JXMS7031

MicroATX (uATX) EMBEDDED MOTHERBOARD

**9.6"
(24.4cm)**

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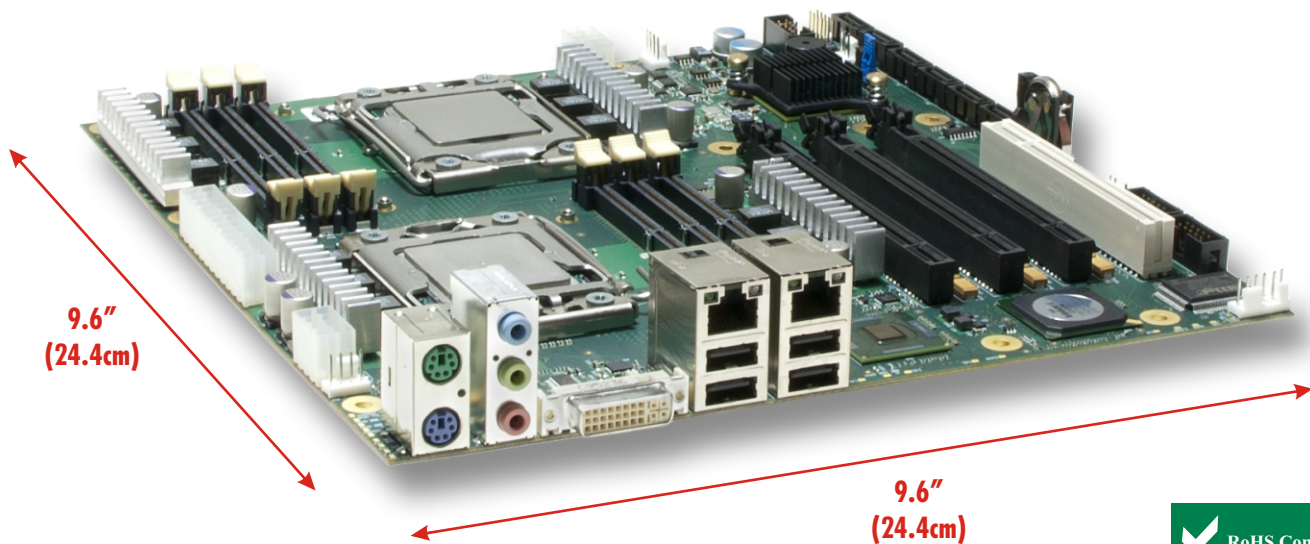**RoHS Compatible**

Delivers superior processing performance in an efficient MicroATX (uATX) motherboard form factor using a quad-core Intel® Xeon® C5500 processor. Trenton's JXMS7031 embedded motherboard features:

- System performance boost via advanced CPU micro-architecture
- 9.6" x 9.6" uATX form factor enhances system design flexibility
- PCI Express 2.0 and 1.1 Option Card Support
- Enables compact system designs
- Direct DDR3-to-CPU memory performance increases
- 5-year product warranty maximizes system ROI

PROCESSOR & MicroATX FORM FACTOR:

Quad-Core Intel® Xeon® C5500 Processor, 1.73GHz - 2.53GHz*
Processor Package: LGA1366

*Dual-core processor options available

Trenton's JXMS7031 packs the enhanced capabilities of a quad-core CPU in a small 9.6" x 9.6" uATX motherboard. The JXMS7031 Jasper Forest CPU uses the Nehalem micro-architecure with DDR3 integrated memory controllers and built-in PCIe links to:

- Save power via improved component thermal designs
- Double CPU processing capabilities with the quad-core micro-architecture and Intel® Hyper-Threading (EC5549)
- Enhance system flexibility with Intel® VT-x2 & VT-d2
- Enable compact system designs with long-term availability, technical superiority and improved ROIs

PLATFORM CONTROLLER HUB (PCH):

The Intel® 3420 is a Platform Controller Hub or PCH that saves system power by replacing the typical multi-component chipset with one component. The PCH design approach provides enhanced I/O and additional system interface capabilities.

OPTION CARD SLOTS:

The card slots on the Trenton JXMS7031 MicroATX motherboard are configured to support a wide variety of option cards in many different system applications. For example the x16 PCIe mechanical slots are driven with x8 PCIe 2.0/1.1 electrical links to support high-end video and graphics cards common in machine vision, medical diagnostics and military surveillance applications. Both PCI Express slots support either PCIe 2.0 or 1.1 option cards and automatic link training to support cards with x8, x4 or x1 PCI Express electrical interfaces. The 32-bit/33MHz PCI slot is ideal for supporting system designs with a mix of option card technology.

DDR3-1333 MEMORY INTERFACE:

The DDR3-1333 memory interface is a three-channel interface with the channels connected directly to the Intel® Xeon® EC5500 Series Processor. The motherboard uses ECC registered, PC3-8500 or PC3-10600 DDR3 Mini-DIMMs. A maximum memory capacity of 24GB is supported when using 8GB DDR3 Mini-DIMMs and 12GB with 4GB Mini-DIMMs. The peak memory interface bandwidth per channel is 32GB/s when using the PC3-10600 Mini-DIMMs.

SERIAL ATA/300 PORTS:

An integrated Serial ATA (SATA) controller in the Intel® 3420 provides six SATA ports with data transfer rates up to 300MB/s. Independent SATA drive operation and RAID drive array configurations are supported on the motherboard.
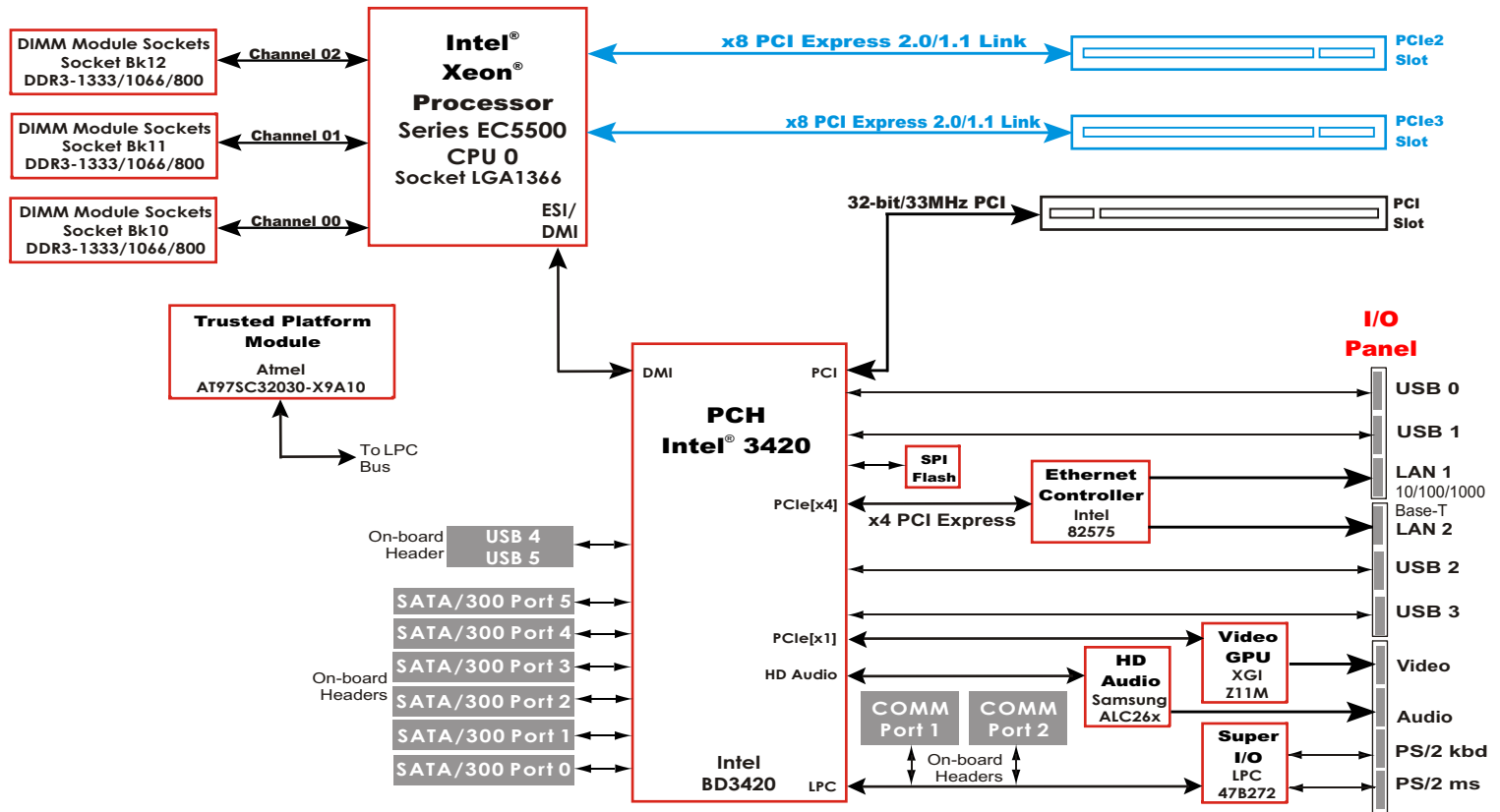
TPM 1.2 & TRUSTED COMPUTING APPLICATIONS:

The JXMS7031 is compliant with version 1.2 of the Trusted Computing Group specification for Trusted Platform Modules via the use of the Atmel® ATC97SC3203 TPM. The card's TPM maximizes the system access security and integrity of any embedded computer design using a Trenton JXMS7031 uATX motherboard.

DVI-I VIDEO INTERFACE & AUDIO:

Trenton's JXMS7031 motherboard features a Graphics Processing Unit (GPU) driven with a x1 PCIe link from the PCH of the board. The GPU has 8MB of on-board video memory to support pixel resolutions up to 1920 x 1200 (WUXGA) with a 64K color depth. The board's versatile DVI-I video interface connector supports both digital and analog video monitor interfaces. The board may be ordered with a vertical DVI-I connector to support applications where the board is mounted inside a monitor enclosure or in a machine with an internal monitor. Audio ports are available on the motherboard's I/O plate to support a variety of system needs including HD Audio.

TRENTON
Dependable, always.

DIMM Module Sockets Socket Bk12 DDR3-1333/1066/800 — Channel 02
DIMM Module Sockets Socket Bk11 DDR3-1333/1066/800 — Channel 01
DIMM Module Sockets Socket Bk10 DDR3-1333/1066/800 — Channel 00

Intel® Xeon® Processor Series EC5500 CPU 0 Socket LGA1366
ESI/DMI

x8 PCI Express 2.0/1.1 Link — PCIe2 Slot
x8 PCI Express 2.0/1.1 Link — PCIe3 Slot
32-bit/33MHz PCI — PCI Slot

Trusted Platform Module Atmel AT97SC32030-X9A10
To LPC Bus

PCH Intel® 3420
Intel BD3420
DMI, PCI, SPI Flash, PCIe[x4], PCIe[x1], HD Audio, LPC

Ethernet Controller Intel 82575
x4 PCI Express

On-board Header: USB 4 / USB 5

On-board Headers:
SATA/300 Port 5
SATA/300 Port 4
SATA/300 Port 3
SATA/300 Port 2
SATA/300 Port 1
SATA/300 Port 0

COMM Port 1 / COMM Port 2 — On-board Headers
HD Audio Samsung ALC26x
Video GPU XGI Z11M
Super I/O LPC 47B272

I/O Panel:
USB 0, USB 1, LAN 1 10/100/1000 Base-T, LAN 2, USB 2, USB 3, Video, Audio, PS/2 kbd, PS/2 ms

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

The JXMS7031 motherboard supports two Gigabit Ethernet ports on the board's I/O panel. The board's Ethernet controller chip is driven with a x4 PCI Express link to ensure fast and reliable network communications.

UNIVERSAL SERIAL BUS INTERFACES (USB 2.0):

There are six USB 2.0 interfaces on the JXMS7031 motherboard. USB ports 0 through 3 are located on the I/O plate and one on-board header contains USB ports 4 and 5.

RS-232 COMMUNICATION PORTS:

Trenton's JXMS7031 motherboard supports two serial COMM ports. The board features two RS-232 serial communication port headers for use in system set-up, system monitoring and data transfer applications.

BIOS (FLASH):

JXMS7031 board use Aptio® 4.x BIOS from American Megatrends, Inc. (AMI). The JXMS7031's BIOS resides in the motherboard's SPI Flash device to simplify field upgrades and BIOS customization.

STANDARDS:

- PCI Express® Base Specifications 2.0 and 1.1
- MicroATX Motherboard Specification 1.2
- IEEE P996, Personal Computer Bus Standard

APPLICATION CONSIDERATIONS:

Power Requirements:
Typical Values - Static Desktop (Idle) with 6GB of system memory

CPU	Intel® No.	+5V	+12V	+3.3V
2.53GHz	EC5549	0.92A	6.75A	2.54A
2.27GHz	EC5539^D	1.10A	7.17A	2.63A
2.0GHz	EC5509	0.92A	6.55A	2.44A
2.13GHz	LC5528	0.65A	5.67A	2.59A

Typical Values - 100% Stress State with 6GB of system memory

CPU	Intel® No.	+5V	+12V	+3.3V
2.53GHz	EC5549	0.92A	15.35A	2.56A
2.27GHz	EC5539^D	1.10A	12.21A	2.63A
2.0GHz	EC5509	0.92A	11.21A	2.44A
2.13GHz	LC5528	0.66A	12.64A	2.71A

D = Dual-core CPU
Note: Power numbers shown for dual-processor model: JXM7031

Temperature/Environment:
Operating Temperature: 0⁰ to 50⁰ C.
Air Flow Requirement: 350LFM continuous airflow
Storage Temperature: - 20⁰ to 70⁰ C.
Humidity: 5% to 90% non-condensing

Mechanical:
The form factor of the JXMS7031 complies with the MicroATX Motherboard Specification 1.2 that defines industry standard mounting hole placements and overall board dimensions of 9.6" (24.4cm) x 9.6" (24.4cm). The standard height cooling solution is designed for 2U and greater chassis heights. Contact Trenton if your system design requires a lower profile cooling solution for a 1U chassis design.

ORDERING INFORMATION:

Model No.	CPU Speed	Intel® No.*
507031-635-xG	2.53GHz	EC5549
507031-835-xG	2.27GHz	EC5539$^{D,\#}$
507031-563-xG	2.0GHz	EC5509$^\#$
507031-734-xG	2.13GHz	LC5528

(xG = Memory)

* = All CPU options are embedded CPUs, # = CPU options without Hyper-Threading
NOTE: Model numbers reflect side-mounted CPU cooling fan

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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