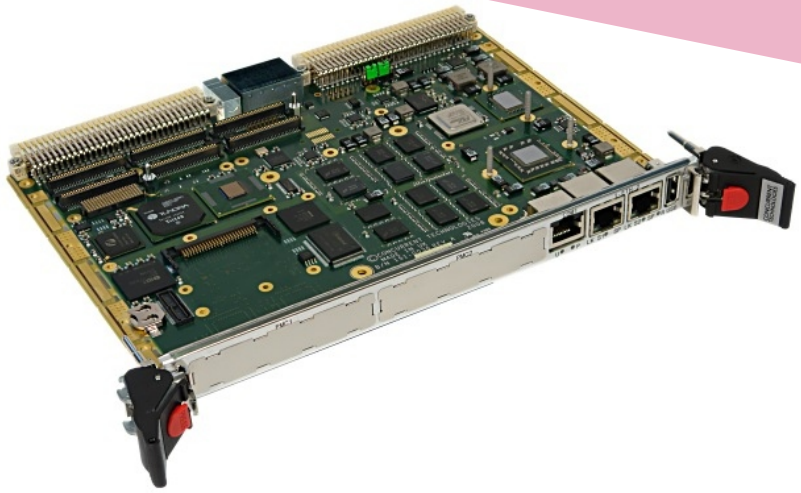
VXS

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

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



APPLICATIONS

The VX 511/06x is a PC-compatible high performance VXS/VME processor board supporting the Intel® Core™ 2 Duo processor up to 2.26 GHz, and the Intel® GS45 mobile class chipset with up to 6 Gbytes of DDR3-1066 SDRAM. This single slot board features two PMC (with an XMC) sites, and a variety of interfaces including an option for an on-board SATA300 drive, plus a CompactFlash® site. The board supports VITA 41.4 dual x4 PCI Express® backplane fabric interfaces and VITA 41.6 Gigabit IEEE 802.3 (1000 Base-Bx) ports. The VX 511/06x is suitable for a range of applications within the defense, industrial control, telecomms, telemetry, scientific and aerospace markets. For harsher environments, extended temperature, ruggedized air-cooled and ruggedized conduction-cooled versions are supported. To simplify integration, many industry standard operating systems are supported.

HIGHLIGHTS

- 2.26 GHz or 1.86 GHz Intel® Core™ 2 Duo processor:
  - dual-core processor
  - 1066 MHz Front Side Bus
  - 6 Mbytes L2 cache shared between cores
  - Intel® 64 Technology (64-bit computing)
- Up to 6 Gbytes of DDR3-1066 SDRAM
- 2 x SATA300 interfaces via P2 rear I/O with optional on-board disk drive
- CompactFlash® socket on-board
- 2 x PMC (including an XMC) module interfaces:
  - 1 x 32-bit, 33MHz PMC site
  - 1 x 32/64-bit, 33/66MHz PCI/PCI-X™ site
  - 1 x XMC module interface (x8/x4 PCI Express™)
- Graphics, keyboard and mouse interfaces
- 2 x serial channels and 3 x USB 2.0 interfaces
- 2 x 10/100/1000Mbps Ethernet channels via front panel
- 4 Mbyte BIOS SPI Flash EPROM
- Optional VXS P0 connector supporting fabric interfaces:
  - dual x4 PCI Express links, data plane (VITA 41.4)
  - dual 1000 Base-Bx ports, control plane (VITA 41.6)
- VME64/VME320 interface supporting A32/A24/A16/D64/D32/D16/D8(E0), MBLT64, 2eSST
- Watchdog timer; Long Duration Timer
- Single slot
- Extended temperature versions:
  - -25°C to +70°C (E-Series)
  - -40°C to +85°C (K-Series, includes humidity sealant)
- Ruggedized air-cooled version (RA-Series):
  - -40°C to +75°C, conformally coated
  - see separate VX 511/06x-RA datasheet
- Ruggedized conduction-cooled version (RC-Series):
  - conduction-cooled to ANSI/VITA 30.1-2002
  - -40°C to +85°C, conformally coated
  - see separate VX 511/06x-RC datasheet
- Optional Built-In Test (BIT) support:
  - Power-on BIT, Initiated BIT, Continuous BIT
- Support for Intel® Active Management Technology (AMT)
- Support for Linux®, Windows® 7, Windows® Embedded Standard 7, Windows® XP, Windows® XP (64-bit), Windows® XPE, Windows® 2000, VxWorks®, QNX®, Solaris™ and LynxOS®

CONCURRENT TECHNOLOGIES

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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
  - → 1066 MHz Front Side Bus
  - → 6 Mbytes of shared Level 2 on-die cache
  - → Intel® 64 Technology (64-bit computing)
  - → uses FC-BGA 956 (micro Flip-Chip Ball Grid Array) package
- 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

Fabric Interfaces
- dual x4 PCI Express® data plane (VITA 41.4):-
  - → implemented by PLX 8624 PCI Express switch via x8 PCI Express link
- dual 1000 Base-Bx control plane (VITA 41.6):-
  - → implemented by Intel® 82576EB Ethernet Controller via x4 PCI Express link
- fabric interfaces via optional VXS P0 connector

Ethernet Interfaces
- two interfaces supporting 10/100/1000 Mbps:-
  - → implemented by Intel® 82567LM Ethernet Controller via x1 PCI Express® link
  - → implemented by Intel® 82574L Ethernet Controller via x1 PCI Express® link
- Intel® 82567LM Gigabit Ethernet controller supports Intel AMT
- both interfaces accessed via front panel

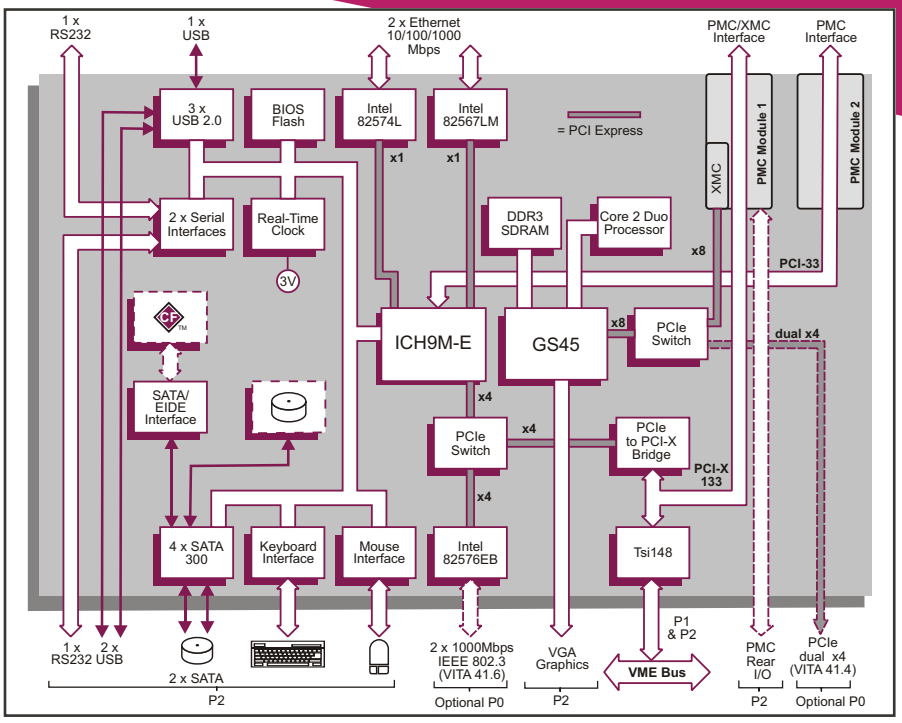
Mass Storage Interfaces
- 2 x SATA300 channels via P2 rear I/O
- optional on-board SATA300 drive
- EIDE interface supports on-board CompactFlash™ socket

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
  - → XMC interface supports x8 PCI Express link
  - → front panel I/O and PMC (Pn4) I/O via P2
- PMC site 2 supports:-
  - → 32-bit, 33MHz PCI only
  - → 3.3V or 5V signaling
  - → front panel I/O

Graphics Interface
- implemented by Intel GS45 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 on front panel
  - → 1 x RS232 via P2 connector
- 16550 compatible UARTs

Software Support
- support for Linux®, Windows® 7, Windows® Embedded Standard 7, Windows® XP (64-bit), Windows® XP, Windows® XPE, Windows® 2000, VxWorks®, QNX®, Solaris™ and LynxOS®
- Intel® Active Management Technology (AMT)



BIOS EPROM
- 4 Mbyte of BIOS SPI Flash EPROM

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

Built-In Test (BIT) Support (optional)
- Power-on BIT (PBIT)
- Initiated BIT (IBIT)
- Continuous BIT (CBIT)

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

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 VITA41.x fabric interfaces
- 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

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

Electrical Specification
- requires 5V supply only
- +5V @ 8.0A (typical at 2.26GHz with 3 GBytes DRAM);
- 3.3V, +12V and -12V supplies not utilized
- voltage +5/-3%

Environmental Specification
- operating temperatures:-
  - → 0°C to +55°C (N-Series)
  - → -25°C to +70°C (E-Series, 1.86 GHz only)
  - → -40°C to +85°C (K-Series, 1.86 GHz only)
- storage temperature: -40°C to +85°C
- 5% to 95% Relative Humidity, non condensing (operating or storage):-
  - → K-Series includes humidity sealant
- ruggedized versions, 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 connector
- IEEE 1101.10 handles
- shock: 20g, 11ms, ½ sine
- vibration: 5Hz-2000Hz at 2g, 0.38mm peak displacement

ORDERING INFORMATION

Order Number	Product Description (Hardware)	For the order number suffix (xy) options please contact your local sales office: Where x = P0 configurations	Where y = SDRAM size
VX 511/062-xy	1.86 GHz Core 2 Duo processor, Dual PMC, VXS/VME SBC	x - VXS P0 configuration	y - up to 6 Gbytes SDRAM
VX 511/063-xy	2.26 GHz Core 2 Duo processor, Dual PMC, VXS/VME SBC		

For accessories please contact your local sales office.
For extended temperature E and K-Series, or ruggedized RA and RC-Series, please contact your local sales office.

Datasheet Code 1579/0810