

Intel® Core™ 2 Duo Processor, Dual PMC/XMC



APPLICATIONS

The PP 531/06x is a PC-compatible, high performance, dual PMC/XMC, CompactPCI® board supporting the Intel® Core™ 2 processor up to 2.26 GHz (45nm process technology), and the Intel® GS45 mobile chipset with up to 8 Gbytes of DDR3-1066 SDRAM. The PP 531/06x features a variety of I/O interfaces including an option for an on-board SATA300 drive and a CompactFlash® socket. The board will operate in a system slot, a peripheral slot or independently from the CompactPCI

bus. Supporting two Gigabit Ethernet ports, the board is compliant to the PICMG® 2.16 specification. Full system monitoring is provided by the PICMG 2.9 compliant IPMI interface. The PP 531/06x is suitable for demanding applications within the defense, industrial control, telemetry, transportation, and aerospace markets. Ruggedized conduction-cooled and air-cooled versions supported. To simplify the board's integration many popular standard operating systems are supported.

HIGHLIGHTS

- 2.26GHz or 1.86GHz Intel® Core™ 2 Duo processor:
 - 45nm process technology, dual-core processor
 - 1066MHz Front Side Bus
 - 6 Mbytes last-level cache shared between cores
 - Intel® 64 Technology (64-bit computing)
- Up to 8 Gbytes DDR3-1066 SDRAM
- 2 x PMC/XMC sites with front and rear user I/O:
 - 32/64-bit; 33/66MHz PCI
 - 64-bit; up to 100MHz PCI-X
 - XMC interfaces (x8 and x4 PCI Express™)
- High-performance mass storage interfaces:
 - 2 external SATA 300 ports
 - optional on-board Hard Disk Drive
- On-board CompactFlash® socket
- 4 x Universal Serial Bus (USB 2.0) interfaces
- 4 x 10/100/1000Mbps Ethernet interfaces:
 - Dual Gigabit Packet Switching Backplane (PICMG 2.16)
 - Support for Wake-On-LAN
- 1 x RS232/RS422/RS485 serial channel interface
- Graphics, keyboard and mouse interfaces
- Watchdog timer and Long Duration Timer
- CompactPCI controller:
 - operates in system slot or peripheral slot
 - 32/64-bit at 33/66 MHz CompactPCI interface
- Option to bypass CompactPCI bus (Satellite Mode)
- IPMI (Intelligent Platform Management Interface)
- PICMG 2.9 (System Management Specification)
- Extended temperature versions:
 - -25°C to +70°C (E-Series)
 - -40°C to +85°C (K-Series, includes humidity sealant)
- Ruggedized conduction-cooled version (RC-Series):
 - conduction-cooled to ANSI/VITA 30.1-2002
 - -40°C to +85°C, conformally coated
 - see separate PP 531/06x-RC datasheet
- Ruggedized air-cooled version (RA-Series):
 - -40°C to +75°C, conformally coated
 - see separate PP 531/06x-RA datasheet
- Support for Linux®, Windows® XP, Windows® XP Embedded, Windows® Server 2003, Windows® Server 2008, QNX®, Solaris™ and VxWorks®

Central Processor

- 2.26 GHz Intel® Core™ 2 Duo SP9300 or 1.86 GHz Intel® Core™ 2 Duo SL9400
- common processor features:-
 - 45nm process technology
 - soldered to board
 - 1066 MHz Front Side Bus
 - 6 Mbytes of shared last-level on-die cache
 - Intel 64 technology (64-bit computing)
 - no CPU fan
- utilizes Intel® GS45 mobile class chipset with Intel ICH9M-E I/O Controller Hub
- provision for XDP debug port

SDRAM

- supports up to 8 Gbytes DDR3-1066 SDRAM:-
 - up to 8 Gbyte soldered
 - peak bandwidth of 16 Gbytes/s
 - dual channel architecture
- accessible by CPU and from CompactPCI® bus

Mass Storage Interfaces

- 2 SATA interfaces via J5
- 1 x SATA 300 interface for on-board hard disk or solid state drive (uses a PMC/XMC site)
- 1 x SATA 300 interface for on-board CompactFlash socket via EIDE converter

Ethernet Interfaces

- 2 x front interfaces implemented by Intel® 82574L controllers via x1 PCI Express™ links
- 1 x rear interface via J3 implemented by Intel 82574L controller via x1 PCI Express link
- 1 x rear interface via J3 implemented by an Intel® 82567 Gigabit Ethernet controller
- support for PICMG 2.16 R1.0 - Packet Switching Backplane (PSB)
- supports 10 Base-T, 100 Base-TX, 1000 Base-T
- support for Wake-On-LAN

PMC/XMC Interfaces

- 2 x PMC/XMC sites
- common features for both PMC sites:-
 - 32/64-bit, 33/66MHz PCI bus
 - 64-bit PCI-X bus up to 100MHz
 - 5V and 3.3V signaling levels
 - front panel I/O and Pn4 connectors used for rear I/O
- XMC (PCI Express™ Mezzanine Card) features:-
 - XMC site 2 interface supported via x4 PCI Express link
 - XMC site 1 interface supported via x8 PCI Express link

Graphics Interface

- implemented by Intel GS45 chipset
- analog VGA accessed via J5 rear I/O
 - resolutions up to 2048 x 1536 @ 16M colors

Serial Interface

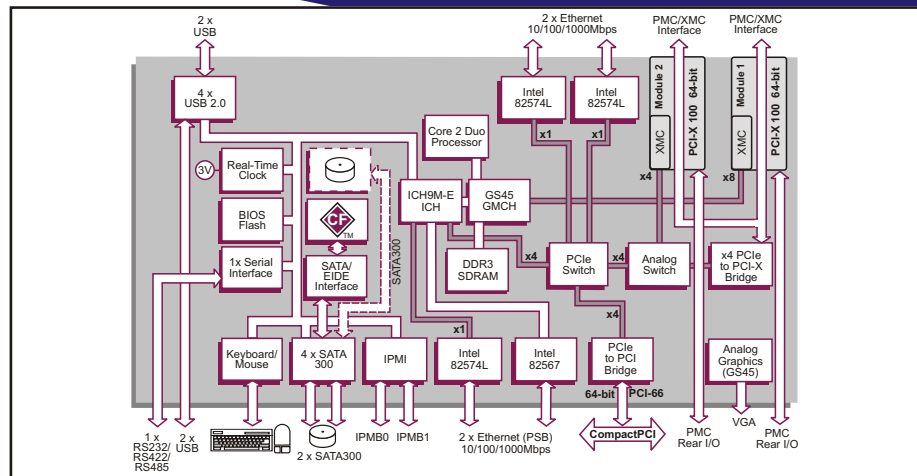
- 1 x RS232/RS422/RS485 serial channel:-
 - Tx, Rx, CTS and RTS signals via J5
- 16550 compatible UART

Flash EPROM

- 4 Mbytes of BIOS Flash EPROM - 8-bits wide

Firmware Support

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



Software Support

- support for Linux®, Windows® XP, Windows® XP Embedded, Windows® Server 2003, Windows® Server 2008, QNX®, Solaris™ and VxWorks®

Other Peripheral Interfaces

- PC Real Time Clock (Year 2000 compliant)
- watchdog timer
- 1 x 32-bit Long Duration Timer with processor interrupt capability
- CPU temperature monitor; voltages monitor; optional system fan monitor:-
 - accessible via IPMI
- GPIO signals :-
 - 4 x GPO and 8 x GPI multiplexed signals via AD PP5/006 RTM or
 - 3 direct GPIO signals via J5
- 4 x USB 2.0 interfaces:-
 - 2 accessed via J5
 - 2 accessed via front panel
- independent legacy speaker output via J3
- keyboard and mouse

CompactPCI Interface

- compliant with PICMG 2.0 R3.0; 3.3V or 5V signaling levels (universal signaling support)
- 33/66 MHz, 32/64-bit interface accessed via J1/J2 connectors
- PCI Express to PCI bridge for off-board accesses
- J4 connector not fitted
- PICMG 2.1 R2.0 Hot Swap compliant
- operates as a System Slot controller or in a Peripheral slot
- option to disable CompactPCI interface (Satellite Mode):-
 - receives power from CompactPCI bus
 - board can be hot swapped

IPMI

- PICMG 2.9 R1.5 (System Management Spec.):-
 - implements the IPMB0 interface
 - implements an IPMB1 interface
- on-board Baseboard Management Controller
- supports 8 Kbytes of non-volatile memory

Electrical Specification

- typical current at 1.86 GHz (4 Gbytes SDRAM):-
 - +5V@ 3.9A ; voltage +5% / -3%
 - +3.3V@ 3.5A; voltage +5% / -3%
- +12V@0.01A; voltage +5% / -5%
- -12V not required
- +12V and -12V routed to PMC slots

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, 1.86 GHz)
 - -40°C to +85°C (K-Series, 1.86 GHz)
- storage temperature: -40°C to +85°C
- 5% to 95% Relative Humidity, non condensing (operating or storage):-
 - K-Series includes humidity sealant
- ruggedized versions available, see separate datasheets:-
 - rear plug compatible
 - conduction-cooled: PP 531/06x-RC
 - air-cooled: PP 531/06x-RA

Mechanical Specification

- 6U form-factor: 9.2-inches x 6.3-inches (233mm x 160mm)
- single-slot: 0.8-inches (20.3mm)
- connectors: IEC-1076-4-101 for J1-J5
- 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)

For the order number suffix (xy) options please contact your local sales office: where x = I/O where y = SDRAM size

PP 531/061-xy 1.86 GHz Core 2 Duo processor SL9400 SBC
PP 531/062-xy 2.26 GHz Core 2 Duo processor SP9300 SBC

x - rear Ethernet configuration y - up to 8 Gbytes SDRAM

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.

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Datasheet Code 1601/0310
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