The Moog Broad Reach BRE440 CPU meets the requirements of a wide variety space and high reliability applications. The BRE440 CPU is a fully radiation hardened implementation of the PowerPC 440 processor core in a true System-On-a-Chip design, including floating point unit.

The BRE440 integrates a mix of peripheral controllers by implementing IBM’s high speed CoreConnect™ technology and contains the PPC440x5 version of the PPC440 core. The BRE440 Embedded Processor provides high performance and low power consumption. The BRE440 CPU executes at sustained speeds approaching two instructions per cycle. On-chip peripherals reduce chip count and design complexity in systems and improve system throughput. The 440 core combined with wide peripheral mix provides an ideal foundation for compact systems.

The BRE440 Chip represents the culmination of several years of internal development effort aimed at producing the highest level of space based processing capabilities.
**SPECIFICATIONS**

**Features**
- High Performance IBM PPC440 Core, 2 MIPS/MHz
- ANSI/IEEE 754-1985 compliant FPU
- Manufactured on Honeywell 150nm HX5000 Radiation Hardened ASIC Line
- Superscalar, Dual Issue, 32-bit RISC, Book E Compliant

**Memory**
- 32 kByte L1 Instruction & Data Caches
- 256 kByte unified L2 Cache (can be configured as general purpose SRAM)
- On-Chip 8 kByte SRAM
- High Bandwidth Main Memory Access with Error Detection and Correction

**Interfaces**
- PCI Interface for Peripheral Communication
- PCI Arbitration for up to 6 External Peripherals (Clock Distribution)
- 4 Channel DMA with Scatter/Gather Capability
- 32-Bit Peripheral Bus with EDAC
- 32-Bit DDR DRAM Bus with EDAC
- External Expansion Bus
- 2 Ethernet Media Access Controllers
- 2 UART Ports (16750 Compatible)
- JTAG

**Radiation Capability**
- TID >1 MRad;Latch-up immune
- SEU >40 Years/Upset (Adams 90% worst case environment)

**Core Clock Frequency**
- 100 MHz @ -55°C to 125°C
- 133 MHz @ -10°C to 80°C
- Typical Power 8.0W @ 133MHz
- Typical Power 3.5W @ 83MHz

**Availability**
- Available in many of Moog Broad Reach next generation avionics and board products.
- Engineering and flight units available now.

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