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Data Sheet

MM-6494D

4GB Dual RACE++ SDRAM, Type B Daughtercard

Features

- ◆ Capacity: 512MB, 1GB, 2GB, 4GB
- ◆ Two independent RACE++ nodes provide simultaneous access to each memory blocks
- ◆ Compatibility: MCJ6, MCJ9, MCH6, MCH9 or ImpactRT (TM) carriers
- ◆ Data Transfer Rates up to: 533MB/s
 - RACE++ Port A: 267MB/s
 - RACE++ Port B: 267MB/s
- ◆ Error Detection and Correction
- ◆ MC/OS descriptors provided for easy configuration - no complicated device driver integration required

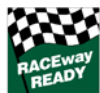
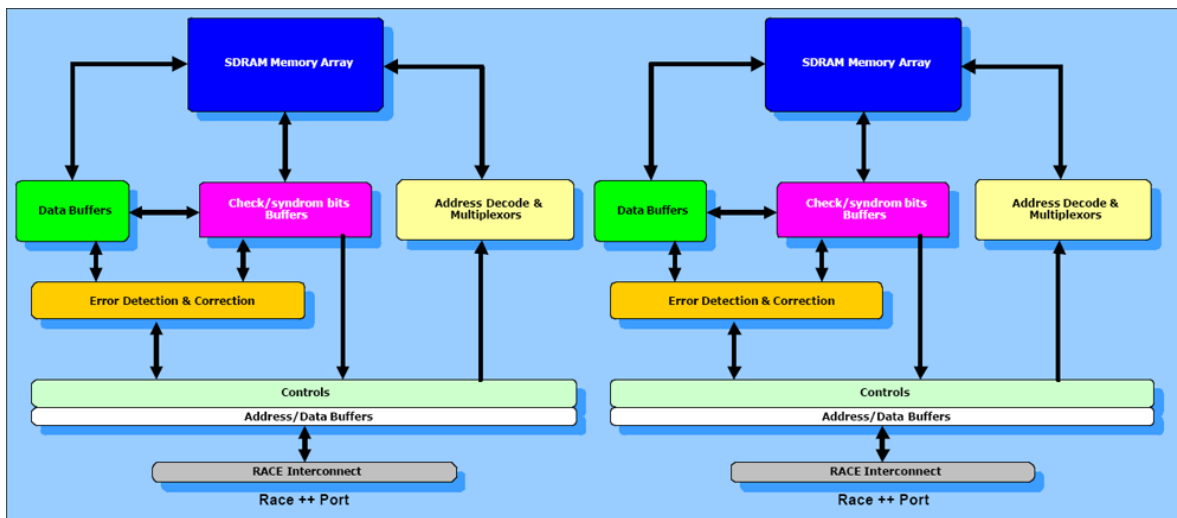
Overview

The MM-6494D is a RACE++ memory card in a Type B form factor designed for use on Mercury Computers® MCJ6, MCJ9, MCPJ6, MCPJ-IO, MCH6, MCH9 and the MM-6495D VME carrier. The card can be plugged into a single daughtercard site and provide a large buffer for incoming and outgoing data.

The MM-6495D has two independent RACE++ ports; each port has an individual memory bank with up to 2GB of SDRAM. Each memory bank can be accessed simultaneously, but only through its dedicated RACE++ port with each supporting burst transfer rates of up to 267MB/s. This architecture provides that data from the two independent

RACE++ ports can be directly transmitted or received from any one of two "non-busy" memory banks to achieve an aggregate transfer rate of up to 534MB/s.

Figure 1: Memory Controller Block Diagram



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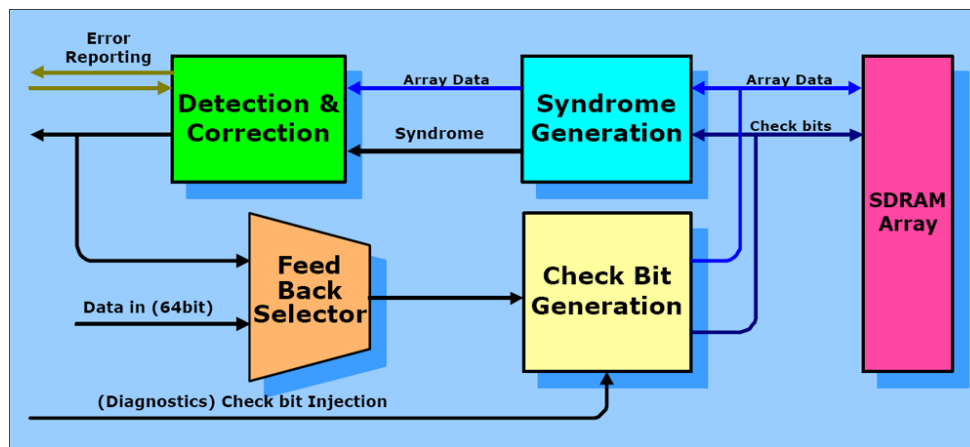
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Figure 2: Memory Controller, Error Detection and Correction



Memory Array

DRAM devices are utilized to provide 512MB, 1GB, 2GB or 4GB card configurations. The 72-bit wide memory array uses 64 bits for data and 8 bits for ECC. Depth of the array changes in proportion to the card's total configuration. For example, using 72-bit wide words, a 256MB card is 32 mega-words deep and a 4GB card is 512 mega-words deep. To provide these larger configurations and stay within the physical specifications of a Type B daughtercard, a specialized stacking technology is utilized that maximizes memory density for form factors where real estate comes at a high premium.

Memory Controller

The card's RACE++ memory controller supports block transfers and data transfer rates of up to 267MB/s. In addition to handling data management, the controller corrects single bit errors and provides double bit detection.

Applications

System architects tasked with optimally matching compute node processing power to meet the requirements of intensive data streaming applications face a challenging puzzle. If the application is a real time environment the amount of incoming data might vary in size and/or not follow a consistent schedule. And if this data has to reach persistent storage with limited I/O capabilities, such as found with hard drives or FLASH disks, the complexities are further compounded. Designed specifically for use in these types of intensive data streaming application that utilize array processors, the MM-6494D card can be placed at the front or rear of the system to buffer incoming and outgoing data.

Individual compute nodes are then afforded the luxury of receiving, processing and transferring the streaming data at will, with the additional benefit of reducing arbitration and overhead for the host. This strategy can greatly reduce total compute time and improve overall system performance.

Integration

Unlike memory on the PCI bus that can require complicated integration and OS specific drivers, the MM-6494D includes easy to install MC/OS descriptors and configuration files. Once configured, the memory can be mapped and accessed over the RACE++ connection using MC/OS system calls. The User Guide describes how to read and write to the MM-6494D using memory pointers and how to use the compute node's DMA controller to perform high-speed block transfers.

Reliability

Reliability is ensured by burn-in and running memory diagnostics that check operations for 48 hours while temperature-cycling boards from 0°C to 65°C.



Table 1: Specifications

Capacity	512MB, 1GB, 2GB, 4GB
Interface	2 independent RACE++ nodes
Form Factor	Type B Daughtercard (5.000in x 4.35in)
Compatibility	VME: MCJ6, MCJ9, MM-6495D, MM-6496D cPCI: MCPj6, MCPJ-IO, ImpactRT S500
Burst Mode Transfer Rate	Up to 267MB/s per node
Data Integrity	Error Detection and Correction (EDC) for all single-bit errors and detection for double-bit errors
Sequential Access	Block transfer (BLT) of 2KB per port
Data In / Data Out	32-bits multiplexed
Refresh	Refresh cycles are 100nsec every 7.5usec.
Power Requirements (3.3V Supply)	Standby: 1.27A Operate: 2.15A (max)

Power Dissipation	7.1W (worst case)	
Physical Dimensions	Height: TBD Depth: TBD Front Panel Height: TBD	Width: TBD Max Component Height: TBD Weight: TBD
	Temperature	Operating: 0°C to +60°C (at an altitude of 10,000ft.) Storage: -40°C to +85°C
Shock	Z-axis: 20g, 11 ms half sine X & Y-axis: 32g, 11 ms half sine Z-axis: 20g, 1 ms half sine	
Relative Humidity	Up to 95% without condensation	
Max Operating Altitude	10,000ft.	
Air Flow	10 CFM min.	

Warranty

This product has a one year warranty.

Contact Information

To find your appropriate sales representative, please visit:

Website: www.cwembedded.com/sales

Email: sales@cwembedded.com

For technical support, please visit:

Website: www.cwembedded.com/support1

Email: support1@cwembedded.com

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