



# Rugged TVME6100-R Single Board Computer

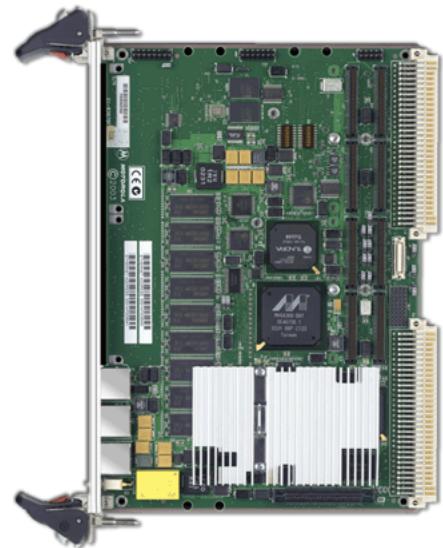
The TVME6100-R is the first board to utilize the Tundra Tsi148 interface chip for 2eSST VMEbus performance. The 2eSST protocol enables up to 320MB/s VMEbus bandwidth for most applications. It is enhanced to withstand shock and vibration extremes in excess of the original Motorola SBC specification. Conformally coated, this rugged solution is designed for use in critical embedded systems deployed in the most demanding military and industrial environments.

## Key Environmental Features:

- Qualified to environmental standards of MIL STDs 810F, 901D and 167, and 461
- Shock: MIL STD 810F, 45g's at half-sine 20 ms
- Vibration: MIL STD 167, 5g's at 50 to 500Hz sine and .05g<sup>2</sup>/Hz at 15Hz to 2KHz random
- Conformal Coating per MIL STD I-46508, urethane
- Operating temperature: 0°C to +55°C
- Altitude: -1,500 ft to 11,000 ft
- Humidity: 5% to 95% non-condensing with resistance to salt fog
- *Ask about our extensions to any environmental standards*

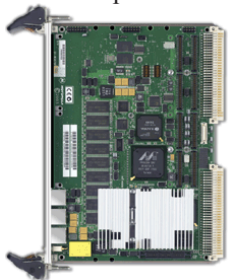
## TVME6100-R Features:

- ◆ 2eSST VMEbus protocol with 320MB/s transfer rate across the VMEbus
- ◆ MPC7457 PowerPC® processor at 1.267 GHz
- ◆ 256KB of on-chip L2 cache and 2MB of L3 cache
- ◆ 128-bit AltiVec™ coprocessor for parallel processing, ideal for data-intensive applications
- ◆ Up to 2GB of on-board DDR ECC memory and 128MB of Flash memory for demanding applications
- ◆ Two 33/66/100 MHz PMC-X sites allow the addition of industry-standard, application specific modules
- ◆ Dual Gigabit Ethernet interfaces for high performance networking
- ◆ I/O compatibility with MVME51xx family
- ◆ Single VME slot even when fully configured with two PMC modules or one PMC module and an add-on memory mezzanine
- ◆ Support for processor PMCs (PrPMCs)



## COTS Systems By Design

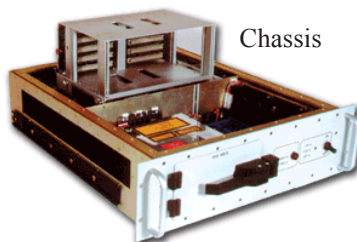
Single Board  
Computer



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Design,  
Software &  
Documentation

Chassis



Storage



I/O



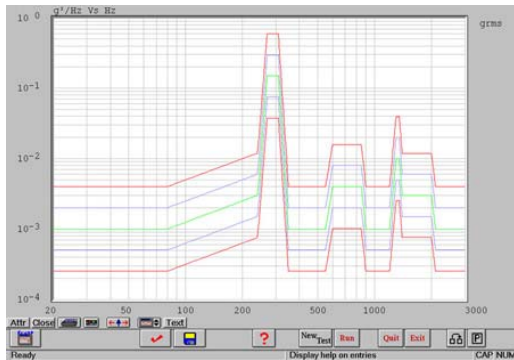
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SBCs built with surface mount technology can often meet the demands of rugged environments. The Motorola SBCs can be modified to meet environmental conditions as specified by MIL-STD-810. The boards are physically modified to pass 810 Shock and Vibration testing and electrically modified to meet front panel isolation requirements. ACT/Technico's PMC Modules can also be modified to meet the same specifications.

**ACT/Technico can help you extend the application of Motorola® COTS hardware by making mechanical enhancements and providing test services and qualification data.**

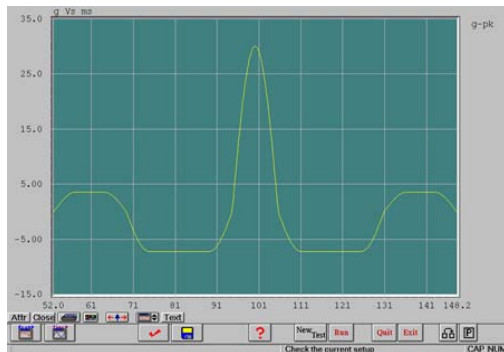
## Board Description

The TVME6100-R delivers high levels of computing power with Motorola's PowerPC architecture. This rugged solution offers superior shock and vibration protection and is conformal coated. The TVME6100-R can provide excellent performance in a wide array of military applications including fixed ground installations such as radar, communications, and artillery support equipment in facilities with limited protection from the elements. Mobile ground applications include vehicle mounted equipment supporting mission critical communications, tactical artillery support, radar, ground penetrating radar and data collection. In ground

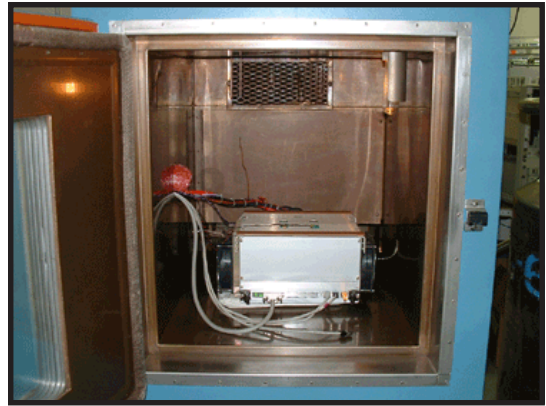


Sample random vibration test profile

applications, suitably applied conformal coatings resist the effects of dust, sand and other contaminants. Ship borne applications for the TVME6100-R expose equipment to the combined effects of shock, vibration, and atmospheric contaminants — including salt mist. In addition to the day-to-day pounding a ship propulsion control system endures, ship borne applications must survive shock levels resulting from the effects of conventional or nuclear weaponry. Rotary winged aircraft can rely on the TVME6100-R to perform mission critical tasks in demanding environments. Users requiring a “technology refresh” for their application, while maintaining backwards compatibility with their existing VMEbus infrastructure, can upgrade to the MVME6100 series and take advantage of its enhanced performance features.



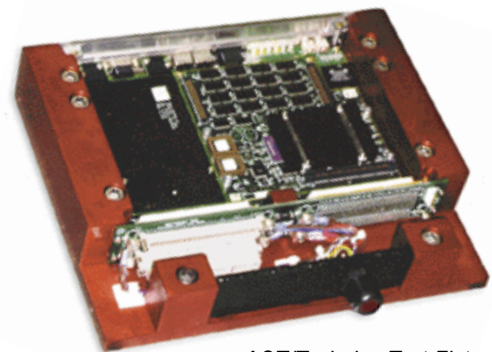
Sample shock test profile



ACT/Technico Temperature Cycle Chamber

## Testing

ACT/Technico's ruggedized SBC products are tested according to MIL-STDs 810F, 883, 467, 901D and 167; NEBS, and others as applicable. Complete documentation packages address product qualification, validation and manufacturing processes. ACT/Technico warrants all ruggedized products and specification extensions for use in the target application environment.



ACT/Technico Test Fixture

## Baseline Motorola MVME6100 Specifications

### MVME6100 Processor Module

#### Processors

Microprocessor: MPC7457  
 Clock Frequency: 1.267 GHz  
 On-chip L1/L2 Cache (I/D): 32K/32K  
 On-chip L3 Cache: 2 MB

**System Controller:** Marvell MV54360 (Discovery II)

#### Main Memory

Double data-rate (DDR) ECC SDRAM running at DDR266 (133 MHz) speed. Two banks of memory in configurations of 512MB, 1GB, 2GB. (512MB or 1GB configurations are available at initial release)

#### Flash Memory

128MB of soldered Flash in two banks of 64MB each. Flash is write protectable via a jumper

#### VMEbus Interface

Tundra Tsi148 PCI-X bus to VMEbus bridge with support for VME64 and 2eSST protocols for support of data transfer speeds on the VMEbus of 320MB/sec

### Ethernet Interfaces

Dual 10/100/1000Mb/s Ethernet interfaces. One routed to the front panel RJ-45 connector. One routed to a front panel RJ-45 connector or optionally routed to the P2 connector (jumper selectable)

### Asynchronous Serial Ports

Dual 16550 compatible serial ports. One routed to a front panel RJ-45 connector. One routed to a planar 10-pin connector.

### Dual IEEE P1386.1 PCI Mezzanine Card Slots (PMC)

Dual PMC slots supporting PCI bus speeds of 33 MHz, 66 MHz or 100 MHz.

### PCI Expansion

32/64-bit, 33/66 MHz PCI connection via a 114-pin connector to support PCI expansion carriers such as the Motorola PMCSpan

### Counters/Timers

TOD clock, four 32-bit programmable timers/counters and a watchdog timer

### Power Requirements

+5V ± 5%

MVME6100-0163:

TBD

MVME6100-0163 with IPMC712/761:

TBD

Note: In a 3-row chassis, PMC current should be limited to 19.8 watts (total of both PMC slots). In a 5-row chassis, PMC current should be limited to 46.2 watts (total of both PMC slots).

### Board Size

Height: 233.4 mm (9.2 in.)  
Depth: 160.0 mm (6.3 in.)  
Front Panel Height: 261.8 mm (10.3 in.)  
Width: 19.8 mm (0.8 in.)  
Max. Component Height: 14.8 mm (0.58 in.)

### Operating Systems and Kernels

MVME6100 supports booting a variety of operating systems:

Wind River Systems: VxWorks  
LinuxWorks: BlusCat Linux, LynxOS (Do-178)  
TimeSys: Linux

### Electromagnetic Compatibility (EMC)

Intended for use in systems meeting the following regulations:

U.S.: FCC Part 15, Subpart B, Class A (non-residential)

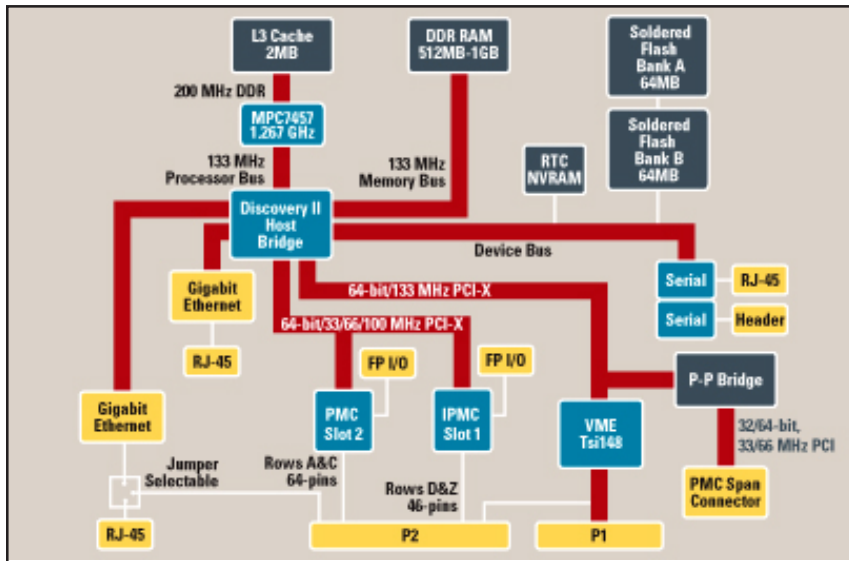
Canada: ICES-003, Class A (non-residential)

This product was tested in a representative system to the following standards: CE Mark per European EMC Directive 89/336/EEC with Amendments; Emissions: EN55022 Class B; Immunity: EN55024

### Safety

All printed wiring boards (PWBs) are manufactured with a flammability rating of 94V-0 by UL recognized manufacturers.

## MVME6100 Block Diagram





## Transition Modules

ACT/Technico offers single slot rear transition module solutions compatible with both 3-row and 5-row connectors. The following features are standard:

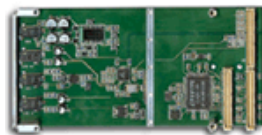
- 6U x 80mm form factor integral SCSI connector
- Four serial ports via RJ45 connectors (DTE/DCE jumpers on-board and modem support)
- Parallel port header
- Locking front panel-mount AUI connector
- SCSI Centronics connector, with removable SCSI termination resistor networks
- On-board Centronics parallel port header
- LED indicators for SCSI termination and Ethernet power



## PMC Modules

We offer a wide selection of PMC Modules. Some models can be modified to meet the above ruggedization specifications, such as the PMCStor and PMCDisk, Audio, SCSI, and various communications controllers.

Solid State PMCDisk



Audio PMC

## Order Information

Please use the part numbers below to order your rugged TVME6100. Standard part number includes conformal coating. Choose between Scanbe or IEEE handles. For additional configurations, Transition Modules, PMCs, and any additional products, please refer to their datasheets, or call us for assistance.

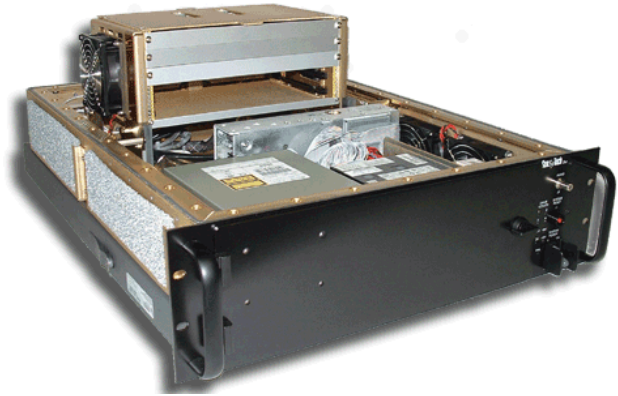
Part Number	Description
TVME6100-0161-R	1.267 GHz MPC7457 processor, 512MB DDR memory, 128MB Flash, Scanbe handles
TVME6100-0163-R	1 GHz MPC7455 PowerPC processor, 512MB SDRAM, IEEE handles
TVME6100-0171-R	1.267 GHz MPC7457 processor, 1GB DDR memory, 128MB Flash, Scanbe handles
TVME6100-0173-R	1.267 GHz MPC7457 processor, 1GB DDR memory, 128MB Flash, IEEE handles

## Documentation

Documentation is available for online viewing and ordering at <http://www.motorola.com/computer/literature>

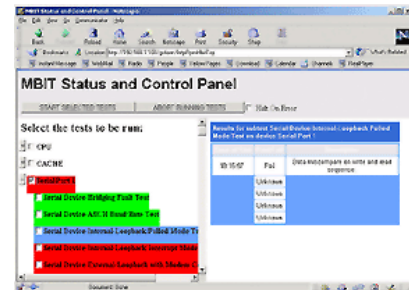
## Complete Rugged System Solutions

ACT/Technico offers a complete line of rugged supporting products in form factors ranging from mezzanines to rear I/O to 3U and 6U boards. System level ruggedization and qualification services are available as pre-defined rugged systems. Specification extensions can be tailored for specific environments on all products. Visit [www.acttechnico.com](http://www.acttechnico.com) for additional information.



## MBIT GUI Web Based Diagnostics

This Built-In self-Test (BIT) tool provides a Web based control of Motorola's Built-in Test Diagnostic Software. It also provides a GUI based point and click test selection, and color coded test status with an automatic update. It is compatible with Netscape and Internet Explorer.



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