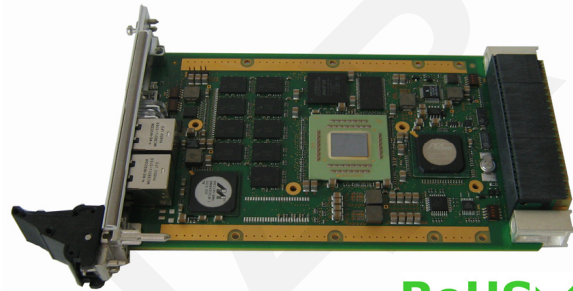


IC-PPC-VPX3a MPC8640D Single Board Computer

The **IC-PPC-VPX3a** is powered by one **MPC8640D** processor.

Designed for applications requiring a very high level of performance in a compact 3U form factor, the **IC-PPC-VPX3a** board provides a very flexible combination of interfaces, supporting OpenVPX's high bandwidth serial switched fabrics such as PCI Express and Serial RapidIO.

The **IC-PPC-VPX3a**, associated with our FPGA VPX 3U and/or with our XMC carrier supporting IOs boards, is the ideal solution to build high computing platforms, FPGA processing configurations or embedded computers.



Description

The MPC8640D processor of the **IC-PPC-VPX3a** uses e600 cores and high-speed interconnect technology to balance processor performance with I/O system throughput. Each core is a high performance supercalar design supporting multiple execution units. Each includes 32-Kbyte separate I/D L1 cache and a 1-Mbyte L2 cache.

IC-PPC-VPX3a implements up to 4GB of DDR2-ECC. The integration of the system controller provides spectacular memory bandwidth and memory latency performances.

The OpenVPX standard allow system designers to have flexibility in topology for large mesh designs, or designs passing heavy traffic on particular backplane segments. The **IC-PPC-VPX3a** board maintains this flexibility.

Thus, a PCI EXpress switch allows versatile coupling between the processor and the other slots. The P1A and P1B x4 links can be aggregated to form a PCIe x8 link or spread to form four PCIe x2 links.

In addition, the P1C link can be either a PCI-Express x4 link or a Serial-RapidIO x4 link.

These configurations are hardware selectable by the user.

The **IC-PPC-VPX3a** board also provides four GigaEthernet ports, two of them offering compliance with the Ethernet on VPX.

The **IC-PPC-VPX3a** is a VPX 3U / 4HP (0.8") board compliant with 3U module definitions of the VITA 46.0 standard.

Main features

Processor Unit

- ▶ one MPC8640 Dual-Core running at 1 GHz with :
 - L1 cache : 32KB Inst. and 32KB Data
 - 1MB of L2 integrated cache with parity
- ▶ two DDRII banks (up to 2 GBytes each) with ECC
- ▶ Mirror-Bit Flash (up to 512 MBytes)
- ▶ 512 KB of nvSRAM (non-volatile memory)
- ▶ one Calendar clock with supercap backup
- ▶ one Elapsed Time Counter
- ▶ one thermal monitoring sensor
- ▶ one supplies monitoring sensor

- ▶ Up to 8GB of Soldered NAND flash

Communication subsystem

- ▶ 8 lanes available as one PCIe x8 or two PCIe x4 or four PCIe x2 links (hardware setting)
- ▶ 4 lanes available as one PCIe x4 or one SRIO x4 link (hardware setting)
- ▶ 2*GigaEthernet ports available either as 2*1000BT interfaces on front RJ45 connectors or as 2*1000KX (or SGMII) interfaces on P2
- ▶ 2*GigaEthernet ports available either as 2*1000BT interfaces or 2*1000KX (or SGMII) interfaces on P1 (factory setting)
- ▶ 1* RS232 UART available on a front mini USB connector and P1
- ▶ Eight GPIOs on P2 (3.3V LVTTTL Level)
- ▶ I2C bus for Management interface
- ▶ Status Leds

Accessories

- ▶ Engineering kit for debug : JTAG/COP, console,...
- ▶ 3U Rear Transition Module

IC-PPC-VPX3a is available in standard, extended, rugged and conduction-cooled grades.

IC-PPC-VPX3a

MPC8640 (Dual Core) Single Board Computer

On-board firmware

IC basic firmware takes in charge the Freescale MPC8640D and its internal chipset initialization. This on-board firmware, based on UBOOT, is an efficient set of software stored in a secured flash.

UBoot

It is called by the reset vector when the board is powered up. It initializes the PowerPC and its system controller, performs a comprehensive Power-on self-tests (PBIT), before jumping into different applications according to the values stored in memory.

The firmware allows loading files from Ethernet via Bootp, running files in RAM or flashing them. In addition, it allows some monitoring functions such as : display or modify the RAM data. To end with, it enables the user to perform maintenance tests.

IC_Bios

This module allows the user to access the specific IC-PPC-VPX3a hardware resources via an easy-to-use API, generalized on all IC's products. This module is used as a library with VxWorks and as a dynamically loaded library module for Linux.

IC-BSP basic

These BSPs products are based on the standard distribution of the OS editor. They take in charge hardware initialization, interrupt handling and generation, hardware clock and timer services, memory management, PCI management, mapping of memory spaces, serial ports, GE MAC driver ports, Flash files systems, etc

Interface Concept provides BSP for VxWorks® (starting with 6.7) and LSP for Linux® (Interface Concept SDK, WindRiver or Sysgo) operating systems. Other RTOS (LynxOS, Integrity...) can be ported on request.

Interface features

Front connectors :

- ▶ 2*Giga Ethernet port (1000BT - RJ45) (also available on P2)
- ▶ 1*RS232 UART (also available on P1)
- ▶ Leds

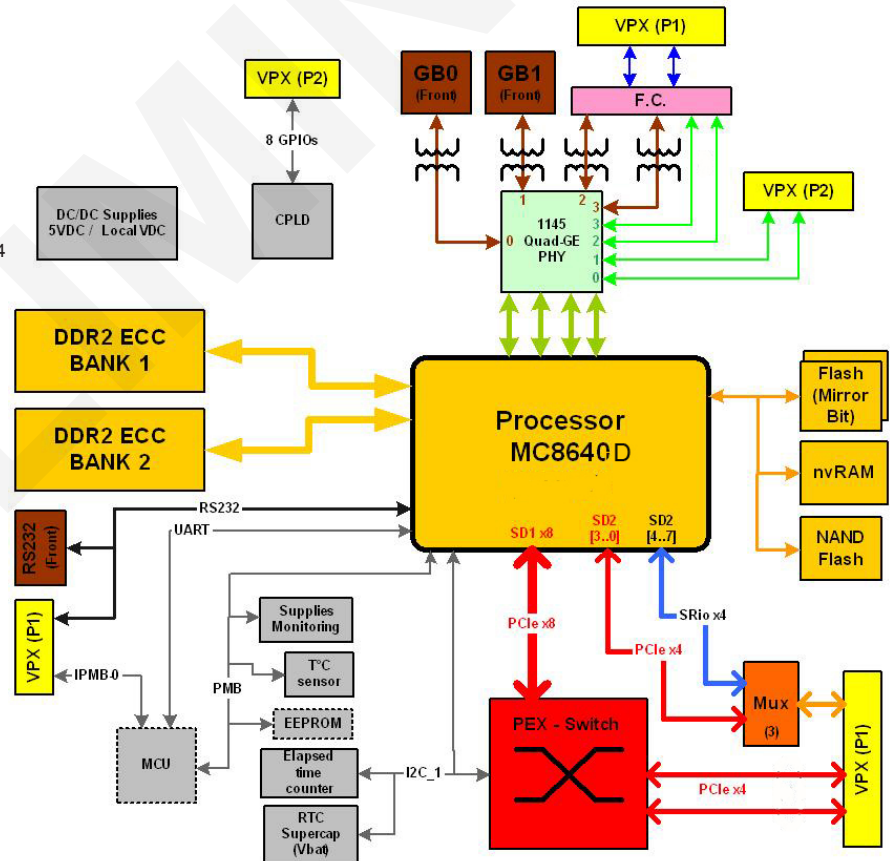
P1 connector

- ▶ 8 lanes available as one PCIe x8 or two PCIe x4 or four PCIe x2 links (hardware setting)
- ▶ 4 lanes available as one PCIe x4 or one SRIO x4 link (hardware setting)
- ▶ 2*GigaEthernet ports available either as 2*1000BT interfaces or 2*1000KX (or SGMII) interfaces (factory setting)
- ▶ 1*RS232 UART

P2 connector

- ▶ Eight GPIOs (3.3V LVTTTL Level)
- ▶ 2*GigaEthernet ports available as 1000KX (or SGMII) interfaces (automatic detection with 1000BT front interfaces)

Block Diagram



Environnement Specifications:

Please consult the IC-PPC-VPX3a page at www.interfaceconcept.com.

Ordering Information:

Please contact our sales department : tel. +33 (0)2 98 573 030 - email : info@interfaceconcept.com

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