



S703

Radiation Tolerant MIL-STD-1553B PMC



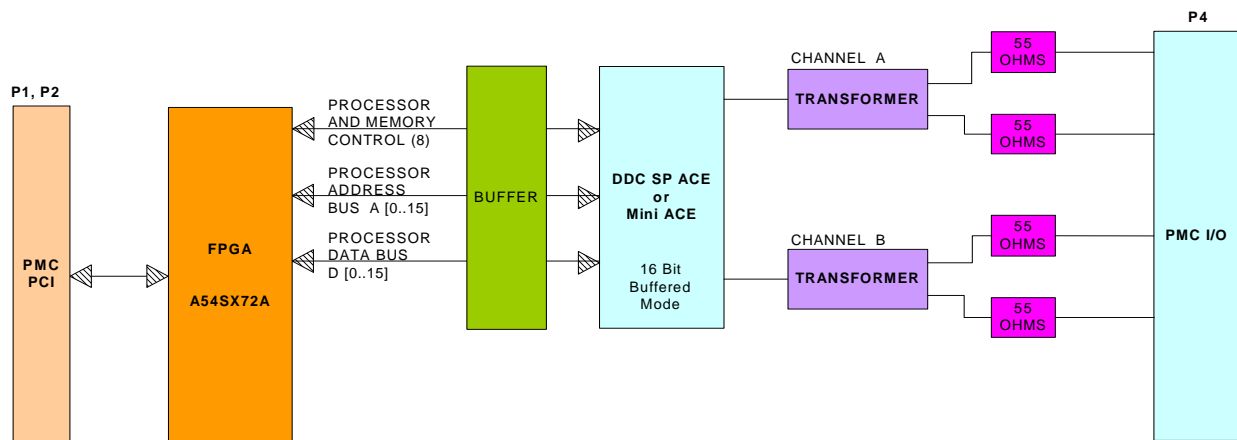
- **Designed for LEO, Mars Terrestrial with an Option for GEO Environments**
- **One MIL-STD-1553B Dual Redundant BC/RT/MT (STANAG 3838 compliant) Channel**
- **64k X 16 Shared RAM per Channel for Engineering Unit and 16k X 16 for Flight Unit**
- **Simultaneous RT/Monitor Mode and Automatic BC Frame Retries**
- **On-Board Interrupt Mask And Status Register**
- **Programmable BC Gap Timing**
- **Programmable RT Address (Software or Hardwired)**
- **Integrated BIT (Built-In Test) Capability**
- **Full BC/RT/MT Driver Library for VxWorks**
- **IEEE 1101.2 (conduction cooled) for both engineering unit and flight unit**
- **32-bit PCI 2.1 compliant cPCI interface at 33.333 MHz**
- **S703 nominal power consumption is less than 3.9 Watts**
- **Level-2 Components per NASA GSFC 311-INST-001A specification are available**

Aitech Defense Systems Inc.

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S703 Radiation Tolerant MIL-STD-1553B PMC

Aitech's S703 MIL-STD-1553B PMC features one BU61688 Mini-Advanced Communication Engine or a BU61582 SpaceACE hybrid by DDC. Each terminal provides dual transceiver and encoder/decoder, complete MIL-STD-1553B protocol, 16k words of shared RAM, and memory management logic for all three modes (BC/RT/MT). Background Mode Operation prevents inadvertent access to the card during power-on self-test. On-board Interrupt Mask and Interrupt Status Registers support flexible operation for both interrupt and polling applications.

The memory management scheme for RT mode provides an option for separation of broadcast data plus a circular buffer option for individual RT sub-addresses to off-load the demands on the PC host processor.

The S703's PCI interface provides bridging capabilities between the carrier board PCI bus and the local MIL-STD-1553B controller bus. The Bridge supports a 32-bit wide PCI bus clocked at 33.333 MHz. This high bandwidth path can achieve data transfer rates of 132 MB/s taking advantage of the 32-bit data width required. The PCI Local Bus is compliant to Rev. 2.1 specifications.

The S703 interface to the MIL-STD-1553B bus is either for transformer (long stub) or direct (short stub) coupling. Each S703 terminal/channel pair can be switched to use either transformer or direct coupling according to the factory installed configuration (transformer coupling by default).

Both, transformer and direct-coupling configurations require the use of an isolation transformer located on the S703 PMC. For the (long stub) transformer-coupled configuration, a second transformer (referred to as a bus-coupling transformer) is required, in accordance with MIL-STD-1553B.

In addition, both coupling configurations require an isolation resistor to be placed in series with each leg of the transformer connecting to the MIL-STD-1553B bus. This design protects the bus against short circuit conditions in the transformers, stubs, or terminal components.



Mechanical Features

The S703 is available in a conduction cooled form factor per ANSI/VITA20-2001 for installation on top of an IEEE 1101.2 conduction-cooled carrier boards

Dimensions

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

Radiation Performance

- Radiation Tolerant with a minimum unshielded Total Ionization Dose (TID) of greater than 35 krad (Si). Higher TID tolerance can be available upon request.
- Latch-up Immune with a high LET of 37 MeV•cm²/mg
- Low SEU Rate – less than 1 upset per 25 years of operation at ISS orbit

Power Requirements

The S703 draws its power +5.0V and +3.3V (VIO inputs) from the standard PMC interface. It then generates its own power on board (+2.5V).

S703 typical power consumption is less than 3.9 Watts at 50% duty cycle. The S703 power consumption is estimated as follows:

+3.3V	(+5%)	0.2A
+5V	(±5%)	0.44A (idle)
		0.53A (25% duty cycle)
		0.65A (50% duty cycle)
		0.86A (100% duty cycle)

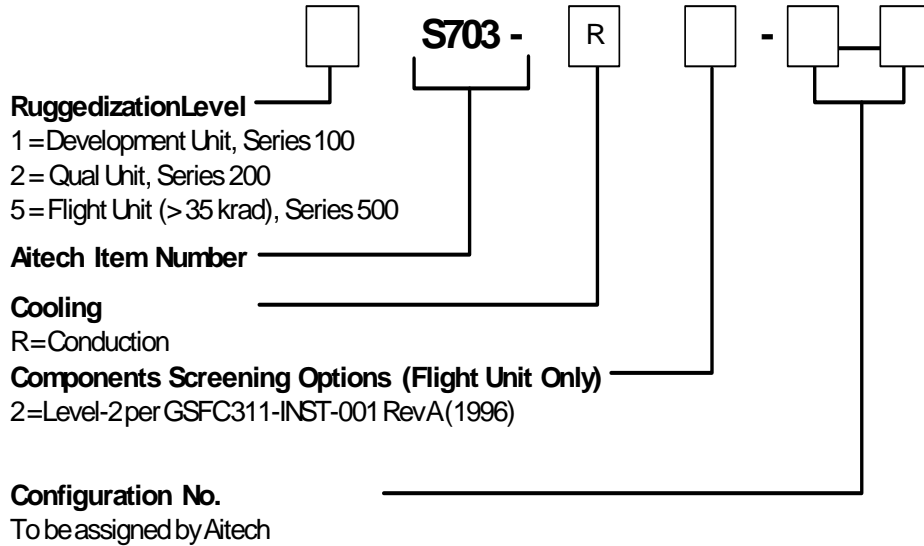
Environmental Features

Please refer to Aitech Ruggedization Datasheet:

<http://www.rugged.com/home/rugged.html>



Ordering Information



Available Configurations are: 1S703-R, 2S703-R, 5S703-R2

For more information about the S703 or any Aitech product, please contact Aitech Defense Systems sales department at (888) AITECH-8 (888-248-3248).



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