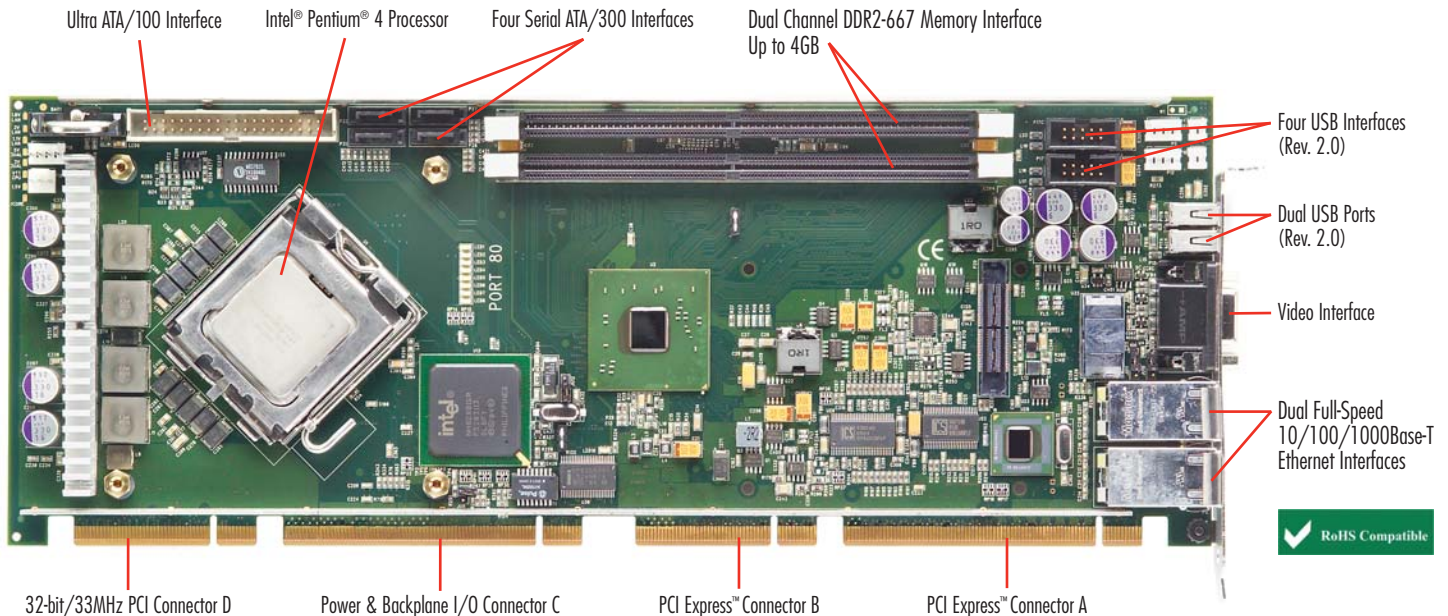


T4L (SHB Express™) SYSTEM HOST BOARD



Trenton's T4L is a graphics-class, PICMG® 1.3 system host board that offers flexibility, performance and value. The SHB supports x16, x4 and x1 PCI Express™ links, and a 32-bit/33MHz PCI interface to a PICMG 1.3 backplane. The T4L handles a wide range of system option cards, from the latest x16 PCI Express video cards to legacy 32-bit/33MHz PCI cards. Socket-LGA775 processor options have larger L2 cache memories and faster system bus architectures. The Intel® 945G MCH and Intel® ICH7R ICH deliver advanced T4L capabilities for demanding applications.

PROCESSOR:

Intel® Pentium® 4 Processor at 3.0GHz to 3.8GHz*
 Processor Package: FC-LGA4, plugs into an LGA775 socket

*Higher speeds as available

The Intel® processor options on the T4L support a 1066MHz, 800MHz or 533MHz system bus depending on the choice of processor. All of the processor options support both 64-bit and 32-bit applications. Intel® Extended Memory 64 Technology (Intel® EM64T) is the processor feature that allows 64-bit application support. Other processor features:

- Hyper-Threading Technology
- 1M or 2M L2 Cache

CHIPSET:

The Intel® 945G chipset combines advanced video and graphics capabilities with high-bandwidth interfaces such as a dual-channel DDR2-667, 1066MHz FSB, PCI Express x16 graphics port and PCI Express x4 and x1 links to a PICMG 1.3 backplane. An Intel® ICH7R provides eight USB 2.0 and four SATA/300 ports. The ICH7R's SATA controller supports independent DMA, Advanced Host Controller Interface (AHCI) and integrated RAID level 0, 1, 5 and 10 functionality.

PCI EXPRESS™ INTERFACES:

Trenton's T4L graphics-class system host board provides one x16 PCI Express link on the SHB's edge connectors A and B. This x16 PCIe link is designed to support PCI Express video/graphics cards on an SHB Express™ (PICMG 1.3) backplane. A x4 PCI Express link and five PCI Express reference clocks are also included on edge connectors A and B. An additional x1 PCI Express link between the T4L and backplane can be provided by Trenton's optional IOB31 I/O Expansion Module. The x4 and x1 PCI Express links are used on SHB Express backplanes to support PCI Express option cards and the bridge chips that provide PCI/PCI-X cards via PCI Express-to-PCI/PCI-X bridge chip technology. The T4L also provides a 32-bit/33MHz PCI bus interface on edge connector D.

DDR2-667 MEMORY:

The DDR2-667 interface is a dual-channel interface originating at the Memory Controller Hub, with each channel terminating at a DIMM module socket. The T4L supports system memory transfer rates of either 400, 533 or 667MHz using unbuffered, non-ECC, PC2-3200, PC2-4200 or PC2-5300 DIMMs. Maximum memory capacity is 4GB. When using a single PC2-5300 DIMM, the memory interface bandwidth is 5.4GB/s, and when using two PC2-5300 DIMMs with equal memory capacities the T4L's peak memory bandwidth increases to 10.7GB/s.

VIDEO INTERFACE:

The T4L supports three video connection options:

- Direct connection via the chipset's Intel Graphics Media Accelerator 950 with faster graphics and 3D performance
- A x16 PCI Express graphics port that provides 3.5 times more bandwidth than an AGP 8X interface
- ADD2 video and graphic cards

PCI EXPRESS™ CONFIGURATION AND BUS SPEEDS:

- | | |
|-------------------------------------|-----------------------------|
| PCI Express - Edge Connectors A & B | - One x16 link, one x4 link |
| | - Five reference clocks |
| PCI Express - (on-board only) | - Two x1 links |
| PCI | - 32-bit/33MHz |
| System or FSB | - 1066MHz, 800MHz or 533MHz |

SERIAL ATA/300 PORTS (FOUR):

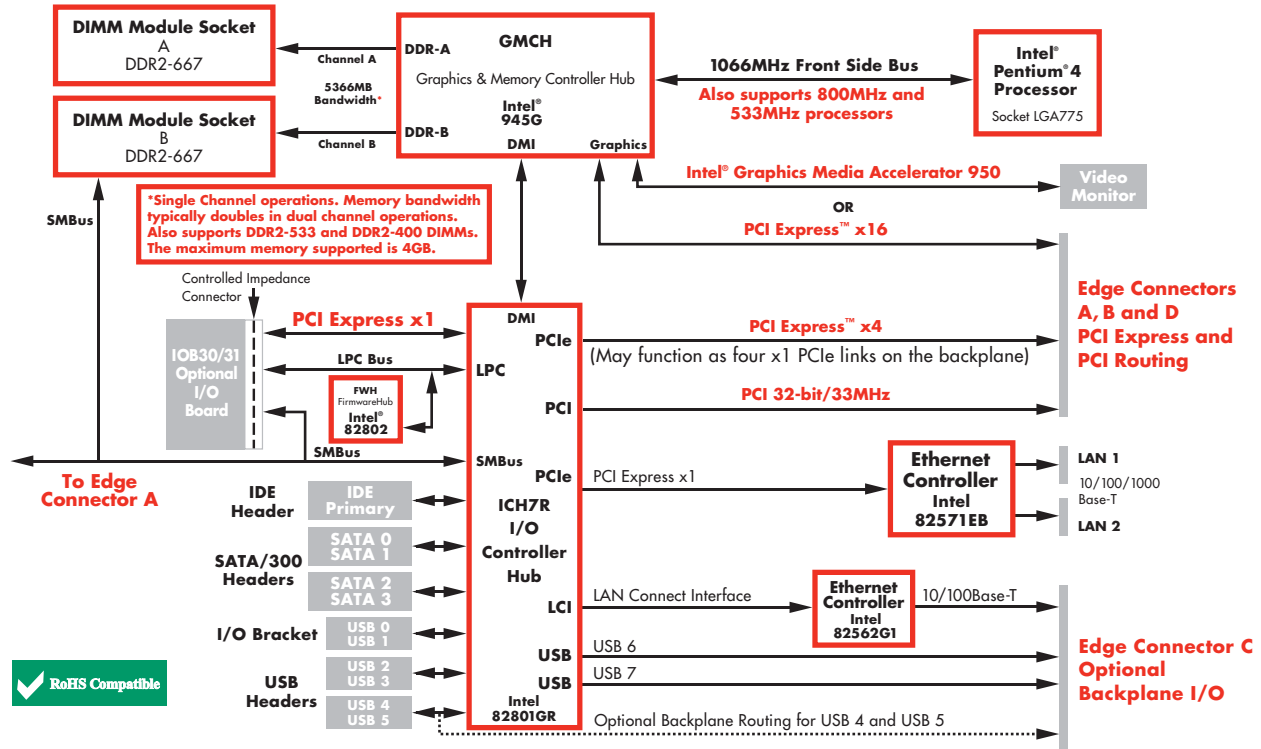
The primary and secondary Serial ATA (SATA) ports on the T4L board support four independent SATA storage devices such as hard disks and CD-RW devices. SATA produces higher performance interfacing by providing data transfer rates up to 300MB per second on each port. The T4L's ICH7R I/O Controller hub features Intel® Matrix Storage Technology, which allows the ICH7R's SATA controller to be configured as a RAID controller supporting RAID 0, 1, 5, and 10 implementations.

ETHERNET INTERFACES:

The T4L uses an internal x1 PCI Express link to connect the I/O Controller hub to the dual-port Gigabit Ethernet controller chip. This design feature enables dual 10/100/1000Base-T Ethernet interfaces on LAN 1 and LAN2. The LAN ports have RJ-45 connectors on the I/O bracket to provide the mechanical interfaces to the Ethernet networks. The ICH7R's internal LAN Interconnect Interface (LCI) provides an additional 10/100Base-T Ethernet interface for use on PICMG® 1.3 backplanes via the SHB's edge connector C.



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 Dependable, always.



EIGHT UNIVERSAL SERIAL BUS INTERFACES (USB 2.0):

A total of eight USB 2.0 interfaces are supported by the T4L. USB ports 0 and 1 are on the I/O bracket and ports 2, 3, 4 and 5 have header connectors on the T4L. USB ports 4 and 5 can be routed to edge connector C for use on a PICMG® 1.3 backplane. The backplane routing for USB 4 and 5 is a factory-build option. Contact Trenton for ordering details. USB ports 6 and 7 are routed directly to the T4L's edge connector C.

BIOS (FLASH):

The T4L uses AMIBIOS®. The flash BIOS resides in the SHB's Firmware Hub (FWH). AMIBIOS8 contains features such as:

- Support for flash devices for BIOS upgrading
- Integrated support for USB mass storage devices such as USB, CD-ROM, CD-RW, etc.
- Boot from network, USB mass storage devices, IDE or ATAPI
- Serial port console redirection to support headless operation (requires optional IOB30/IOB31)
- SATA/ATA/ATAPI support includes 48-bit LBA addressing to support SATA/ATA/IDE hard drive capacities over 137GB

AGENCY APPROVALS:

Designed for UL60950, CAN/CSA C22.2 No. 60950-00, EN55022:1998 Class B, EN61000-4-2:1995, EN61000-4-3:1997, EN61000-4-4:1995, EN61000-4-5:1995, EN61000-4-6:1996, EN61000-4-11:1994

STANDARDS:

- PCI Express™ Base Specification 1.0a
- SHB Express™ System Host Board PCI Express Specification - PCI Industrial Computer Manufacturers Group (PICMG®) 1.3

T4L APPLICATION CONSIDERATIONS:

Power Requirements:

Typical Values - CPU Idle State:

CPU Speed	Intel® No.	+5V	+12V	+3.3V
3.4GHz	651	2.56A	1.53A	3.27A
3.0GHz	531	2.40A	2.50A	3.27A

Typical Values - 100% CPU Stress State:

CPU Speed	Intel® No.	+5V	+12V	+3.3V
3.4GHz	651	3.60A	4.42A	3.27A
3.0GHz	531	2.64A	6.70A	3.27A

-12V @ <100mA

Tolerance for all voltages is +/- 5% and must be applied by the PICMG 1.3 backplane to edge connector C.

All processors listed are Intel® Pentium® 4

Temperature/Environment:

Operating Temperature: 0° to 45° C.
Storage Temperature: -40° to 70° C.
Humidity: 5% to 90% non-condensing

Mechanical:

In a typical backplane, the T4L's cooling solution enables placement of option cards approximately 2.38" (60.45mm) away from the top component side of the SHB. The T4L's overall dimensions are 13.330" (33.858cm) L x 4.976" (12.639cm) H. The relative PICMG 1.3 SHB height off the backplane is the same as a PICMG 1.0 SBC due to the shorter PCI Express backplane connectors.

ADDITIONAL T4L FEATURES:

System Hardware Monitor:

- The functions monitored are:
- Voltage: +3.3V, +/-12V, +5V and VCORE
 - Fan speed
 - Temperature

ADDITIONAL T4L FEATURES:

I/O Features:

- One EIDE Ultra ATA/100 interface
- Optional IOB30 I/O plug-in expansion board includes:
 - Enhanced bi-directional parallel interface
 - PS/2 mouse and keyboard interface (mini DIN connector)
 - Floppy drive interface
 - Two high-speed serial ports

Watchdog Timer:

The programmable watchdog timer is supported directly by the I/O Controller Hub. Two operating modes, free-running and one-shot, are available with this two-stage watchdog timer. Stage one can generate IRQ, SMI or SCI. Stage two generates a programmable watchdog timer reset with a total range of 1ms to 10 minutes.

ORDERING INFORMATION:

Model Name: T4L			
Model #	CPU Speed	Intel® No.	Embedded CPU
6483-104-xM	3.4GHz	651	Yes
6483-052-xM	3.0GHz	531	Yes
(xM = Memory)			

The stated bus speed, memory and communication interface speeds are component maximums; actual system performance may vary.

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