

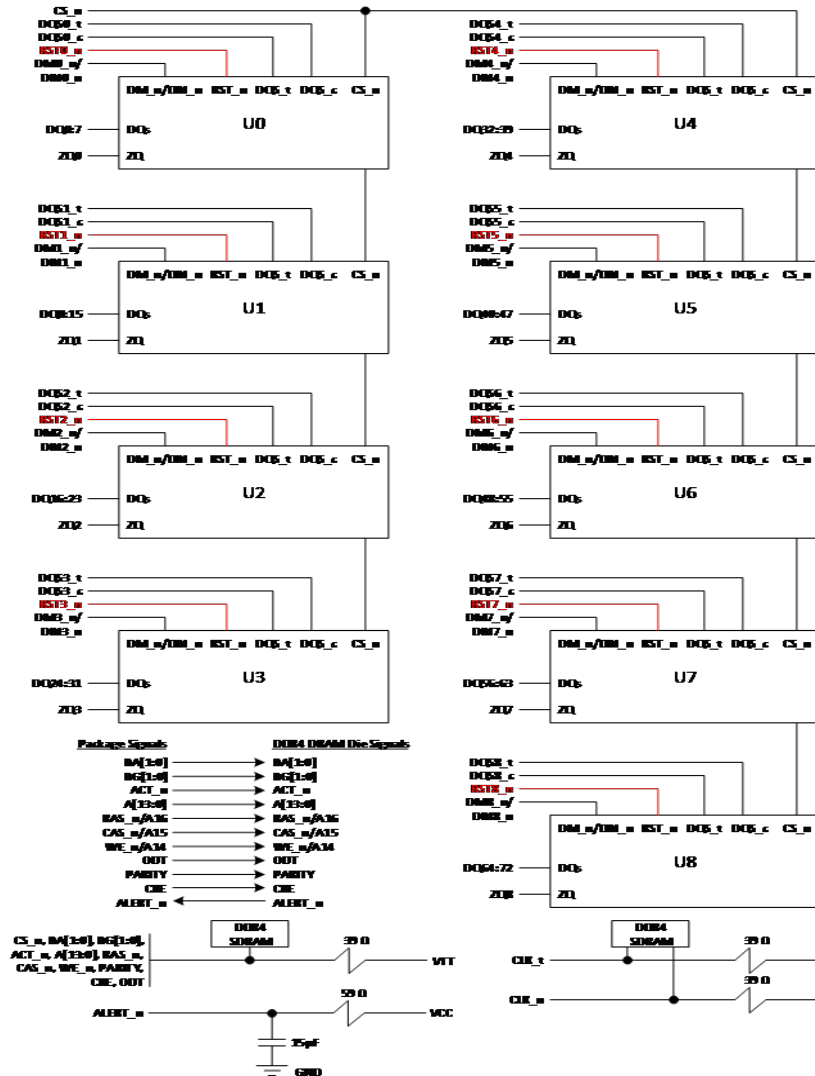
## 18GB (16GB + 2GB ECC) DDR4 Memory



For space applications demanding ultra-high memory density and throughput with exceptional space grade assurances, FRONTGRADE offers the industry leading 18Gbyte DDR4 DRAM memory module. The 18GB DDR4 provides a 2G addressing depth with a 64-bit data plus 8-bit ECC bus width capable of 2400 MT/s data throughput.

The radiation tolerant UT8SD4MQ2G72 is an ultra-high-density multi-chip module providing 18GB single-rank ECC UDIMM capability in a small 20mm x 15mm footprint. The solution allows for a module level bus width supporting 64-data bits plus 8-ECC check bits, which supports Single Error Correction and Double Error Detection (SEDED) ECC protection. To further enable SEFI recovery techniques, the UT8SD4MQ2G72 provides dedicated RESET for each die thus allowing the system controller to reset/recover SEFI die while holding the remaining die in a self-refreshing stand-by mode. For applications requiring strong EDAC and SEFI protection, the module can be used in a 48-bit data bus plus 24-bit Reed-Solomon EDAC configuration.

Radiation effects characterization report available upon request.



**Features:**

- High Density: 18GB (16GB + 2GB ECC)
- 72 bit bus
- 2,400 MT/s
- Single Power supply (1.2V nominal)
- SEFI/SEU characterized
- Individual reset signals to each die

**Applications:**

- AI & Machine Learning
- High Speed Performance Processing
- Data buffering for Solid State Drives
- Data-Intense storage & sensor processing

**Operational Environment:**

- Temperature Range: -55°C to +125°C
- Total Dose Target: 100 krads (Si)
- SEL : 40,000 yrs MTTF GEO;
  - 1,500,000 yrs MTTF ISS LEO
  - Part characterized from 37 to 82 LET
- SEU (ISS LEO): 8.93E-12 errors/bit-day (Single bit errors)
- SEFI (ISS LEO):
  - High current (Static) – 1.04E-4 events/device-day
  - dynamic –5.87E-4 events/device-day

\*Adam's 90%, 100mil Al

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**Physical:**

- 266-Ball PBGA unleaded (SAC305) or leaded (63Sn 37Pb)
- 15mm x 20mm x 1.9mm
- 1 mm ball pitch

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**Power:**

- Power: 200mW burst read/write power per die
- VCC/VCCQ: 1.26-1.14V

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**Qualifications:**

- Frontgrade's Space PEM L2 Manufacturing and Qualification Flows—based on NASA-PEM-INST-001
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