Rambus

Q4 2019

Rambus Investor Presentation



Safe Harbor for Forward-Looking Statements; Other Disclosures

This presentation contains forward-looking statements under the Private Securities Litigation Reform Act of 1995 including Rambus' financial guidance for future periods, product and investment strategies, timing of expected product launches, demand for existing and newly-acquired technologies, the growth opportunities of the various markets we serve, the expected benefits of our merger, acquisition and divestiture activity, including the expected timing of transaction completions and the success of our integration efforts, and the effects of ASC 606 on reported revenue, amongst other things.

Such forward-looking statements are based on current expectations, estimates and projections, management's beliefs and certain assumptions made by Rambus' management. Actual results may differ materially. Our business is subject to a number of risks which are described more fully in our periodic reports filed with the Securities and Exchange Commission. Rambus undertakes no obligation to update forward-looking statements to reflect events or circumstances after the date hereof.

Effective January 1, 2018, the Company adopted Accounting Standards Update No. 2014-09, Revenue from Contracts with Customers in ASC 606. The adoption of ASC 606 materially impacted the timing of revenue recognition for the Company's fixed-fee intellectual property licensing arrangements. The adoption of ASC 606 did not have a material impact on the Company's other revenue streams, net cash provided by operating activities, or its underlying financial position.

This presentation contains non-GAAP financial measures, including operating costs and expenses, interest and other income (expense), net and diluted net income (loss) per share. In computing these non-GAAP financial measures, stock-based compensation expenses, acquisition-related transaction costs and retention bonus expense, amortization expenses, non-cash interest expense and certain other one-time adjustments were considered. The non-GAAP financial measures should not be considered a substitute for, or superior to, financial measures calculated in accordance with GAAP, and the financial results calculated in accordance with GAAP and reconciliations from these results should be carefully evaluated. Management believes the non-GAAP financial measures are appropriate for both its own assessment of, and to show investors, how the Company's performance compares to other periods. Reconciliation from GAAP to non-GAAP results are made available and more fully described on our website as well as the back of this deck and in the earnings release.

CONFIDENTIAL

Rambus at a Glance

Who We Are

- Premier silicon IP and chip provider, making data faster and safer
- Developed **foundational** . technology for all modern computing systems
- Improving performance, ٠ capacity and security for leading SoCs and systems

Rambus Offerings



Financial Performance

Data · Faster · Safer

NASDAO:

RMBS

All Growth Markets Are Impacted by These Megatrends





Semiconductor Industry Ecosystem Built on Leading-Edge IP



Ecosystem Example

Semiconductor Solutions Built on Leading-Edge IP



Silicon IP: Security

Protecting semiconductors and their secrets from design and manufacturing through deployment and end-of-life





Complementary Portfolio Extends Market Reach and Depth

	Secure S	Silicon IP	Secure Software Protocols	Secure Provisioning
	Securing Data <i>at Rest</i>	Securing Data in Motion		
Rambus	\checkmark			\checkmark
III verimatrix.		\checkmark	\checkmark	\checkmark
Key Markets	 Data Center AI + ML Automotive Military 	NetworkingIoTEdge	Data CenterEdge	 Military Automotive Data Center AI + ML

Silicon IP: High-speed Interfaces

High-speed memory and SerDes interfaces are pervasive in modern computing and critical to performance in dataintensive applications

DDR5 GDDR6 DDR4/3HBM2 **Backplane Interconnects** & HBM3 • 100/200/400GbE 28nm & 14nm • 112G – I R • 56G – LR • 128GFC Backplane Device Interconnects Memory • USB3/4 Interconnects SerDes PHY + Digital Controller • SATA • HBM2 • SAS • GDDR5/6 • DDR3/4 Chip-to-Chip 16G LPDDR3/4 Interconnects 28G 56G 112G Chiplets • PCle 3/4/5 28nm & • 112G – MR. **Chiplet Interconnects** 14nm VSR • 112 – XSR • 56G – MR • 56 - XSR • 28G – MR

Memory PHY + Digital Controller

Complementary Physical and Digital IP Portfolios

	DDR4	GDDR6	HBM2	PCle	MIPI
Rambus PHYs	\checkmark	\checkmark	\checkmark	\checkmark	
NORTHWEST LOGIC a Rambus Company Controllers	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Markets	 Data Center Networking Edge Automotive AI + ML IoT 	 Data Center Networking Automotive AI + ML 	Data CenterNetworkingAI + ML	 Data Center Networking Edge Automotive AI + ML IoT 	IoTMobile

Memory buffers are the key to expanding capacity for data centers and high-performance computing







Products Driving Growth

In Thousands

Compelling Product Revenue Growth Trajectory



- Silicon IP growth driven by design win momentum and acquisitions
- Buffer Chip market share gains expected to continue through DDR4 ramp and DDR5 introduction
- Strong systematic growth in Buffer Chip and Silicon IP product revenue offsets structural declines in Patent Licensing
- Predictability of long-term licensing agreements with key industry partners provides strong cash flow and stability

Key Financial Metrics

	<u>ASC 606</u>					
In Millions	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	
Revenue	\$59.8	\$68.5	\$48.4	\$58.3	\$57.4	Driven by the structure and timing of key deals. Year over year growth from product revenue
Total Operating Expenses ¹	\$67.6	\$61.6	\$67.3	\$64.1	\$67.1	Managed expenses through refocus on core growth initiatives. Adoption of ASC 842 in Q1'19 increased operating expense with corresponding decrease in interest expense
Operating Income (Loss) ¹	(\$7.9)	\$6.9	(\$18.9)	(\$5.8)	(\$9.7)	Operating results under ASC 606 do not reflect significant cash flow from fixed-fee licensing arrangements
Cash from Operations	\$31.6	\$35.1	\$28.8	\$38.7	\$25.6	Consistent performance in line with expectations

¹Please refer to reconciliations of non-GAAP financial measures included in this presentation and in our earnings release

Financial Strength

In Millions	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	
Total Cash & Marketable Securities	\$248.2	\$277.8	\$305.9	\$337.7	\$338.0	Issued \$172.5M convert in Q4 2017 and extinguished \$81.2M of debt in Q3 2018. \$21.9M utilized in Q3 2019 for acquisition of Northwest Logic
Total Assets	\$1,344.0	\$1,361.1	\$1,321.4	\$1,312.2	\$1,299.8	Strong balance sheet with limited debt
Stockholders' Equity	\$1,008.3	\$1,012.1	\$999.9	\$973.2	\$961.3	\$597M and \$560M contract assets in Q2 and Q3 2019 respectively, related to ASC 606 adoption
Cash from Operations	\$31.6	\$35.1	\$28.8	\$38.7	\$25.6	Continued strong cash performance

Strong Cash From Operations



Low Capital Expenditure, Consistent Return to Shareholders

- Predictable revenue stream provides consistent cash flow
- Returned \$200M of cash to shareholders from 2015 through 2018 through Accelerated Share Repurchase programs

Rambus Investment Summary



Delivering to performance-intensive, high-growth market segments including data center, edge, AI and automotive



Thank you



Reconciliation of Non-GAAP Financial Measures

Net Income (Loss) in Millions	Q3 2018 (AC 606)	Q4 2018 (ASC 606)	Q1 2019 (ASC 606)	Q2 2019 (ASC 606)	Q3 2019 (ASC 606)
GAAP Net Loss	(\$105)	(\$2)	(\$27)	(\$37)	(\$17)
Adjustments:					
Stock-based compensation	\$6	\$6	\$7	\$7	\$7
Acquisition-related/divestiture costs	\$0	\$0	\$0	\$0	\$3
Amortization	\$5	\$5	\$5	\$5	\$3
Restructuring charges and other	\$0	\$0	\$0	\$3	\$1
Non-cash interest expense	\$2	\$2	\$2	\$2	\$2
Provision for (benefit from) income taxes	\$90	(\$2)	\$3	\$4	(\$0)
Impairment (recovery) on assets held for sale	\$0	\$0	\$0	\$17	(\$2)
Escrow settlement refund	\$0	\$0	\$0	\$(0)	\$0
Non-GAAP Net Income (Loss)	(\$1)	\$9	(\$9)	\$1	\$(3)

Operating Income (Loss) in Millions	Q3 2018 (ASC 606)	Q4 2018 (ASC 606)	Q1 2019 (ASC 606)	Q2 2019 (ASC 606)	Q3 2019 (ASC 606)
GAAP Operating Loss	(\$19)	(\$4)	(\$31)	(\$37)	(\$23)
Adjustments:					
Stock-based compensation	\$6	\$6	\$7	\$7	\$7
Acquisition-related/divestiture costs	\$0	\$0	\$0	\$0	\$3
Amortization	\$5	\$5	\$5	\$5	\$3
Restructuring and other charges	\$0	\$0	\$0	\$3	\$1
Impairment (recovery) on assets held for sale	\$0	\$0	\$0	\$17	(\$2)
Escrow settlement refund	\$0	\$0	\$0	(\$0)	\$0
Non-GAAP Operating Income (Loss)	(\$8)	\$7	(\$19)	(\$6)	(\$10)
Depreciation	\$3	\$3	\$3	\$3	\$4
Adjusted EBITDA	(\$5)	\$10	(\$16)	(\$3)	(\$5)

Certain amounts may be off \$1.0M due to rounding.



GAAP to Non-GAAP Income Statement

	GAAP	Non-GAAP	Delta
In \$ Millions	Actual	Actual	to
	Q3'19	Q3'19	GAAP
Revenue	\$ 57.4	\$ 57.4	\$-
Cost of revenue	12.6	9.6	(3.0)
Research and development	41.5	38.1	(3.4)
Sales, general and administrative	26.7	19.5	(7.2)
Recovery on assets held for sale	(1.9)	0.0	1.9
Restructuring charges and other	1.4	0.0	(1.4)
Total operating cost and expenses	80.3	67.1	(13.1)
Operating loss	(22.9)	(9.7)	13.1
Interest and other income (expense), net	4.2	6.0	1.7
Loss before income taxes	(18.6)	(3.8)	14.9
Benefit from income taxes	(1.3)	(0.9)	0.4
Net loss	(\$17.3)	(\$2.9)	\$14.5

Certain amounts may be off \$0.1M due to rounding.

Non-GAAP Provision for (Benefit from) Income Taxes

	Actual	Actual	Variance
In \$ Millions	Q3'19	Q2'19	QoQ
Provision for (benefit from) income taxes (GAAP)	(1.3)	4.4	
Adjustment to GAAP provision for (benefit from) income taxes	0.4	(4.3)	
Non-GAAP provision for (benefit from) income tax	(0.9)	0.1	(1.0)

Supplemental Reconciliation of GAAP to Non-GAAP Effective Tax Rate (1)

	Actual	Actual	Variance
	Q3'19	Q2'19	QoQ
GAAP effective tax rate	7%	(13)%	
Adjustment to GAAP effective tax rate	17%	37%	
Non-GAAP effective tax rate	24%	24%	0%

(1) For purposes of internal forecasting, planning and analyzing future periods that assume net income from operations, the Company estimates a fixed, long-term projected tax rate of approximately 24 percent for 2019, which consists of estimated U.S. federal and state tax rates, and excludes tax rates associated with certain items such as withholding tax, tax credits, deferred tax asset valuation allowance and the release of any deferred tax asset valuation allowance. Accordingly, the Company has applied these tax rates to its non-GAAP financial results for all periods in the relevant year to assist the Company's planning. Certain amounts may be off by \$0.1M due to rounding.

Revenue and Licensing Billings

			ASC 60	6		ASC 606 ASC 605								
In Thousands	Q1'18	Q2'18	Q3'18	Q4'18	FY 2018	Q1'19	Q2'19	Q3'19	YTD 2019	Q1'18	Q2'18	Q3'18	Q4'18	FY 2018
Royalty Revenue	\$21,374	\$30,049	\$33,599	\$45,430	\$130,452	\$24,853	\$27,050	\$19,448	\$71,351	\$77,174	\$73 <i>,</i> 626	\$75,704	\$76,717	\$303,221
Product Revenue	\$7,313	\$8,087	\$11,753	\$11,537	\$38,690	\$8,964	\$16,031	\$21,377	\$46,372	\$7,556	\$8,221	\$11,753	\$11,867	\$39,397
Contract and Other Revenue	\$17,739	\$18,322	\$14,402	\$11,596	\$62,059	\$14,567	\$15,216	\$16,574	\$46,357	\$15,729	\$16,973	\$12,383	\$13,398	\$58,483
Total	\$46,426	\$56,458	\$59,754	\$68,563	\$231,201	\$48,384	\$58,297	\$57,399	\$164,080	\$100,459	\$98,820	\$99,840	\$101,982	\$401,101

In Thousands	Q1'18	Q2'18	Q3'18	Q4'18	FY 2018	Q1'19	Q2'19	Q3'19	YTD 2019
Royalty Revenue	\$21,374	\$30,049	\$33,599	\$45,430	\$130,452	\$24,853	\$27,050	\$19,448	\$71,351
Licensing Billings ¹	\$75,924	\$73,210	\$75,374	\$76,717	\$301,225	\$75,460	\$64,948	\$63 <i>,</i> 058	\$203,466
Delta	\$54,550	\$43,161	\$41,775	\$31,287	\$170,773	\$50,607	\$37,898	\$43,610	\$132,115

In Thousands	Q1'18	Q2'18	Q3'18	Q4'18	FY 2018	Q1'19	Q2'19	Q3'19	YTD 2019
ASC 606 Interest Income ²	\$7,514	\$7,041	\$6,532	\$6,147	\$27,234	\$5,707	\$5,288	\$4,925	\$15,920

¹ Licensing billings is an operational metric that reflects amounts invoiced to our patent and technology licensing customers during the period, as adjusted for certain differences.

² Interest income associated with the significant financing component of licensing agreements as a result of the adoption of ASC 606.





Product Overview





Silicon IP



Silicon IP: Security

Rambus Data · Faster · Safer From chip-to-cloud-to-crowd, Rambus secure silicon IP helps protect the world's most valuable resource: data. Securing electronic systems at their hardware foundation, our embedded security solutions span areas including root of trust, tamper resistance, content protection, anti-counterfeiting and trusted provisioning.

Improved Profitability

- Improved time-to-market and reduced inventory waste
- Dynamic SKU and feature management lowers inventory costs
- Reduce revenue lost to unauthorized access and counterfeits

Superior Security

- Provide a robust hardware root-of-trust
- Secure valuable secret keys, identity credentials, intellectual property, and other sensitive data
- Protect against cloning, counterfeiting, and reverse engineering

Managed Value Chain

- Actively monitor production status, availability, and inventory levels
- Validate process information through secure logs
- Deploy in distributed, high-volume manufacturing

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Silicon IP: Security

Secure Silicon IP

- CryptoManager Root of Trust
- DPA cores, accelerators, workstation
- Crypto accelerators
- CryptoFirewall accelerators



Provisioning

- CryptoManager Provisioning
- CryptoManager Device Key Management



CryptoManager Root of Trust

Family of fully-programmable secure co-processors

- Protects private data (keys and chip identity) with security anchored in hardware
- Adapts to an evolving threat landscape
- Supports new secure features and applications



Purpose-built for security with defense in depth against attacks

Provisioning and Device Key Management

Silicon and device provisioning and enablement of downstream cloudbased services with a complete silicon-to-cloud security solution



Silicon IP: SerDe

Optimized for power and area, our line-up of SerDes Interface solutions deliver maximum performance and flexibility for today's most challenging systems.

Fully Standards-Compatible

- Compliant with the latest industry-standard specifications
- Support for multi-modal functionality

Enhanced Design Flexibility

- Support for multiple packaging options
- Enhanced margin and yield

Reduced Power

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- Improved power efficiency
- Lower signaling and stand-by power

Improved Performance

- Increased data rates
- Improved bandwidth
- Higher capacity

Rambus Data · Faster · Safer

High-Speed SerDes Solutions

SerDes PHY and digital controller solutions

16G 28nm & 14nm	28G ^{14nm}	56G 10nm	112G ^{7nm}
 PCIe 4/3/2 CEI 11/6 XFI/XAUI SATA SAS 	 CEI-28/25/11 100/10GbE FC28 XFI/XAUI 	 CEI-56G MR CEI-56G LR CEI-28/25/11 400/100GbE PAM-4/NRZ 	 CEI-112G LR CEI-112G XSR CEI-56/28/25 800/400/200/ 100GbE PAM-4/NRZ
Si	Si	LEAD CUSTOMERS	LEAD CUSTOMERS

Integrated tools for easy bring-up and characterization



LabStation Platform

- Easy-to-use PC Interface
- Interface to 3rd
 party software
- Pre-defined test scripts
- PHY control settings
- External instrument control
- System characteristics and analysis

PCIe digital controllers



Silicon IP: Memory Interfaces

Rambus Data · Faster · Safer

With their reduced power consumption and industry-leading data rates, our line-up of enhanced memory interface solutions support a broad range of industry standards with improved margin and flexibility.

Fully Standards-Compatible

- Compliant with the latest JEDEC and industry-standard specifications
- Support for multi-modal functionality

Enhanced Design Flexibility

- Support for multitude packaging options
- Enhanced margin and yield

Reduced Power

- Improved power efficiency
- Lower signaling and stand-by power

Improved Performance

- Increased data rates
- Improved bandwidth
- Higher capacity

Memory Interface Solutions

Memory PHY and digital controller solutions

DDR4/3 28nm & 14nm	HBM2 ^{14nm}	GDDR6	DDR5 & HBM3	
 3200 Mbps x16 to x72-bits 1-4 Ranks DFI 4.0 	 2000 Mbps 1024-bit 2.5D design architecture 	 12-18 Gbps 2x 16-bit channels 	ROADMAP	
Si	Si	Si		

Integrated tools for easy bring-up and characterization



LabStation Platform

- Easy-to-use PC Interface
- Interface to 3rd party software
- Pre-defined test scripts
- PHY control settings
- External instrument ٠ control
- System characteristics • and analysis

Memory digital controllers







Rambus Data · Faster · Safer Built for speed, power efficiency and reliability, the DDRn memory interface chips for RDIMM, LRDIMM and NVDIMM server modules deliver top-of-the-line performance and the capacity needed to meet the growing demands on enterprise and data center systems.

Industry-leading Performance

- Fully-compliant with the latest JEDEC standards
- Operational speeds up to 3200 Mbps

Enhanced Margin

- Wide margin I/O design with advanced programmability
- Exceed JEDEC reliability standards for ESD and EOS

Optimized Power

- Advanced power management
- Frequency-based, low-power optimization

Superior Debug and Serviceability

- Integrated tools for bring-up and debug
- Works out-of-the-box with no BIOS changes required

Enabling performance and capacity in server DIMMs

DDR3	DDR4	NV	DDR5
db & rcd	db & rcd	ddr4 nvrcd	db & rcd
 JEDEC Compliant Speeds up to 2133 Mbps Multiple OEM qualifications 	 JEDEC Compliant Speeds up to 3200 Mbps Multiple OEM qualifications 	 JEDEC Compliant Speeds up to 3200 Mbps Ongoing qualifications 	 Consistent with JEDEC direction
AVAILABLE IN	AVAILABLE IN	AVAILABLE IN	UNDER
PRODUCTION	PRODUCTION	PRODUCTION	DEVELOPMENT

Smart tools for easy integration and reduced time to market



LabStation Platform and Buffer BIOS Integration Tool

Validated solutions with partners





Thank you

