such, these costs have not been material.

### ***Computation of Earnings (Loss) Per Share***

Basic earnings (loss) per share is calculated by dividing the net income (loss) by the weighted average number of common shares outstanding during the period. Diluted earnings (loss) per share is calculated by dividing the earnings (loss) by the weighted average number of common shares and potentially dilutive securities outstanding during the period. Potentially

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

dilutive common shares consist of incremental common shares issuable upon exercise of stock options, employee stock purchases, restricted stock and restricted stock units, and shares issuable upon the conversion of convertible notes. The dilutive effect of outstanding shares is reflected in diluted earnings per share by application of the treasury stock method. This method includes consideration of the amounts to be paid by the employees, the amount of excess tax benefits that would be recognized in equity if the instrument was exercised and the amount of unrecognized stock-based compensation related to future services. No potential dilutive common shares are included in the computation of any diluted per share amount when a net loss is reported.

### ***Comprehensive Income (Loss)***

Comprehensive income (loss) is defined as the change in equity of a business enterprise during a period from transactions and other events and circumstances from non-owner sources, including foreign currency translation adjustments and unrealized gains and losses on marketable securities. Other comprehensive income (loss), net of tax, is presented in the consolidated statements of comprehensive income (loss).

### ***Credit Concentration***

As of December 31, 2019 and 2018, the Company's cash, cash equivalents and marketable securities were invested with various financial institutions in the form of corporate notes, bonds and commercial paper, money market funds, U.S. Treasuries, U.S. Government Agencies, and municipal bonds and notes. The Company's exposure to market risk for changes in interest rates relates primarily to its investment portfolio. The Company places its investments with high credit issuers and, by investment policy, attempts to limit the amount of credit exposure to any one issuer. As stated in the Company's investment policy, it will ensure the safety and preservation of the Company's invested funds by limiting default risk and market risk. The Company has no investments denominated in foreign country currencies and therefore is not subject to foreign exchange risk from these assets.

The Company mitigates default risk by investing in high credit quality securities and by positioning its portfolio to respond appropriately to a significant reduction in a credit rating of any investment issuer or guarantor. The portfolio includes only marketable securities with active secondary or resale markets to enable portfolio liquidity.

The Company's note hedge transactions, entered into in connection with the 1.375% convertible senior notes due 2023 (the "2023 Notes"), expose the Company to credit risk to the extent that its counterparties may be unable to meet the terms of the transactions. The Company mitigates this risk by limiting its counterparties to major financial institutions. Refer to Note 12, "Convertible Notes" for further details.

The Company's accounts receivable are derived from revenue earned from customers located in the U.S. and internationally. Refer to Note 7, "Segments and Major Customers" for further details.

### ***Foreign Currency Translation and Re-Measurement***

The Company translates the assets and liabilities of its non-U.S. dollar functional currency subsidiaries into U.S. dollars using exchange rates in effect at the end of each period. Revenue and expenses for these subsidiaries are translated using rates that approximate those in effect during the period. Gains and losses from these translations are recognized in foreign currency translation included in Accumulated Other Comprehensive Gain (Loss) in the consolidated statements of stockholders' equity. The Company's subsidiaries that use the U.S. dollar as their functional currency re-measure monetary assets and liabilities at exchange rates in effect at the end of each period, and inventories, property and non-monetary assets and liabilities at historical rates. Additionally, foreign currency transaction gains and losses are included in interest income and other (income) expense, net, in the consolidated statements of operations and were not material in the periods presented. Subsequent to the divestiture of the Company's Payments and Ticketing businesses, the U.S. dollar is primarily the functional currency of the Company's foreign subsidiaries.

### ***Business Combinations***

The Company accounts for acquisitions of businesses using the purchase method of accounting, which requires the Company to recognize separately from goodwill the assets acquired and the liabilities assumed at their acquisition date fair values. While the Company uses its best estimates and assumptions to accurately value assets acquired and liabilities assumed at the acquisition date as well as contingent consideration, where applicable, the estimates are inherently uncertain and subject to refinement. As a result, during the measurement period, which may be up to one year from the acquisition date, the Company may record adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill. Upon the

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

conclusion of the measurement period or final determination of the values of assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments are recorded to the consolidated statements of operations.

Accounting for business combinations requires management to make significant estimates and assumptions, especially at the acquisition date including the Company's estimates for intangible assets, contractual obligations assumed and pre-acquisition contingencies where applicable. Although, the Company believes the assumptions and estimates made in the past have been reasonable and appropriate, they are based in part on historical experience and information obtained from the management of the acquired companies and are inherently uncertain. Significant estimates and assumptions made by management in estimating the fair value of the existing technologies included revenue growth rates, operating expense margins, technology obsolescence rates and discount rates. Unanticipated events and circumstances may occur that may affect the accuracy or validity of such assumptions, estimates or actual results.

### *Litigation*

Rambus may be involved in certain legal proceedings. Based upon consultation with outside counsel handling its defense in these matters and an analysis of potential results, if Rambus believes that a loss arising from such matters is probable and can be reasonably estimated, Rambus records the estimated liability in its consolidated financial statements. If only a range of estimated losses can be determined, Rambus records an amount within the range that, in its judgment, reflects the most likely outcome; if none of the estimates within that range is a better estimate than any other amount, Rambus records the low end of the range. Any such accrual would be charged to expense in the appropriate period. Rambus recognizes litigation expenses in the period in which the litigation services were provided.

### **3. Recent Accounting Pronouncements**

#### *Recent Accounting Pronouncements Adopted*

In February 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2016-02, "Leases." This ASU requires lessees to recognize right-of-use assets and liabilities for operating leases, initially measured at the present value of the lease payments, on the balance sheet. In addition, it requires lessees to recognize a single lease cost, calculated so that the cost of the lease is allocated over the lease term, generally on a straight-line basis. In July 2018, the FASB issued ASU No. 2018-10, "Codification Improvements to Topic 842, Leases," and ASU No. 2018-11, "Leases (Topic 842)," which allow the application of the new guidance at the beginning of the year of adoption, recognizing a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption, in addition to the method of applying the new guidance retrospectively to each prior reporting period presented. The amendments in ASU No. 2018-10 and ASU No. 2018-11 have the same effective and transition requirements as ASU No. 2016-02 (collectively referred to as the "New Leasing Standard").

The Company adopted the New Leasing Standard as of January 1, 2019 using the alternative transition method provided by ASU No. 2018-11 and did not recast comparative periods. The Company elected the package of practical expedients permitted under the transition guidance within the new standard, which among other things, allowed the Company to carry forward the historical lease classification. Additionally, the Company elected the practical expedient related to non-lease components in which the Company will not separate non-lease components from lease components. Finally, the Company made the policy election for the short-term leases exemptions, which allows the Company to not recognize lease assets and liabilities for leases having a term of 12 months or less. Upon adoption, the Company recognized \$21.4 million and \$23.9 million of lease assets and liabilities, respectively, on its consolidated balance sheet. The difference between the lease assets and lease liabilities, net of the deferred tax impact which was not material, was recorded as an adjustment to the opening accumulated deficit. Additionally, in accordance with the New Leasing Standard, the Company was required to derecognize the Sunnyvale and Ohio facilities as imputed facility obligations (as accounted for under the previous leasing guidance) and recognize these facilities as operating leases on the consolidated balance sheet. This change resulted in no longer recognizing interest expense associated with these imputed facility lease obligations, but instead, recognizing operating lease costs which will be included in operating costs and expenses on the consolidated statement of operations. Furthermore, the Company derecognized \$37.6 million of imputed financing obligation related to these facilities and \$32.0 million of capitalized building property upon adoption of the New Leasing Standard. The adoption of the New Leasing Standard resulted in a decrease to the Company's opening accumulated deficit of \$4.5 million.

### ***Recent Accounting Pronouncements Not Yet Adopted***

In January 2020, the FASB issued ASU No. 2020-01, “Investments—Equity Securities (Topic 321), Investments—Equity Method and Joint Ventures (Topic 323), and Derivatives and Hedging (Topic 815).” The amendments in this ASU clarify the interaction of the accounting for equity securities under Topic 321 and investments accounted for under the equity method of accounting in Topic 323 and the accounting for certain forward contracts and purchased options accounted for under Topic 815. This ASU is effective for interim and annual reporting periods beginning after December 15, 2020. Early adoption is permitted. The amendments in this ASU should be applied on a prospective basis. The Company is currently evaluating the impact that the adoption of this guidance will have on its consolidated financial statements.

In December 2019, the FASB issued ASU No. 2019-12, “Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes.” The amendments in this ASU remove certain exceptions, and clarify and amend existing guidance. This ASU is effective for interim and annual reporting periods beginning after December 15, 2020. Early adoption is permitted. Certain disclosures in ASU No. 2019-12 would need to be applied on a retrospective basis, modified retrospective basis, or prospective basis. The Company is currently evaluating the impact that the adoption of this guidance will have on its consolidated financial statements.

In August 2018, the FASB issued ASU No. 2018-13, “Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement.” The amendments in this ASU remove certain disclosures, modify certain disclosures and add additional disclosures. This ASU is effective for interim and annual reporting periods beginning after December 15, 2019. Early adoption is permitted. Certain disclosures in ASU No. 2018-13 would need to be applied on a retrospective basis and others on a prospective basis. The Company will adopt this ASU effective January 1, 2020 and while the Company is currently evaluating the impact that this guidance will have on its consolidated financial statements, the Company does not expect the adoption of this guidance to have a material impact on its consolidated financial statements.

In June 2016, the FASB issued ASU No. 2016-13. The purpose of this ASU is to require a financial asset measured at amortized cost basis to be presented at the net amount expected to be collected. Credit losses relating to available-for-sale debt securities should be recorded through an allowance for credit losses. In April 2019, the FASB issued ASU No. 2019-04, “Codification Improvements to Topic 326, Financial Instruments—Credit Losses, Topic 815, Derivatives and Hedging, and Topic 825, Financial Instruments (ASU 2019-04),” which provided certain improvements to various ASUs, including ASU 2016-13. In May 2019, the FASB issued ASU No. 2019-05, “Financial Instruments—Credit Losses (Topic 326),” which provides an option to irrevocably elect the fair value option for certain financial assets previously measured at amortized cost basis. In November 2019, the FASB issued ASU No. 2019-10, “Financial Instruments—Credit Losses (Topic 326), Derivatives and Hedging (Topic 815), and Leases (Topic 842)” which amends certain effective dates. In November 2019, the FASB issued ASU No. 2019-11, “Financial Instruments—Credit Losses (Topic 326),” which provides additional clarifications. These ASUs and the related amendments are effective for interim and annual reporting periods beginning after December 15, 2019. The Company will adopt this ASU on January 1, 2020 and the Company does not expect the adoption of this guidance to have a material impact on its consolidated financial statements.

## **4. Revenue Recognition**

Rambus’ revenue consists of royalty, product and contract and other revenue. Royalty revenue consists of patent and technology license royalties. Products consist of memory interface chips sold directly and indirectly to module manufacturers and OEMs worldwide through multiple channels, including our direct sales force and distributors. Contract and other revenue consists of software license fees, engineering fees associated with integration of Rambus’ technology solutions into its customers’ products and support and maintenance fees.

### **1. Royalty Revenue**

Rambus’ patent and technology licensing arrangements generally range between 1 year and 7 years in duration and generally grant the licensee the right to use the Company’s entire IP portfolio as it evolves over time. These arrangements do not typically grant the licensee the right to terminate for convenience and where such rights exist, termination is prospective, with no refund of fees already paid by the licensee. There is no interdependency or interrelation between the IP included in the portfolio licensed upon contract inception and any IP subsequently made available to the licensee, and the Company would be able to fulfill its promises by transferring the portfolio and the additional IP use rights independently. However, the numbers of additions to, and removals from the portfolio (for example when a patent expires and renewal is not granted to the Company) in

any given period have historically been relatively consistent; as such, the Company does not allocate the transaction price between the rights granted at contract inception and those subsequently granted over time as a function of these additions.

Patent and technology licensing arrangements result in fixed payments received over time, with guaranteed minimum payments on occasion, variable payments calculated based on the licensee's sale or use of the IP, or a mix of fixed and variable payments.

- For fixed-fee arrangements (including arrangements that include minimum guaranteed amounts), variable royalty arrangements that the Company has concluded are fixed in substance, and the fixed portion of hybrid fixed/variable arrangements, the Company recognizes revenue upon control over the underlying IP use right transferring to the licensee, net of the effect of significant financing components calculated using customer-specific, risk-adjusted lending rates ranging between 3% and 6%, with the related interest income being recognized over time on an effective rate basis. Where a licensee has the contractual right to terminate a fixed-fee arrangement for convenience without any substantive penalty payable upon such termination, the Company applies the guidance in ASU No. 2014-09, Revenue from Contracts with Customers in Accounting Standards Codification (ASC) Topic 606 ("ASC 606" or "the New Revenue Standard") to the duration of the contract in which the parties have present enforceable rights and obligations and only recognizes revenue for amounts that are due and payable.
- For variable arrangements, the Company recognizes revenue based on an estimate of the licensee's sale or usage of the IP during the period of reference, typically quarterly, with a true-up recorded when the Company receives the actual royalty report from the licensee.

## 2. *Product Revenue*

Product revenue is recognized upon shipment of product to customers, net of accruals for estimated sales returns and allowances, and to distributors, net of accruals for price protection and rights of return on products unsold by the distributors. To date, none of these accruals have been significant. The Company transacts with direct customers primarily pursuant to standard purchase orders for delivery of products and generally allows customers to cancel or change purchase orders within limited notice periods prior to the scheduled shipment date.

## 3. *Contract and Other Revenue*

Contract and other revenue consists of software license fees and engineering fees associated with integration of Rambus' technology solutions into its customers' related support and maintenance.

An initial software arrangement generally consists of a term-based or perpetual license, significant software customization services and support and maintenance services that include post-implementation customer support and the right to unspecified software updates and enhancements on a when and if available basis. The Company recognizes license and customization services revenue based on an over time model, measured using the input method. License and customization services revenue is reported as part of contract and other revenue which was approximately \$28 million for the year ended December 31, 2019. Due to the nature of the work performed in these arrangements, the estimation of the over time model is complex and involves significant judgment. The key factor reviewed by management to estimate costs to complete each contract is the estimated man-months necessary to complete the project. The Company recognizes license renewal revenue at the beginning of the renewal period. The Company recognizes revenue from professional services purchased in addition to an initial software arrangement on a cumulative catch-up basis if these services are not distinct from the services provided as part of the initial software arrangement, or as a separate contract if these services are distinct.

Prior to the divestiture of the Company's Payments and Ticketing businesses in 2019, the Company's Payment Product Group derived a significant portion of its revenue from heavily customized software in the mobile market, whereby the Payment Product Group's software solution interacts with third-party solutions and other payment platforms to provide the functionality the customer requires. Historically, these third-party solutions have evolved at a rapid pace, with the Payment Product Group being required to deliver as part of its support and maintenance services the patches and updates needed to maintain the functionality of its own software offering. As the utility of the solution to the end customer erodes very quickly without these updates, these were viewed as critical and the customized software solution and updates were not separately identifiable. As such, these arrangements were treated as a single performance obligation; revenue was deferred until completion of the customization services, and recognized ratably over the committed support and maintenance term.

Prior to the divestiture of the Company's Payments and Ticketing businesses in 2019, the Company's Ticketing Products Group primarily derived revenue from ticketing services arrangements that systematically consist of a software component,



support and maintenance, managed services and hosting services. The software could be hosted by third-party hosting service providers or the Company. All arrangements entered into subsequent to the acquisition (the Company had originally acquired the Payments and Ticketing businesses in 2016) preclude customers from taking possession of the software at any time during the hosting term and the Company had concluded that should a customer that was under contract as of the acquisition date ever request possession of the software, the Ticketing Products Group would have the ability to charge the customer, and enforce a claim to payment of a substantive fee in exchange for such right, and that the costs of setting up the environment needed to run the software would act as a significant disincentive to the customer taking possession of the software. Based on the above, the Company concluded that these services were a single performance obligation, with customers simultaneously receiving and consuming the benefits provided by the Ticketing Products Group's performance, and recognized ticketing services revenue ratably over the term, commencing upon completion of setup activities. The Company recognized setup fees upon completion. While these activities did not transfer a service to the customer, the Company elected not to defer and amortized these fees over the expected duration of the customer relationship owing to the immateriality of the amounts charged.

### Significant Judgments

Historically and with the exception noted below, no significant judgment has generally been required in determining the amount and timing of revenue from the Company's contracts with customers.

- The Company has adequate tools and controls in place, and substantial experience and expertise in timely and accurately tracking man-months incurred in completing customization and other professional services, and quantifying changes in estimates.

Key estimates used in recognizing revenue predominantly consist of the following:

- All fixed-fee arrangements result in cash being received after control over the underlying IP use right has transferred to the licensee, and over a period exceeding a year. As such, all these arrangements include a significant financing component. The Company calculates a customer-specific lending rate using a Daily Treasury Yield Curve Rate that changes depending on the date on which the licensing arrangement was entered into and the term (in years) of the arrangement, and takes into consideration a licensee-specific risk profile determined based on a review of the licensee's "Full Company View" Dun & Bradstreet report obtained on the date the licensing arrangement was signed by the parties, with a risk premium being added to the Daily Treasury Yield Curve Rate considering the overall business risk, financing strength and risk indicators, as listed.
- The Company recognizes revenue on variable fee licensing arrangements on the basis of estimates. In connection with the adoption of the New Revenue Standard, the Company has set up specific procedures and controls to ensure timely and accurate quantification of variable royalties, and implemented new systems to enable the preparation of the estimates and reporting of the financial information required by the New Revenue Standard.

### Contract Balances

Timing of revenue recognition may differ from the timing of invoicing to the Company's customers. The Company records contract assets when revenue is recognized prior to invoicing, and a contract liability when revenue is recognized subsequent to invoicing.

The contract assets are primarily related to the Company's fixed fee IP licensing arrangements and rights to consideration for performance obligations delivered but not billed as of December 31, 2019. The contract assets are transferred to receivables when the billing occurs.

The Company's contract balances were as follows:

(In thousands)	As of	
	December 31, 2019	December 31, 2018
Unbilled receivables	\$ 528,069	\$ 673,616
Deferred revenue	11,947	19,566

During the years ended December 31, 2019 and December 31, 2018, the Company recognized \$18.3 million and \$20.5 million, respectively, of revenue that was included in the contract balances as of December 31, 2018 and January 1, 2018, respectively.

Revenue allocated to remaining performance obligations represents the transaction price allocated to the performance obligations that are unsatisfied, or partially unsatisfied, which includes unearned revenue and amounts that will be invoiced and recognized as revenue in future periods. Contracted but unsatisfied performance obligations were approximately \$22.0 million as of December 31, 2019, which the Company primarily expects to recognize over the next 2 years.

## 5. Earnings (Loss) Per Share

The following table sets forth the computation of basic and diluted income (loss) per share:

	For the Years Ended December 31,		
	2019	2018	2017
Net loss per share:			
Numerator:			
Net loss	\$ (90,419)	\$ (157,957)	\$ (22,862)
Denominator:			
Weighted-average common shares outstanding - basic	110,948	108,450	110,198
Effect of potential dilutive common shares	—	—	—
Weighted-average common shares outstanding - diluted	110,948	108,450	110,198
Basic net loss per share	\$ (0.81)	\$ (1.46)	\$ (0.21)
Diluted net loss per share	\$ (0.81)	\$ (1.46)	\$ (0.21)

For the years ended December 31, 2019, 2018 and 2017, options to purchase approximately 1.0 million, 1.6 million and 1.5 million shares, respectively, were excluded from the calculation because they were anti-dilutive after considering proceeds from exercise, taxes and related unrecognized stock-based compensation expense.

For the years ended December 31, 2019, 2018 and 2017, an additional 2.4 million, 2.4 million and 3.7 million shares, respectively, have been excluded from the weighted average dilutive shares because there was a net loss for the periods. These shares do not include the Company's 2023 Notes and the 1.125% convertible senior notes due 2018 (the "2018 Notes"). The par amount of convertible notes is payable in cash equal to the principal amount of the notes plus any accrued and unpaid interest and then the "in-the-money" conversion benefit feature at the conversion price above \$18.93 and \$12.07, respectively, per share is payable in cash, shares of the Company's common stock or a combination of both. The Company has the option to pay cash, issue shares of common stock or any combination thereof for the aggregate amount due upon conversion of the notes. The Company's intent is to settle the principal amount of the notes in cash upon conversion. As a result, upon conversion of the notes, only the amounts payable in excess of the principal amounts of the notes are considered in diluted earnings per share under the treasury stock method. Refer to Note 12, "Convertible Notes" for more details.

## 6. Intangible Assets and Goodwill

### Goodwill

The following tables present goodwill information for the years ended December 31, 2019 and December 31, 2018:

	December 31, 2018	Additions to Goodwill (1)	Divestiture of Goodwill (2)	Effect of Exchange Rates (3)	December 31, 2019
(In thousands)					
Total goodwill	\$ 207,178	\$ 30,322	\$ (54,494)	\$ 459	\$ 183,465

- (1) In August 2019, the Company acquired Northwest Logic, Inc. ("Northwest Logic"), and in December 2019, the Company acquired the Secure Silicon IP and Protocols business from Verimatrix (the "Secure Silicon IP and Protocols business"), which resulted in the Company recognizing additional goodwill. Refer to Note 21, "Acquisitions," for additional information.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

- (2) Refer to Note 17, “Divestiture,” for additional information.  
 (3) Effect of exchange rates relates to foreign currency translation adjustments for the period.

	As of December 31, 2019		
	Gross Carrying Amount	Accumulated Impairment Losses	Net Carrying Amount
	(In thousands)		
Total goodwill	\$ 205,235	\$ (21,770)	\$ 183,465

	December 31, 2017	Effect of Exchange Rates (1)	December 31, 2018
		(In thousands)	
Total goodwill	\$ 209,661	\$ (2,483)	\$ 207,178

- (1) Effect of exchange rates relates to foreign currency translation adjustments for the period.

	As of December 31, 2018		
	Gross Carrying Amount	Accumulated Impairment Losses	Net Carrying Amount
	(In thousands)		
Total goodwill	\$ 228,948	\$ (21,770)	\$ 207,178

**Intangible Assets**

The components of the Company’s intangible assets as of December 31, 2019 and December 31, 2018 were as follows:

	Useful Life	As of December 31, 2019		
		Gross Carrying Amount (1) (2)	Accumulated Amortization (1) (2)	Net Carrying Amount
		(In thousands)		
Existing technology	3 to 10 years	\$ 262,789	\$ (213,354)	\$ 49,435
Customer contracts and contractual relationships	0.5 to 10 years	36,293	(33,428)	2,865
Non-compete agreements and trademarks	3 years	300	(300)	—
IPR&D	Not applicable	2,600	—	2,600
Total intangible assets		\$ 301,982	\$ (247,082)	\$ 54,900

- (1) In October 2019, the Company disposed of approximately \$20.7 million of net intangible assets in connection with the sale of the legal entities comprising the Company’s Payments and Ticketing businesses. Refer to Note 17, “Divestiture,” for additional information.  
 (2) In August 2019, the Company acquired Northwest Logic, and in December 2019, the Company acquired the Secure Silicon IP and Protocols business, which resulted in the Company recognizing additional intangible assets. Refer to Note 21, “Acquisitions,” for additional information.

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

	Useful Life	As of December 31, 2018		
		Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
(In thousands)				
Existing technology	3 to 10 years	\$ 258,903	\$ (213,824)	\$ 45,079
Customer contracts and contractual relationships	1 to 10 years	67,667	(54,410)	13,257
Non-compete agreements and trademarks	3 years	300	(300)	—
IPR&D	Not applicable	1,600	—	1,600
Total intangible assets		\$ 328,470	\$ (268,534)	\$ 59,936

During the year ended December 31, 2018, the Company acquired patents related to its memory technology for an immaterial amount.

During the year ended December 31, 2018, the Company did not sell any intangible assets.

Amortization expense for intangible assets for the years ended December 31, 2019, 2018, and 2017 was \$17.1 million, \$29.3 million, and \$42.0 million, respectively. The estimated future amortization expense of intangible assets as of December 31, 2019 was as follows (amounts in thousands):

Years Ending December 31:	Amount
2020	\$ 18,413
2021	14,411
2022	7,444
2023	6,740
2024	5,292
Thereafter	—
Total amortizable purchased intangible assets	52,300
IPR&D	2,600
Total intangible assets	\$ 54,900

**7. Segments and Major Customers**

Operating segments are based upon Rambus' internal organization structure, the manner in which its operations are managed, the criteria used by its Chief Operating Decision Maker ("CODM") to evaluate segment performance and availability of separate financial information regularly reviewed for resource allocation and performance assessment.

The Company has determined its CODM to be the Chief Executive Officer ("CEO"). In line with the Company's divestiture of its Payments and Ticketing businesses and its refocus on its semiconductor operations, commencing in the third quarter of 2019, the CEO reviews financial information presented on a consolidated basis for purposes of managing the business, allocating resources, making operating decisions and assessing financial performance. On this basis, the Company is organized and operates as a single segment: high-speed interface IP and chips, and embedded security within the semiconductor space. As of December 31, 2019, the Company has a single operating and reportable segment. Accordingly, no additional disclosure of segment measures of profit or loss or total assets is applicable for all periods presented. The Company has recast the prior-period segment information to reflect the new segment structure.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Accounts receivable from the Company's major customers representing 10% or more of total accounts receivable at December 31, 2019 and 2018, respectively, was as follows:

	As of December 31,	
	2019	2018
Customer 1	19%	39%
Customer 2	14%	*
Customer 3	*	12%

\* Customer accounted for less than 10% of total accounts receivable in the period

Revenue from the Company's major customers representing 10% or more of total revenue for the years ended December 31, 2019, 2018 and 2017 were as follows:

	Years Ended December 31,		
	2019	2018	2017
Customer A	*	*	17%
Customer B	10%	*	13%
Customer C	*	*	13%
Customer D	14%	15%	*
Customer E	*	11%	*

Revenue from customers in the geographic regions based on the location of contracting parties is as follows:

	Years Ended December 31,		
	2019	2018	2017
	(In thousands)		
USA	\$ 134,526	\$ 129,567	\$ 165,263
Taiwan	24,118	21,749	9,953
South Korea	3,583	13,421	115,811
Japan	11,877	23,222	23,378
Europe	10,262	15,668	22,597
Canada	3,554	4,960	4,373
Singapore	21,751	19,140	22,554
Asia-Other	14,356	3,474	29,167
Total	\$ 224,027	\$ 231,201	\$ 393,096

At December 31, 2019, of the \$44.7 million of total property, plant and equipment, approximately \$40.3 million were located in the United States, \$3.4 million were located in India and \$1.0 million were located in other foreign locations. At December 31, 2018, of the \$57.0 million of total property, plant and equipment, approximately \$50.4 million were located in the United States, \$3.8 million were located in India and \$2.8 million were located in other foreign locations.

### 8. Marketable Securities

Rambus invests its excess cash and cash equivalents primarily in U.S. government-sponsored obligations, commercial paper, corporate notes and bonds, money market funds and municipal notes and bonds that mature within three years. As of December 31, 2019 and 2018, all of the Company's cash equivalents and marketable securities have a remaining maturity of less than one year.

All cash equivalents and marketable securities are classified as available-for-sale. Total cash, cash equivalents and marketable securities are summarized as follows:

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

(Dollars in thousands)	As of December 31, 2019				
	Fair Value	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Weighted Rate of Return
Money market funds	\$ 10,065	\$ 10,065	\$ —	\$ —	1.48%
U.S. Government bonds and notes	39,086	39,087	—	(1)	1.49%
Corporate notes, bonds, commercial paper and other	314,391	314,435	19	(63)	1.81%
Total cash equivalents and marketable securities	363,542	363,587	19	(64)	
Cash	44,122	44,122	—	—	
Total cash, cash equivalents and marketable securities	\$ 407,664	\$ 407,709	\$ 19	\$ (64)	

(Dollars in thousands)	As of December 31, 2018				
	Fair Value	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Weighted Rate of Return
Money market funds	\$ 10,080	\$ 10,080	\$ —	\$ —	2.23%
U.S. Government bonds and notes	32,630	32,634	—	(4)	2.28%
Corporate notes, bonds, commercial paper and other	183,998	184,095	—	(97)	2.37%
Total cash equivalents and marketable securities	226,708	226,809	—	(101)	
Cash	51,056	51,056	—	—	
Total cash, cash equivalents and marketable securities	\$ 277,764	\$ 277,865	\$ —	\$ (101)	

Available-for-sale securities are reported at fair value on the balance sheets and classified as follows:

	As of	
	December 31, 2019	December 31, 2018
	(Dollars in thousands)	
Cash equivalents	\$ 58,054	\$ 64,868
Short term marketable securities	305,488	161,840
Total cash equivalents and marketable securities	363,542	226,708
Cash	44,122	51,056
Total cash, cash equivalents and marketable securities	\$ 407,664	\$ 277,764

The Company continues to invest in highly rated quality, highly liquid debt securities. As of December 31, 2019, these securities have a remaining maturity of less than one year. The Company holds all of its marketable securities as available-for-sale, marks them to market, and regularly reviews its portfolio to ensure adherence to its investment policy and to monitor individual investments for risk analysis, proper valuation, and unrealized losses that may be other than temporary.

The estimated fair value of cash equivalents and marketable securities classified by the length of time that the securities have been in a continuous unrealized loss position at December 31, 2019 and 2018 are as follows:

	Fair Value		Gross Unrealized Loss	
	December 31, 2019	December 31, 2018	December 31, 2019	December 31, 2018
	(In thousands)			
<b>Less than one year</b>				
U.S. Government bonds and notes	\$ 14,112	\$ 32,630	\$ (1)	\$ (4)
Corporate notes, bonds and commercial paper	250,822	183,998	(63)	(97)
Total Corporate notes, bonds, and commercial paper and U.S. Government bonds and notes	\$ 264,934	\$ 216,628	\$ (64)	\$ (101)

The gross unrealized loss at December 31, 2019 and 2018 was not material in relation to the Company's total available-for-sale portfolio. The gross unrealized loss can be primarily attributed to a combination of market conditions as well as the



## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

demand for and duration of the U.S. government-sponsored obligations and corporate notes and bonds. The Company has no intent to sell, there is no requirement to sell and the Company believes that it can recover the amortized cost of these investments. The Company has found no evidence of impairment due to credit losses in its portfolio. Therefore, these unrealized losses were recorded in other comprehensive income (loss). However, the Company cannot provide any assurance that its portfolio of cash, cash equivalents and marketable securities will not be impacted by adverse conditions in the financial markets, which may require the Company in the future to record an impairment charge for credit losses which could adversely impact its financial results.

Refer to Note 9, "Fair Value of Financial Instruments," for discussion regarding the fair value of the Company's cash equivalents and marketable securities.

### 9. Fair Value of Financial Instruments

The fair value measurement statement defines fair value as the price that would be received from selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. When determining fair value, the Company considers the principal or most advantageous market in which the Company would transact, and the Company considers assumptions that market participants would use when pricing the asset or liability, such as inherent risk, transfer restrictions, and risk of non-performance.

The Company's financial instruments are measured and recorded at fair value, except for equity method investments and convertible notes. The Company's non-financial assets, such as goodwill, intangible assets, and property, plant and equipment, are measured at fair value when there is an indicator of impairment and recorded at fair value only when an impairment charge is recognized. The Company's equity method investments are initially recognized at cost, and the carrying amount is increased or decreased to recognize the Company's share of the profit or loss of the investee after the date of acquisition. The Company's share of the investee's profit or loss is recognized in the Company's consolidated statements of operations. Distributions received from an investee reduce the carrying amount of the investment.

#### *Fair Value Hierarchy*

The fair value measurement statement requires disclosure that establishes a framework for measuring fair value and expands disclosure about fair value measurements. The statement requires fair value measurement be classified and disclosed in one of the following three categories:

*Level 1:* Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities.

The Company uses unadjusted quotes to determine fair value. The financial assets in Level 1 include money market funds.

*Level 2:* Quoted prices in markets that are not active, or inputs which are observable, either directly or indirectly, for substantially the full term of the asset or liability.

The Company uses observable pricing inputs including benchmark yields, reported trades, and broker/dealer quotes. The financial assets in Level 2 include U.S. government bonds and notes, corporate notes, commercial paper and municipal bonds and notes.

*Level 3:* Prices or valuation techniques that require inputs that are both significant to the fair value measurement and unobservable (i.e., supported by little or no market activity).

The Company does not have any financial assets in Level 3 as of December 31, 2019 and 2018.

The Company reviews the pricing inputs by obtaining prices from a different source for the same security on a sample of its portfolio. The Company has not adjusted the pricing inputs it has obtained. The following table presents the financial instruments that are carried at fair value and summarizes the valuation of its cash equivalents and marketable securities by the above pricing levels as of December 31, 2019 and 2018:



**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

As of December 31, 2019				
Total	Quoted Market Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	
(In thousands)				
Money market funds	\$ 10,065	\$ 10,065	\$ —	\$ —
U.S. Government bonds and notes	39,086	—	39,086	—
Corporate notes, bonds, commercial paper and other	314,391	—	314,391	—
Total available-for-sale securities	<u>\$ 363,542</u>	<u>\$ 10,065</u>	<u>\$ 353,477</u>	<u>\$ —</u>
As of December 31, 2018				
Total	Quoted Market Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	
(In thousands)				
Money market funds	\$ 10,080	\$ 10,080	\$ —	\$ —
U.S. Government bonds and notes	32,630	—	32,630	—
Corporate notes, bonds, commercial paper and other	183,998	—	183,998	—
Total available-for-sale securities	<u>\$ 226,708</u>	<u>\$ 10,080</u>	<u>\$ 216,628</u>	<u>\$ —</u>

The Company monitors its investments for other-than-temporary impairment and records appropriate reductions in carrying value when necessary. The Company monitors its investments for other-than-temporary losses by considering current factors, including the economic environment, market conditions, operational performance and other specific factors relating to the business underlying the investment, reductions in carrying values when necessary and the Company's ability and intent to hold the investment for a period of time which may be sufficient for anticipated recovery in the market. Any other-than-temporary loss is reported under "Interest and other income (expense), net" in the consolidated statement of operations. During the years ended December 31, 2019 and 2018, the Company recorded no other-than-temporary impairment charges on its investments.

During the second half of 2018, the Company made an investment in a non-marketable equity security of a private company. This equity investment is accounted for under the equity method of accounting, and the Company accounts for its equity method share of the income (loss) on a quarterly basis. As of December 31, 2019, the Company's 25.0% ownership percentage amounted to a \$3.6 million equity interest in this equity investment. As of December 31, 2018, the Company's 27.7% ownership percentage amounted to a \$3.3 million equity interest in this equity investment. The Company's equity interest was included in other assets on the accompanying consolidated balance sheets. The Company recorded immaterial amounts in its consolidated statements of operations representing its share of the investee's loss for the years ended December 31, 2019 and 2018.

During the years ended December 31, 2019 and 2018, there were no transfers of financial instruments between different categories of fair value.

The following table presents the financial instruments that are not carried at fair value but which require fair value disclosure as of December 31, 2019 and 2018:

(in thousands)	As of December 31, 2019			As of December 31, 2018		
	Face Value	Carrying Value	Fair Value	Face Value	Carrying Value	Fair Value
1.375% Convertible Senior Notes due 2023	\$ 172,500	\$ 148,788	\$ 174,239	\$ 172,500	\$ 141,934	\$ 150,075

The fair value of the convertible notes at each balance sheet date is determined based on recent quoted market prices for these notes which is a level 2 measurement. As discussed in Note 12, "Convertible Notes," as of December 31, 2019, the convertible notes are carried at their face value of \$172.5 million, less any unamortized debt discount and unamortized debt

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

issuance costs. The carrying value of other financial instruments, including accounts receivable, accounts payable and other liabilities, approximates fair value due to their short maturities.

Information regarding the Company's goodwill and long-lived assets balances are disclosed in Note 6, "Intangible Assets and Goodwill."

**10. Leases**

On July 8, 2019, the Company entered into a definitive triple net space lease agreement with 237 North First Street Holdings, LLC (the "Landlord"), whereby the Company will lease approximately 90,000 square feet of office space located at 4453 North First Street in San Jose, California (the "Lease"). The office space will serve as the Company's corporate headquarters and include engineering, marketing and administrative functions. The Company expects to move to the new premises during the summer of 2020. The Lease has a term of 128 months from the commencement date in October 2019. The starting rent of the Lease is approximately \$3.26 per square foot on a triple net basis. The annual base rent increases each year to certain fixed amounts over the course of the term as set forth in the Lease and will be \$4.38 per square foot in the eleventh year. In addition to the base rent, the Company will also pay operating expenses, insurance expenses, real estate taxes, and a management fee. The Lease also allows for an option to expand, wherein the Company has the right of first refusal to rent additional space in the building. The Company has a one-time option to extend the Lease for a period of 60 months and may elect to terminate the Lease, via written notice to the Landlord, in the event the office space is damaged or destroyed. Total future required payments under the Lease are approximately \$41 million. Pursuant to the terms of the lease, the landlord agreed to reimburse the Company up to \$8.9 million, related to a tenant improvement allowance. The lease of the Company's current Sunnyvale, California headquarters expires on June 30, 2020.

Refer to Note 13, "Commitments and Contingencies," for additional information regarding the Company's leases.

The Company used its incremental borrowing rate to measure the lease liabilities at the adoption date for its existing operating leases that commenced prior to January 1, 2019 which was based on the remaining lease term and remaining lease payments for such leases. On an ongoing basis, as most of the Company's leases do not provide an implicit rate, the Company will use its incremental borrowing rate based on the information available at commencement date in determining the present value of lease payments. The Company will use the implicit rate when readily determinable. Refer to Note 3, "Recent Accounting Pronouncements" for additional information regarding the adoption of the New Leasing Standard on January 1, 2019.

The table below reconciles the undiscounted cash flows for the first five years and total of the remaining years to the operating lease liabilities recorded on the consolidated balance sheet as of December 31, 2019 (in thousands):

Years ending December 31,	Amount
2020	\$ 7,926
2021	8,602
2022	7,381
2023	4,618
2024	3,977
Thereafter	23,314
<b>Total minimum lease payments</b>	<b>55,818</b>
Less: amount of lease payments representing interest	(9,572)
<b>Present value of future minimum lease payments</b>	<b>46,246</b>
Less: current obligations under leases	(6,357)
<b>Long-term lease obligations</b>	<b>\$ 39,889</b>

As of December 31, 2019, the weighted-average remaining lease term for the Company's operating leases was 7.9 years, and the weighted-average discount rate used to determine the present value of the Company's operating leases was 4.2%.

Operating lease costs included in research and development and selling, general and administrative costs on the statement of operations were \$9.6 million for the year ended December 31, 2019. Rent expense, recorded under accounting guidance in

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

effect prior to January 1, 2019 when the New Leasing Standard became effective for the Company, was approximately \$5.2 million and \$4.4 million for the years ended December 31, 2018 and 2017, respectively.

Cash paid for amounts included in the measurement of operating lease liabilities was \$10.4 million for the year ended December 31, 2019.

**11. Balance Sheet Details*****Inventories***

Inventories consist of the following:

	As of December 31,	
	2019	2018
	(In thousands)	
Raw materials	\$ 3,997	\$ 2,583
Work in process	1,455	145
Finished goods	4,634	4,044
Total	<u>\$ 10,086</u>	<u>\$ 6,772</u>

***Property, Plant and Equipment, net***

Property, plant and equipment, net is comprised of the following:

	As of December 31,	
	2019	2018
	(In thousands)	
Building (1)	\$ —	\$ 40,320
Computer software	50,453	26,127
Computer equipment	36,761	37,223
Furniture and fixtures	16,136	16,286
Leasehold improvements	10,316	10,824
Machinery	10,446	9,097
Construction in progress	1,691	429
Property, plant and equipment, gross	<u>125,803</u>	<u>140,306</u>
Less accumulated depreciation and amortization	<u>(81,089)</u>	<u>(83,278)</u>
Property, plant and equipment, net	<u>\$ 44,714</u>	<u>\$ 57,028</u>

(1) Refer to Note 3, "Recent Accounting Pronouncements" and Note 13, "Commitments and Contingencies," for a discussion related to the Company's facility leases due to the adoption of the New Leasing Standard on January 1, 2019.

Depreciation expense for the years ended December 31, 2019, 2018 and 2017 was \$15.2 million, \$10.7 million and \$13.3 million, respectively.

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**
**Accumulated Other Comprehensive Gain (Loss)**

Accumulated other comprehensive gain (loss) is comprised of the following:

	As of December 31,	
	2019	2018
	(In thousands)	
Foreign currency translation adjustments	\$ 105	\$ (10,040)
Unrealized loss on available-for-sale securities, net of tax	(197)	(251)
Total	<u>\$ (92)</u>	<u>\$ (10,291)</u>

**12. Convertible Notes**

The Company's convertible notes are shown in the following table:

(Dollars in thousands)	As of December 31, 2019	As of December 31, 2018
1.375% Convertible Senior Notes due 2023	\$ 172,500	\$ 172,500
Unamortized discount - 2023 Notes	(22,163)	(28,517)
Unamortized debt issuance costs - 2023 Notes	(1,549)	(2,049)
Total convertible notes	\$ 148,788	\$ 141,934
Less current portion	—	—
Total long-term convertible notes	<u>\$ 148,788</u>	<u>\$ 141,934</u>

**1.375% Convertible Senior Notes due 2023.** On November 17, 2017, the Company issued \$172.5 million aggregate principal amount of 1.375% convertible senior notes pursuant to an indenture (the "2023 Indenture"), by and between the Company and U.S. Bank National Association, as trustee (the "Trustee"). In accounting for the 2023 Notes at issuance, the Company separated the 2023 Notes into liability and equity components pursuant to the accounting standards for convertible debt instruments that may be fully or partially settled in cash upon conversion. As of the date of issuance, the Company determined that the liability component of the 2023 Notes was \$137.3 million and the equity component of the 2023 Notes was \$35.2 million. The fair value of the liability component was estimated using an interest rate for a similar instrument without a conversion feature. The unamortized discount related to the 2023 Notes is being amortized to interest expense using the effective interest method over approximately five years.

The 2023 Notes bear interest at a rate of 1.375% per year, payable semi-annually on February 1 and August 1 of each year, beginning on August 1, 2018. The 2023 Notes will mature on February 1, 2023, unless earlier repurchased by the Company or converted pursuant to their terms.

The Company incurred transaction costs of approximately \$3.3 million related to the issuance of 2023 Notes. In accounting for these costs, the Company allocated the costs to the liability and equity components in proportion to the allocation of proceeds from the issuance of the 2023 Notes to such components. Transaction costs allocated to the liability component of \$2.6 million are netted against the carrying amount of the liability in the consolidated balance sheet and are amortized to interest expense using the effective interest method over the term of the 2023 Notes. The transaction costs allocated to the equity component of \$0.7 million were recorded as additional paid-in capital.

The initial conversion rate of the 2023 Notes is 52.8318 shares of the Company's common stock per \$1,000 principal amount of 2023 Notes (which is equivalent to an initial conversion price of approximately \$18.93 per share). The conversion rate will be subject to adjustment upon the occurrence of certain specified events but will not be adjusted for accrued and unpaid interest. In addition, upon the occurrence of a make-whole fundamental change (as defined in the 2023 Indenture), the Company will, in certain circumstances, increase the conversion rate by a number of additional shares for a holder that elects to convert its 2023 Notes in connection with such make-whole fundamental change.

Prior to the close of business on the business day immediately preceding November 1, 2022, the 2023 Notes will be convertible only under the following circumstances: (1) during any calendar quarter commencing after March 31, 2018, and only during such calendar quarter, if the last reported sale price of the common stock for at least 20 trading days (whether or not consecutive) in a period of 30 consecutive trading days ending on the last trading day of the immediately preceding calendar quarter is more than 130% of the conversion price on each applicable trading day; (2) during the five business day period after

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

any five consecutive trading day period in which, for each trading day of that period, the trading price per \$1,000 principal amount of 2023 Notes for such trading day was less than 98% of the product of the last reported sale price of the common stock and the conversion rate on each such trading day; (3) upon the occurrence of specified distributions to holders of our common stock; or (4) upon the occurrence of specified corporate transactions. On or after November 1, 2022, until the close of business on the second scheduled trading day immediately preceding the maturity date, holders of the 2023 Notes may convert all or a portion of their 2023 Notes regardless of the foregoing conditions. Upon conversion, the Company will pay cash up to the aggregate principal amount of the 2023 Notes to be converted and pay or deliver, as the case may be, cash, shares of common stock or a combination of cash and shares of common stock, at the Company's election, in respect of the remainder, if any, of its conversion obligation in excess of the aggregate principal amount of the 2023 Notes being converted.

The Company may not redeem the 2023 Notes prior to the maturity date and no sinking fund is provided for the 2023 Notes. Upon the occurrence of a fundamental change (as defined in the 2023 Indenture) prior to the maturity date, holders may require the Company to repurchase all or a portion of the 2023 Notes for cash at a price equal to 100% of the principal amount of the 2023 Notes to be repurchased, plus any accrued and unpaid interest to, but excluding, the fundamental change repurchase date.

The 2023 Notes are the Company's senior unsecured obligations and will rank senior in right of payment to any of the Company's indebtedness that is expressly subordinated in right of payment to the notes; equal in right of payment with the Company's existing and future liabilities that are not so subordinated, including its "2018 Notes"; effectively junior in right of payment to any of the Company's secured indebtedness to the extent of the value of the assets securing such indebtedness; and structurally junior to any existing and future indebtedness and other liabilities (including trade payables, but excluding intercompany obligations and liabilities) and any preferred stock of subsidiaries of the Company.

The following events are considered "events of default" with respect to the 2023 Notes, which may result in the acceleration of the maturity of the 2023 Notes:

- (1) the Company defaults in the payment when due of any principal of any of the 2023 Notes at maturity or upon exercise of a repurchase right or otherwise;
- (2) the Company defaults in the payment of any interest, including additional interest, if any, on any of the 2023 Notes, when the interest becomes due and payable, and continuance of such default for a period of 30 days;
- (3) failure by the Company to comply with its obligation to convert the 2023 Notes in accordance with the 2023 Indenture upon exercise of a holder's conversion right;
- (4) failure by the Company to give a fundamental change notice or notice of a specified corporate transaction when due with respect to the Notes;
- (5) failure by the Company to comply with any of its other agreements contained in the 2023 Notes or the 2023 Indenture for a period of 60 days after written notice from the Trustee or the holders of at least 25% in aggregate principal amount of the Notes then outstanding has been received;
- (6) failure by the Company to pay when due the principal of, or acceleration of, any indebtedness for money borrowed by the Company or any of its Material Subsidiaries (as defined in the 2023 Indenture) in excess of \$40.0 million principal amount, if such indebtedness is not discharged, or such acceleration is not annulled, for a period of 30 days after written notice to the Company by the Trustee or to the Company and the Trustee by holders of 25% or more in aggregate principal amount of the 2023 Notes then outstanding in accordance with the 2023 Indenture; and
- (7) certain events of bankruptcy, insolvency or reorganization of the Company or any of its Material Subsidiaries (as defined in the Indenture).

If such an event of default, other than an event of default described in clause (7) above with respect to the Company, occurs and is continuing, the Trustee by written notice to the Company, or the holders of at least 25% in aggregate principal amount of the outstanding Notes by notice to the Company and the Trustee, may, and the Trustee at the request of such holders shall, declare 100% of the principal of and accrued and unpaid interest, if any, on all the Notes then outstanding to be due and payable. If an event of default described in clause (7) above occurs, 100% of the principal of and accrued and unpaid interest on the Notes then outstanding will automatically become due and payable.

**Note Hedges and Warrants.** On November 14, 2017 and November 16, 2017, in connection with the 2023 Notes, the Company entered into privately negotiated convertible note hedge transactions (the "Convertible Note Hedge Transactions") with respect to the Company's common stock, par value \$0.001 per share (the "Common Stock"), with certain bank

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

counterparties (the “Counterparties”). The Company paid an aggregate amount of approximately \$33.5 million to the Counterparties for the Convertible Note Hedge Transactions. The Convertible Note Hedge Transactions cover, subject to anti-dilution adjustments substantially similar to those in the 2023 Notes, approximately 9.1 million shares of Common Stock, the same number of shares underlying the 2023 Notes, at a strike price that corresponds to the initial conversion price of the 2023 Notes, and are exercisable upon conversion of the 2023 Notes. The Convertible Note Hedge Transactions will expire upon the maturity of the 2023 Notes. The Convertible Note Hedge Transactions are intended to reduce the potential economic dilution upon conversion of the 2023 Notes. The Convertible Note Hedge Transactions are separate transactions and are not part of the terms of the 2023 Notes. Holders of the 2023 Notes will not have any rights with respect to the Convertible Note Hedge Transactions.

In addition, concurrently with entering into the Convertible Note Hedge Transactions, the Company separately entered into privately negotiated warrant transactions, whereby the Company sold to the Counterparties warrants (the “Warrants”) to acquire, collectively, subject to anti-dilution adjustments, approximately 9.1 million shares of the Common Stock at an initial strike price of approximately \$23.30 per share, which represents a premium of 60% over the last reported sale price of the Common Stock of \$14.56 on November 14, 2017. The Company received aggregate proceeds of approximately \$23.2 million from the sale of the Warrants to the Counterparties. The Warrants are separate transactions and are not part of the 2023 Notes or Convertible Note Hedge Transactions. Holders of the 2023 Notes and Convertible Note Hedge Transactions will not have any rights with respect to the Warrants.

The amounts paid and received for the Convertible Note Hedge Transactions and Warrants have been recorded in additional paid-in capital in the consolidated balance sheets. The fair value of the Convertible Note Hedge Transactions and Warrants are not re-measured through earnings each reporting period. The amounts paid for the Convertible Note Hedge Transactions are tax deductible expenses, while the proceeds received from the Warrants are not taxable.

**Impact to Earnings per Share.** The 2023 Notes will have no impact to diluted earnings per share until the average price of our Common Stock exceeds the conversion price of \$18.93 per share because the principal amount of the 2023 Notes is required to be settled in cash upon conversion. Under the treasury stock method, in periods the Company reports net income, the Company is required to include the effect of additional shares that may be issued under the 2023 Notes when the price of the Company’s Common Stock exceeds the conversion price. Under this method, the cumulative dilutive effect of the 2023 Notes would be approximately 9.1 million shares if the average price of the Company’s Common Stock is \$18.93. However, upon conversion, there will be no economic dilution from the 2023 Notes, as exercise of the Convertible Note Hedge Transactions eliminates any dilution from the 2023 Notes that would have otherwise occurred when the price of the Company’s Common Stock exceeds the conversion price. The Convertible Note Hedge Transactions are required to be excluded from the calculation of diluted earnings per share, as they would be anti-dilutive under the treasury stock method.

The warrants will have a dilutive effect when the average share price exceeds the warrant’s strike price of \$23.30 per share. However, upon conversion, the Convertible Note Hedge Transactions would neutralize the dilution from the 2023 Notes so that there would only be dilution from the warrants.

**1.125% Convertible Senior Notes due 2018.** On August 16, 2013, the Company issued \$138.0 million aggregate principal amount of 1.125% convertible senior notes pursuant to an indenture (the “2018 Indenture”) by and between the Company and U.S. Bank, National Association as the trustee. The 2018 Notes matured on August 15, 2018 (the “Maturity Date”), subject to earlier repurchase or conversion. In accounting for the 2018 Notes at issuance, the Company separated the 2018 Notes into liability and equity components pursuant to the accounting standards for convertible debt instruments that may be fully or partially settled in cash upon conversion. As of the date of issuance, the Company determined that the liability component of the 2018 Notes was \$107.7 million and the equity component of the 2018 Notes was \$30.3 million. The fair value of the liability component was estimated using an interest rate for a similar instrument without a conversion feature. The unamortized discount related to the 2018 Notes was amortized to interest expense using the effective interest method over five years through August 2018.

The Company paid cash interest at an annual rate of 1.125% of the principal amount at issuance, semi-annually in arrears on February 15 and August 15 of each year, commencing on February 15, 2014. The Company incurred transaction costs of approximately \$3.6 million related to the issuance of 2018 Notes. In accounting for these costs, the Company allocated the costs to the liability and equity components in proportion to the allocation of proceeds from the issuance of the 2018 Notes to such components. Transaction costs allocated to the liability component of \$2.8 million were recorded as deferred offering costs and were amortized to interest expense using the effective interest method over five years (the expected term of the debt). The transaction costs allocated to the equity component of \$0.8 million were recorded as additional paid-in capital. The 2018 Notes were the Company’s general unsecured obligations, ranking equally in right of payment to all of Rambus’ existing and future

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

senior unsecured indebtedness, including the 2023 Notes, and senior in right of payment to any of the Company's future indebtedness that is expressly subordinated to the 2018 Notes.

The 2018 Notes were convertible into shares of the Company's common stock at an initial conversion rate of 82.8329 shares of common stock per \$1,000 principal amount of 2018 Notes, subject to adjustment in certain events. This is equivalent to an initial conversion price of approximately \$12.07 per share of common stock. Holders may have surrendered their 2018 Notes for conversion prior to the close of business day immediately preceding May 15, 2018 only under the following circumstances: (1) during any calendar quarter commencing after the calendar quarter ending on December 31, 2013 (and only during such calendar quarter), if the closing sale price of the common stock for 20 or more trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on the last trading day of the immediately preceding calendar quarter is more than 130% of the conversion price per share of common stock on the last trading day of the preceding calendar quarter; (2) during the five business day period after any five consecutive trading day period (the "measurement period") in which the trading price (as defined below) per \$1,000 principal amount of notes for each trading day of the measurement period was less than 98% of the product of the closing sale price of the Company's common stock and the conversion rate on each such trading day; (3) upon the occurrence of specified distributions to holders of the Company's common stock; or (4) upon the occurrence of specified corporate events. On or after May 15, 2018 until the close of business on the second scheduled trading day immediately preceding the Maturity Date, holders may have converted their notes at any time, regardless of the foregoing circumstances. If a holder elected to convert its 2018 Notes in connection with certain fundamental changes, as that term is defined in the 2018 Indenture, that occurred prior to the Maturity Date, the Company would have, in certain circumstances, increased the conversion rate for 2018 Notes converted in connection with such fundamental changes by a specified number of shares of common stock.

Upon conversion of the 2018 Notes, the Company will have paid cash up to the aggregate principal amount of the notes to have been converted and paid or delivered, as the case may be, cash, shares of the Company's common stock or a combination of cash and shares of the Company's common stock, at the Company's election, in respect of the remainder, if any, of the Company's conversion obligation in excess of the aggregate principal amount of the notes converted, as specified in the Indenture.

The Company may not have redeemed the 2018 Notes at its option prior to the Maturity Date, and no sinking fund was provided for the 2018 Notes.

Upon the occurrence of a fundamental change, holders may have required the Company to repurchase for cash all or any portion of their notes at a repurchase price equal to 100% of the principal amount of the notes to be repurchased, plus accrued and unpaid interest to, but excluding, the fundamental change repurchase date.

The following events are considered events of default under the Indenture which may have resulted in the acceleration of the maturity of the 2018 Notes:

- (1) default in the payment when due of any principal of any of the notes at maturity, upon redemption or upon exercise of a repurchase right or otherwise;
- (2) default in the payment of any interest, including additional interest, if any, on any of the notes, when the interest became due and payable, and continuance of such default for a period of 30 days;
- (3) the Company's failure to deliver cash or cash and shares of the Company's common stock (including any additional shares deliverable as a result of a conversion in connection with a make-whole fundamental change, as defined in the Indenture) when required by the Indenture;
- (4) default in the Company's obligation to provide notice of the occurrence of a fundamental change, make-whole fundamental change or distribution to holders of the Company's common stock when required by the Indenture;
- (5) the Company's failure to comply with any of the Company's other agreements in the notes or the 2018 Indenture (other than those referred to in clauses (1) through (4) above) for 60 days after the Company's receipt of written notice to the Company of such default from the trustee or to the Company and the trustee of such default from holders of not less than 25% in aggregate principal amount of the 2018 Notes then outstanding;
- (6) the Company's failure to pay when due the principal of, or acceleration of, any indebtedness for money borrowed by the Company or any of the Company's material subsidiaries in excess of \$40 million principal amount, if such indebtedness is not discharged, or such acceleration is not annulled, for a period of 30 days after written notice thereof is delivered to the Company by the trustee or to the Company and the trustee by the holders of 25% or more in aggregate principal amount of the notes then

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

outstanding without such failure to pay having been cured or waived, such acceleration having been rescinded or annulled (if applicable) and such indebtedness not having been paid or discharged; and

(7) certain events of bankruptcy, insolvency or reorganization relating to the Company or any of the Company's material subsidiaries (as defined in the Indenture).

If an event of default, other than an event of default described in clause (7) above with respect to the Company, occurred and was continuing, either the trustee or the holders of at least 25% in aggregate principal amount of the notes then outstanding may have declared the principal amount of, and accrued and unpaid interest, including additional interest, if any, on the notes then outstanding to be immediately due and payable. If an event of default described in clause (7) above occurred with respect to the Company, the principal amount of and accrued and unpaid interest, including additional interest, if any, on the notes will have automatically become immediately due and payable.

During the third quarter of 2018, the Company paid upon maturity the remaining \$81.2 million in aggregate principal amount of the 2018 Notes. Additionally, the Company delivered 423,873 shares of the Company's common stock as settlement related to the in-the-money conversion feature of the 2018 Notes at maturity. The value of the shares delivered was approximately \$5.0 million.

During the fourth quarter of 2017, the Company repurchased \$56.8 million aggregate principal amount of the 2018 Notes for a price of \$72.3 million which resulted in a loss on extinguishment of debt of \$1.1 million and \$16.6 million being recorded in stockholders' equity. To determine the impact of the repurchase on stockholders' equity, the Company first determined the fair value of the liability component of the repurchased 2018 Notes immediately prior to the repurchase. The Company then reduced the amount paid for the repurchased 2018 Notes by the fair value of the liability component and allocated the remaining amount paid to the equity component, which resulted in a reduction to stockholders' equity.

Additional paid-in capital at December 31, 2019 and December 31, 2018 includes \$111.3 million and \$111.3 million, respectively, for each year related to the equity component of the notes.

As of December 31, 2019, none of the conversion conditions were met related to the 2023 Notes. Therefore, the classification of the entire equity component for the 2023 Notes in permanent equity is appropriate as of December 31, 2019.

Interest expense related to the notes for the years ended December 31, 2019, 2018 and 2017 was as follows:

	Years Ended December 31,		
	2019	2018	2017
	(in thousands)		
2023 Notes coupon interest at a rate of 1.375%	\$ 2,372	\$ 2,372	\$ 290
2023 Notes amortization of discount and debt issuance cost at an additional effective interest rate of 4.9%	6,854	6,486	768
2018 Notes coupon interest at a rate of 1.125%	—	377	1,488
2018 Notes amortization of discount and debt issuance cost at an additional effective interest rate of 5.5%	—	2,756	6,810
Total interest expense on convertible notes	<u>\$ 9,226</u>	<u>\$ 11,991</u>	<u>\$ 9,356</u>

**13. Commitments and Contingencies**

On December 15, 2009, the Company entered into a lease agreement for approximately 125,000 square feet of office space located at 1050 Enterprise Way in Sunnyvale, California commencing on July 1, 2010 and expiring on June 30, 2020. The office space is used for the Company's corporate headquarters, as well as engineering, sales, marketing and administrative operations and activities. The annual base rent for these leases includes certain rent abatement and increases annually over the lease term. The Company has two options to extend the lease for a period of 60 months each and a one-time option to terminate the lease after 84 months in exchange for an early termination fee. Pursuant to the terms of the lease, the landlord agreed to reimburse the Company approximately \$9.1 million, which was received by the year ended December 31, 2011. On November 4, 2011, to better plan for future expansion, the Company entered into an amended lease for its Sunnyvale facility for approximately an additional 31,000 square-foot space commencing on March 1, 2012 and expiring on June 30, 2020. Additionally, a tenant improvement allowance to be provided by the landlord was approximately \$1.7 million. On



**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

September 29, 2012, the Company entered into a second amended Sunnyvale lease to reduce the tenant improvement allowance to approximately \$1.5 million. On January 31, 2013, the Company entered into a third amendment to the Sunnyvale lease to surrender the 31,000 square-foot space from the first amendment back to the landlord and recorded a total charge of \$2.0 million related to the surrender of the amended lease.

Refer to Note 10, "Leases," for information regarding the Company's lease agreement for a new corporate headquarters in San Jose, California.

On March 8, 2010, the Company entered into a lease agreement for approximately 25,000 square feet of office and manufacturing areas, located in Brecksville, Ohio. The office area was used for the lighting division's engineering activities while the manufacturing area was used for the manufacture of prototypes. This lease was amended on September 29, 2011 to expand the facility to approximately 51,000 total square feet and the amended lease expired on July 31, 2019. The Company had an option to extend the lease for a period of 60 months. During 2018, the Company closed its lighting division and manufacturing operations in Brecksville, Ohio, and sold the related equipment. Refer to Note 18, "Restructuring and Other Charges," for additional details.

The Company undertook a series of structural improvements to ready the Sunnyvale and Brecksville facilities for its use. Since these improvements were considered structural in nature and the Company was responsible for any cost overruns, for accounting purposes, the Company was treated in substance as the owner of each construction project during the construction period. At the completion of each construction, the Company concluded that it retained sufficient continuing involvement to preclude de-recognition of the building under the FASB authoritative guidance applicable to the sale leasebacks of real estate. As such, prior to January 1, 2019 when the New Leasing Standard became effective for the Company, the Company accounted for the buildings as owned real estate and recorded an imputed financing obligation for its obligations to the legal owners. Upon adoption of the New Leasing Standard, these leases were treated as operating leases.

Prior to the adoption of the New Leasing Standard, monthly lease payments on these facilities were allocated between the land element of the lease (which was accounted for as an operating lease) and the imputed financing obligation. The imputed financing obligation was amortized using the effective interest method and the interest rate was determined in accordance with the requirements of sale leaseback accounting. For the years ended December 31, 2018 and 2017, the Company recognized in its Consolidated Statements of Operations \$4.3 million and \$4.4 million, respectively, of interest expense in connection with the imputed financing obligation on these facilities. As of December 31, 2018, the imputed financing obligation balance in connection with these facilities was \$37.6 million, which was primarily classified under long-term imputed financing obligation.

As of December 31, 2018, the Company had capitalized \$40.3 million in property, plant and equipment based on the estimated fair value of the portion of the pre-construction shell, construction costs related to the build-out of the facilities and capitalized interest during construction period.

On November 17, 2017, the Company entered into an Indenture with U.S. Bank, National Association, as trustee, relating to the issuance by the Company of \$172.5 million aggregate principal amount of the 2023 Notes. The aggregate principal amount of the 2023 Notes as of December 31, 2019 was \$172.5 million, offset by unamortized debt discount and unamortized debt issuance costs of \$22.2 million and \$1.5 million, respectively, on the accompanying consolidated balance sheets. The unamortized discount related to the 2023 Notes is being amortized to interest expense using the effective method over the remaining 3.1 years until maturity of the 2023 Notes on February 1, 2023. Refer to Note 12, "Convertible Notes," for additional details.

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

As of December 31, 2019, the Company's material contractual obligations were as follows (in thousands):

	Total	2020	2021	2022	2023	2024
<b>Contractual obligations (1) (2)</b>						
Other contractual obligations	\$ 468	\$ 234	\$ 234	\$ —	\$ —	\$ —
Software licenses (3)	31,530	13,525	11,977	6,028	—	—
Acquisition retention bonuses (4)	9,998	3,499	3,499	3,000	—	—
Convertible notes	172,500	—	—	—	172,500	—
Interest payments related to convertible notes	8,308	2,372	2,372	2,372	1,192	—
<b>Total</b>	<b>\$ 222,804</b>	<b>\$ 19,630</b>	<b>\$ 18,082</b>	<b>\$ 11,400</b>	<b>\$ 173,692</b>	<b>\$ —</b>

- (1) The above table does not reflect possible payments in connection with unrecognized tax benefits of approximately \$24.6 million including \$22.8 million recorded as a reduction of long-term deferred tax assets and \$1.8 million in long-term income taxes payable, as of December 31, 2019. As noted below in Note 19, "Income Taxes," although it is possible that some of the unrecognized tax benefits could be settled within the next 12 months, the Company cannot reasonably estimate the outcome at this time.
- (2) For the Company's lease commitments as of December 31, 2019, refer to Note 10, "Leases."
- (3) The Company has commitments with various software vendors for agreements generally having terms longer than one year.
- (4) In connection with the acquisitions of Northwest Logic in August 2019 and the Secure Silicon IP and Protocols business in December 2019, the Company is obligated to pay retention bonuses to certain employees subject to certain eligibility and acceleration provisions including the condition of employment.

Refer to Note 3, "Recent Accounting Pronouncements" and Note 10, "Leases," for a discussion related to the Company's facility leases due to the adoption of the New Leasing Standard on January 1, 2019.

Additionally, the Company's lease-related obligations as of December 31, 2018, as determined under the prior accounting standard, were as follows (in thousands):

	Total	2019	2020	2021	2022	2023
<b>Lease-related obligations</b>						
Imputed financing obligation (1)	\$ 8,081	\$ 5,677	\$ 2,404	\$ —	\$ —	\$ —
Leases	19,415	5,333	4,883	4,960	3,271	968
<b>Total</b>	<b>\$ 27,496</b>	<b>\$ 11,010</b>	<b>\$ 7,287</b>	<b>\$ 4,960</b>	<b>\$ 3,271</b>	<b>\$ 968</b>

- (1) With respect to the imputed financing obligation, the main components of the difference between the amount reflected in the table above and the amount reflected on the consolidated balance sheet are the interest on the imputed financing obligation and the estimated common area expenses over the future periods. The amount includes the amended Ohio lease and the amended Sunnyvale lease.

**Indemnifications**

From time to time, the Company indemnifies certain customers as a necessary means of doing business. Indemnification covers customers for losses suffered or incurred by them as a result of any patent, copyright, or other intellectual property infringement or any other claim by any third party arising as result of the applicable agreement with the Company. The Company generally attempts to limit the maximum amount of indemnification that the Company could be required to make under these agreements to the amount of fees received by the Company, however, this is not always possible. The fair value of the liability as of December 31, 2019 and 2018 was not material.

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)****14. Equity Incentive Plans and Stock-Based Compensation***Equity Incentive Plans*

The Company has three equity incentive plans under which grants are currently outstanding: the 2006 Equity Incentive Plan (the “2006 Plan”), the 2015 Equity Incentive Plan (the “2015 Plan”) and the 2019 Inducement Equity Incentive Plan (the “2019 Inducement Plan”). On April 23, 2015, the Company’s stockholders approved the 2015 Plan, which replaced the 2006 Plan. Additionally, in the third quarter of 2019, the Company adopted the 2019 Inducement Plan and, subject to the adjustment provisions of the 2019 Inducement Plan, reserved 400,000 shares of the Company’s common stock for issuance pursuant to equity awards granted under the 2019 Inducement Plan. The 2015 Plan and 2019 Inducement Plan were the Company’s only plans for providing stock-based incentive awards to eligible employees, executive officers, non-employee directors and consultants as of December 31, 2019. Grants under all plans typically have a requisite service period of 60 months or 48 months, have straight-line vesting schedules and expire not more than 10 years from date of grant. No further awards will be made under the 2006 Plan, but the 2006 Plan will continue to govern awards previously granted under it. In addition, any shares subject to stock options or other awards granted under the 2006 Plan that on or after the effective date of the 2015 Plan are forfeited, cancelled, exchanged or surrendered or terminate under the 2006 Plan will become available for grant under the 2015 Plan. The Board will periodically review actual share consumption under the 2015 Plan and may make a request for additional shares as needed.

The 2019 Inducement Plan provides for the grant of equity-based awards, including nonstatutory stock options, restricted stock units, restricted stock, stock appreciation rights, performance shares and performance units, and its terms are substantially similar to the Company’s 2015 Plan. However, awards under the 2019 Inducement Plan may only be granted to individuals who previously have not been employees or non-employee directors of the Company (or who will become employed following a bona fide period of non-employment or service with the Company), as an inducement material to the individuals’ entry into employment with the Company, or, to the extent permitted by Rule 5635(c)(3) of the Nasdaq Listing Rules, in connection with a merger or acquisition.

A summary of shares available for grant under the Company’s plans is as follows:

	<b>Shares Available for Grant</b>
Total shares available for grant as of December 31, 2016	7,305,368
Stock options granted	(558,426)
Stock options forfeited	1,978,042
Nonvested equity stock and stock units granted (1) (2)	(5,007,947)
Nonvested equity stock and stock units forfeited (1)	1,334,110
Total shares available for grant as of December 31, 2017	5,051,147
Increase in shares approved for issuance	5,500,000
Stock options granted	(711,479)
Stock options forfeited	877,803
Nonvested equity stock and stock units granted (1) (3)	(4,993,802)
Nonvested equity stock and stock units forfeited (1)	4,350,377
Total shares available for grant as of December 31, 2018	10,074,046
Increase in shares approved for issuance (5)	400,000
Stock options granted	(80,000)
Stock options forfeited	426,960
Nonvested equity stock and stock units granted (1) (4)	(7,261,845)
Nonvested equity stock and stock units forfeited (1)	3,267,702
Total shares available for grant as of December 31, 2019	<u>6,826,863</u>

- (1) For purposes of determining the number of shares available for grant under the 2015 Plan against the maximum number of shares authorized, each restricted stock granted reduces the number of shares available for grant by 1.5 shares and each restricted stock forfeited increases shares available for grant by 1.5 shares.

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

- (2) Amount includes 0.4 million shares that had been reserved for potential future issuance related to certain performance unit awards discussed under the section titled “Nonvested Equity Stock and Stock Units” below.
- (3) Amount includes 0.5 million shares that have been reserved for potential future issuance related to certain performance unit awards discussed under the section titled “Nonvested Equity Stock and Stock Units” below.
- (4) Amount includes 1.0 million shares that have been reserved for potential future issuance related to certain performance unit awards discussed under the section titled “Nonvested Equity Stock and Stock Units” below.
- (5) Shares were reserved under the 2019 Inducement Plan adopted in the third quarter of 2019.

**General Stock Option Information**

The following table summarizes stock option activity under the Company’s equity incentive plans for the years ended December 31, 2019, 2018 and 2017 and information regarding stock options outstanding, exercisable, and vested and expected to vest as of December 31, 2019:

	Options Outstanding		Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value
	Number of Shares	Weighted Average Exercise Price per Share		
(Dollars in thousands, except per share amounts)				
Outstanding as of December 31, 2016	7,008,833	\$ 9.34		
Options granted	558,426	\$ 12.95		
Options exercised	(1,278,856)	\$ 7.34		
Options forfeited	(1,978,042)	\$ 10.68		
Outstanding as of December 31, 2017	4,310,361	\$ 9.78		
Options granted	711,479	\$ 12.84		
Options exercised	(908,146)	\$ 6.70		
Options forfeited	(877,803)	\$ 13.73		
Outstanding as of December 31, 2018	3,235,891	\$ 10.25		
Options granted	80,000	\$ 13.25		
Options exercised	(1,249,785)	\$ 7.79		
Options forfeited	(426,960)	\$ 13.71		
Outstanding as of December 31, 2019	1,639,146	\$ 11.37	4.54	\$ 4,631
Vested or expected to vest at December 31, 2019	1,627,218	\$ 11.36	4.49	\$ 4,621
Options exercisable at December 31, 2019	1,319,210	\$ 11.01	3.63	\$ 4,327

**Employee Stock Purchase Plans**

During the years ended December 31, 2019, 2018, and 2017, the Company had one employee stock purchase plan, the 2015 Employee Stock Purchase Plan (“2015 ESPP”). Employees generally will be eligible to participate in the plan if they are employed by Rambus for more than 20 hours per week and more than five months in a fiscal year. The 2015 ESPP provides for six month offering periods, with a new offering period commencing on the first trading day on or after May 1 and November 1 of each year. Under the plans, employees may purchase stock at the lower of 85% of the beginning of the offering period (the enrollment date), or the end of each offering period (the purchase date). Employees generally may not purchase more than the number of shares having a value greater than \$25,000 in any calendar year, as measured at the purchase date.

The Company issued 629,438 shares at a weighted average price of \$8.53 per share during the year ended December 31, 2019. The Company issued 541,395 shares at a weighted average price of \$9.99 per share during the year ended December 31, 2018. The Company issued 615,370 shares at a weighted average price of \$10.47 per share during the year ended December 31, 2017. As of December 31, 2019, 1,665,440 shares under the ESPP remain available for issuance.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

### ***Stock-Based Compensation***

#### *Stock Options*

During the years ended December 31, 2019, 2018 and 2017, Rambus granted 80,000, 711,479 and 558,426 stock options, respectively, with an estimated total grant-date fair value of \$0.3 million, \$3.0 million and \$2.3 million, respectively. During the years ended December 31, 2019, 2018 and 2017, Rambus recorded stock-based compensation related to stock options of \$1.0 million, \$1.7 million and \$2.8 million, respectively.

As of December 31, 2019, there was \$2.0 million of total unrecognized compensation cost, net of expected forfeitures, related to unvested stock-based compensation arrangements granted under the stock option plans. This cost is expected to be recognized over a weighted-average period of 2.3 years. The total fair value of options vested for the years ended December 31, 2019, 2018 and 2017 was \$6.7 million, \$12.9 million and \$17.3 million, respectively.

#### *Employee Stock Purchase Plans*

During the years ended December 31, 2019, 2018 and 2017, Rambus recorded stock-based compensation related to the ESPP of \$1.5 million, \$1.4 million and \$1.7 million, respectively. As of December 31, 2019, there was \$0.7 million of total unrecognized compensation cost related to stock-based compensation arrangements granted under the ESPP. That cost is expected to be recognized over four months.

There were no tax benefits realized as a result of employee stock option exercises, stock purchase plan purchases, and vesting of equity stock and stock units for the years ended December 31, 2019 and December 31, 2018. Tax benefits realized as a result of employee stock option exercises, stock purchase plan purchases, and vesting of equity stock and stock units for the year ended December 31, 2017, calculated in accordance with accounting for share-based payments were \$1.3 million.

#### ***Valuation Assumptions***

Rambus estimates the fair value of stock options using the Black-Scholes-Merton model (“BSM”). The BSM model determines the fair value of stock-based compensation and is affected by Rambus’ stock price on the date of the grant as well as assumptions regarding a number of highly complex and subjective variables. These variables include expected volatility, expected life of the award, expected dividend rate, and expected risk-free rate of return. The assumptions for expected volatility and expected life are the two assumptions that significantly affect the grant date fair value. If actual results differ significantly from these estimates, stock-based compensation expense and Rambus’ results of operations could be materially impacted.

The fair value of stock awards is estimated as of the grant date using the BSM option-pricing model assuming a dividend yield of 0% and the additional weighted-average assumptions as listed in the following tables:

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

The following table presents the weighted-average assumptions used to estimate the fair value of stock options granted that contain only service conditions in the periods presented:

	<b>Stock Option Plan for Years Ended December 31,</b>		
	<b>2019</b>	<b>2018</b>	<b>2017</b>
<b>Stock Option Plan</b>			
Expected stock price volatility	33%-36%	24%-32%	24%-32%
Risk free interest rate	1.4%-1.6%	2.6%-2.8%	1.8%-2.0%
Expected term (in years)	5.1-5.2	5.8	5.3-5.4
Weighted-average fair value of stock options granted	\$4.36	\$4.23	\$4.09
	<b>Employee Stock Purchase Plan for Years Ended December 31,</b>		
	<b>2019</b>	<b>2018</b>	<b>2017</b>
<b>Employee Stock Purchase Plan</b>			
Expected stock price volatility	32%	27%-34%	25%-27%
Risk free interest rate	1.6%-2.4%	2.05%-2.5%	0.98%-1.3%
Expected term (in years)	0.5	0.5	0.5
Weighted-average fair value of purchase rights granted under the purchase plan	\$3.13	\$2.59	\$3.07

*Expected Stock Price Volatility:* Given the volume of market activity in its market traded options, Rambus determined that it would use the implied volatility of its nearest-to-the-money traded options. The Company believes that the use of implied volatility is more reflective of market conditions and a better indicator of expected volatility than historical volatility. If there is not sufficient volume in its market traded options, the Company will use an equally weighted blend of historical and implied volatility.

*Risk-free Interest Rate:* Rambus bases the risk-free interest rate used in the BSM valuation method on implied yield currently available on the U.S. Treasury zero-coupon issues with an equivalent term. Where the expected terms of Rambus' stock-based awards do not correspond with the terms for which interest rates are quoted, Rambus uses an approximation based on rates on the closest term currently available.

*Expected Term:* The expected term of options granted represents the period of time that options granted are expected to be outstanding. The expected term was determined based on historical experience of similar awards, giving consideration to the contractual terms of the stock-based awards, vesting schedules and expectations of future employee behavior. The expected term of ESPP grants is based upon the length of each respective purchase period.

***Nonvested Equity Stock and Stock Units***

The Company grants nonvested equity stock units to officers, directors and employees. For the years ended December 31, 2019, 2018 and 2017, the Company granted nonvested equity stock units totaling 4,233,701, 2,978,558 and 3,075,396 shares, respectively. These awards have a service condition, generally a service period of four years, except in the case of grants to directors, for which the service period is one year. For the years ended December 31, 2019, 2018 and 2017, the fair value of nonvested equity stock units at the date of grant was approximately \$43.0 million, \$38.1 million and \$40.0 million, respectively. During the years ended December 31, 2019, 2018 and 2017, the Company granted performance unit awards to certain Company executive officers with vesting subject to the achievement of certain performance conditions. The ultimate number of performance units that can be earned can range from 0% to 200% of target depending on performance relative to target over the applicable period. The shares earned will vest on the third anniversary of the date of grant. The Company's shares available for grant has been reduced to reflect the shares that could be earned at the maximum target.

For the years ended December 31, 2019, 2018 and 2017, the Company recorded stock-based compensation expense of approximately \$23.9 million, \$18.6 million and \$22.9 million, respectively, related to all outstanding nonvested equity stock grants. Unrecognized stock-based compensation related to all nonvested equity stock grants, net of an estimate of forfeitures, was approximately \$33.2 million at December 31, 2019. This cost is expected to be recognized over a weighted average period of 2.4 years.

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

The following table reflects the activity related to nonvested equity stock and stock units for the three years ended December 31, 2019:

<b><u>Nonvested Equity Stock and Stock Units</u></b>	<b>Shares</b>	<b>Weighted-Average Grant-Date Fair Value</b>
Nonvested at December 31, 2016	4,863,056	\$ 12.33
Granted	3,075,396	\$ 13.02
Vested	(1,216,476)	\$ 12.15
Forfeited	(860,627)	\$ 12.61
Nonvested at December 31, 2017	5,861,349	\$ 12.68
Granted	2,978,558	\$ 12.77
Vested	(1,713,930)	\$ 12.39
Forfeited	(2,266,842)	\$ 12.97
Nonvested at December 31, 2018	4,859,135	\$ 12.71
Granted	4,233,701	\$ 10.17
Vested	(1,896,283)	\$ 12.40
Forfeited	(1,907,070)	\$ 11.33
Nonvested at December 31, 2019	<u>5,289,483</u>	<u>\$ 11.27</u>

**15. Stockholders' Equity*****Share Repurchase Program***

During the year ended December 31, 2019, the Company did not repurchase any shares of its common stock under its share repurchase program.

On January 21, 2015, the Company's Board approved a new share repurchase program authorizing the repurchase of up to an aggregate of 20.0 million shares. Share repurchases under the plan may be made through the open market, established plans or privately negotiated transactions in accordance with all applicable securities laws, rules, and regulations. There is no expiration date applicable to the plan. This new stock repurchase program replaced the previous program approved by the Board in February 2010 and canceled the remaining shares outstanding as part of the previous authorization.

On March 5, 2018, the Company initiated an accelerated share repurchase program with Citibank N.A. The accelerated share repurchase program was part of the broader share repurchase program previously authorized by the Company's Board on January 21, 2015. Under the accelerated share repurchase program, the Company pre-paid to Citibank N.A. the \$50.0 million purchase price for its common stock and, in turn, the Company received an initial delivery of approximately 3.1 million shares of its common stock from Citibank N.A., in the first quarter of 2018, which were retired and recorded as a \$40.0 million reduction to stockholders' equity. The remaining \$10.0 million of the initial payment was recorded as a reduction to stockholders' equity as an unsettled forward contract indexed to the Company's stock. During the second quarter of 2018, the accelerated share repurchase program was completed and the Company received an additional 0.7 million shares of its common stock as the final settlement of the accelerated share repurchase program. There were no other repurchases of the Company's common stock during 2018.

On May 1, 2017, the Company initiated an accelerated share repurchase program with Barclays Bank PLC. The accelerated share repurchase program was part of the broader share repurchase program previously authorized by the Company's Board on January 21, 2015. Under the accelerated share repurchase program, the Company pre-paid to Barclays Bank PLC the \$50.0 million purchase price for its common stock and, in turn, the Company received an initial delivery of approximately 3.2 million shares of its common stock from Barclays Bank PLC, in the second quarter of 2017, which were retired and recorded as a \$40.0 million reduction to stockholders' equity. The remaining \$10.0 million of the initial payment was recorded as a reduction to stockholders' equity as an unsettled forward contract indexed to the Company's stock. The number of shares to be ultimately purchased by the Company was determined based on the volume weighted average price of the common stock during the terms of the transaction, minus an agreed upon discount between the parties. During the fourth quarter of 2017, the

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

accelerated share repurchase program was completed and the Company received an additional 0.8 million shares of its common stock as the final settlement of the accelerated share repurchase program. There were no other repurchases of the Company's common stock during 2017.

As of December 31, 2019, there remained an outstanding authorization to repurchase approximately 3.6 million shares of the Company's outstanding common stock under the current share repurchase program.

The Company records stock repurchases as a reduction to stockholders' equity. The Company records a portion of the purchase price of the repurchased shares as an increase to accumulated deficit when the price of the shares repurchased exceeds the average original proceeds per share received from the issuance of common stock. During the year ended December 31, 2018, the cumulative price of \$37.5 million was recorded as an increase to accumulated deficit.

### *Convertible Note Hedge Transactions*

On November 14, 2017 and November 16, 2017, in connection with the 2023 Notes, the Company entered into the Convertible Note Hedge Transactions with respect to the Common Stock, with the Counterparties. The Company paid an aggregate amount of approximately \$33.5 million to the Counterparties for the Convertible Note Hedge Transactions. The Convertible Note Hedge Transactions cover, subject to anti-dilution adjustments substantially similar to those in the 2023 Notes, approximately 9.1 million shares of Common Stock, the same number of shares underlying the 2023 Notes, at a strike price that corresponds to the initial conversion price of the 2023 Notes, and are exercisable upon conversion of the 2023 Notes. The Convertible Note Hedge Transactions will expire upon the maturity of the 2023 Notes.

The Convertible Note Hedge Transactions are expected generally to reduce the potential dilution to the Common Stock upon conversion of the 2023 Notes and/or offset any cash payments the Company is required to make in excess of the principal amount of the converted 2023 Notes, as the case may be, in the event that the market price per share of the Common Stock, as measured under the terms of the Convertible Note Hedge Transactions, is greater than the strike price of the Convertible Note Hedge Transactions.

The Convertible Note Hedge Transactions are separate transactions, entered into by the Company with the Counterparties, and are not part of the terms of the 2023 Notes. Holders of the 2023 Notes will not have any rights with respect to the Convertible Note Hedge Transactions. Refer to Note 12, "Convertible Notes," for additional details.

### *Warrant Transactions*

On November 14, 2017 and November 16, 2017, in connection with the 2023 Notes, the Company sold the Warrants to the Counterparties to acquire, collectively, subject to anti-dilution adjustments, approximately 9.1 million shares of the Common Stock at an initial strike price of approximately \$23.30 per share, which represents a premium of 60% over the last reported sale price of the Common Stock of \$14.56 on November 14, 2017. The Company received aggregate proceeds of approximately \$23.2 million from the sale of the Warrants to the Counterparties. The Warrants were sold in private placements to the Counterparties pursuant to an exemption from the registration requirements of the Securities Act afforded by Section 4(a)(2) of the Securities Act.

If the market price per share of the Common Stock, as measured under the terms of the Warrants, exceeds the strike price of the Warrants, the Warrants could have a dilutive effect, unless the Company elects, subject to certain conditions, to settle the Warrants in cash.

The Warrants are separate transactions, entered into by the Company with the Counterparties, and are not part of the terms of the 2023 Notes. Holders of the 2023 Notes will not have any rights with respect to the Warrants. Refer to Note 12, "Convertible Notes," for additional details.

## **16. Benefit Plans**

Rambus has a 401(k) Profit Sharing Plan (the "401(k) Plan") qualified under Section 401(k) of the Internal Revenue Code of 1986. Each eligible employee may elect to contribute up to 60% of the employee's annual compensation to the 401(k) Plan, up to the Internal Revenue Service limit. Rambus, at the discretion of its Board of Directors, may match employee contributions to the 401(k) Plan. The Company matches 50% of eligible employee's contribution, up to the first 6% of an eligible employee's qualified earnings. For the years ended December 31, 2019, 2018 and 2017, Rambus made matching contributions totaling approximately \$2.0 million, \$2.1 million and \$2.3 million, respectively.



## 17. Divestiture

During the second quarter of 2019, the Company entered into a share purchase agreement with Visa International Service Association (the “Purchaser”), pursuant to which the Purchaser agreed to acquire all of the outstanding shares of the Company’s subsidiary, Smart Card Software Limited, which comprises the Company’s Payments and Ticketing businesses, which was part of the Company’s former Rambus Security Division (RSD) segment. The decision to sell these businesses reflected the Company’s ongoing review of its business to focus on products and offerings that are core to its semiconductor business.

The sale of the legal entities comprising the Company’s Payments and Ticketing businesses was completed in October 2019. The final gross proceeds from the sale amounted to \$82.5 million, which included the selling price of \$75.0 million and approximately \$7.5 million in net working capital adjustments finalized in October 2019. The \$7.5 million in net working capital adjustments is net of a final working capital adjustment due to the buyer of approximately \$1.1 million, which the Company will pay in cash to the buyer during the first quarter of 2020. The final gross proceeds were offset by approximately \$3.8 million in transaction costs for the year ended December 31, 2019.

The Company measured these businesses at the lower of their carrying value or fair value less any costs to sell, and recognized a cumulative impairment of approximately \$7.4 million during the year ended December 31, 2019. In the second quarter of 2019, in order to determine the impairment loss, the Company performed a relative fair value measurement to allocate goodwill to the business units between the disposed Payments and Ticketing businesses and the retained business, which includes Cryptography Research Inc., which was part of the former RSD segment. The fair value of the retained business was estimated by management using a discounted cash flow model. The Company’s cash flow projections for the retained business included significant judgments and assumptions relating to revenue growth rates, projected operating income and the discount rate.

The operating results of these businesses did not qualify for reporting as discontinued operations. The reported results and financial position of the businesses did not necessarily reflect the total value of the businesses that the Company realized upon their sale.

## 18. Restructuring and Other Charges

### *The 2019 Plan*

In June 2019, the Company initiated a restructuring program to reduce overall expenses which is expected to improve future profitability by reducing spending on research and development efforts and sales, general and administrative programs (the “2019 Plan”). In connection with this restructuring program, the Company initiated a plan of termination resulting in a reduction of approximately 80 employees. During the year ended December 31, 2019, the Company recorded restructuring and other severance-related charges of approximately \$8.8 million related primarily to the reduction in workforce. As of December 31, 2019, the Company’s accrued restructuring balance was approximately \$5.0 million. The 2019 Plan is expected to be substantially completed in early 2020.

### *The 2018 Plan*

On January 30, 2018, the Company announced its plans to close its lighting division and manufacturing operations in Brecksville, Ohio, (“the 2018 Plan”). The Company believed that such business was not core to its strategy and growth objectives. In connection therewith, the Company terminated approximately fifty employees, and began the process to exit the facilities in Ohio and sell the related equipment. The Company expected to record restructuring charges of approximately \$2.0 million to \$5.0 million related to employee terminations and severance costs and facility related costs. During the year ended December 31, 2018, the Company recorded a net charge of \$2.2 million, primarily related to the reduction in workforce, of which \$2.0 million was related to the lighting division and \$0.2 million was related to corporate support functions. The 2018 Plan was completed as of December 31, 2019.

The Company concluded that the closure of its lighting division did not meet the criteria for reporting as discontinued operations. Consequently, the lighting division’s long-lived assets were reclassified as held for sale. As of December 31, 2018, the Company sold all property, plant and equipment from its lighting division reclassified as held for sale on the consolidated balance sheets of approximately \$3.5 million and recognized a gain on the disposal of the held for sale assets of approximately \$1.2 million included in restructuring charges on the consolidated statements of operations.

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

During 2017, the Company did not initiate any restructuring programs.

**19. Income Taxes**

Income (loss) before taxes consisted of the following:

	Years Ended December 31,		
	2019	2018	2017
	(In thousands)		
Domestic	\$ (81,316)	\$ (63,829)	\$ 46,031
Foreign	(5,700)	(6,799)	(5,042)
	<u>\$ (87,016)</u>	<u>\$ (70,628)</u>	<u>\$ 40,989</u>

The provision for (benefit from) income taxes is comprised of:

	Years Ended December 31,		
	2019	2018	2017
	(In thousands)		
Federal:			
Current	\$ 2,932	\$ 5,451	\$ 20,661
Deferred	2,016	82,726	43,678
State:			
Current	657	333	495
Deferred	(1,198)	522	(43)
Foreign:			
Current	1,708	1,592	1,101
Deferred	(2,712)	(3,295)	(2,041)
	<u>\$ 3,403</u>	<u>\$ 87,329</u>	<u>\$ 63,851</u>

The differences between Rambus' effective tax rate and the U.S. federal statutory regular tax rate are as follows:

	Years Ended December 31,		
	2019	2018	2017
Expense at U.S. federal statutory rate	21.0 %	21.0 %	35.0 %
Expense (benefit) at state statutory rate	0.9	(1.2)	0.7
Withholding tax	(3.5)	(7.7)	50.1
Foreign rate differential	(1.1)	(0.2)	2.8
Research and development ("R&D") credit	1.2	2.2	(3.9)
Executive compensation	(1.2)	(0.1)	1.8
Stock-based compensation	(2.3)	(2.8)	14.9
Foreign tax credit	3.4	7.7	(50.1)
Foreign derived intangible income deduction	4.6	14.8	—
Impact of corporate rate change on deferred taxes	—	—	50.6
Divestiture	4.8	—	—
Other	(0.2)	0.7	1.4
Valuation allowance	(31.5)	(158.0)	52.5
	<u>(3.9)%</u>	<u>(123.6)%</u>	<u>155.8 %</u>



**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

The components of the net deferred tax assets (liabilities) are as follows:

	As of December 31,	
	2019	2018
(In thousands)		
Deferred tax assets:		
Depreciation and amortization	\$ 13,995	\$ 13,085
Lease liabilities	10,734	—
Other timing differences, accruals and reserves	9,522	8,272
Deferred equity compensation	4,456	6,236
Net operating loss carryovers	20,900	21,259
Tax credits	233,407	253,890
Total gross deferred tax assets	293,014	302,742
Deferred tax liabilities:		
Lease right-of-use assets	(10,400)	—
Convertible debt	(151)	(207)
Deferred revenue	(94,763)	(143,182)
Total gross deferred tax liabilities	(105,314)	(143,389)
Total net deferred tax assets	187,700	159,353
Valuation allowance	(196,972)	(173,878)
Net deferred tax liabilities	\$ (9,272)	\$ (14,525)

	As of December 31,	
	2019	2018
(In thousands)		
Reported as:		
Non-current deferred tax assets	\$ 4,574	\$ 4,435
Non-current deferred tax liabilities	(13,846)	(18,960)
Net deferred tax liabilities	\$ (9,272)	\$ (14,525)

The Company periodically evaluates the realizability of its net deferred tax assets based on all available evidence, both positive and negative. During the third quarter of 2018, the Company assessed the changes in its underlying facts and circumstances and evaluated the realizability of its existing deferred tax assets based on all available evidence, both positive and negative, and the weight accorded to each, and concluded a full valuation allowance associated with U.S. federal and California deferred tax assets was appropriate. As such, the Company has set up and continues to maintain a full valuation allowance against its U.S. federal deferred tax assets.

The following table presents the tax valuation allowance information for the years ended December 31, 2019, 2018 and 2017:

	Balance at Beginning of Period	Charged (Credited) to Operations	Charged to Other Account*	Valuation Allowance Release	Valuation Allowance Set up	Balance at End of Period
Tax Valuation Allowance						
Year ended December 31, 2017	\$ 23,529	—	5,855	—	21,527	\$ 50,911
Year ended December 31, 2018	\$ 50,911	—	9,238	—	113,729	\$ 173,878
Year ended December 31, 2019	\$ 173,878	23,094	—	—	—	\$ 196,972

\* Amounts not charged to operations are charged to other comprehensive income or retained earnings.

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

As of December 31, 2019, Rambus had California and other state net operating loss carryforwards of \$202.7 million and \$36.4 million, respectively. As of December 31, 2019, Rambus had federal and state capital loss carryforwards of \$26.4 million. As of December 31, 2019, Rambus had federal research and development tax credit carryforwards of \$40.6 million, alternative minimum tax credit carryforwards of \$1.9 million and foreign tax credits of \$186.1 million. As of December 31, 2019, Rambus had California research and development tax credit carryforwards of \$31.5 million. The federal foreign tax credits and research and development credits begin to expire in 2020 and 2019, respectively. Approximately \$29.1 million of federal foreign tax credits will expire in 2020. The California net operating losses begin to expire in 2020. The California research and development credits carry forward indefinitely.

In the event of a change in ownership, as defined under federal and state tax laws, Rambus' net operating loss and tax credit carryforwards could be subject to annual limitations. The annual limitations could result in the expiration of the net operating loss and tax credit carryforwards prior to utilization.

As of December 31, 2019, the Company had \$115.7 million of unrecognized tax benefits including \$22.8 million recorded as a reduction of long-term deferred tax assets, \$91 million recorded as a reduction of other assets associated with refundable withholding taxes previously withheld from licensees in South Korea (Korea), and \$1.8 million recorded in long-term income taxes payable. As a result of recent court rulings in Korea, the Company has determined that they may be entitled to refund claims for foreign taxes previously withheld from licensees in Korea. The Company recognizes that there are numerous risks and uncertainties associated with the ultimate collection of this refund, and, has therefore established an offsetting reserve for the entire amount of refundable withholding taxes previously withheld in Korea (which had an insignificant impact to the Company's income tax provision). If recognized, \$1.8 million would be recorded as an income tax benefit in the consolidated statement of operations. As of December 31, 2018, the Company had \$23.5 million of unrecognized tax benefits including \$21.4 million recorded as a reduction of long-term deferred tax assets and \$2.1 million recorded in long term income taxes payable. If recognized, \$2.1 million would be recorded as an income tax benefit in the consolidated statement of operations. It is reasonably possible that a reduction of up to \$0.1 million of existing unrecognized tax benefits could occur in the next 12 months.

A reconciliation of the beginning and ending amounts of unrecognized income tax benefits for the years ended December 31, 2019, 2018 and 2017 is as follows (amounts in thousands):

	Years Ended December 31,		
	2019	2018	2017
Balance at January 1	\$ 23,482	\$ 22,652	\$ 21,925
Tax positions related to current year:			
Additions	16,485	1,032	1,083
Tax positions related to prior years:			
Additions	76,158	115	16
Reductions	(472)	(317)	(372)
Settlements	—	—	—
Balance at December 31	\$ 115,653	\$ 23,482	\$ 22,652

Rambus recognizes interest and penalties related to uncertain tax positions as a component of the income tax provision (benefit). At December 31, 2019 and 2018, an immaterial amount of interest and penalties are included in long-term income taxes payable.

Rambus files income tax returns for the U.S., California, India, the U.K., the Netherlands and various other state and foreign jurisdictions. The U.S. federal returns are subject to examination from 2016 and forward. The California returns are subject to examination from 2010 and forward. In addition, any research and development credit carryforward or net operating loss carryforward generated in prior years and utilized in these or future years may also be subject to examination. The India returns are subject to examination from fiscal year ending March 2012 and forward. The Company is currently under examination by California for the 2010 and 2011 tax years. The Company's India subsidiary is under examination by the Indian tax administration for tax years beginning with 2011, except for 2014, which was assessed in the Company's favor. These examinations may result in proposed adjustments to the income taxes as filed during these periods. Management regularly assesses the likelihood of outcomes resulting from income tax examinations to determine the adequacy of their provision for income taxes and believes their provision for unrecognized tax benefits is adequate.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Additionally, the Company's future effective tax rates could be adversely affected by earnings being higher than anticipated in countries where the Company has higher statutory rates or lower than anticipated in countries where it has lower statutory rates, by changes in valuation of its deferred tax assets and liabilities or by changes in tax laws or interpretations of those laws.

At December 31, 2019, no other income taxes (state or foreign) have been provided on undistributed earnings of approximately \$14.0 million from the Company's international subsidiaries since these earnings have been, and under current plans will continue to be, indefinitely reinvested outside the United States. However, if such earnings were distributed, the Company would incur approximately \$1.9 million of foreign withholding taxes and an immaterial amount of U.S. taxes.

### 20. Litigation and Asserted Claims

Rambus is not currently a party to any material pending legal proceeding; however, from time to time, Rambus may become involved in legal proceedings or be subject to claims arising in the ordinary course of its business. Although the results of litigation and claims cannot be predicted with certainty, the Company currently believes that the final outcome of these ordinary course matters will not have a material adverse effect on our business, operating results, financial position or cash flows. Regardless of the outcome, litigation can have an adverse impact on the Company because of defense and settlement costs, diversion of management attention and resources and other factors.

The Company records a contingent liability when it is probable that a loss has been incurred and the amount is reasonably estimable in accordance with accounting for contingencies.

### 21. Acquisitions

#### *Northwest Logic, Inc.*

On July 26, 2019, the Company entered into an Agreement and Plan of Merger (the "Merger Agreement") with Northwest Logic, a leading supplier of memory, PCIe, and MIPI digital controllers. On August 23, 2019 (the "Closing Date"), the Company completed its acquisition of Northwest Logic by acquiring all issued and outstanding shares of Northwest Logic through the merger of a wholly-owned Rambus subsidiary with Northwest Logic. Under the terms of the Merger Agreement, the Company paid approximately \$21.9 million in cash, including certain bonus payments and adjustments for working capital. Of the purchase price, \$3.0 million of the consideration was deposited into an escrow account to fund indemnification obligations and other contractual provisions, to be released 24 months after the Closing Date. This acquisition allows the Company to further scale, bringing together high-speed design expertise with the physical and digital IP families from renowned market leaders to offer comprehensive memory and SerDes IP solutions for chip designers. The Company integrated Northwest Logic's offerings and design team into its IP cores technology solutions.

As part of the acquisition, the Company agreed to pay \$9.0 million to certain Northwest Logic employees in cash over three years following August 23, 2019 (the "Retention Bonus"). The Retention Bonus will be paid in three installments of \$3.0 million on each of the dates that are 12 months, 24 months and 36 months following the Closing Date. The Retention Bonus payouts are subject to the condition of continued employment, and therefore treated as compensation and expensed as incurred.

As of December 31, 2019, the Company had incurred approximately \$0.7 million in external acquisition costs in connection with the transaction, which were expensed as incurred.

The purchase price allocation and related accounting for this acquisition is preliminary. The preliminary fair value estimates for the assets acquired and liabilities assumed were based upon preliminary calculations and valuations and the Company's estimates and assumptions for the acquisition are subject to change if the Company obtains additional information during the measurement period. In accordance with ASC No. 805, during the measurement period an acquirer shall retrospectively adjust the provisional amounts recognized at the acquisition date to reflect information obtained about facts and circumstances that existed as of the acquisition date that, if known, would have affected the measurement of the amounts recognized as of the acquisition date. Accordingly, the Company has recognized a measurement period adjustment made during the fourth quarter of 2019 to the fair value of certain assets acquired and liabilities assumed as a result of further refinements in the Company's estimates. This adjustment was retrospectively applied to the August 23, 2019 acquisition date balance sheet. The effect of this adjustment on the preliminary purchase price allocation was an increase in goodwill of \$2.1 million and an increase in deferred tax liability, net, of \$2.1 million. This adjustment did not have a material impact on the Company's previously reported results of operations.

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

The fair value of the assets acquired was determined by management primarily by using the multi-period excess earnings method under the income approach. This method reflects the present value of the projected cash flows that are expected to be generated by the existing technologies less charges representing the contribution of other assets to those cash flows. The Company performed a valuation of the net assets acquired as of the Closing Date.

The total consideration from the business combination was allocated as of the Closing Date, including the retrospective adjustment made in the fourth quarter of 2019, as follows:

	<u>Total</u>
	<u>(in thousands)</u>
Cash and cash equivalents	\$ 159
Accounts receivable	1,679
Prepaid expenses and other current assets	65
Identified intangible assets	8,800
Goodwill	13,477
Operating lease right-of-use asset	178
Other asset	9
Accounts payable	(9)
Operating lease liability	(178)
Other current liabilities	(108)
Deferred tax liability, net	(2,133)
Total	<u>\$ 21,939</u>

The goodwill arising from the acquisition is primarily attributed to synergies related to the combination of new and complementary technologies of the Company and the assembled workforce of Northwest Logic. This goodwill is not expected to be deductible for tax purposes.

The identified intangible assets assumed in the acquisition of Northwest Logic were recognized as follows based upon their estimated fair values as of the acquisition date:

	<u>Total</u>	<u>Estimated Weighted</u>
	<u>(in thousands)</u>	<u>Average Useful Life</u>
		<u>(in years)</u>
Existing technology	\$ 8,100	5
Customer contracts and contractual relationships	400	2
Customer backlog	300	0.5
Total	<u>\$ 8,800</u>	

***Secure Silicon IP and Protocols Business from Verimatrix***

On September 11, 2019, the Company announced it had signed an asset purchase agreement to acquire the Secure Silicon IP and Protocols business from Verimatrix, formerly Inside Secure, for \$65.0 million in cash. On December 8, 2019 (the "Closing Date"), the Company completed its acquisition of the Secure Silicon IP and Protocols business. Under the terms of the Asset Purchase Agreement, as amended, the Company paid approximately \$45.0 million in cash at the Closing Date, and will pay up to an additional \$20.0 million, currently valued at \$1.8 million, subject to certain revenue targets of the transferred business for the calendar year 2020. The addition of the embedded security teams, products and expertise from the Secure Silicon IP and Protocols business augments the Company's portfolio of mission-critical embedded security products and expands its offerings for data center, AI, networking and automotive.

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

The total adjusted purchase consideration for the acquisition of the Secure Silicon IP and Protocols business was \$46.8 million, which consisted of the following:

	<b>Total</b>
	<b>(in thousands)</b>
Cash consideration transferred at the Closing Date	\$ 45,000
Fair value of earn-out liability	1,800
<b>Total adjusted purchase price</b>	<b>\$ 46,800</b>

As part of the acquisition, the Company agreed to pay \$1.0 million to certain employees in cash over two years effective January 1, 2020 (the “Retention Bonus”). The Retention Bonus will be paid in arrears in two annual installments of \$0.5 million in December 2020 and December 2021, respectively. The Retention Bonus payouts are subject to the condition of continued employment, and therefore treated as compensation and expensed as incurred.

As of December 31, 2019, the Company had incurred approximately \$3.1 million in external acquisition costs in connection with the transaction, which were expensed as incurred.

The purchase price allocation and related accounting for this acquisition is preliminary. The preliminary fair value estimates for the assets acquired and liabilities assumed were based upon preliminary calculations and valuations and the Company’s estimates and assumptions for the acquisition are subject to change if the Company obtains additional information during the measurement period.

The fair value of the assets acquired was determined by management primarily by using the multi-period excess earnings method under the income approach. This method reflects the present value of the projected cash flows that are expected to be generated by the existing technologies less charges representing the contribution of other assets to those cash flows. The Company performed a valuation of the net assets acquired as of the Closing Date.

The Company performed a valuation of the net assets acquired as of the Closing Date. The total consideration from the acquisition was allocated as follows:

	<b>Total</b>
	<b>(in thousands)</b>
Prepaid expenses and other current assets	\$ 267
Unbilled receivables	6,765
Operating lease right-of-use assets	852
Identified intangible assets	23,500
Goodwill	16,845
Deferred revenue	(310)
Operating lease liabilities	(852)
Other current liabilities	(267)
<b>Total</b>	<b>\$ 46,800</b>

The goodwill arising from the acquisition is primarily attributed to synergies related to the combination of new and complementary technologies of the Company and the assembled workforce of the Secure Silicon IP and Protocols business. Approximately \$15.0 million of the goodwill is expected to be deductible for tax purposes.



**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

The identified intangible assets assumed in the acquisition of the Secure Silicon IP and Protocols business were recognized as follows based upon their estimated fair values as of the acquisition date:

	<b>Total</b>	<b>Estimated Weighted Average Useful Life</b>
	<b>(in thousands)</b>	<b>(in years)</b>
Existing technology	\$ 21,600	3 to 5 years
Customer contracts and contractual relationships	900	5 years
IPR&D	1,000	Not applicable
Total	<u>\$ 23,500</u>	

IPR&D consists of one project, primarily relating to the development of Media Access Control Security frame engines, which is part of the Silicon IP solutions. The project is expected to be completed over the next twelve months. The acquired IPR&D will not be amortized until completion of the related product which is determined by when the underlying project reaches technological feasibility and commences commercial production. Upon completion, the IPR&D project will be amortized over its useful life, which is expected to range between three years and five years.

**Unaudited Pro Forma Combined Consolidated Financial Information**

The following unaudited pro forma financial information presents the combined results of operations for the Company and Northwest Logic as if the acquisition had occurred on January 1, 2018. The unaudited pro forma financial information has been prepared for comparative purposes only and does not purport to be indicative of the actual operating results that would have been recorded had the acquisition actually taken place on January 1, 2018, and should not be taken as indicative of future consolidated operating results. Additionally, the unaudited pro forma financial results do not include any anticipated synergies or other expected benefits from the acquisition (unaudited, in thousands, except per share amounts):

	<b>Years Ended December 31,</b>	
	<b>2019</b>	<b>2018</b>
Revenue	\$ 231,492	\$ 241,049
Net loss	\$ (90,688)	\$ (160,742)
Net loss per share - diluted	\$ (0.82)	\$ (1.48)

Pro forma loss for 2019 was adjusted to exclude \$0.7 million of acquisition-related costs incurred in 2019. Consequently, pro forma loss for 2018 was adjusted to include these costs.

Pro forma financial information on the combined results of operations for the Company and the Secure Silicon IP and Protocols business as if the acquisition had occurred on January 1, 2018 has not been presented as it was impracticable to prepare full financial statements for the Secure Silicon IP and Protocols business, given that the Secure Silicon IP and Protocols business had not been managed as a stand-alone business and thus stand-alone financial statements were not readily available.

Additionally, the revenue recognized from the Northwest Logic and Secure Silicon IP and Protocols business acquisitions is not material to the Company's consolidated financial statements during the year ended December 31, 2019, either individually or in the aggregate. Furthermore, the Company does not track operating results from these businesses separately.

**Supplementary Financial Data**

**RAMBUS INC.**  
**CONSOLIDATED SUPPLEMENTARY FINANCIAL DATA**  
**Quarterly Statements of Operations**  
**(Unaudited)**

	Dec. 31, 2019	Sept. 30, 2019	June 30, 2019	March 31, 2019	Dec. 31, 2018	Sept. 30, 2018	June 30, 2018	March 31, 2018
(In thousands, except for per share amounts)								
Total revenue	\$ 59,947	\$ 57,399	\$ 58,297	\$ 48,384	\$ 68,563	\$ 59,754	\$ 56,458	\$ 46,426
Total operating costs and expenses	\$ 73,158	\$ 80,272	\$ 95,343	\$ 79,793	\$ 72,763	\$ 78,921	\$ 76,445	\$ 90,039
Operating loss	\$ (13,211)	\$ (22,873)	\$ (37,046)	\$ (31,409)	\$ (4,200)	\$ (19,167)	\$ (19,987)	\$ (43,613)
Net loss (1)	\$ (9,532)	\$ (17,331)	\$ (36,980)	\$ (26,576)	\$ (2,018)	\$ (104,893)	\$ (15,357)	\$ (35,689)
Net loss per share — basic	\$ (0.09)	\$ (0.16)	\$ (0.33)	\$ (0.24)	\$ (0.02)	\$ (0.97)	(0.14)	\$ (0.33)
Net loss per share — diluted	\$ (0.09)	\$ (0.16)	\$ (0.33)	\$ (0.24)	\$ (0.02)	\$ (0.97)	(0.14)	\$ (0.33)
Shares used in per share calculations — basic (2)	111,883	111,315	110,875	109,692	108,826	107,897	107,737	109,358
Shares used in per share calculations — diluted (2)	111,883	111,315	110,875	109,692	108,826	107,897	107,737	109,358

- (1) The net loss for the quarter ended September 30, 2018 included a \$91.3 million impact of an increase in our deferred tax asset valuation allowance. Refer to Note 19, “Income Taxes,” of Notes to Consolidated Financial Statements of this Form 10-K.
- (2) The quarterly financial information includes the impact of the accelerated share repurchase program as follows: 0.7 million shares in the quarter ended June 30, 2018 and 3.1 million shares repurchased in the quarter ended March 31, 2018. Refer to Note 15, “Stockholders’ Equity,” of Notes to Consolidated Financial Statements of this Form 10-K.

INDEX TO EXHIBITS

<b>Exhibit Number</b>	<b>Description of Document</b>
3.1(1)	<a href="#">Amended and Restated Certificate of Incorporation of Registrant filed May 29, 1997.</a>
3.2(2)	<a href="#">Certificate of Amendment of Amended and Restated Certificate of Incorporation of Registrant filed June 14, 2000.</a>
3.3(3)	<a href="#">Amended and Restated Bylaws of Registrant dated April 25, 2013.</a>
4.1(4)	<a href="#">Form of Registrant’s Common Stock Certificate.</a>
4.3(5)	<a href="#">Indenture, dated November 17, 2017, between Rambus Inc and U.S. Bank National Association (including form of 1.375% Convertible Senior Note due 2023).</a>
4.4	<a href="#">Description of Securities.</a>
10.1(6)	<a href="#">Form of Indemnification Agreement entered into by Registrant with each of its directors and executive officers.</a>
10.2(7)*	<a href="#">Form of Change of Control Severance Agreement, Agreement entered into by Registrant with each of its named executive officers other than its chief executive officer.</a>
10.4(8)*	<a href="#">2006 Equity Incentive Plan, as amended.</a>
10.5(8)*	<a href="#">Forms of agreements under the 2006 Equity Incentive Plan, as amended.</a>
10.6(8)*	<a href="#">2006 Employee Stock Purchase Plan, as amended.</a>
10.7(9)*	<a href="#">2015 Equity Incentive Plan, as amended.</a>
10.8(10)*	<a href="#">Form of Restricted Stock Unit Agreement (2015 Equity Incentive Plan).</a>
10.9(10)*	<a href="#">Form of Stock Option Agreement (2015 Equity Incentive Plan).</a>
10.10(9)*	<a href="#">2015 Employee Stock Purchase Plan, as amended.</a>
10.11(11)	<a href="#">Triple Net Space Lease, dated as of December 15, 2009, by and between Registrant and MT SPE, LLC.</a>
10.12(12)**	<a href="#">Settlement Agreement, dated January 19, 2010, among Registrant, Samsung Electronics Co., Ltd, Samsung Electronics America, Inc., Samsung Semiconductor, Inc. and Samsung Austin Semiconductor, L.P.</a>
10.13(12)**	<a href="#">Semiconductor Patent License Agreement, dated January 19, 2010, between Registrant and Samsung Electronics Co., Ltd.</a>
10.14(13)	<a href="#">First Amendment of Lease, dated November 4, 2011, by and between Registrant and MT SPE, LLC.</a>
10.15(14)	<a href="#">Employment Agreement between the Company and Luc Seraphin, dated as of October 25, 2018.</a>
10.16(14)	<a href="#">Amended and Restated Change of Control Severance Agreement between the Company and Luc Seraphin, dated as of October 25, 2018.</a>
10.17(15)**	<a href="#">Settlement Agreement, dated June 11, 2013, among Registrant, SK hynix and certain SK hynix affiliates.</a>
10.18(16)**	<a href="#">Semiconductor Patent License Agreement, dated June 11, 2013, between Registrant and SK hynix.</a>
10.19(17)**	<a href="#">Settlement Agreement, dated December 9, 2013, between Rambus Inc., Micron Technology, Inc., and certain Micron affiliates.</a>
10.20(17)**	<a href="#">Semiconductor Patent License Agreement, dated December 9, 2013, between Rambus, Inc. and Micron Technology, Inc.</a>
10.21(17)**	<a href="#">Amendment to Semiconductor Patent License Agreement, dated December 30, 2013, by and between Rambus Inc. and Samsung Electronics Co., Ltd.</a>
10.22(18)**	<a href="#">Amendment 1 to Semiconductor Patent License Agreement, dated June 17, 2015, by and between Rambus Inc. and SK hynix Inc.</a>
10.23(19)	<a href="#">Asset Purchase Agreement, dated June 29, 2016, by and between Rambus Inc., Bell ID Singapore Ptd Ltd, Inphi Corporation and Inphi International Pte. Ltd.</a>
10.24(20)	<a href="#">Offer Letter, dated September 9, 2016, by and between Rambus Inc. and Rahul Mathur.</a>
10.25(5)	<a href="#">Form of Convertible Note Hedge Confirmation.</a>
10.26(5)	<a href="#">Form of Warrant Confirmation.</a>
10.27(21)	<a href="#">Share Purchase Agreement by and between Rambus Inc. and VISA International Service Association dated June 20, 2019.</a>
10.28(21)	<a href="#">Lease agreement between Rambus Inc. and 237 North First Street Holdings, LLC dated July 8, 2019.</a>
10.29(22)	<a href="#">Offer Letter, dated August 9, 2019, by and between Rambus Inc. and Sean Fan.</a>

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10.30(22)	<a href="#">2019 Inducement Equity Incentive Plan.</a>
10.31(22)	<a href="#">Form of Restricted Stock Unit Agreement (2019 Inducement Equity Incentive Plan).</a>
10.32(22)	<a href="#">Form of Performance Based Restricted Stock Unit Agreement (2019 Inducement Equity Incentive Plan).</a>
21.1	<a href="#">Subsidiaries of Registrant.</a>
23.1	<a href="#">Consent of Independent Registered Public Accounting Firm.</a>
24	<a href="#">Power of Attorney (included in signature page).</a>
31.1	<a href="#">Certification of Principal Executive Officer, pursuant to Rule 13a-14(a) and Rule 15d-14(a) of the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</a>
31.2	<a href="#">Certification of Principal Financial Officer, pursuant to Rule 13a-14(a) and Rule 15d-14(a) of the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</a>
32.1	<a href="#">Certification of Principal Executive Officer, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.</a>
32.2	<a href="#">Certification of Principal Financial Officer, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.</a>
101.INS±	XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH±	XBRL Taxonomy Extension Schema Document
101.CAL±	XBRL Taxonomy Extension Calculation Linkbase Document
101.LAB±	XBRL Taxonomy Extension Label Linkbase Document
101.PRE±	XBRL Taxonomy Extension Presentation Linkbase Document
101.DEF±	XBRL Taxonomy Extension Definition Linkbase Document
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

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- \* Management contracts or compensation plans or arrangements in which directors or executive officers are eligible to participate.
  - \*\* Confidential treatment has been granted with respect to certain portions of this exhibit. Omitted portions have been filed separately with the Securities and Exchange Commission.
  - ± XBRL (Extensible Business Reporting Language) information is furnished and not filed or a part of a registration statement or prospectus for purposes of Sections 11 or 12 of the Securities Act of 1933, is deemed not filed for purposes of Section 18 of the Securities Exchange Act of 1934, and otherwise is not subject to liability under these sections.
- (1) Incorporated by reference to the Form 10-K filed on December 15, 1997.
  - (2) Incorporated by reference to the Form 10-Q filed on May 4, 2001.
  - (3) Incorporated by reference to the Form 8-K filed on April 30, 2013.
  - (4) Incorporated by reference to the Form S-1/A (file no. 333-22885) filed on April 24, 1997.
  - (5) Incorporated by reference to the Form 8-K filed on November 17, 2017.
  - (6) Incorporated by reference to the Form S-1 (file no. 333-22885) filed on March 6, 1997.
  - (7) Incorporated by reference to the Form 8-K filed on March 9, 2015.
  - (8) Incorporated by reference to the Form 8-K filed on April 30, 2014.
  - (9) Incorporated by reference to the Form 8-K filed on April 27, 2018.
  - (10) Incorporated by reference to the Form 10-Q filed on July 23, 2015.
  - (11) Incorporated by reference to the Form 10-K filed on February 26, 2010.
  - (12) Incorporated by reference to the Form 10-Q filed on May 3, 2010.
  - (13) Incorporated by reference to the Form 10-K filed on February 24, 2012.
  - (14) Incorporated by reference to the Form 8-K filed on October 29, 2018.
  - (15) Incorporated by reference to the Form 10-Q/A filed on January 13, 2014.
  - (16) Incorporated by reference to the Form 10-Q filed on July 29, 2013.
  - (17) Incorporated by reference to the Form 10-K filed on February 21, 2014.
  - (18) Incorporated by reference to the Form 10-Q filed on July 23, 2015.
  - (19) Incorporated by reference to the Form 10-Q filed on July 22, 2016.
  - (20) Incorporated by reference to the Form 8-K filed on September 21, 2016.
  - (21) Incorporated by reference to the Form 10-Q filed on August 2, 2019.
  - (22) Incorporated by reference to the Form 8-K filed on August 28, 2019.

## SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

RAMBUS INC.

By:

/s/ RAHUL MATHUR

Rahul Mathur

*Senior Vice President, Finance and Chief Financial Officer*

Date: February 26, 2020

## POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Luc Seraphin and Rahul Mathur as his true and lawful agent, proxy and attorney-in-fact, with full power of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to (i) act on, sign, and file with the Securities and Exchange Commission any and all amendments to this Annual Report on Form 10-K, together with all schedules and exhibits thereto, (ii) act on, sign, and file such certificates, instruments, agreements and other documents as may be necessary or appropriate in connection therewith, and (iii) take any and all actions that may be necessary or appropriate to be done, as fully for all intents and purposes as he might or could do in person, hereby approving, ratifying and confirming all that such agent, proxy and attorney-in-fact or any of his substitutes may lawfully do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<hr/> <u>/s/ LUC SERAPHIN</u> Luc Seraphin	Chief Executive Officer, President and Director (Principal Executive Officer)	February 26, 2020
<hr/> <u>/s/ RAHUL MATHUR</u> Rahul Mathur	Senior Vice President, Finance and Chief Financial Officer (Principal Financial Officer)	February 26, 2020
<hr/> <u>/s/ KEITH JONES</u> Keith Jones	Vice President, Chief Accounting Officer and Corporate Controller (Principal Accounting Officer)	February 26, 2020
<hr/> <u>/s/ CHARLES KISSNER</u> Charles Kissner	Chairman of the Board of Directors	February 26, 2020
<hr/> <u>/s/ ELLIS THOMAS FISHER</u> Ellis Thomas Fisher	Director	February 26, 2020
<hr/> <u>/s/ EMIKO HIGASHI</u> Emiko Higashi	Director	February 26, 2020
<hr/> <u>/s/ MEERA RAO</u> Meera Rao	Director	February 26, 2020
<hr/> <u>/s/ SANJAY SARAF</u> Sanjay Saraf	Director	February 26, 2020
<hr/> <u>/s/ NECIP SAYINER</u> Necip Sayiner	Director	February 26, 2020
<hr/> <u>/s/ ERIC STANG</u> Eric Stang	Director	February 26, 2020

## DESCRIPTION OF SECURITIES

References to “Rambus” and the “Company” herein are, unless the context otherwise indicates, only to Rambus Inc. and not to any of its subsidiaries.

### **Description of Capital Stock**

The following is a summary of the Company’s capital stock and certain provisions of its Amended and Restated Certificate of Incorporation (the “**Certificate**”) and Amended and Restated Bylaws (the “**Bylaws**”). This summary does not purport to be complete and is qualified in its entirety by the provisions of the Certificate and the Bylaws.

### **Common Stock**

Shares Outstanding. The Company is authorized to issue up to 500,000,000 shares of common stock, par value \$0.001 per share (the “**Common Stock**”).

Dividends. Subject to prior dividend rights of the holders of any shares of preferred stock of the Company (“**Preferred Stock**”), holders of shares of Common Stock are entitled to receive ratably dividends when, as and if declared by the Company’s Board of Directors (the “**Board**”) out of funds legally available for that purpose. Delaware law allows a corporation to pay dividends only out of surplus, as determined under Delaware law.

Voting Rights. Each share of Common Stock is entitled to one vote on all matters submitted to a vote of stockholders. The directors of the Company are elected by a plurality of the voting power of the shares present in person or represented by proxy. On all other matters submitted to the stockholders, the affirmative vote of the majority of the voting power of the shares present in person or represented by proxy shall be the act of the shareholders.

Other Rights. In the event of a liquidation, dissolution or winding up of our company, the holders of common stock are entitled to share ratably in all assets remaining after payment of liabilities, subject to prior liquidation preferences of holders of convertible preferred stock, if any, then outstanding. The shares of Common Stock are not subject to redemption by operation of a sinking fund or otherwise. Holders of shares of Common Stock are not currently entitled to pre-emptive rights or conversion rights or other subscription rights.

Fully Paid. The issued and outstanding shares of Common Stock are fully paid and non-assessable. This means the full purchase price for the outstanding shares of Common Stock has been paid and the holders of such shares will not be assessed any additional amounts for such shares. Any additional shares of Common Stock that the Company may issue in the future will also be fully paid and non-assessable.

Transfer Agent and Registrar. The transfer agent and registrar for the Common Stock is Computershare Investor Services, LLC.

Listing. Our Common Stock is listed on the Nasdaq Global Select Market under the trading symbol “RMBS”.

### **Preferred Stock**

The Board is authorized to issue up to 5,000,000 shares of Preferred Stock from time to time in one or more series, to establish the number of shares to be included in each such series and to fix the designation, powers, preferences and rights of such shares and any qualifications, limitations or restrictions thereof. The issuance of Preferred Stock may have the effect of delaying, deferring or preventing a change in control of the Company without further action by the stockholders and may adversely affect the voting and other rights of the holders of Common Stock. The issuance of Preferred Stock with voting and conversion rights may adversely affect the voting power of the holders of Common Stock, including the loss of voting control to others.

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## Anti-takeover Effects of Our Certificate of Incorporation and Bylaws and Delaware Law

Some provisions of Delaware law, the Certificate and Bylaws could make the following more difficult:

- acquisition of the Company by means of a tender offer,
- acquisition of the Company by means of a proxy contest or otherwise, or
- removal of the Company's incumbent officers and directors.

These provisions, summarized below, are expected to discourage and prevent coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of the Company to first negotiate with the Board. They are also intended to provide our management with the flexibility to enhance the likelihood of continuity and stability if our Board determines that a takeover is not in our best interests or the best interests of the stockholders. These provisions, however, could have the effect of discouraging attempts to acquire us, which could deprive our stockholders of opportunities to sell their shares of Common Stock at prices higher than prevailing market prices. The Company believes that the benefits of these provisions, including increased protection, give it the potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure the Company and outweigh the disadvantages of discouraging takeover proposals, because negotiation of takeover proposals could result in an improvement of their terms.

Size of Board and Vacancies. The Bylaws provide that the Board will have one or more members, not to exceed ten members, which number will be determined from time to time by resolution of the Board. Our Certificate provides for a classified Board consisting of two classes of directors, each serving a staggered two-year term. The Certificate and Bylaws contain provisions that establish specific procedures for appointing and removing members of the Board. Under the Certificate and the Bylaws, vacancies and newly created directorships on the Board may be filled only by a majority of directors then serving on the Board. Under the Certificate and Bylaws, directors may be removed by stockholders only for cause.

Elimination of Stockholder Action by Written Consent. The Bylaws eliminate the right of the Company's stockholders to act by written consent. Stockholder action must take place at the annual or a special meeting of the Company's stockholders.

Stockholder Meetings. Under the Bylaws, only the chairperson of the Board, the president, the secretary or the majority of the authorized number of directors on the Board may call special meetings of the Company's stockholders.

Requirements for Advance Notification of Stockholder Nominations and Proposals. The Bylaws establish advance notice procedures with respect to stockholder proposals and nomination of candidates for election as directors.

Delaware Anti-takeover Law. The Company is subject to Section 203 of the Delaware General Corporation Law ("**Section 203**"), an anti-takeover law. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a business combination with an interested stockholder for a period of three years following the date such person became an interested stockholder, unless the business combination or the *transaction* in which such person became an interested stockholder is approved in a prescribed manner. Generally, a "business combination" includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. Generally, an "interested stockholder" is a person that, together with affiliates and associates, owns, or within three years prior to the determination of interested stockholder status did own, 15% or more of a corporation's voting stock. The existence of this provision may have an anti-takeover effect with respect to transactions not approved in advance by the Board, including discouraging attempts that might result in a premium over the market price for the shares of Common Stock held by stockholders.

No Cumulative Voting. Neither the Certificate nor Bylaws provide for cumulative voting in the election of directors.

Undesignated Preferred Stock. The authorization of the Company's undesignated Preferred Stock makes it possible for the Board to issue Preferred Stock with voting or other rights or preferences that could impede the success of any attempt to change control of the Company.

**SUBSIDIARIES OF REGISTRANT**

Rambus Canada Inc.  
Rambus Controllers, Inc.  
Rambus Delaware LLC  
Rambus International Ltd.  
Rambus K.K. (Japan)  
Rambus Ltd. (Grand Cayman Islands, BWI)  
Rambus Chip Technologies (India) Private Limited  
Rambus Korea, Inc. (Korea)  
Rambus France SAS  
Rambus Global Inc.  
Rambus Technology Information (Shanghai) Consulting Co. Ltd.  
Rambus UK Ltd.  
Rambus ROTW Holding B.V.  
Rambus Memory Holding B.V.  
Rambus Security Holding B.V.  
Cryptography Research, Inc.  
Mozaik Multimedia, Inc.  
Unity Semiconductor Corporation

**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-28597, 333-38855, 333-67457, 333-93427, 333-48730, 333-52158, 333-86140, 333-103789, 333-115015, 333-124513, 333-146770, 333-159516, 333-181072, 333-191432, 333-195656, 333-203708, 333-225186 and 333-233533) of Rambus Inc. of our report dated February 26, 2020 relating to the consolidated financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

San Jose, California  
February 26, 2020

**CERTIFICATION PURSUANT TO RULE 13A-14(A) AND RULE 15D-14(A)  
OF THE SECURITIES EXCHANGE ACT OF 1934,  
AS ADOPTED PURSUANT TO  
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Luc Seraphin, certify that:

1. I have reviewed this Annual Report on Form 10-K of Rambus Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 26, 2020

By: /s/ Luc Seraphin

Name: Luc Seraphin

Title: *Chief Executive Officer and President*

**CERTIFICATION PURSUANT TO RULE 13A-14(A) AND RULE 15D-14(A)  
OF THE SECURITIES EXCHANGE ACT OF 1934,  
AS ADOPTED PURSUANT TO  
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Rahul Mathur, certify that:

1. I have reviewed this Annual Report on Form 10-K of Rambus Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 26, 2020

By: /s/ Rahul Mathur

Name: Rahul Mathur

Title: *Senior Vice President, Finance and Chief Financial Officer*



**CERTIFICATION PURSUANT TO  
18 U.S.C. SECTION 1350,  
AS ADOPTED PURSUANT TO  
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

I, Rahul Mathur, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of Rambus Inc. on Form 10-K for the fiscal year ended December 31, 2019, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, and that information contained in such Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of Rambus Inc.

Date: February 26, 2020

By: /s/ Rahul Mathur

Name: Rahul Mathur

Title: *Senior Vice President, Finance and Chief Financial Officer*