VXS

VX 511/06x
N, E, K - Series

Intel® Core™ 2 Duo Processor Dual PMC VITA 41.4 Controller

RoHS 2002/95/EC

APPLICATIONS

The VX 511/06x is a PC-compatible high performance VXS/VME processor board supporting the Intel® Core™ 2 processor up to 2.26 GHz (45nm process technology), and the Intel® GS45 mobile class chipset with up to 6 Gbytes of DDR3-1066 SDRAM. This single slot board features 2 PMC (and an XMC) sites, and a variety of interfaces including an option for an on-board SATA300 drive, plus a CompactFlash® socket. The board supports VITA 41.4 (VXS P0) PCI Express® backplane fabric interconnections, VITA 41.6 Gigabit IEEE 802.3 ports, and VITA 35 PMC I/O pinouts. Options to operate in temperatures from -40°C to +85°C are available. Ruggedized air-cooled and conduction-cooled versions are planned. The VX 511/06x is suitable for a range of applications within the defense, industrial control, telecomms, telemetry, scientific and aerospace markets. To simplify integration, many industry standard operating systems are supported.

HIGHLIGHTS

- 2.26 GHz or 1.86 GHz Intel® Core™ 2 Duo processor:
  - 45nm process technology
  - dual-core processor
  - 1066 MHz Front Side Bus
  - 6 Mbytes L2 cache shared between cores
  - Intel® 64 Technology (64-bit computing)
  - no CPU fan needed; low power processor
- Up to 6 Gbytes of DDR3-1066 SDRAM
- SATA300 interfaces with optional on-board disk drive
- CompactFlash® socket on-board
- 2 x PMC (plus an XMC) module interfaces:
  - 1 x 32-bit, 33MHz PMC site
  - 1 x 32/64-bit, 33/66MHz PCI/PCI-X™ site
  - P2 rear I/O to VITA 35 P4V2-64ac pinout
  - 1 x XMC module interface (x8/x4 PCI Express™)
- Graphics, keyboard and mouse interfaces
- 2 x RS232 serial channel interfaces
- 3 x Universal Serial Bus (USB 2.0) interfaces
- Optional VXS P0 connector supporting:
  - VITA 41.4 PCI Express backplane fabric interconnections
  - 2 x 1000Mbps baseband IEEE 802.3 ports for VITA 41.6 Gigabit control plane
- 2 x 10/100/1000Mbps Ethernet channels via front panel
- Watchdog timer; Long Duration Timer
- 4 Mbyte BIOS SPI Flash EPROM
- VME64/VME320 interface supporting A32/A24/A16/D64/D32/D16/D8(E0), MBLT64, 2eSST
- Single slot
- Extended temperature grades available:
  - E-Series, -25°C to +70°C
  - K-Series, -40°C to +85°C with humidity seal
- Ruggedized versions planned:
  - conduction cooled and air cooled
- Support for Intel® Active Management Technology (AMT)
- Support for Linux®, Windows® XP, Windows® XPE, Windows® 2000, VxWorks®, QNX®, Solaris™ and LynxOS®

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Specification

Central Processor

- 2.26 GHz Intel® Core® 2 Duo SP9300 or 1.86 GHz Intel Core 2 Duo SL9400 processor
- common processor features:-
  - → dual-core CPU
  - → 45nm process technology
  - → uses µFC-BGA 956 (micro Flip-Chip Ball Grid Array) package
  - → 1066 MHz Front Side Bus
  - → 6 Mbytes of shared Level 2 on-die cache
  - → Intel® 64 Technology (64-bit computing)
  - → no CPU fan
- utilizes Intel® GS45 mobile class chipset:-
  - → uses Intel® ICH9M-E I/O Controller Hub
- provision for XDP debug port

DRAM

- supports up to 6 Gbytes DDR3-1066 SDRAM:-
  - → soldered SDRAM
  - → peak bandwidth of 8 Gbytes/s
- accessible from processor or VME bus

Hard Disk Interfaces

- 2 x SATA300 channels via P2 rear I/O
- option for on-board SATA300 drive (uses PMC site 2)
- EIDE interface:-
  - → used for on-board CompactFlash™ socket

PMC/XMC Interfaces

- 2 x PMC sites (1 includes an XMC interface)
- PMC site 1 supports:-
  - → 32/64-bit, 33/66/133 MHz PCI/PCI-X
  - → 3.3V or 5V signaling
  - → I/O via front panel and P2 (VITA 35 P4V2-64ac pinout)
- PMC site 1 supports an XMC interface via x8 PCI Express® port:-
  - → configurable as dual x4 PCI Express
- PMC site 2 supports:-
  - → 32-bit, 33MHz PCI only
  - → 3.3V or 5V signaling
  - → I/O via front panel only

Ethernet Interfaces

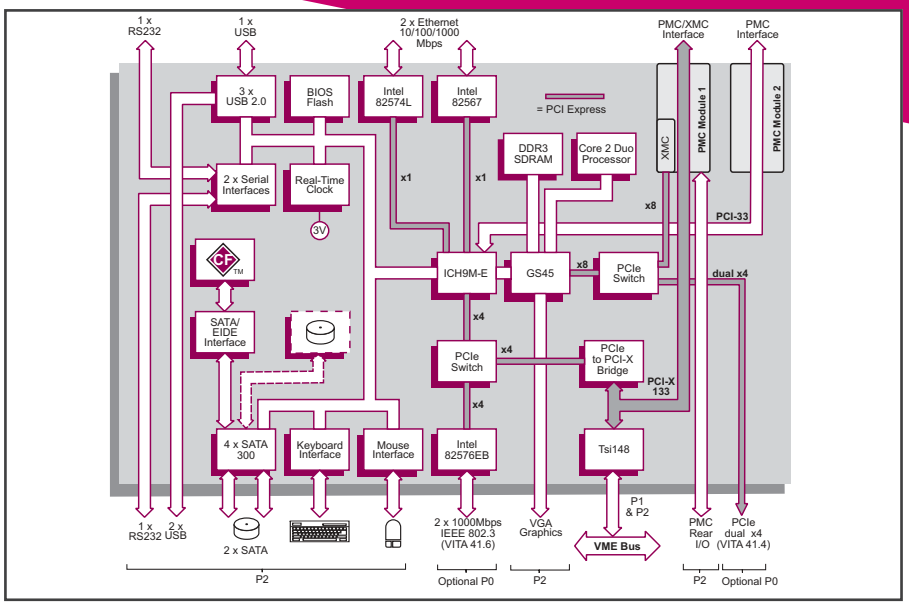
- 2 x Ethernet interfaces via front panel:-
  - → supporting 10 Base-T, 100 Base-T, 1000 Base-T via RJ45 connectors
  - → support for Intel AMT via interface 2, implemented by an Intel® 82567 Gigabit Ethernet controller
- two SERDES interfaces via VXS P0:-
  - → supporting VITA 41.6 Gigabit control plane interface
  - → 2 x 1000Mbps baseband IEEE 802.3 ports

Graphics Interface

- implemented by Intel new-generation mobile chipset
- analog VGA accessed via P2 rear I/O
- resolutions up to 2048 x 1536 @ 16M colors

Serial Interfaces

- 2 x serial channel interfaces:-
  - → 1 x RS232 accessed via RJ45 connector on front panel
  - → 1 x RS232 via P2 connector
- 16550 compatible UART



Other Peripheral Interfaces

- PC-compatible Real Time Clock
- 3 x USB 2.0 interfaces:-
  - → 1 via connector on front panel
  - → 2 via P2 connector
- keyboard and mouse interfaces via P2
- watchdog timer
- 1 x 32-bit Long Duration Timer with processor interrupt capability

BIOS EPROM

- 4 Mbyte of BIOS SPI Flash EPROM

Software Support

- support for Linux®, Windows® XP, Windows® XP Embedded, Windows® 2000, VxWorks®, QNX®, Solaris™ and LynxOS®
- Intel® Active Management Technology (AMT)

Firmware Support

- Phoenix® TrustedCore® BIOS
- comprehensive Power-On Self-Test (POST)
- LAN boot firmware included

VME/VXS Interface

- compatible with VME64x and VXS:-
  - → P1 and P2 connectors compatible with VME64x and VXS systems
  - → P0 connector compatible with VXS systems
- optional VXS P0 provides dual x4 PCI Express interface (VITA 41.4 compliant):-
- optional VXS P0 also provides dual Gigabit IEEE802.3 ports (VITA 41.6 compliant)
- VME bus interface implemented using Tundra® Tsi148 PCI-X VME64/VME320 bridge
- VME Master/Slave
- A32/A24/A16/D64/D32/D16/D8(EO)/MBLT64, 2eSST support
- auto system controller detect
- full interrupter/interrupt handler support

Electrical Specification

- requires 5V supply only
- +5V @ 6.5A (estimated typical at 2.26GHz with 3 GBytes DRAM); ±5%
- 3.3V, +12V and -12V supplies not utilized

Safety

- PCB (PWB) manufactured with flammability rating of 94V-0

Environmental Specification

- operating temperatures:-
  - → 0°C to +55°C (N-Series)
  - → -25°C to +70°C (E-Series)
  - → -40°C to +85°C (K-Series)
- storage temperature: -40°C to +85°C
- 5% to 95% Relative Humidity, non condensing (operating or storage):-
  - → K-Series includes humidity sealant
- ruggedized versions planned, see separate datasheets:-
  - → conduction-cooled: VX 511/06x-RC
  - → air-cooled: VX 511/06x-RA

Mechanical Specification

- 6U form-factor
- single slot, front panel width 0.8 inch (20.3mm)
- utilizes 160-way connectors for P1 and P2
- optional VXS P0
- IEEE 1101.10 handles
- shock:-
  - → 20g, 11ms, ½-sine (operating)
  - → 30g, 11ms, ½-sine (non-operating)
- vibration:-
  - → 5Hz-2000Hz at 2g, 0.38mm peak displacement (operating)
  - → 5Hz-2000Hz at 5g, 0.76mm peak displacement (non-operating)

ORDERING INFORMATION

Order Number	Product Description (Hardware)	Replace the order number suffix (-xy) with selections from the following: Where x = P0 combination	Where y = memory size
VX 511/062-xy	1.86 GHz Core 2 Duo processor, Dual PMC, VXS/VME SBC	2 - VXS P0 not fitted	3 - 3 Gbytes
VX 511/063-xy	2.26 GHz Core 2 Duo processor, Dual PMC, VXS/VME SBC	5 - VXS P0 fitted, VITA 41.4, VITA 41.6	5 - 6 Gbytes
AD VP2/018-10	RTM for VME64x or VXS backplane: use when x=2 or 5		
AD VP2/018-30	RTM, with VXS P0, for VXS backplane: use when x=5 only		

For options please contact your local sales office

For extended temperature, E and K-Series, please contact your local sales office
For ruggedized versions see separate datasheets

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Specification subject to change; E and OE. RoHS 2002/95/EC compliant.

Datasheet Code 1579/1208
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