

# Rambus Investor Presentation

Q2 2023

A glowing blue square chip with rounded corners and a thin blue border. The word "Rambus" is written in white italicized font in the center. The chip is set against a dark blue background with a complex circuit pattern of glowing blue lines and dots.

***Rambus***

# Safe Harbor for Forward-Looking Statements; Other Disclosures

This presentation contains forward-looking statements, including those relating to the Company's expectations regarding business opportunities, the Company's ability to deliver long-term, profitable growth, industry growth rates, timing of expected product launches, demand for existing and newly-acquired technologies, product and investment strategies, the Company's outlook and financial guidance for recent and upcoming quarters and related drivers, and the effects of ASC 606 on reported revenue, among other items.

Such forward-looking statements are based on current expectations, estimates and projections, management's beliefs and certain assumptions. Actual results may differ materially. The Company's business generally is subject to a number of risks which are described more fully in the Company's periodic reports filed with the Securities and Exchange Commission. The Company 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 cost of product revenue, operating costs and expenses, and interest and other income (expense), net. In computing these non-GAAP financial measures, stock-based compensation expenses, acquisition-related transaction costs and retention bonus expense, amortization of acquired intangible assets, expense on abandoned operating leases, facility restoration costs, gain on sale of equity security, provision for income taxes, change in fair value earn-out liability, loss on fair value adjustment of derivatives, loss on extinguishment of debt, 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.

**Rambus**  
**Data** • Faster • Safer

## Record

2022 Chip and  
Silicon IP Revenue

**\$230M**

2022 Cash from Operations



Industry-Leading  
**Chips and Silicon IP**



Data Center  
**>75%** of Chip and  
Silicon IP Revenue

**+58%**

2022 Product Revenue  
Growth

**33 Years**  
Technology Leadership

**San Jose HQ**  
Global Footprint

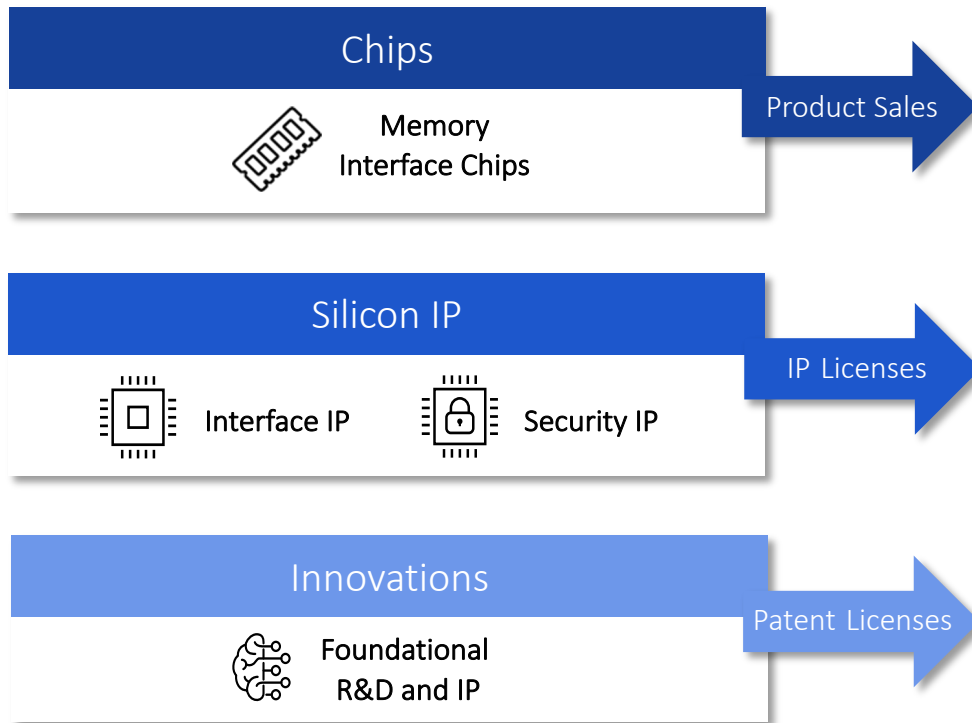
**750 Employees**  
>70% in Engineering

**3000**  
Patents



# Semiconductor Solutions Built on Innovation

## Rambus Offerings



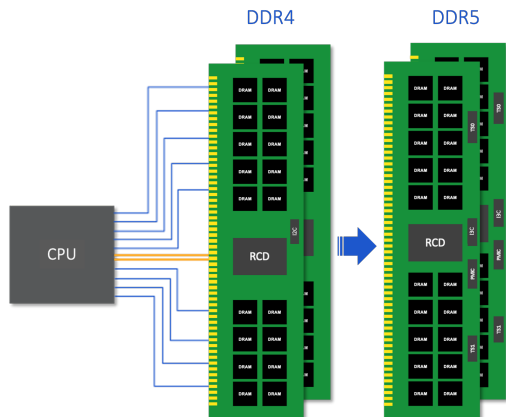
## Markets Served



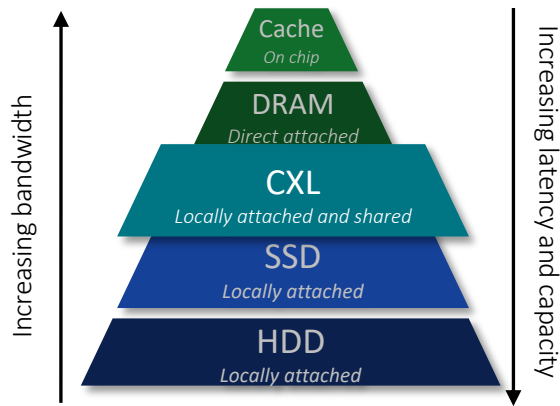


# Amplified Opportunities in Data Center

Delivering higher performance with DDR5

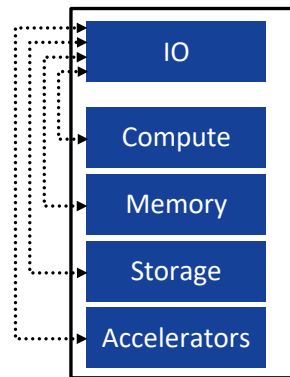


Bridging the latency gap with CXL memory tiering



Server memory hierarchy

Improving efficiency with composable computing

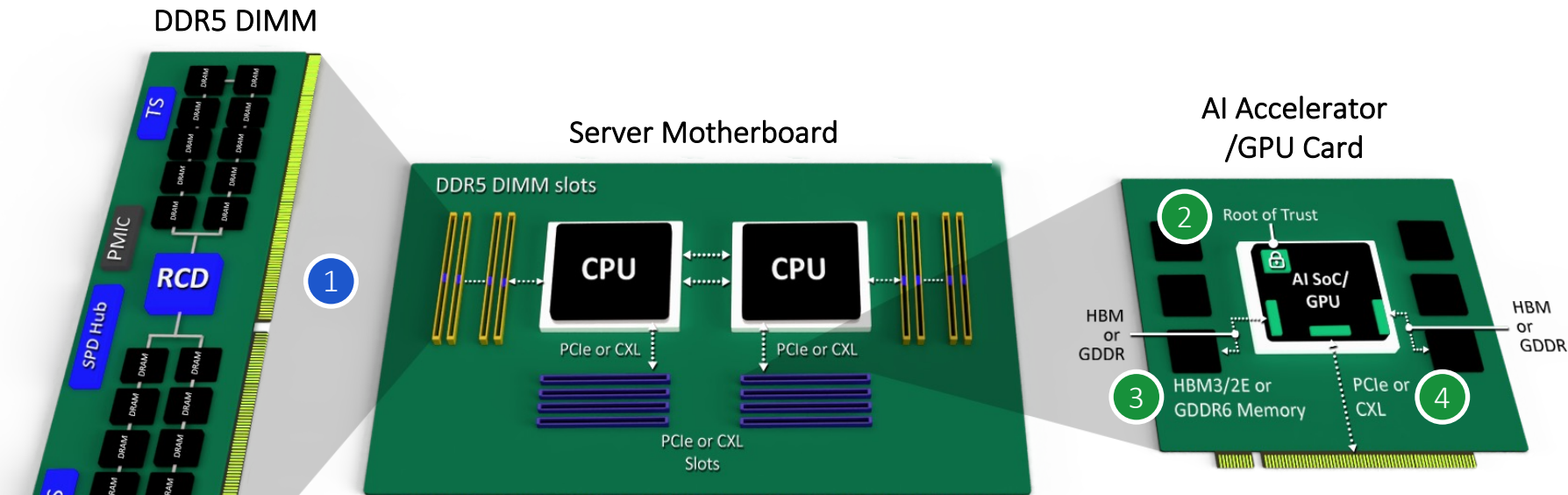


Composable resources:

- Compute
- Memory
- Storage
- Accelerators
- Shared Boot
- Enhance Security

Increasing need for performance, delivered securely and reliably

# Rambus Solutions for the Data Center



## Rambus Products:

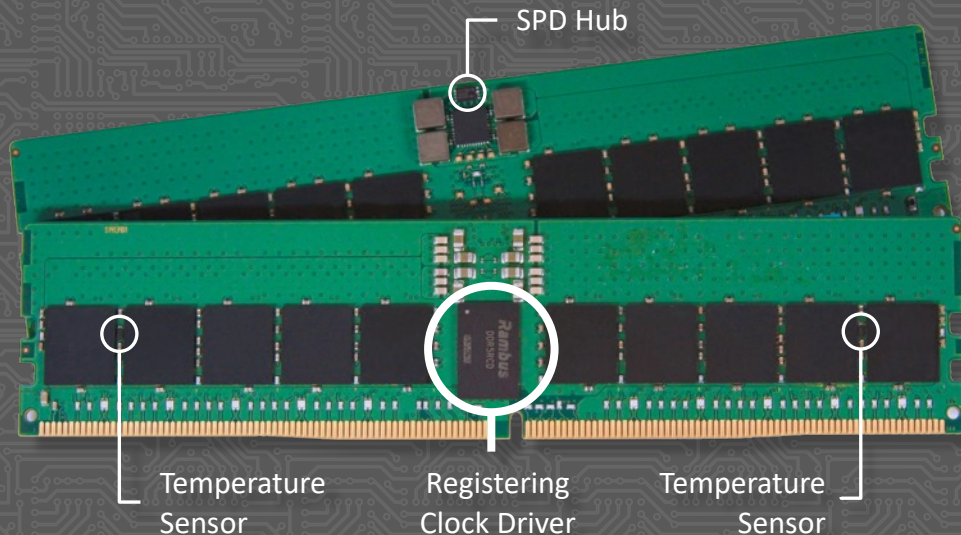
- 1 Memory Interface Chips for DDR5/4 RDIMMs
- 2 Root of Trust security IP
- 3 HBM/GDDR memory interface IP for accelerators
- 4 PCIe/CXL interface IP for high-speed interconnects

● Chips

● Silicon IP

# Rambus Memory Interface Chips

Driving the pace of server main memory performance



## DDR5 Server Chipset

**58%**

2022 Product Revenue Growth  
(~Memory Interface Chips)

Industry-leading DDR5 RCD offering:

- Gen1 RCD 4800 MT/s
- Gen2 RCD 5600 MT/s
- Gen3 RCD 6400 MT/s

Newly expanded DDR5 chip portfolio:

- SPD Hub\*
- Temperature Sensor

\*SPD Hub supports client UDIMMs and SODIMMs



# Rambus Uniquely Positioned for CXL Solutions

## Industry Leadership

Industry leading performance to 6400 MT/s for DDR5-based servers

## Core Expertise

World-class expertise in memory interface and interconnect subsystems (PHY, controller, and security IP)

## Innovation

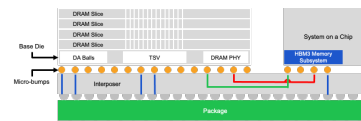
33 years of research and innovation in high-performance memory, high-speed signaling, and hardware security

## Foundation

Company founded on mission to drive increased memory bandwidth for greater computing performance



DDR5 Memory Interface Chipset



HBM3 Memory Subsystem



Smart Data Acceleration Engine



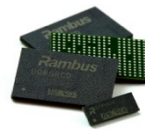
RDRAM Synchronous Memory

# Product Leadership Driving Topline Growth

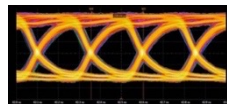
## 2022 Annual Growth

48%

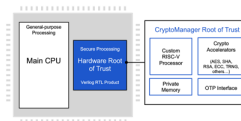
## Chip and Silicon IP combined revenue



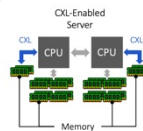
DDR5 and DDR4 memory  
interface chipsets delivering  
industry-leading performance



Integrated PCIe6/5, CXL 3/2,  
HBM3/2E and GDDR6  
PHY + Controller subsystems



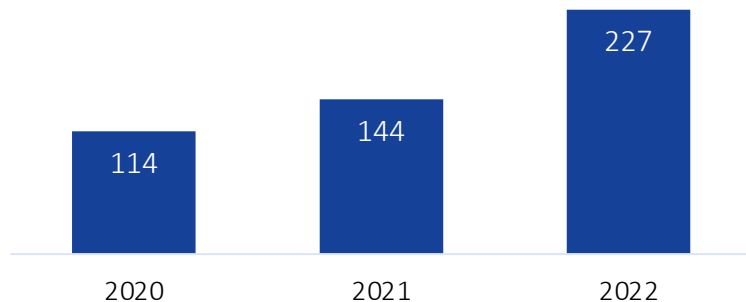
Broadest portfolio of secure root of trust, protocol engine, and crypto accelerator cores



Experts in interconnect solutions  
critical for performance and utilization  
in emerging data center architectures

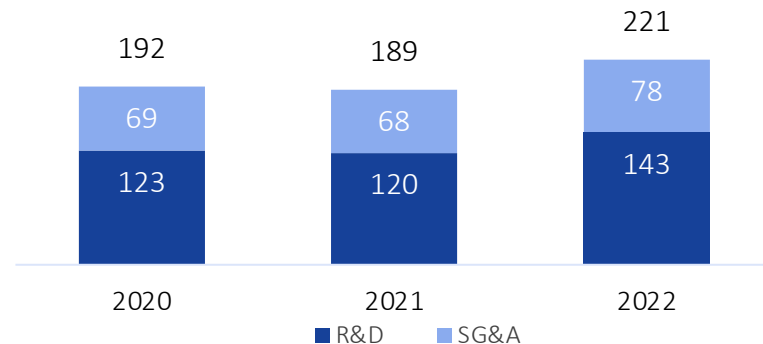
# Financial Highlights

Product Revenue\* (\$M)

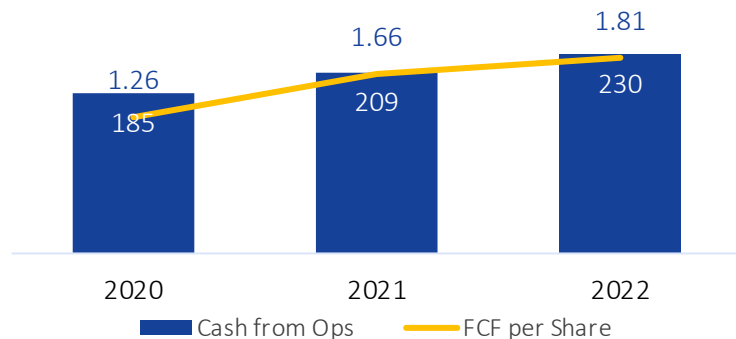


\*Consisting Primarily of Memory Interface Chips

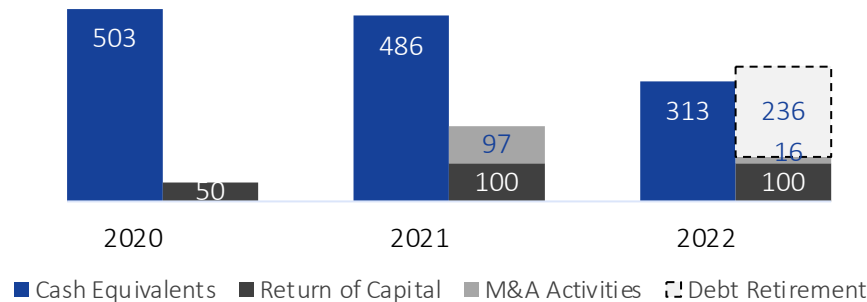
Pro Forma Operating Expenses (\$M)



Cash from Operations (\$M) & FCF per Share (\$)



Cash Equivalents & Return of Capital (\$M)





# Rambus Investment Summary



Amplified data center market opportunity as memory relevance continues to grow



Pioneer of industry-leading chips and silicon IP enabling critical performance improvements for the data center



Continued innovation feeds patent portfolio and product roadmap expansion



Focus on strategic initiatives drives financial results and profitable growth



Strong cash generation fuels growth initiatives and return of value to stockholders

# Detailed Financials



Strong cash generation fuels growth initiatives  
and return of value to stockholders

# Outstanding Cash Generation

<i>In Millions</i>	<u>ASC 606</u> Q1 2022	<u>ASC 606</u> Q2 2022	<u>ASC 606</u> Q3 2022	<u>ASC 606</u> Q4 2022	<u>ASC 606</u> Q1 2023	
Revenue	\$99.0	\$121.1	\$112.2	\$122.4	\$113.8	Driven by strong product revenue performance
Total Operating Costs and Expenses <sup>1</sup>	\$74.9	\$76.1	\$77.9	\$85.4	\$86.3	Strategic R&D investment to support growth initiatives
Operating Income <sup>1</sup>	\$24.2	\$45.0	\$34.4	\$36.9	\$27.5	Operating results under ASC 606 do not reflect significant cash flows from fixed-fee licensing arrangements
Cash from Operations	\$42.6	\$56.5	\$80.0	\$51.3	\$38.9	Solid cash generation

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



# Strong Balance Sheet Supports Strategic Initiatives

<i>In Millions</i>	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	
Total Cash & Marketable Securities	\$343.7	\$351.6	\$264.8	\$313.2	\$292.1	Retired remaining debt
Total Assets	\$1,060.9	\$1,110.9	\$969.1	\$1,012.6	\$962.6	Strong balance sheet and debt free  \$113M and \$151M contract assets in Q1 2023 and Q4 2022, respectively, related to ASC 606 adoption
Stockholders' Equity	\$793.1	\$838.2	\$749.9	\$779.3	\$761.7	
Cash from Operations	\$42.6	\$56.5	\$80.0	\$51.3	\$38.9	Sustained, predictable cash generation

# Reconciliation of Non-GAAP Financial Measures

Net Income (Loss) in Millions	Q1 2022 (ASC 606)	Q2 2022 (ASC 606)	Q3 2022 (ASC 606)	Q4 2022 (ASC 606)	Q1 2023 (ASC 606)
GAAP Net Income (Loss)	(\$66)	\$35	\$1	\$16	\$3
Adjustments:					
Stock-based compensation	\$8	\$9	\$9	\$10	\$13
Acquisition-related costs and retention bonus expense	\$3	\$2	\$2	\$1	\$1
Amortization of acquired intangible assets	\$4	\$4	\$4	\$4	\$4
Non-cash interest expense	\$1	\$0	\$0	\$0	\$0
Expense on abandoned operating leases	\$1	\$1	\$1	\$1	\$1
Gain on sale of equity security	\$0	\$0	(\$4)	(\$0)	\$0
Provision for income taxes	(\$6)	(\$8)	(\$6)	(\$8)	(\$7)
Change in fair value of earn-out liability	\$1	(\$6)	\$2	\$5	\$7
Loss on fair value adjustment of derivatives, net	\$8	\$0	\$2	\$0	\$0
Loss on extinguishment of debt	\$66	\$0	\$17	\$0	\$0
Facility restoration costs	\$0	\$0	\$0	\$0	\$0
<b>Non-GAAP Net Income</b>	<b>\$20</b>	<b>\$36</b>	<b>\$28</b>	<b>\$28</b>	<b>\$22</b>
Operating Income in Millions	Q1 2022 (ASC 606)	Q2 2022 (ASC 606)	Q3 2022 (ASC 606)	Q4 2022 (ASC 606)	Q1 2023 (ASC 606)
GAAP Operating Income	\$8	\$36	\$17	\$16	\$2
Adjustments:					
Stock-based compensation	\$8	\$9	\$9	\$10	\$13
Acquisition-related costs and retention bonus expense	\$3	\$2	\$2	\$1	\$1
Amortization of acquired intangible assets	\$4	\$4	\$4	\$4	\$4
Expense on abandoned operating leases	\$1	\$1	\$1	\$1	\$1
Change in fair value of earn-out liability	\$1	(\$6)	\$2	\$5	\$7
Facility restoration costs	\$0	\$0	\$0	\$0	\$0
<b>Non-GAAP Operating Income</b>	<b>\$24</b>	<b>\$45</b>	<b>\$34</b>	<b>\$37</b>	<b>\$28</b>
Depreciation	\$6	\$6	\$7	\$7	\$7
<b>Adjusted EBITDA</b>	<b>\$30</b>	<b>\$51</b>	<b>\$41</b>	<b>\$44</b>	<b>\$35</b>

# Revenue and Licensing Billings

In Thousands	ASC 606					ASC 606
	Q1'22	Q2'22	Q3'22	Q4'22	FY 2022	Q1'23
Royalty Revenue	\$30,464	\$48,038	\$29,878	\$31,436	\$139,816	\$28,169
Product Revenue	\$47,969	\$53,302	\$58,619	\$67,178	\$227,068	\$63,775
Contract and Other Revenue	\$20,617	\$19,792	\$23,747	\$23,753	\$87,909	\$21,818
<b>Total</b>	<b>\$99,050</b>	<b>\$121,132</b>	<b>\$112,244</b>	<b>\$122,367</b>	<b>\$454,793</b>	<b>\$113,762</b>

In Thousands	Q1'22	Q2'22	Q3'22	Q4'22	FY 2022	Q1'23
Royalty Revenue	\$30,464	\$48,038	\$29,878	\$31,436	\$139,816	\$28,169
Licensing Billings <sup>1</sup>	\$64,102	\$66,104	\$62,156	\$64,328	\$256,690	\$63,405
<b>Delta</b>	<b>\$33,638</b>	<b>\$18,066</b>	<b>\$32,278</b>	<b>\$32,892</b>	<b>\$116,874</b>	<b>\$35,236</b>

In Thousands	Q1'22	Q2'22	Q3'22	Q4'22	FY 2022	Q1'23
ASC 606 Interest Income <sup>2</sup>	\$1,827	\$1,455	\$1,248	\$1,029	\$5,559	\$919

<sup>1</sup> 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 relating to advanced payments for variable licensing agreements.

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



# GAAP to Non-GAAP Income Statement

In \$ Millions	GAAP Actual Q1'23	Non-GAAP Actual Q1'23	Delta to GAAP
Revenue	\$113.8	\$113.8	\$-
Cost of revenue	31.7	28.0	(3.7)
Research and development	41.9	37.3	(4.6)
Sales, general and administrative	31.3	21.0	(10.3)
Change in fair value of earn-out liability	6.9	0.0	(6.9)
Total operating cost and expenses	111.8	86.3	(25.6)
Operating income	1.9	27.5	25.6
Interest and other income (expense), net	1.5	1.8	0.3
Income before income taxes	3.5	29.3	25.9
Provision for income taxes	0.2	7.0	6.8
Net income	\$3.3	\$22.3	\$19.0

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

# Product Overview



Industry-leading Chips and Silicon IP

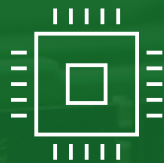
# Chips

Providing memory bandwidth and capacity to unleash the power of CPUs and accelerators

Chips

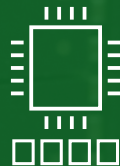
Silicon IP

Innovations



## Memory Interface Chips

- DDR5 Server Chipset
- DDR4 Server Chipset



## CXL Memory Initiative

# DDR5 DIMM Chipset

## Industry-leading Performance and Margin

- Compliant with latest JEDEC spec up to 6400 MT/s
- Wide margin IO design with advanced programmability
- Exceeds JEDEC reliability requirements

## Optimized Power

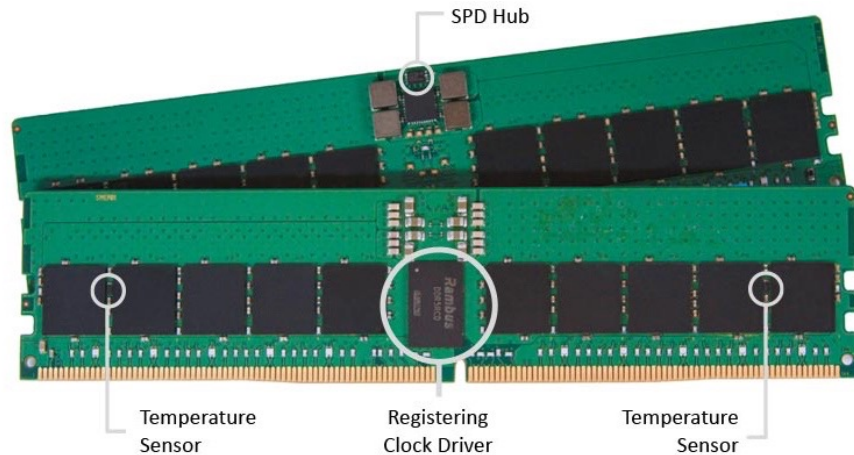
- Frequency-based power optimization

## Best-in-class Debug and Serviceability

- Integrated tools for bring-up and debug
- Works out of the box with default system BIOS

## Use Cases

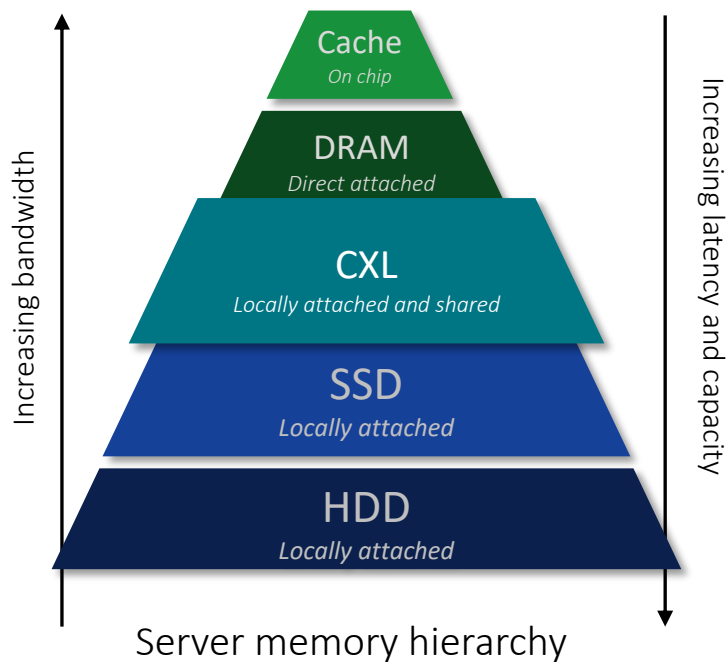
- Server (RCD, SPD Hub, Temp. Sensors): RDIMM, LRDIMM, NVDIMM
- Client (SPD Hub Only): UDIMM, SODIMM



*DDR5 RDIMMs with Rambus Memory Interface chips: Registering Clock Driver, SPD Hub and Temperature Sensors*



# Bridging the Latency Gap with CXL



- Compute Express Link™ (CXL™) is a new interconnect standard with wide industry support
- Leverages broadly adopted PCI Express® for its physical link layer
- Delivers memory cache coherency allowing memory resources to be shared between computing devices
- Enables a new tiered memory architecture that can bridge the latency and capacity gap

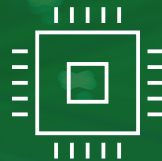
# Silicon IP

Enabling accelerated computing  
with high-performance interfaces  
and hardware-level security

Chips

Silicon IP

Innovations



## Interface IP

- PCI Express
- CXL
- HBM
- GDDR
























## Security IP

- Root of Trust
- MACsec
- IPsec
- IME
































# Interface IP: Interconnect and Memory Subsystems

	Interconnect (SerDes) Interfaces						Video Compression		Memory Interfaces				
	CXL		PCI Express		Multi-Protocol	MIPI	VESA	FEC	DDR-Type			HBM	
IP Products	2.0	3.0	5.0	6.0	28/32G	C/D	DSC/ VDC-M	DP/ HDMI	DDR	LPDDR	GDDR	2/2E	3
PHY													
Digital						 ★	 ★	 ★					
Availability	Now	PHY Now; Controller Roadmap	Now	Now	Now	Now	Now	Now	Now	Now	Now	Now	Now

★ ISO 26262 (Automotive)

# Security IP: Protecting Data at Rest, in Motion, and in Use

	Root of Trust		Network Security		Cipher Engines	Crypto Cores		Provisioning	
Application Focus	Programmable	Firmware Controlled	MACsec	IPsec TLS	IME	Crypto	TRNG	Infrastructure	Key Management
Data at rest	   	 				 	 		
Data in motion						 	 		
Data in use							 		
Availability	Now	Now	Now	Now	Now	Now	Now	Now	Now

 FIPS 140 CMVP, NIST (Government)
  ISO 26262 (Automotive)
  Common Criteria (IoT)

# Rambus Labs

Enabling next-generation data centers through innovation, research and development



Chips

Silicon IP

Innovations



Next-Gen Memory



Post-Quantum  
Computing Security

# Key Areas of Focus for Rambus Labs



Next-Gen Memory  
Architectures and  
Performance



Secure and Reliable  
Memory Systems



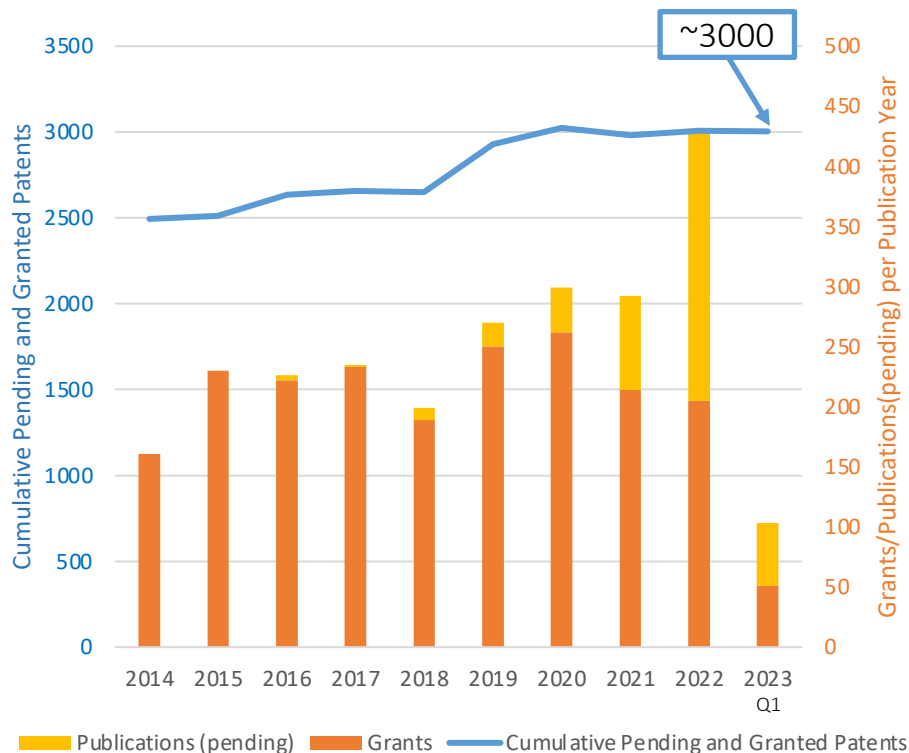
Security for AI/ML  
and PQC



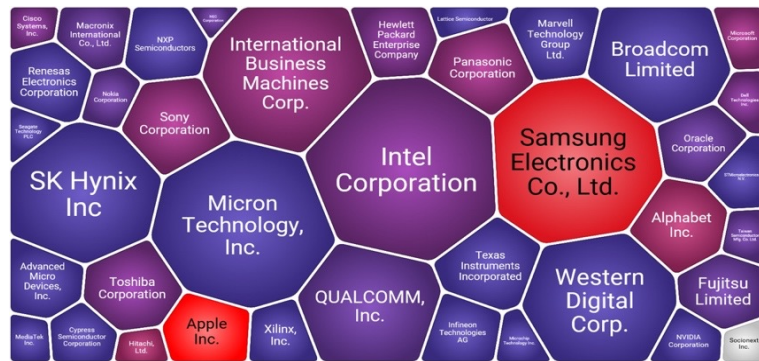
Strategic Customer &  
Product Roadmap  
Support

# Innovating to Meet Market Needs

## Growing Patent Portfolio



## Industry Recognition of Rambus Patents



- Fundamental R&D feeds product development
- Relevant portfolio regularly cited by major industry players
- Supports predictable licensing base and sustained cash generation



Thank you

