

IC-De6-VMEa MPC8641D Single Board Computer

IC-De6-VMEa is a VME64x processor board based on the latest Freescale e600 processors. It is designed to provide the highest level of performance and integration available today.

The 2eSST capabilities of the **IC-De6-VMEa** provides up to 300MB/s burst transfer rate across the VMEbus. Moreover the backward compatibility protects existing investments.

The MPC8641D is a high-performance embedded Dual e600 core. These high-performance PowerPC processors are ideal for application in the fields of defense, industrial automation and medical imaging.

IC-De6-VMEa can be used in many highly integrated applications like :

- Leading-edge computing
- Embedded storage system
- Signal & Display processing, etc.



Description

IC-De6-VMEa is powered either by a MPC8641 (single core) or a MPC8641D (Dual core version). It uses e600 core(s) (formerly G4) 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 caches and a 1-Mbyte L2 cache.

IC-De6-VMEa runs as a system controller or a standard board. An automatic detection can be used with the VME64x 2eSST backplane. In order to ensure the best software compatibility, the VMEbus interface is based on a combination of the Tundra Tsi148 VME bridge and the latest generation of Texas Instrument transceivers. Two GigaEthernet ports provide the compatibility with VITA31.1 standard regarding packet switched architecture.

IC-De6-VMEa implements two independent DDR2-ECC banks with a capacity of up to 4Gbytes each. The integration of the system controller provides spectacular memory bandwidth and memory latency performances.

IC-De6-VMEa integrates many communication functions : 4+3 Giga Ethernet Ports filled out by a Giga Ethernet L2+ switch. An USB2 controller provides two high/full speed ports. Two serial ports and four additional UART channels are also available.

One on-board PMC (PCI-X) / XMC (PCIe) slot enhances the SBC flexibility, that can be completed by one or two PMC/XMC Expanders providing two additional PMC/XMC slots each.

Thanks to its SATA controller, **IC-De6-VMEa** can manage several storage devices : Solid State or Rotate 1.8/2.5" Disk; One or two 2.5" SATA disks can be directly set-up on the board even for the one slot conduction-cooled version.

Optionnaly, the **IC-De6-VMEa** provides a graphic interface based on the Carmine 2D/3D GPU. Two video outputs and two video capture channels are available.

IC-De6-VMEa is available in standard, extended and conduction-cooled grades.

Main features

Processor Unit

- ▶ MPC8641(D) running at 1GHz or 1.5 GHz with :
 - L1 caches : 32KB Inst. and 32KB Data with parity
 - 1MB*2 of L2 integrated cache with ECC
- ▶ 2*DDR2 banks with each up to 4GB
- ▶ 256MB of soldered Mirror Flash
- ▶ 256KB of BSRAM (non-volatile memory)
- ▶ PPC 64-bit Real Time clock and four 32 bit-timers
- ▶ Calendar clock with supercap backup
- ▶ Temperature sensor and monitoring

Storage subsystem

- ▶ Up to 8GB of Soldered SSD Disk with Raid 0/1 capability
- ▶ 3*channels SATA controllers with two ports allowing through planar connectors, standard disk installations

Communication subsystem

- ▶ 4*GigaEthernet controllers with enhanced functions
- ▶ 1*L2+ Giga switch (QoS, VLAN, etc.)
- ▶ 2*USB2 external ports
- ▶ 6*serial ports : 2 RS232/422 and four TTL
- ▶ I2C bus

Graphic subsystem

- ▶ Fujitsu MB86297 (Carmine) with 128 MBytes DDR
- ▶ Hardware 2D/3D acceleration
- ▶ 2*video outputs : 1280x1024@32bpp
- ▶ Analog output with green or separate H/V synchronization
- ▶ DVI, VGA, Stanag3350
- ▶ Dual Independent Video Capture up to 800x600

I/O subsystem

- ▶ VME64x with 2eSST (Tsi148)
- ▶ 14 GPIO (LV-TTL) interruptible
- ▶ PCIe*4 expander bus

Accessories

- ▶ Engineering kit for debug : JTAG/COP, console,...
- ▶ 6U Rear Transition Module
- ▶ Internal onboard SATA Disk kits (Riser)
- ▶ PMC Expander to add two or four PMC slots

IC-De6-VMEa

MPC8641D VME64x VITA 31.1 Single Board Computer

On-board firmware

Our basic firmware takes in charge Freescale's new MPC8641D and its internal chipset initialization. This on-board firmware, 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 monitor bus 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-De6-VMEa hardware resources via an easy-to-use API. This module is used as a library with Vx-works 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, USB2 driver, SATA drivers with Raid functions (Linux only), Nand and Nor Flash files systems, etc

Interface Concept provides BSP for VxWorks® 6.6 (or latest) and LSP for Linux® (Interface Concept or WindRiver SDK) operating systems. Other RTOS (LynxOS, Integrity...) can be ported on request. Vxworks-SMP and Linux-SMP are supported for dual core configurations.

Graphic Software

For Linux, IC provides an OpenGL2.x 3D DRI driver with DMA management. The OpenGL-ES1.1 functions are accelerated by the GPU. A basic frame buffer (2D) driver is also available.

Interface features

VMEbus 64x interface (P1/P2)

- ▶ DTB Master : A16/32/64 ; D08-D64, SCT, BLT,MBLT, 2eVME, 2eSST
- ▶ DTB Slave : A16/24/32/64 ; D8-64, SCT, BLT, MBLT, 2eVME, 2eSST, UAT
- ▶ Arbiter : RR/PRI
- ▶ Interrupt : handler/generator with IRQ[1..7]
- ▶ System controller with auto detect.

PMC/XMC slot

- ▶ Signaling : 3.3 tolerant
- ▶ PCI 32/64-bit at 33, 66, PCI(X up to 133 MHz)
- ▶ PCIe x4
- ▶ PMC IO routed on a/c rows of P2 (VITA 35 a/c row)

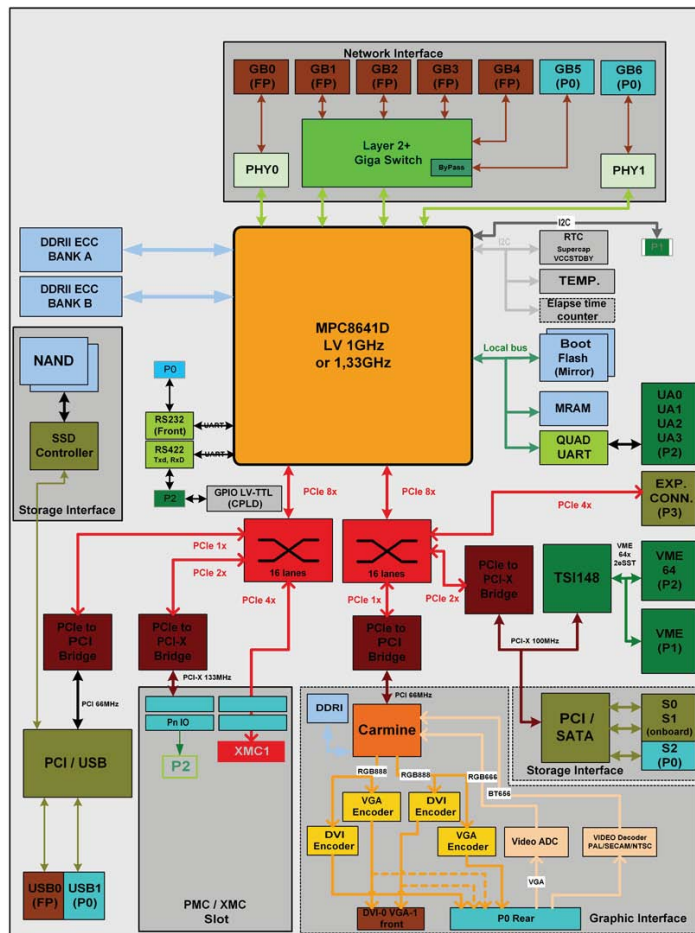
P0 connector

- ▶ 2 Giga Ethernet Compliant with Vita31.1
- ▶ 1*USB2 , 1*SATA ports
- ▶ Video input / output

P2 connector

- ▶ Pn IO
- ▶ Quad UART
- ▶ GPIOs

Block Diagram



Environnement Specifications:

Please consult the IC-De6-VMEa 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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