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

$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

~700
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
Rambus Semiconductor Ecosystem Positioning

<table>
<thead>
<tr>
<th>Markets</th>
<th>Data Center</th>
<th>5G/Edge</th>
<th>IoT</th>
<th>Automotive</th>
<th>Government</th>
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<tr>
<td>Cloud Providers</td>
<td>Google</td>
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<td>Microsoft</td>
<td>Alibaba Group</td>
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<td>System OEMs/ODMs</td>
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<td>DELL</td>
<td>Quanta Computer</td>
<td>BOSCH</td>
<td>ERICSSON</td>
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<td>Platform and Module</td>
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<td>SAMSUNG</td>
<td>Micron</td>
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<td>Chip Makers</td>
<td>Rambus</td>
<td>RENESAS</td>
<td>MONTAGE Technology</td>
<td>MICROCHIP</td>
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<td>Foundry</td>
<td>TSMC</td>
<td>SAMSUNG</td>
<td>GLOBAL FOUNDRIES</td>
<td>intel</td>
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<tr>
<td>Technology Suppliers</td>
<td>Rambus</td>
<td>cadence</td>
<td>SYNOPSYS</td>
<td>arm</td>
<td></td>
</tr>
</tbody>
</table>
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
Rambus Memory Interface Chip Growth

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

2018-2021
55% CAGR
Rambus Product Revenue (~Chips)
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
- 2020: 162
- 2021: 192

Pro Forma Operating Expenses ($M)

- 2019:
  - R&D: 80
  - SG&A: 144
- 2020:
  - R&D: 69
  - SG&A: 123
- 2021:
  - R&D: 68
  - SG&A: 120

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

- 2019:
  - Cash from Ops: 129
  - FCF per Share: 1.02
- 2020:
  - Cash from Ops: 185
  - FCF per Share: 1.26
- 2021:
  - Cash from Ops: 209
  - FCF per Share: 1.66

Cash Equivalents & Return of Capital ($M)

- 2019:
  - Cash Equivalents: 408
- 2020:
  - Cash Equivalents: 503
- 2021:
  - Cash Equivalents: 486

*Includes Product and Contract & Other Revenue
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 data center and cloud
- Continued innovation feeds patent portfolio and product roadmap expansion
- Focus on strategic initiatives drives financial results and profitable growth
- Strong cash generation enables strategic initiatives and return of capital to shareholders
Detailed Financials
### Outstanding Cash Generation

<table>
<thead>
<tr>
<th></th>
<th>ASC 606</th>
<th>ASC 606</th>
<th>ASC 606</th>
<th>ASC 606</th>
<th>ASC 606</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q1 2021</td>
<td>Q2 2021</td>
<td>Q3 2021</td>
<td>Q4 2021</td>
<td>Q1 2022</td>
</tr>
<tr>
<td>Revenue</td>
<td>$70.4</td>
<td>$84.9</td>
<td>$81.3</td>
<td>$91.8</td>
<td>$99.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Balanced portfolio drives growth</td>
</tr>
<tr>
<td>Total Operating Costs and Expenses¹</td>
<td>$58.2</td>
<td>$56.1</td>
<td>$62.8</td>
<td>$65.4</td>
<td>$74.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Strategic R&amp;D investment to support growth initiatives</td>
</tr>
<tr>
<td>Operating Income¹</td>
<td>$12.1</td>
<td>$28.8</td>
<td>$18.5</td>
<td>$26.4</td>
<td>$24.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Operating results under ASC 606 do not reflect significant cash flows from fixed-fee licensing arrangements</td>
</tr>
<tr>
<td>Cash from Operations</td>
<td>$39.5</td>
<td>$51.6</td>
<td>$46.0</td>
<td>$72.2</td>
<td>$42.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Solid cash generation</td>
</tr>
</tbody>
</table>

¹Please refer to reconciliations of non-GAAP financial measures included in this presentation and in our earnings release
## Strong Balance Sheet Supports Strategic Initiatives

<table>
<thead>
<tr>
<th>In Millions</th>
<th>Q1 2021</th>
<th>Q2 2021</th>
<th>Q3 2021</th>
<th>Q4 2021</th>
<th>Q1 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Cash &amp; Marketable Securities</strong></td>
<td>$529.1</td>
<td>$477.1</td>
<td>$419.7</td>
<td>$485.6</td>
<td>$343.7</td>
</tr>
<tr>
<td>Solid cash from operations offset by $157M convertible debt repayment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td>$1,235.8</td>
<td>$1,153.0</td>
<td>$1,202.7</td>
<td>$1,232.6</td>
<td>$1,060.9</td>
</tr>
<tr>
<td>Strong balance sheet with limited debt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stockholders’ Equity</strong></td>
<td>$909.4</td>
<td>$830.6</td>
<td>$847.8</td>
<td>$862.4</td>
<td>$793.1</td>
</tr>
<tr>
<td>$225M and $259M contract assets in Q1 2022 and Q4 2021, respectively, related to ASC 606 adoption</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Cash from Operations</strong></td>
<td>$39.5</td>
<td>$51.6</td>
<td>$46.0</td>
<td>$72.2</td>
<td>$42.6</td>
</tr>
<tr>
<td>Sustained, predictable cash generation</td>
<td></td>
<td></td>
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</table>
## Reconciliation of Non-GAAP Financial Measures

<table>
<thead>
<tr>
<th></th>
<th>Q1 2021 (ASC 606)</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>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Net Income (Loss) in Millions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GAAP Net Income (Loss)</td>
<td>($3)</td>
<td>$11</td>
<td>$4</td>
<td>$6</td>
<td>($66)</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>$7</td>
<td>$6</td>
<td>$8</td>
</tr>
<tr>
<td>Acquisition-related costs and retention bonus expense</td>
<td>$1</td>
<td>$2</td>
<td>$2</td>
<td>$1</td>
<td>$3</td>
</tr>
<tr>
<td>Amortization of acquired intangible assets</td>
<td>$5</td>
<td>$5</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>$2</td>
<td>$1</td>
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<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>$3</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Provision for (benefit from) income taxes</td>
<td>($4)</td>
<td>($5)</td>
<td>($4)</td>
<td>($5)</td>
<td>($6)</td>
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<tr>
<td>Change in fair value of earn-out liability</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$5</td>
<td>$1</td>
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<tr>
<td>Loss on fair value adjustment of derivatives, net</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$8</td>
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<tr>
<td>Loss on extinguishment of debt</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$66</td>
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<tr>
<td><strong>Non-GAAP Net Income</strong></td>
<td><strong>$11</strong></td>
<td><strong>$23</strong></td>
<td><strong>$16</strong></td>
<td><strong>$21</strong></td>
<td><strong>$20</strong></td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Q1 2021 (ASC 606)</th>
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<th>Q3 2021 (ASC 606)</th>
<th>Q4 2021 (ASC 606)</th>
<th>Q1 2022 (ASC 606)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating Income (Loss) in Millions</strong></td>
<td></td>
<td></td>
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<tr>
<td>GAAP Operating Income (Loss)</td>
<td>($3)</td>
<td>$14</td>
<td>$5</td>
<td>$9</td>
<td>$8</td>
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<tr>
<td>Adjustments:</td>
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<td>$2</td>
<td>$2</td>
<td>$1</td>
<td>$3</td>
</tr>
<tr>
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<td>$5</td>
<td>$5</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>$3</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>$0</td>
<td>$5</td>
<td>$1</td>
</tr>
<tr>
<td><strong>Non-GAAP Operating Income</strong></td>
<td><strong>$12</strong></td>
<td><strong>$29</strong></td>
<td><strong>$19</strong></td>
<td><strong>$26</strong></td>
<td><strong>$24</strong></td>
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<td>Depreciation</td>
<td>$5</td>
<td>$5</td>
<td>$5</td>
<td>$6</td>
<td>$6</td>
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<tr>
<td><strong>Adjusted EBITDA</strong></td>
<td><strong>$17</strong></td>
<td><strong>$34</strong></td>
<td><strong>$24</strong></td>
<td><strong>$32</strong></td>
<td><strong>$30</strong></td>
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Certain amounts may be off $1.0M due to rounding.
## Revenue and Licensing Billings

<table>
<thead>
<tr>
<th>In Thousands</th>
<th>Royalty Revenue</th>
<th>Product Revenue</th>
<th>Contract and Other Revenue</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASC 606</strong></td>
<td><strong>Q1’21</strong></td>
<td><strong>Q2’21</strong></td>
<td><strong>Q3’21</strong></td>
<td><strong>Q4’21</strong></td>
</tr>
<tr>
<td>Royalty Revenue</td>
<td>$28,859</td>
<td>$41,910</td>
<td>$33,044</td>
<td>$32,893</td>
</tr>
<tr>
<td>Product Revenue</td>
<td>$30,781</td>
<td>$31,170</td>
<td>$36,710</td>
<td>$45,274</td>
</tr>
<tr>
<td>Contract and Other Revenue</td>
<td>$10,742</td>
<td>$11,779</td>
<td>$11,528</td>
<td>$13,614</td>
</tr>
<tr>
<td>Total</td>
<td><strong>$70,382</strong></td>
<td><strong>$84,859</strong></td>
<td><strong>$81,282</strong></td>
<td><strong>$91,781</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In Thousands</th>
<th>Licensing Billings¹</th>
<th><strong>ASC 606</strong></th>
<th><strong>Q1’21</strong></th>
<th><strong>Q2’21</strong></th>
<th><strong>Q3’21</strong></th>
<th><strong>Q4’21</strong></th>
<th><strong>FY 2021</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Royalty Revenue</td>
<td>$28,859</td>
<td>$41,910</td>
<td>$33,044</td>
<td>$32,893</td>
<td>$136,706</td>
<td>$30,464</td>
<td></td>
</tr>
<tr>
<td>Licensing Billings¹</td>
<td>$63,506</td>
<td>$65,216</td>
<td>$66,105</td>
<td>$66,586</td>
<td>$261,413</td>
<td>$64,102</td>
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<tr>
<td>Delta</td>
<td><strong>$34,647</strong></td>
<td><strong>$23,306</strong></td>
<td><strong>$33,061</strong></td>
<td><strong>$33,693</strong></td>
<td><strong>$124,707</strong></td>
<td><strong>$33,638</strong></td>
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</table>

<table>
<thead>
<tr>
<th>In Thousands</th>
<th>ASC 606 Interest Income²</th>
<th><strong>ASC 606</strong></th>
<th><strong>Q1’21</strong></th>
<th><strong>Q2’21</strong></th>
<th><strong>Q3’21</strong></th>
<th><strong>Q4’21</strong></th>
<th><strong>FY 2021</strong></th>
</tr>
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<tbody>
<tr>
<td>ASC 606 Interest Income²</td>
<td>$2,842</td>
<td>$2,382</td>
<td>$2,163</td>
<td>$1,907</td>
<td>$9,294</td>
<td>$1,827</td>
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</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 Actual Q1’22</th>
<th>Non-GAAP Actual Q1’22</th>
<th>Delta to GAAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>$99.0</td>
<td>$99.0</td>
<td>$-</td>
</tr>
<tr>
<td>Cost of revenue</td>
<td>22.4</td>
<td>18.9</td>
<td>(3.5)</td>
</tr>
<tr>
<td>Research and development</td>
<td>39.8</td>
<td>35.8</td>
<td>(4.1)</td>
</tr>
<tr>
<td>Sales, general and administrative</td>
<td>27.3</td>
<td>20.2</td>
<td>(7.1)</td>
</tr>
<tr>
<td>Change in fair value of earn-out liability</td>
<td>1.2</td>
<td>0.0</td>
<td>(1.2)</td>
</tr>
<tr>
<td>Total operating cost and expenses</td>
<td>90.7</td>
<td>74.9</td>
<td>(15.8)</td>
</tr>
<tr>
<td>Operating income</td>
<td>8.3</td>
<td>24.2</td>
<td>15.9</td>
</tr>
<tr>
<td>Interest and other income (expense), net</td>
<td>(74.0)</td>
<td>(0.3)</td>
<td>73.7</td>
</tr>
<tr>
<td>Income (loss) before income taxes</td>
<td>(65.7)</td>
<td>25.7</td>
<td>91.5</td>
</tr>
<tr>
<td>Provision for income taxes</td>
<td>0.5</td>
<td>6.2</td>
<td>5.7</td>
</tr>
<tr>
<td>Net income (loss)</td>
<td>($66.2)</td>
<td>$19.6</td>
<td>$85.8</td>
</tr>
</tbody>
</table>
Product Overview
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 &amp; DB</td>
<td>RCD &amp; DB</td>
<td>DDR4 NVRCD</td>
<td>RCD &amp; DB</td>
</tr>
</tbody>
</table>

- **DDR5 RCD & DB**
  - Per JEDEC Direction
  - Speeds of 5600 MT/s
  - Ongoing qualifications

- **DDR4 RCD & DB**
  - JEDEC Compliant
  - Speeds up to 3200 MT/s
  - Multiple OEM qualifications

- **NV DDR4 NVRCD**
  - JEDEC Compliant
  - Speeds up to 3200 MT/s
  - Ongoing qualifications

- **DDR3 RCD & DB**
  - JEDEC Compliant
  - Speeds up to 2133 MT/s
  - Multiple OEM qualifications

### 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
DDR DIMMs Boost Capacity and Bandwidth

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

**Figure:**

- **DDR5 Registered DIMM (RDIMM):**
  - Memory Interface Chips = RCD + DB
  - DRAM interfaces are connected through RCD and Data Buffer (DB).

- **DDR5 Load Reduced DIMM (LRDIMM):**
  - Similar setup as RDIMM but with reduced load for improved performance.

- **CPU:**
  - Connects to DIMM Memory Interface directly through RCD and DB for efficient data transfer.

**Memory Interface Chips = RCD + DB**
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>IP Products</td>
<td>2.0</td>
<td>3.0</td>
</tr>
<tr>
<td>PHY</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>Digital Controller</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td><strong>Availability</strong></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

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

- 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**
- PCIe 5
- CXL 2/1.1
- PCIe 4/3/2

**32G**
- CEI-28/25/11
- 40/10GbE
- JESD204B/C
- CPRI

**28G**
- 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

*avery* design systems

Data • Faster • Safer
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.
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.

**Security IP Portfolio**

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.

**Cryptography**
- Standard & DPA Crypto Cores
- Test Equipment
  - RTL designs
  - Test equipment

**Data at Rest**
- Platform Security
  - Crypto Cores & TRNG Cores
  - DPA Crypto Cores
  - DPA Workstation
  - Anti Counterfeiting Camouflage Cells

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

**Provisioning**
- Appliances
  - Key & Asset Injection
- Infrastructure and Appliances for Key and Asset Injection

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

**Device Security**

**Supply Chain Security**
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
Thank you