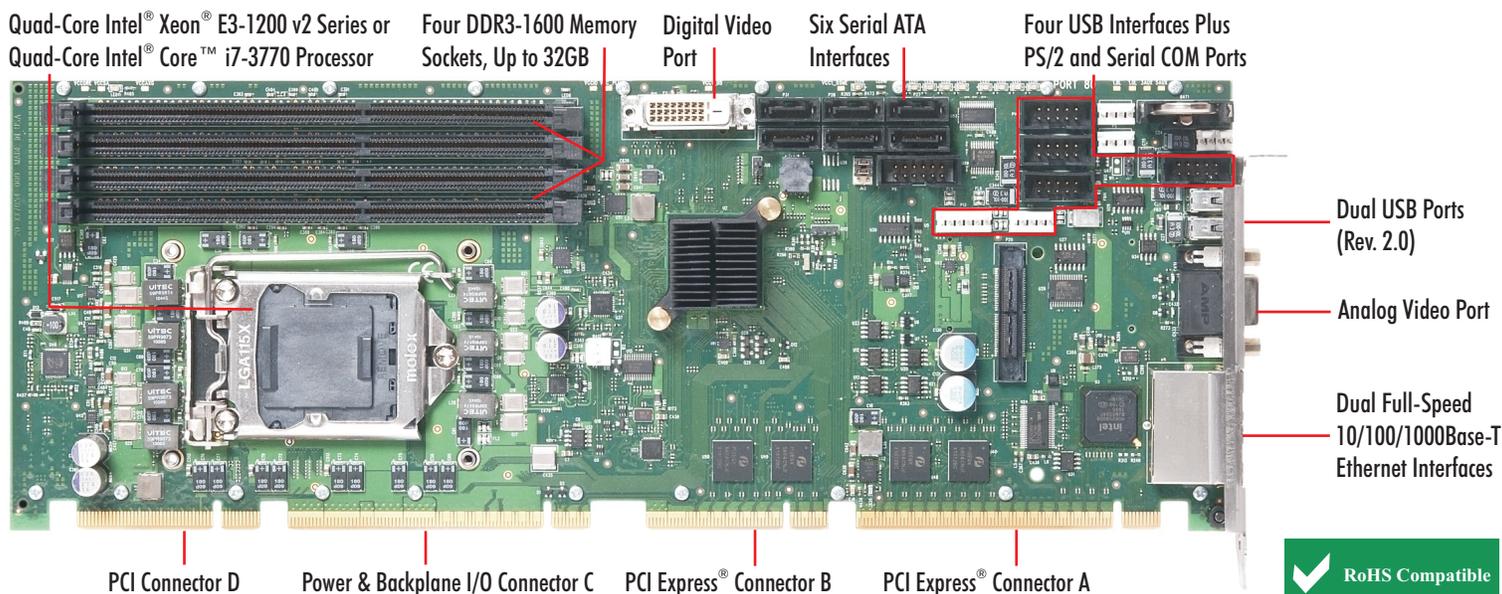


SYSTEM HOST BOARD SUPPORTS FLEXIBLE SYSTEM DESIGNS



Trenton's TSB7053 single board computer is packed with features that enable engineers to design industrial computer systems that support a wide range of applications. Here's a brief list of the SBC highlights:

- System performance boost with Ivy Bridge micro-architecture
- Processor features and on-board TPM enhance system security
- Network interfaces & storage maximizes system capability
- Digital and analog video ports deliver system flexibility
- 5-year product warranty maximizes system ROI
- Deployment risks lowered with extended-life board design

PROCESSORS:

Quad-Core Intel® Xeon® E3-1200 v2 Series, 3.2GHz - 3.5GHz*
 Intel® Core™ i7-3770**, Intel® Core™ i5-3550**, quad-core
 3.4GHz and 3.0GHz or Intel® Core™ i3-3220, dual-core 3.3GHz
 Processor Package: LGA1155

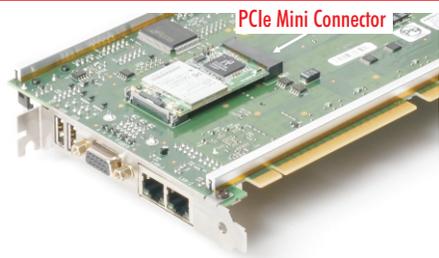
*Higher speed processors as available

**ECC memory functionality not available with these options

Trenton's TSB7053 features the next generation Intel® Core™ and Intel® Xeon® 64-bit, multi-core processors built on the 22nm Intel® Micro-architecture. These processors deliver improved system performance and enhanced platform security. Here's a compelling list of TSB7053 processor features:

- Long-life, embedded processors provide longevity
- Enhanced graphics controller supports multiple video ports
- Full Intel® AMT 8.0 support for remote platform access and control functions including remote KVM redirection

PCI EXPRESS® MINI CARD SUPPORT:



The rear of the TSB7053 SHB features a PCIe mini-connector that supports industry standard PCI Express Mini Cards. Standard PCIe mini cards are available to add WiFi capability to system designs or for additional SSD storage, video or I/O.

PCI EXPRESS® INTERFACES:

Trenton's TSB7053 SHB supports PICMG® 1.3 backplanes with either a x16 or two x8 PCI Express® 2.0 links and a x4 PCIe 1.1 link with eight reference clocks supplied on edge connectors A & B. Trenton's optional IOB33 can be used on the board to provide an additional x4 PCIe 2.0 link to a backplane. The SHB automatically configures all direct PCIe links out the processors to operate as either PCIe 2.0 or PCIe 1.1 link interfaces based on the type of PCI Express endpoints such as option cards, PCIe switches and bridge chips. The SHB features PCI Express auto-negotiation for x1, x4, x8 and x16 PCIe card communications and PCIe 2.0 link repeaters to ensure maximum signal integrity.

PCI EXPRESS INTERFACE CONFIGURATIONS:

PCI Express - Edge Connectors A & B - One x16 or two x8 links, plus one x4 link
 - Eight reference clocks
 - 32-bit/33MHz

PCI - Edge Connector D

PCI Express - (IOB33/PCIe Expansion) - One x4 link

The number, type and combination of PCIe and PCI interfaces available on the TSB7053 enable system designers to develop solutions that meet a variety of application requirements.

PLATFORM CONTROLLER HUB (PCH):

The Intel® C206 is a Platform Controller Hub or PCH that takes the place of the traditional multi-component chipset. The PCH design approach saves power while providing enhanced system host board I/O, PCI Express and Ethernet interface capabilities.

BIOS (FLASH):

The board uses the AMI Aptio® 4.x BIOS that resides in a SPI flash device to simplify field upgrades and BIOS customization.

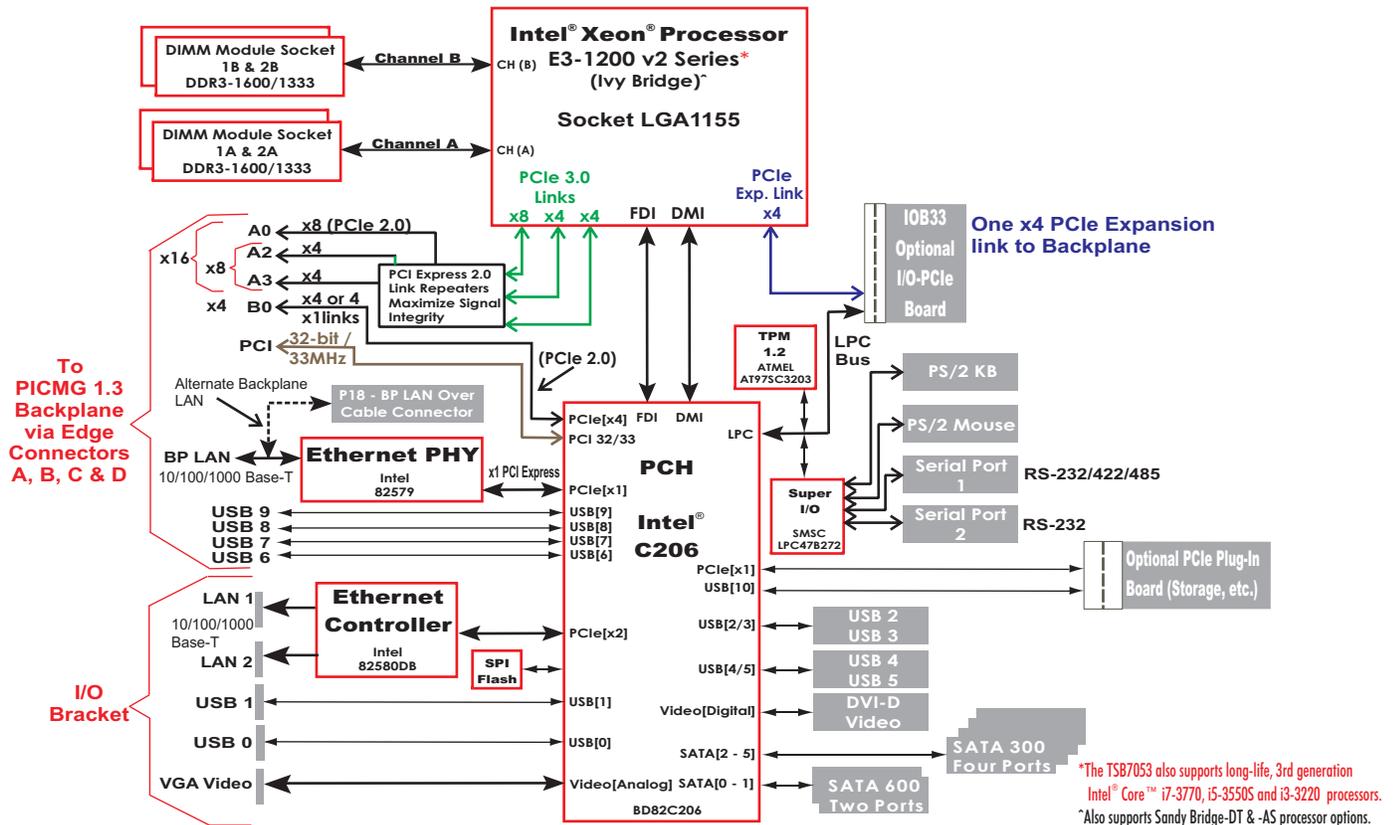
DDR3-1600 MEMORY INTERFACE:

The DDR3-1600 memory interface is made up of two, dual-channel interfaces with two DIMM sockets per channel. The TSB7053 uses unbuffered ECC, PC3-12800 DDR3 DIMMs. The Intel® Xeon® E3-1200 v2 series processor options support ECC memory functionality to deliver advanced data protection. A maximum memory capacity of 32GB is supported when using standard 8GB DDR3 DIMMs and 16GB with 4GB DDR3 DIMMs. The peak memory interface transfer rate per channel is 1600 MT/s when using the PC3-12800 DIMMs.

THREE ETHERNET INTERFACES - 10/100/1000BASE-T:

The TSB7053 supports three Gigabit Ethernet interfaces. Two ports are located on the board's I/O bracket and a third LAN is routed for use on cable header P18 or as a PICMG 1.3 backplane interface via SHB edge connector C. Trenton has a 24" (610mm) Ethernet LAN cable available (part no. 193-500001150-00) for use with header P18 that has the mating P18 connector on one end and an Ethernet LAN connector mounted into an I/O plate on the other. The third Ethernet LAN will be useful in systems requiring Intel® AMT 8.0 support.





*The TSB7053 also supports long-life, 3rd generation Intel® Core™ i7-3770, i5-3550S and i3-3220 processors.
 ^ Also supports Sandy Bridge-DT & -AS processor options.

SERIAL ATA/600 & 300 PORTS:

An integrated Serial ATA (SATA) controller in the Intel® C206 features two SATA ports with data transfer rates up to 600MB/s and four additional ports that transfer data at 300MB/s. Independent SATA drive operation and RAID drive array configurations are supported.

UNIVERSAL SERIAL BUS INTERFACES (USB 2.0):

There are ten USB 2.0 interfaces on the TSB7053 SHB. USB ports 0 and 1 are located on the I/O bracket, on-board headers contain ports 2, 3, 4 and 5, while ports 6, 7, 8 and 9 are routed to the SHB's edge connector C for use on backplanes that support the optional PICMG 1.3 USB interface capability.

VIDEO:

The Intel® HD Graphics P4000 integrated graphics controller in an Intel® Xeon® E3-1200 v2 processor dynamically utilizes a portion of the board's system memory based on the O/S and the amount of memory installed. Maximum video resolutions of 2560 x 1600 are possible and two independent video interfaces are available with an analog video port on the I/O plate and an on-board DVI-D port.

ADDITIONAL PRODUCT FEATURES:

I/O Features:

- Optional I/O and PCIe expansion board provides:
 - x4 PCIe link routing to backplane PCIe Expansion Slot via an optional IOB33 plug-in module
 - Two high-speed serial ports RS232 & RS232/422/485
 - PS/2 mouse and keyboard interface headers
- The TSB7053 provides a programmable watchdog timer (WDT) with programmable timeout periods of 100 msec, 1 second, 10 seconds or 1 minute. When enabled the WDT generates a system reset. WDT control is supplied via the General Purpose I/O (GPIO) pins from the Intel® C206 Platform Controller Hub (PCH).

APPLICATION CONSIDERATIONS:

Power Requirements:

Typical Values - Static Desktop (Idle) with 16GB of system memory

CPU	Intel® No.*	+5V	+12V	+3.3V
3.5GHz	E3-1275 v2	0.70A	2.75A	3.64A
3.4GHz	Core i7-3770 [~]	0.71A	2.34A	3.63A
3.2GHz	E3-1225 v2 [#]	0.73A	2.42A	3.65A
3.0GHz	Core i5-3550S ^{#^}	0.76A	2.00A	3.55A
3.3GHz	Core i3-3220 ^D	0.78A	1.64A	3.51A

Typical Values - 100% Stress State with 16GB of system memory

CPU	Intel® No.*	+5V	+12V	+3.3V
3.5GHz	E3-1275 v2	0.91A	6.95A	3.75A
3.4GHz	Core i7-3770 [~]	0.93A	6.39A	3.75A
3.2GHz	E3-1225 v2 [#]	0.83A	5.58A	3.73A
3.0GHz	Core i5-3550S ^{#^}	0.90A	4.90A	3.75A
3.3GHz	Core i3-3220 ^D	0.93A	3.82A	3.67A

* = Long-life embedded processor options
 D = Dual-Core Cprocessor
 ~ = CPUs without Intel® Hyper-Threading
 ^ = CPUs without ECC system memory capability

Temperature/Environment:

Operating Temperature: 0° to 50° C.
 Extended Operating Temperature: 0° to 55° C. with Intel Core i3-3220 processor option

Air Flow Requirement: 350LFM continuous airflow
 Storage Temperature: -40° to 70° C.
 Humidity: 5% to 90% non-condensing

Mechanical:

The standard active cooling solution used on the TSB7053 enables placement of option cards approximately 2.15" (54.61mm) away from the top component side of the SHB. Contact Trenton for a system engineering consultation if your application needs a lower profile cooling solution. The overall board dimensions are 13.330" (33.85cm) L x 4.976" (12.639cm) H.

ORDERING INFORMATION:

Part Number	CPU Speed	Intel® No.*
92-705313500000	3.5GHz	E3-1275 v2
92-705310400000	3.4GHz	Core i7-3770 [~]
92-705314300000	3.2GHz	E3-1225 v2 [#]
92-705311200000	3.0GHz	Core i5-3550S ^{#^}
92-705312200000	3.3GHz	Core i3-3220 ^D

* = All CPU options are embedded CPUs
 D = Dual-Core CPU
 ~ = CPUs without ECC system memory capability
 # = CPUs without Intel® Hyper-Threading

STANDARDS:

- PCI Express® Base Specifications 2.0 and 1.1
- SHB Express® System Host Board PCI Express Specification - PCI Industrial Computer Manufacturers Group (PICMG®) 1.3

AGENCY APPROVALS:

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

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

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