Cypress Roadmap: Aerospace Memory

Q1 2015
## Aerospace Memory Portfolio

Radiation Hardened | Latch-up Immune | QML-V¹ Certified

### Fast Async SRAM

<table>
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<tr>
<th>Non-ECC²</th>
<th>ECC²</th>
<th>Sync SRAM</th>
<th>Nonvolatile SRAM</th>
<th>FRAM</th>
</tr>
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<tbody>
<tr>
<td>CYRS104x</td>
<td>4Mb; 3.3 V</td>
<td>12 ns; x8</td>
<td>CYRS106x</td>
<td>16Mb; 1.8-5.0 V</td>
</tr>
<tr>
<td>CYRS108x</td>
<td>64Mb; 1.8-5.0 V</td>
<td>12 ns; x8, x16, x32</td>
<td>CYRS154x</td>
<td>72Mb; 1.8 V; 250 MHz</td>
</tr>
<tr>
<td>CYRS109x</td>
<td>128Mb; 1.8-5.0 V</td>
<td>12 ns; x8, x16, x32</td>
<td>CYRS264x</td>
<td>144Mb; 1.8 V; 450 MHz</td>
</tr>
</tbody>
</table>

### Sync SRAM

<table>
<thead>
<tr>
<th>QDR®-II+</th>
<th>Parallel I/O</th>
<th>Serial I/O</th>
<th>Parallel I/O</th>
</tr>
</thead>
<tbody>
<tr>
<td>CYRS14x164</td>
<td>64Mb; 1.8-5.0 V</td>
<td>35 ns; x16, x32</td>
<td>CYRS14x164</td>
</tr>
</tbody>
</table>

### Nonvolatile SRAM

| CYRS106x | 16Mb; 1.8-5.0 V | 10 ns; x8, x16, x32 | CYRS15x102 | 2Mb; 2.0-3.6 V | 40 MHz; SPI |
| CYRS108x | 64Mb; 1.8-5.0 V | 12 ns; x8, x16, x32 | CYRS15x102 | 2Mb; 2.0-3.6 V | 60 ns; x16 |

### FRAM

| CYRS15x102 | 2Mb; 2.0-3.6 V | 60 ns; x16 |

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¹ Qualified Manufacturers List Level V, per military specification MIL-PRF-38535

² Error-correcting code
72Mb QDR®-II+ SRAM with RadStop™

Applications
- Payload processing
- Reconfigurable computing platforms

Features
- Max frequency of operation/throughput: 250 MHz/36 Gb/s
- Burst sizes: 2, 4
- Bus-width configurations: x18, x36
- Military temperature grade: −55ºC to +125ºC
- Two independent unidirectional data ports for read and write enable concurrent transactions
- Maximum throughput with double data rate (DDR) data ports
- Output impedance matching input (ZQ): Matches the device outputs to system data bus impedance
- Bit-interleaving to eliminate multi-bit errors
- I/O signaling standards: 1.5-1.8 V (HSTL)
- Controller available for Xilinx and Microsemi FPGAs
- Total ionizing dose: 300 Krad
- Heavy-ION SEL²: 120 LET³ MeV-cm sq/mg
- Heavy-ION SEU⁴: 1.34E-07 (Geosynchronous) Error/Bit-day
- QML-V⁵ qualified (DSCC⁶ part number: 5962F11201/202VXA)

Collateral
- Datasheets: 72-Mbit SRAMs w/ RadStop™ Technology
- Request FPGA controller via email: radstop@cypress.com

Availability
- Non-space-qualified prototypes (CYPT154x): Now
- QML-V⁵ space-qualified devices (CYRS154x): Now

1 Cypress’s proprietary design and process technology that increases radiation-resistance
2 Single-event latch-up
3 Linear energy transfer
4 Single-event upset
5 Qualified Manufacturers List Level V, per military specification MIL-PRF-38535
6 Defense Supply Center, Columbus, is an inventory control point of the Defense Logistics Agency
4Mb Fast SRAM with RadStop™

**Applications**
- Payload processing
- Sensors and switches

**Features**
- Access time: 10 ns (85°C), 12 ns (125°C)
- Bus-width configuration: x8
- Operating voltage: 3.3 V
- Military temperature grade: −55°C to +125°C
- Bit-interleaving to eliminate multi-bit errors
- Package: 36-pin ceramic flat pack (CFP)
- Total ionizing dose: 300 Krad
- Heavy-ION SEL²: 120 LET³ MeV-cm sq/mg
- Heavy-ION SEU⁴: 5.0E-08 (Geosynchronous) Error/Bit-day
- QML-V⁵ qualified (DSCC⁶ part number: 5962F11235VXA)

**Collateral**
- Cypress Datasheet: 4-Mbit SRAM w/ RadStop™ Technology
- DSCC Datasheet: 4-Mbit SRAM w/ RadStop™ Technology
- QML-V⁵ qualified (DSCC6 part number: 5962F11235VXA)

**Availability**
- Non-space-qualified prototypes (CYPT1049): Now
- QML-V⁵ space-qualified devices (CYRS1049): Now

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¹ Proprietary Cypress design and process technology that increases radiation-resistance
² Single-event latch-up
³ Linear energy transfer
⁴ Single-event upset
⁵ Qualified Manufacturers List Level V, per military specification MIL-PRF-38535
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