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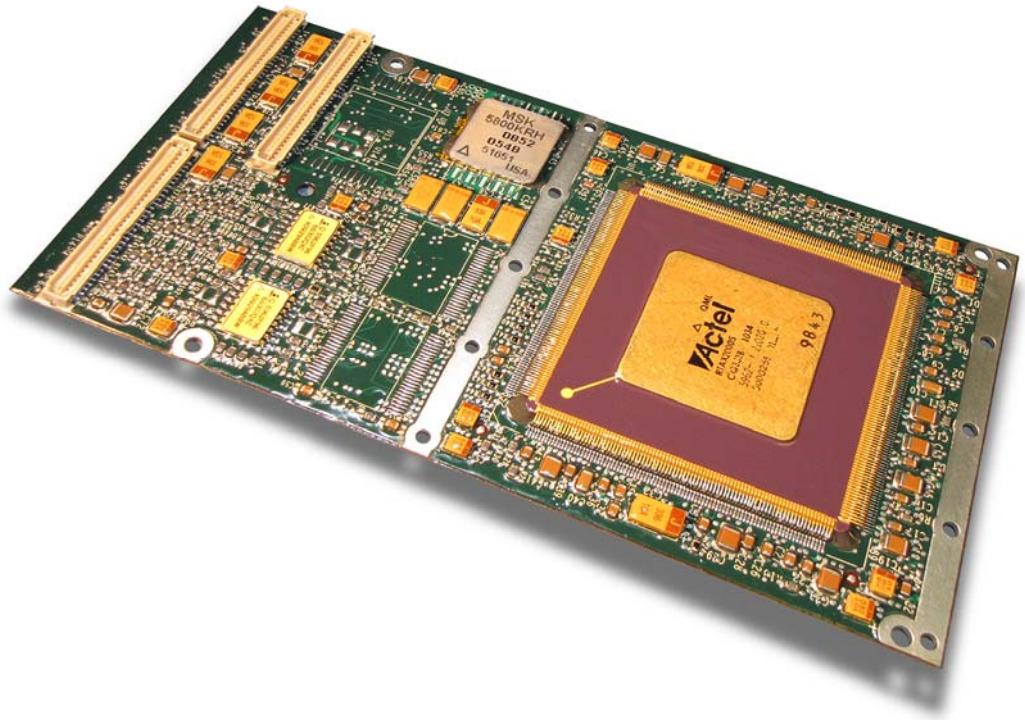
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Find the *Aitech Defense Systems S740* at our website: ***Click HERE***

S740

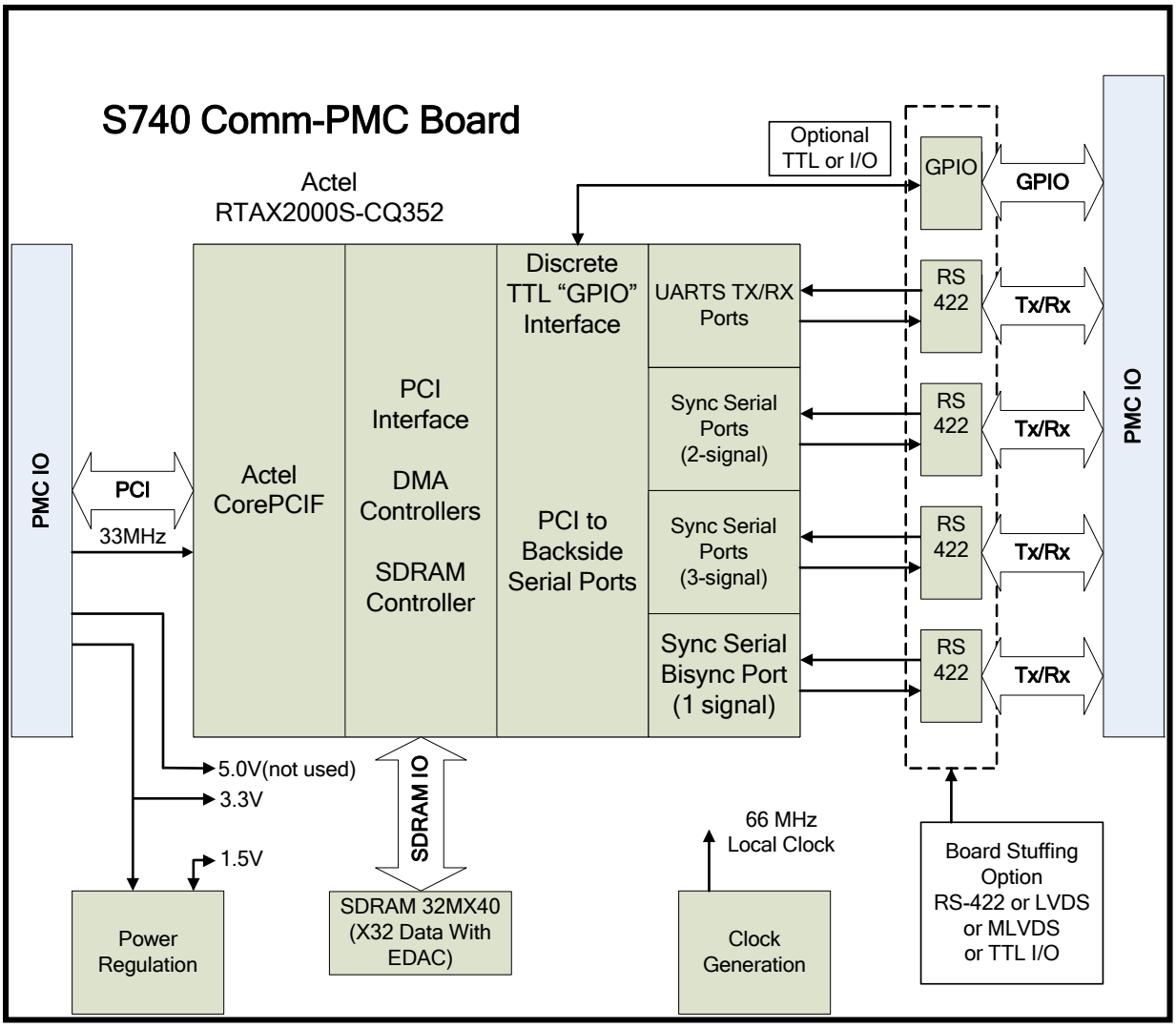
Radiation Tolerant Communications PMC



- **16 Input and 16 Output Differential channels of RS-422, LVDS, MLVDS**
- **Optional up to 64 TTL Drivers and/or Receivers (or mixture I/O standards)**
- **Custom and Standard Product FPGA Control Logic available for a variety of spacecraft standard or custom data interfaces**
- **Serial I/O can be configured to NRZ-L, NRZ-M and BiPhase-L Modes with changes to the FPGA**
- **DMA engine for data transfer to and from the SBC via the local PCI (PMC) Bus**
- **128 Mbytes of ECC Protected On-Board Memory Integrated with DMA controller for Input and Output data packet buffering**
- **Rear I/O via the Motherboard (SBC or Carrier Card) to the cPCI backplane**
- **Software Configurable Interrupt capability to indicate completion of DMA controlled packet data transfers**
- **IEEE 1101.2 (conduction cooled) for both engineering unit and flight unit**
- **32-bit PCI 3.0 compliant PCI Master/Slave interface at 33.333 MHz**
- **S740 nominal power consumption is less than 5 Watts**

Aitech Defense Systems Inc.
A member of the Aitech Rugged Group
19756 Prairie Street, Chatsworth, CA 91311
Tel: (888) AITECH-8 (888-248-3248) Fax: (818) 407-1502 e-mail: sales@rugged.com web: www.rugged.com

S740
Radiation Tolerant Communications PMC



S740 Block Diagram

S740 Radiation Tolerant Communication PMC

Aitech's S740 Communications PMC is a single width, conduction-cooled PCI mezzanine card (PMC) with a 33.333 MHz 32-bit PCI-Bus Interface mezzanine, designed and characterized primarily for Space applications. The S740 features 16 RS-422 differential Inputs and 16 RS-422 differential Outputs with onboard FPGA logic to interface to the external spacecraft sensors and devices. The S740 has an on board PCI Bus DMA controller to move data to/from System Buffers and the local on-board SDRAM Buffers. An additional DMA controller moves data to/from the SDRAM Buffers to/from the serial I/O Ports. Output data packets are automatically sent out from the on board buffers and incoming data packets are stored on board until a programmable packet size is received and the local DMA controller then transfers received data to global memory across the PCI bus.

Available Models of the S740 Communications PMC

Feature	Model S740-01	Model S740-02
16 RS-422 or LVDS or MLVDS Transmit Buffers	X	X
Multiple TX and RX Termination Options Available	X	X
Up to 64 TTL I/O channels available (Stuffing Options with Above)	X	X
Standard and Custom Interface Protocol Interfaces Available (UARTS, Sync Serial Ports, Discrete I/O).	X	X
DMA Controller for PCI to S740 Local Bus SDRAM Buffers	X	X
DMA Controller capable of 8-Word (32 Byte) cPCI Burst Transfers at full bus data rate (33.333 MHz)	X	X
128 Mbytes On-Board SDRAM Buffer		
Asynchronous UARTS; 9600 to 115.2 KBaud; 7, 8 Bit; Parity On/Off	5	8
4 Additional Multiplexed UART I/O Ports (shared with 4 of the UARTS above)		X
1PPS (GPS Sync Pulse) Input (with Interrupt to software service timer)	X	
3 - RS-422 (or TTL) Discrete Outputs	X	
Sync Serial Output Port with: Clock Data Enable Gate	X	
3 - Sync Serial Input Ports with: Clock Data Enable Gate (input)	X	
Sync Serial Input Port with: Input Data Output Clock Output Enable Gate	X	
Sync Serial Output Port with: Continuous Clock Data (or Sync Bytes Fill)	X	
Sync Serial Output Port with Manchester Encoded Data Stream (Data Packets Inserted in Continuous NRZ Stream).	X	
2 Synchronous Serial I/O Ports (Clock and Data). These Ports are capable of continuous streaming serial data transfers up to 2.0 MegBaud. (Note: Multiple Synchronous Serial Channels with higher data rates are available on request.		X

S740

Radiation Tolerant Communications PMC

Mechanical Features

The S740 is available in a conduction cooled PMC form factor per ANSI/VITA20-2001 for installation mounted on ANSI/VITA 30.1 or ANSI/IEEE 1101.2 conduction-cooled carrier boards.

Dimensions

All versions are offered in a conduction-cooled PMC form factor per ANSI/VITA 20-2001 standard.

Radiation Performance

- Radiation Tolerant design with mitigation and or immunity to SEE, TID and Latch-up.
- Standard design meets or exceeds the ISS environment with the South Atlantic Anomaly assuming 100 mils aluminum shielding, i.e. external to the ISS.
  - The ISS External Environment is defined as follows:
    - Orbit: 350 – 400 km @ 51.6°
    - Mission Duration: 10-15 years
    - Trapped Proton Env: AP8MAX
    - Trapped Electron Env: AE8MAX
    - MAX TID: 37kRad (Si)
    - Latchup Threshold: 15 MeV-cm^2/mg
    - SEE Environment: AP8 solar min.
    - Single Event Upset: 1 unmitigated per year
    - Single Event Functional Interrupt: 1 unmitigated per 5 years
- Custom Options are available for Polar, GEO and Interplanetary Missions and require tailoring the testing procedure to ensure mission success. For these options, please contact Aitech directly.

Component Selection

The flight-qualified components used on the S740 are selected in accordance with NASA Goddard Space Flight Center (GSFC) 311-INST-001 Rev A, (1996), Level 2. Other component selection criteria are also available. Please contact your Aitech representative for additional information.

Power Requirements

The S740 draws its power +3.3V (VIO inputs) from the standard PMC interface. It then regulates its own IC-Core power on board (+1.5V)

The S740 typical power consumption is less than 3.5 Watts. The S740 power consumption is estimated as follows:

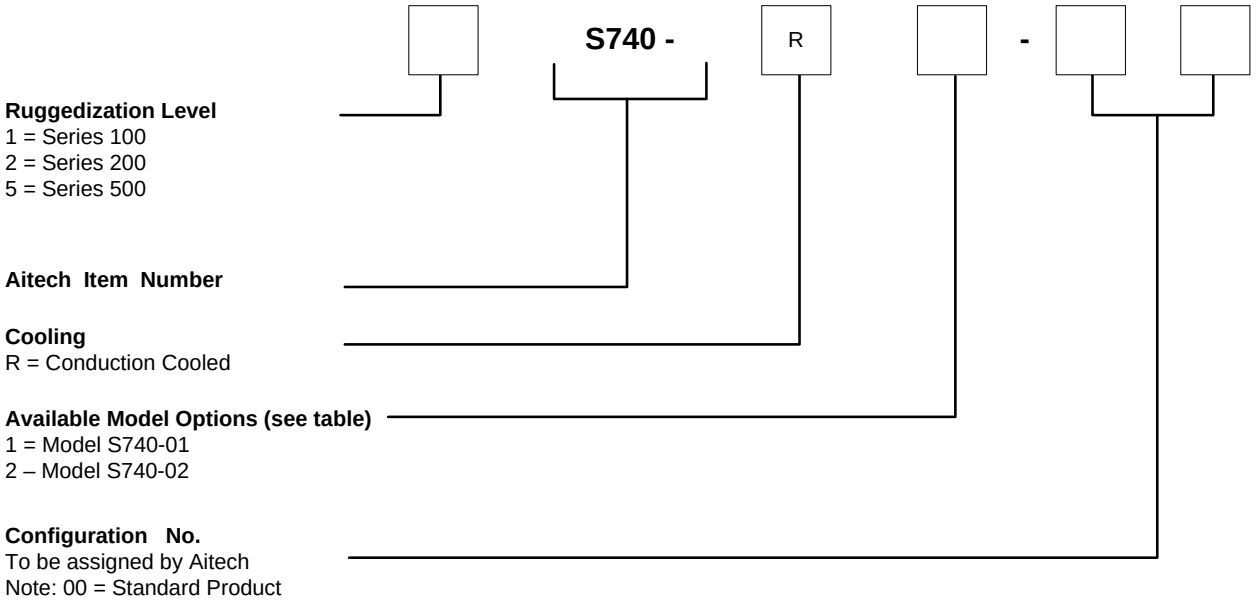
+3.3V (+/-5%) 1.1 amp (typical)

Environmental Features

Please refer to Aitech Ruggedization Datasheet:
http://www.rugged.com/ruggedization-levels

Ordering Information

Ordering Information for the S740



Example Configurations: 1S740-R1-00, 2S740-R1-00, 5S740-R2-xx

For more information about the S740 or any Aitech product, please contact the Aitech Defense Systems sales department at (888) AITECH-8 (888-248-3248).

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