Safe Harbor for Forward-Looking Statements; Other Disclosures

This presentation contains forward-looking statements under the Private Securities Litigation Reform Act of 1995, 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, the growth opportunities of the various markets we serve, product and investment strategies, the long-term sustainability of the Company’s increased product revenue and cash generated from operating activities, the Company’s outlook and financial guidance for the third quarter of 2022 and related drivers, the Company’s ability to effectively manage supply chain shortages, risks and the potential adverse impacts related to, or arising from the Novel Coronavirus (COVID-19) and its variants, 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 made by the Company’s management. 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, as well as the potential adverse impacts related to, or arising from, COVID-19 and its variants. 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, 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, depreciation expense on unused Electronic Design Automation (“EDA”) software licenses, expense on abandoned operating leases, restatement and shareholder activist costs, facility restoration costs, 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.
At a Glance

Industry-leading chips and silicon IP making data faster and safer

2021 $209M
Cash from operations

>75%
Chip and Silicon IP Revenue from Data Center & Edge
*Includes Product, Contract and Other

▲ 18%
YoY Revenue Growth from Products, Contract and Other

~750
Employees worldwide

~3000
Patents & applications

30+ YEARS
Tech leadership & Innovation

★ San Jose, CA USA
HEADQUARTERS

USA
Canada
France
The Netherlands
Finland
Bulgaria
India
China
Taiwan
Korea

WORLDWIDE OFFICES
Semiconductor Solutions Built on Innovation

Rambus Solutions

Chips
- Memory Interface Chips

Silicon IP
- Interface IP: Memory and SerDes
- PHYs and Controllers
- Security IP: Secure Cores and Provisioning

Innovations
- Foundational Patents and IP

Data Intensive Markets
- Product Sales
  - Data Center
  - 5G/Edge
  - IoT
  - Automotive
  - Government

IP Licenses

Patent Licenses

Product Sales

Data Center

5G/Edge

IoT

Automotive

Government
Amplified Market Opportunity

Increasing need for performance and security

**10X**

**Annual growth in AI/ML models**
Largest over 1T parameters

Intel, OpenAI, Beijing Academy of AI

**+100**

**Annual growth in # of hyperscale data centers**
2021: 700 to 2024: 1000+

Synergy Research Group

**$6T**

**Global annual cybercrime losses**

Cybersecurity Ventures
New Memory Architectures Driving TAM Expansion

Transition to DDR5

Memory Subsystem Expansion with CXL

Data Center Disaggregation

Increasing bandwidth, capacity, efficiency and security
Advancing the Data Center

Enabling next-generation data centers with state-of-the-art high-performance memory and interconnect solutions and hardware-level security

Applications
- Server Main Memory
- AI and Network Accelerators
- Smart NICs
- Network Storage
- Network Switches
- Memory Expansion and Pooling

<table>
<thead>
<tr>
<th>DDR5 &amp; 4</th>
<th>Memory Interface Chips</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBM3 &amp; 2E</td>
<td>Memory Subsystems</td>
</tr>
<tr>
<td>GDDR6</td>
<td>Memory Subsystems</td>
</tr>
<tr>
<td>PCIe 6 &amp; 5</td>
<td>Interface Subsystems</td>
</tr>
<tr>
<td>CXL 2</td>
<td>Interface Subsystems</td>
</tr>
<tr>
<td>Root of Trust</td>
<td>Secure Co-processors</td>
</tr>
<tr>
<td>MACsec &amp; IPsec</td>
<td>Protocol Engines</td>
</tr>
</tbody>
</table>
Rambus Memory Interface Chip Growth

- Robust server memory demand projected through 2023
- Strong market position on DDR5 platforms, shipping Gen1 RCD in volume
- Announced DDR5 SPD Hub and Temperature Sensor
- First to sample Gen2 RCD at industry’s fastest data rate of 5600 MT/s

2018-2021

55% CAGR
Rambus Product Revenue (~Chips)

DDR4

DDR5
Product Leadership Driving Topline Growth

2018-2021

39% CAGR
Chip and Silicon IP* combined revenue

Industry’s first and fastest DDR5 memory interface chips

Integrated PCIe5, CXL 2.0, 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

*Product and Contract and Other combined revenue
Financial Highlights

**Chip & Silicon IP Revenue** ($M)

- **2019**: 115, **Chip & Silicon IP**: 133, **Discontinued Business**: 19
- **2020**: 162, **Chip & Silicon IP**: 162, **Discontinued Business**: 19
- **2021**: 192, **Chip & Silicon IP**: 192, **Discontinued Business**: 19

**Pro Forma Operating Expenses** ($M)

- **2019**:
  - **R&D**: 224, **SG&A**: 80
- **2020**:
  - **R&D**: 192, **SG&A**: 69
- **2021**:
  - **R&D**: 189, **SG&A**: 68

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

- **2019**: 129, **Cash from Ops**: 1.02, **FCF per Share**: 0.4
- **2020**: 185, **Cash from Ops**: 1.26, **FCF per Share**: 0.6
- **2021**: 209, **Cash from Ops**: 1.66, **FCF per Share**: 1.0

**Cash Equivalents & Return of Capital** ($M)

- **2019**: 408, **Cash Equivalents**: 408, **Return of Capital**: 67, **M&A Activities**: 0
- **2020**: 503, **Cash Equivalents**: 503, **Return of Capital**: 50, **M&A Activities**: 0
- **2021**: 486, **Cash Equivalents**: 486, **Return of Capital**: 97, **M&A Activities**: 100

*Includes Product and Contract & Other Revenue*
Rambus Investment Summary

1. Amplified data center market opportunity as memory relevance continues to grow
2. Pioneer of industry-leading chips and silicon IP enabling critical performance improvements for data center and cloud
3. Continued innovation feeds patent portfolio and product roadmap expansion
4. Focus on strategic initiatives drives financial results and profitable growth
5. Strong cash generation enables strategic initiatives and return of capital to shareholders
## Outstanding Cash Generation

<table>
<thead>
<tr>
<th>In Millions</th>
<th>ASC 606 Q2 2021</th>
<th>ASC 606 Q3 2021</th>
<th>ASC 606 Q4 2021</th>
<th>ASC 606 Q1 2022</th>
<th>ASC 606 Q2 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>$84.9</td>
<td>$81.3</td>
<td>$91.8</td>
<td>$99.0</td>
<td>$121.1</td>
</tr>
<tr>
<td>Total Operating Costs and Expenses¹</td>
<td>$56.1</td>
<td>$62.8</td>
<td>$65.4</td>
<td>$74.9</td>
<td>$76.1</td>
</tr>
<tr>
<td>Operating Income¹</td>
<td>$28.8</td>
<td>$18.5</td>
<td>$26.4</td>
<td>$24.2</td>
<td>$45.0</td>
</tr>
<tr>
<td>Cash from Operations</td>
<td>$51.6</td>
<td>$46.0</td>
<td>$72.2</td>
<td>$42.6</td>
<td>$56.5</td>
</tr>
</tbody>
</table>

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

Balanced portfolio drives growth
Strategic R&D investment to support growth initiatives
Operating results under ASC 606 do not reflect significant cash flows from fixed-fee licensing arrangements
Strong cash generation
### Strong Balance Sheet Supports Strategic Initiatives

<table>
<thead>
<tr>
<th>In Millions</th>
<th>Q2 2021</th>
<th>Q3 2021</th>
<th>Q4 2021</th>
<th>Q1 2022</th>
<th>Q2 2022</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cash &amp; Marketable Securities</td>
<td>$477.1</td>
<td>$419.7</td>
<td>$485.6</td>
<td>$343.7</td>
<td>$351.6</td>
<td>Strong cash from operations partly offset by convertible debt repayment and acquisition of Hardent</td>
</tr>
<tr>
<td>Total Assets</td>
<td>$1,153.0</td>
<td>$1,202.7</td>
<td>$1,232.6</td>
<td>$1,060.9</td>
<td>$1,110.9</td>
<td>Strong balance sheet with minimal debt</td>
</tr>
<tr>
<td>Stockholders’ Equity</td>
<td>$830.6</td>
<td>$847.8</td>
<td>$862.4</td>
<td>$793.1</td>
<td>$838.2</td>
<td>$212M and $225M contract assets in Q2 2022 and Q1 2022, respectively, related to ASC 606 adoption</td>
</tr>
<tr>
<td>Cash from Operations</td>
<td>$51.6</td>
<td>$46.0</td>
<td>$72.2</td>
<td>$42.6</td>
<td>$56.5</td>
<td>Sustained, predictable cash generation</td>
</tr>
</tbody>
</table>
## Reconciliation of Non-GAAP Financial Measures

<table>
<thead>
<tr>
<th>Net Income (Loss) in Millions</th>
<th>Q2 2021 (ASC 606)</th>
<th>Q3 2021 (ASC 606)</th>
<th>Q4 2021 (ASC 606)</th>
<th>Q1 2022 (ASC 606)</th>
<th>Q2 2022 (ASC 606)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAAP Net Income (Loss)</td>
<td>$11</td>
<td>$4</td>
<td>$6</td>
<td>$(66)</td>
<td>$35</td>
</tr>
<tr>
<td>Adjustments:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stock-based compensation</td>
<td>$7</td>
<td>$7</td>
<td>$6</td>
<td>$8</td>
<td>$9</td>
</tr>
<tr>
<td>Acquisition-related costs and retention bonus expense</td>
<td>$2</td>
<td>$2</td>
<td>$1</td>
<td>$3</td>
<td>$2</td>
</tr>
<tr>
<td>Amortization of acquired intangible assets</td>
<td>$5</td>
<td>$4</td>
<td>$4</td>
<td>$4</td>
<td>$4</td>
</tr>
<tr>
<td>Restructuring and other charges</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Non-cash interest expense</td>
<td>$2</td>
<td>$2</td>
<td>$2</td>
<td>$1</td>
<td>$0</td>
</tr>
<tr>
<td>Facility restoration costs</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Depreciation expense on unused EDA software licenses</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Expense on abandoned operating leases</td>
<td>$1</td>
<td>$1</td>
<td>$1</td>
<td>$1</td>
<td>$1</td>
</tr>
<tr>
<td>Restatement and shareholder activist costs</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Provision for (benefit from) income taxes</td>
<td>($5)</td>
<td>($4)</td>
<td>($5)</td>
<td>($6)</td>
<td>($8)</td>
</tr>
<tr>
<td>Change in fair value of earn-out liability</td>
<td>$0</td>
<td>$0</td>
<td>$5</td>
<td>$1</td>
<td>($6)</td>
</tr>
<tr>
<td>Loss on fair value adjustment of derivatives, net</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$8</td>
<td>$0</td>
</tr>
<tr>
<td>Loss on extinguishment of debt</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$66</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Non-GAAP Net Income</strong></td>
<td><strong>$23</strong></td>
<td><strong>$16</strong></td>
<td><strong>$21</strong></td>
<td><strong>$20</strong></td>
<td><strong>$36</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating Income in Millions</th>
<th>Q2 2021 (ASC 606)</th>
<th>Q3 2021 (ASC 606)</th>
<th>Q4 2021 (ASC 606)</th>
<th>Q1 2022 (ASC 606)</th>
<th>Q2 2022 (ASC 606)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAAP Operating Income</td>
<td>$14</td>
<td>$5</td>
<td>$9</td>
<td>$8</td>
<td>$36</td>
</tr>
<tr>
<td>Adjustments:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stock-based compensation</td>
<td>$7</td>
<td>$7</td>
<td>$6</td>
<td>$8</td>
<td>$9</td>
</tr>
<tr>
<td>Acquisition-related costs and retention bonus expense</td>
<td>$2</td>
<td>$2</td>
<td>$1</td>
<td>$3</td>
<td>$2</td>
</tr>
<tr>
<td>Amortization of acquired intangible assets</td>
<td>$5</td>
<td>$4</td>
<td>$4</td>
<td>$4</td>
<td>$4</td>
</tr>
<tr>
<td>Restructuring and other charges</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Facility restoration costs</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Depreciation expense on unused EDA software licenses</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Expense on abandoned operating leases</td>
<td>$1</td>
<td>$1</td>
<td>$1</td>
<td>$1</td>
<td>$1</td>
</tr>
<tr>
<td>Restatement and shareholder activist costs</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Change in fair value of earn-out liability</td>
<td>$0</td>
<td>$0</td>
<td>$5</td>
<td>$1</td>
<td>($6)</td>
</tr>
<tr>
<td><strong>Non-GAAP Operating Income</strong></td>
<td><strong>$29</strong></td>
<td><strong>$19</strong></td>
<td><strong>$26</strong></td>
<td><strong>$24</strong></td>
<td><strong>$45</strong></td>
</tr>
<tr>
<td>Depreciation</td>
<td>$6</td>
<td>$5</td>
<td>$6</td>
<td>$6</td>
<td>$6</td>
</tr>
<tr>
<td><strong>Adjusted EBITDA</strong></td>
<td><strong>$34</strong></td>
<td><strong>$24</strong></td>
<td><strong>$32</strong></td>
<td><strong>$30</strong></td>
<td><strong>$51</strong></td>
</tr>
</tbody>
</table>

Certain amounts may be off $1.0M due to rounding.
Revenue and Licensing Billings

<table>
<thead>
<tr>
<th>In Thousands</th>
<th>ASC 606</th>
<th>ASC 606</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q1'21</td>
<td>Q2'21</td>
</tr>
<tr>
<td>Q1'22</td>
<td>Q2'22</td>
<td>YTD 2022</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Royalty Revenue</td>
<td>$28,859</td>
<td>$41,910</td>
</tr>
<tr>
<td>Product Revenue</td>
<td>$30,781</td>
<td>$31,170</td>
</tr>
<tr>
<td>Contract and Other Revenue</td>
<td>$10,742</td>
<td>$11,779</td>
</tr>
<tr>
<td>Total</td>
<td>$70,382</td>
<td>$84,859</td>
</tr>
<tr>
<td>Royalty Revenue</td>
<td>$30,464</td>
<td>$48,038</td>
</tr>
<tr>
<td>Product Revenue</td>
<td>$47,969</td>
<td>$53,302</td>
</tr>
<tr>
<td>Contract and Other Revenue</td>
<td>$20,617</td>
<td>$19,792</td>
</tr>
<tr>
<td>Total</td>
<td>$99,050</td>
<td>$121,132</td>
</tr>
<tr>
<td>Royalty Revenue</td>
<td>$34,647</td>
<td>$23,306</td>
</tr>
<tr>
<td>Licensing Billings¹</td>
<td>$63,506</td>
<td>$65,216</td>
</tr>
<tr>
<td>Delta</td>
<td>$33,638</td>
<td>$18,066</td>
</tr>
<tr>
<td>Royalty Revenue</td>
<td>$2,842</td>
<td>$2,382</td>
</tr>
<tr>
<td>ASC 606 Interest Income²</td>
<td>$1,827</td>
<td>$1,455</td>
</tr>
</tbody>
</table>

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 relating to advanced payments for variable licensing agreements.

² 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

<table>
<thead>
<tr>
<th>In $ Millions</th>
<th>GAAP</th>
<th>Non-GAAP</th>
<th>Delta to GAAP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual Q2’22</td>
<td>Actual Q2’22</td>
<td></td>
</tr>
<tr>
<td>Revenue</td>
<td>$121.1</td>
<td>$121.1</td>
<td>$-</td>
</tr>
<tr>
<td>Cost of revenue</td>
<td>24.8</td>
<td>21.3</td>
<td>(3.6)</td>
</tr>
<tr>
<td>Research and development</td>
<td>39.5</td>
<td>35.4</td>
<td>(4.2)</td>
</tr>
<tr>
<td>Sales, general and administrative</td>
<td>26.7</td>
<td>19.5</td>
<td>(7.2)</td>
</tr>
<tr>
<td>Change in fair value of earn-out liability</td>
<td>(5.5)</td>
<td>0.0</td>
<td>(5.5)</td>
</tr>
<tr>
<td>Total operating cost and expenses</td>
<td>85.6</td>
<td>76.1</td>
<td>(9.5)</td>
</tr>
<tr>
<td>Operating income</td>
<td>35.6</td>
<td>45.0</td>
<td>9.5</td>
</tr>
<tr>
<td>Interest and other income (expense), net</td>
<td>2.4</td>
<td>2.4</td>
<td>-</td>
</tr>
<tr>
<td>Income before income taxes</td>
<td>38.0</td>
<td>47.4</td>
<td>9.5</td>
</tr>
<tr>
<td>Provision for income taxes</td>
<td>2.9</td>
<td>11.4</td>
<td>8.5</td>
</tr>
<tr>
<td>Net income</td>
<td>$35.0</td>
<td>$36.1</td>
<td>$1.1</td>
</tr>
</tbody>
</table>

Certain amounts may be off $0.1M due to rounding.
Product Overview
Memory Interface Chips
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 5600 MT/s

**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
## Memory Interface Chips

Enabling performance and capacity in server DIMMs

<table>
<thead>
<tr>
<th>DDR5</th>
<th>DDR4</th>
<th>NV</th>
<th>DDR3</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCD, SPD Hub &amp; Temp. Sensor</td>
<td>RCD &amp; DB</td>
<td>DDR4 NVRCD</td>
<td>RCD &amp; DB</td>
</tr>
<tr>
<td>• Per JEDEC Direction</td>
<td>• JEDEC Compliant</td>
<td>• JEDEC Compliant</td>
<td>• JEDEC Compliant</td>
</tr>
<tr>
<td>• Speeds of 5600 MT/s</td>
<td>• Speeds up to 3200 MT/s</td>
<td>• Speeds up to 3200 MT/s</td>
<td>• Speeds up to 2133 MT/s</td>
</tr>
<tr>
<td>• Ongoing qualifications</td>
<td>• Multiple OEM qualifications</td>
<td>• Ongoing qualifications</td>
<td>• Multiple OEM qualifications</td>
</tr>
</tbody>
</table>

**AVAILABLE IN PRODUCTION**

Smart tools for easy integration and reduced time to market

LabStation Platform and Buffer BIOS Integration Tool

Validated solutions with partners

[Samsung] [SK hynix] [Micron]

---

Data • Faster • Safer
DDR DIMMs Boost Capacity and Bandwidth

DIMM Memory Interface chips reduce the number of loads to enable higher system capacity and performance.

Memory Interface Chips = RCD + DB
**DDR5 DIMM Chipset**

**Industry-leading Performance and Margin**
- Compliant with latest JEDEC spec up to 5600 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*
Silicon IP
Across a broad spectrum of applications spanning automotive, artificial intelligence (AI), Internet of Things (IoT), network edge, and data center, there is a common need to move more data faster. Rambus memory and SerDes IP deliver the performance needed by the most demanding applications to move the data at blinding fast speeds.

**HBM3/2E Memory Subsystem**
- Fully-integrate and silicon-proven PHY and controller
- Running at industry’s fastest data rate up to 8.4 Gbps
- Ideal for AI/ML training, graphics and networking applications

**GDDR6 Memory Subsystem**
- Fully-integrate and silicon-proven PHY and controller
- Running at industry’s fastest data rate up to 18.0 Gbps
- Ideal for AI/ML interference, automotive, graphics and networking applications

**PCIe 5/CXL 2 Interconnect Subsystem**
- Co-validated PHY and controller
- Incorporates industry-leading zero-latency IDE
- Multiple configurations to support broad range of applications
### Broad Interface IP Portfolio

<table>
<thead>
<tr>
<th>IP Products</th>
<th>Chip-to-Chip (SerDes) Interfaces</th>
<th>Memory Interfaces</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CXL</td>
<td>PCI Express</td>
</tr>
<tr>
<td>PHY</td>
<td>2.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Digital Controller</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>Availability</td>
<td>Now</td>
<td>Roadmap</td>
</tr>
</tbody>
</table>

- Leader in high-performance memory interface IP solutions (PHYs and Controllers)
- Industry-leading portfolio of CXL and PCI Express IP
- Accelerating roadmap for next-generation IP solutions
Memory Interface Solutions

Memory PHY and digital controller solutions

**HBM3**
- 8.4 Gbps
- 1024-bit
- 2.5D design architecture

**HBM2E**
- 3.6 Gbps
- 1024-bit
- 2.5D design architecture

**GDDR6**
- 12-18 Gbps
- 2x 16-bit channels

**DDR4/3**
- 3200 Mbps
- x16 to x72-bits
- 1-4 Ranks
- DFI 4.0

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

Verification tools
- 8.4 Gbps
- 1024-bit
- 2.5D design architecture

Data • Faster • Safer
High-Speed Interconnect Solutions

PHY and digital controller solutions

**PCIe 6**
- Controller
- PCIe 6
- PCIe 5/4/3/2

**PCIe 5**
- CXL 2
- 7 & 12nm
- PCIe 5
- CXL 2/1.1
- PCIe 4/3/2

**32G**
- 7, 12 & 22nm
- CEI-28/25/11
- 40/10GbE
- JESD204B/C
- CPRI

**28G**
- 12nm
- CEI-28/25/11
- 40/10GbE
- FC28
- XFI/XAUI

Integrated tools for easy bring-up and characterization

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

LabStation Platform

Verification tools
Rambus secure silicon IP helps protect data at rest and in motion across a broad range of applications and throughout a device’s lifecycle. Securing electronic systems at their hardware foundation, our embedded security solutions span areas including root of trust, tamper resistance, content protection and trusted provisioning.

**Root of Trust Cores**
- Portfolio of solutions from fully-programmable secure co-processors to highly-compact state machines
- Provides hardware-based foundation for security
- Optimized for broad range of applications including AI/ML, automotive, IoT and defense

**MACsec Protocol Engines**
- Protects data in motion with robust Layer 2 security anchored in hardware
- Operates at full line-rate up to 800 Gbps supporting real-time applications
- Offers easy integration into networking SoCs and ASICs

**Provisioning and Key Management**
- Provision cryptographic information securely in untrusted environments
- Protects against cloning, reverse engineering, and counterfeiting
- Manufacturers can leverage securely provisioned keys and identities to enable supply chain integrity.
Security IP Portfolio

Our **Silicon IP and Protocols** secure data & assets managed by semiconductors, whether the data is at-rest or in-motion. We sell soft-IP RTL subsystems and software stacks.

**Cryptography**
- Standard & DPA Crypto Cores
- Test Equipment
- Crypto Cores & TRNG Cores
- DPA Crypto Cores
  - DPA Workstation
- Anti Counterfeiting Camouflage Cells

**Data at Rest**
- Roots of Trust Platform Security
- Programmable Root of Trust
- Fixed Function Root of Trust
- Secure Application Development Kits

**Data in Motion**
- Protocol Engines Software Toolkits
- MACsec Engines & Toolkits
- IPsec, TLS/SSL Engines & Toolkits
- High Speed Crypto Inline Memory Encrypt

**Device Security**

**Provisioning**
- Appliances
  - Key & Asset Injection
- Platform Lifecycle Monitoring
- Infrastructure and Appliances for Key and Asset Injection

**Key Management**
- Cloud Key Management and Device Lifecycle Monitoring

**Supply Chain Security**

Our **Provisioning Solutions** allow key & certificate provisioning in manufacturing, and identity/key lifecycle management via cloud KMS. We sell hardware, enterprise software and cloud services.
Key Areas of Focus for Rambus Labs

- NEXT-GEN MEMORY ARCHITECTURES FOR DATA CENTER
- NEXT-GEN MEMORY INTERFACES
- SECURITY FOR AI/ML AND PQC
- STRATEGIC CUSTOMER & PRODUCT ROADMAP SUPPORT
Innovating to Meet Market Needs

Growing Patent Portfolio

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

Industry Recognition of Rambus Patents

Source: Innography, patent citations

Data • Faster • Safer
Thank you