Baja4700 Technical Specs

Bus Interface

- **VMEbus**
- VME64 architecture: D64A32(7)
- Operates in Master or Slave Mode
- 64-bit and 32-bit wide block transfers using local DMA capability
- System level controller functions including 4 level arbitration
- Uses VIC64 VMEbus interface chip optimized via custom ASIC
- 2K D64 block transfer rates:
    - 166 MHz version:
        - Read - 64.46 MBytes/sec
        - Write - 62.95 MBytes/sec
    - 175 MHz version:
        - Read - 60.39 MBytes/sec
        - Write - 61.82 MBytes/sec

- **VME64 Extensions support**
- 5-row P1 & P2 backplane connectors (100% compatible with 3-row DIN backplanes)
- Provides 46 additional user-definable lines on P2 connector rows D&Z
- 35 additional signal ground lines
- Slot geographical addressing
- 3.3 Volt power
- EMC front panel reduces EMI & RFI radiation

- **Mailbox interrupts**
- Allows remote control of Baja4700 via specified VMEbus addresses
- CPU interrupt and VMEbus lock functions supported

- **PMC**
- PCI Mezzanine Card interface
- Two 32-bit PMC expansion interfaces
- Uses PLX PMC9060 controller with 2 DMA channels
- Accepts 2 single-wide or 1 double-wide PMC module
- I/O can be routed to front panel or out VMEbus P2 connector

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Processor & Memory

- **IDT ORION R4700**
- IDT R4700 implementation of MIPS R4000 architecture
- Available at 166 or 175 MHz

- True 64-bit RISC processor
- 5-stage instruction pipeline
- 16 KB two-way set associative instruction cache
- 16 KB data cache
- 4-deep write buffer
- MMU and Translation Lookaside Buffer (TLB)
- On-chip system control coprocessor manages exception handler, virtual memory system and transitions between processor operating modes
- 64-bit floating point unit on-chip
- Instruction set fully compatible with R4000 processor family

- **Random Access Memory**
- 16 or 64 Mbytes DRAM with parity
- 64-bit data bus
- 2-way bank interleaved architecture
- One parity bit per byte
- Transparent discrete hardware refresh

- **Read Only Memory**
- Up to 512 Kbytes capacity
- Supports 64K, 128K and 512K

- **Flash Memory**
- 1 or 4 Mbytes flash memory
- 512 Kbytes used for monitor & power-on diagnostics
- Provides field upgradeable non-volatile program storage

- **EEPROM**
- 2 Kbytes Non-Volatile RAM
- Storage for user definable parameters such as baud rates, software and hardware revision levels and configuration information
- Provides field upgradeable non-volatile program storage

- **Timers/Counters**
- Real-time clock with 10 msec resolution
- Three 32-bit timer/counters with 62.5 nsec resolution
- Interrupt capability

Peripheral I/O

- **Ethernet Interface**
- Intel 82596CA 32-bit LAN coprocessor
- On-chip DMA, FIFO's, and memory management
- Conforms to IEEE 802.3
- AUI interface connector via cable off front panel
- 800 Kbytes/sec throughput obtained using TCP/IP protocol

- **Serial I/O**
- Two front panel serial I/O ports provided via ASIC
- Intel 8251A UART emulation
- RS-232 standard

- Transfer rates up to 1Mbit/sec (cable length dependent)

Software support

- Wind River Systems' VxWorks real-time operating system and development environment
- ISI's pSOS real-time operating system and development environment
- On-board monitor and power-on diagonostics

Physical Characteristics

- Multilayer with ground and VCC planes
- Board size: 233.5 mm x 160 mm (9.19 in. x 6.3 in.)
- Power requirements: +5VDC @ 5.8A, +12VDC @ 50mA, -12VDC@30mA (power measured with on 16MB board with no PMC modules and no Ethernet transceiver)
- Storage Temperature: -40C to 85C
- Operating range: 0-55C, 85% relative humidity (non-condensing)

- **Front Panel**
- Reset / Interrupt switch
- LED display
- Ethernet port connector
- Serial port connector

Target Applications

- Communications system control
- Network bridge
- Switch control
- Video on demand server
- Data acquisition
- Imaging