

MORPH VITA 46

Reconfigurable Signal Processor



Product Description

The MORPH VITA 46 is a board-level product based on reconfigurable logic. Intended for high-end signal processing and I/O applications, this VPX 1" pitch design features one Freescale MPC8641D High-performance Dual Core Processor and three Xilinx Virtex-5[®] XC5VSX95T FPGA devices. The FPGA array is interconnected via low-power Serializer/Deserializer (SerDes) GTPs. The processor and FPGAs are interconnected via a Serial RapidIO switch and allows external communication to the four x4-lane Serial RapidIO ports out the P1 connector.

Freescale's processor features dual 1GHz e600 32-bit PowerPC cores supporting the Altivec instruction set. Two 512Mbyte DDR2 SDRAM banks, upgradeable to 1Gbyte, are available to the processor.

Each XC5VSX95T features a massive programmable logic array, including over 58,000 flip-flops and their associated combinatorial logic. Additional embedded functions include 640 25x18 multipliers, 8.7Mb of Block RAM, 16 GTPs, and sophisticated digital clock management. Each FPGA has access to dedicated memory resources which includes 256MByte of 200MHz DDR2 SDRAM and 4MByte of 166MHz QDR2 SRAM. The XC5VSX95T is footprint compatible with other Virtex-5 devices in an FF1136 package that supports 640 I/O and 16 GTPs, allowing a wide range in versatility for user requirements and applications.

The XMC site is a standard PCIe x8 site designed to enhance MORPH's reconfigurable capabilities with a wide variety of COTS functions such as A/Ds, high-speed I/O, and auxiliary processors/RAM.

Features

One Freescale MPC8641D PowerPC

Two e600 Cores
1.0 GHz core clock rate
One x8 PCIe port (2.5 Gbps/lane)
One x4 SRIIO port (3.125 Gbps/lane)

External RAM Access

Two 512 MB Banks 64-bit @ 250 MHz

Three Xilinx Virtex-5 SX95T FPGAs

(SX95T swappable with any Virtex-5 in a 640 I/O FF1136 package)

Each SX95T Contains:

14,720 Virtex-5 Slices
248 Block RAM (36Kb)
640 DSP48E Slices (25x18)
16 RocketIO GTP Low-Power Transceivers

External RAM Access

256 MB DDR2 SDRAM 32-bit @ 200 MHz
4 MB QDR2 SRAM 36-bit @ 167 MHz

Board Configuration Management

Boot Flash attached to MPC8641D
JTAG and jumper controllable options
Environmental temperature monitoring

One XMC Site

Primary : PCIe x8 (2.5 Gbps/lane)

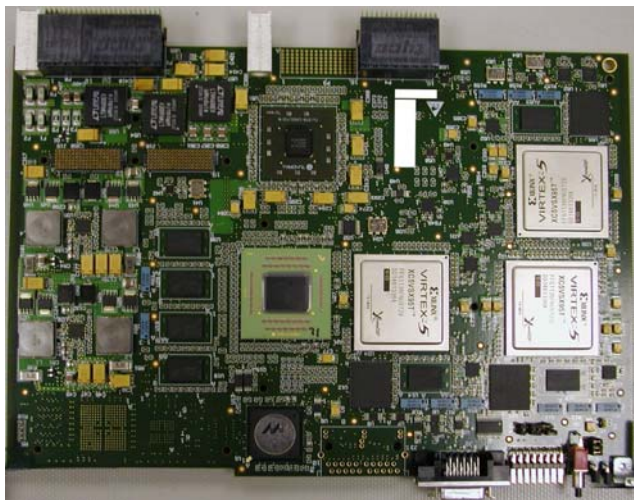
Front Panel

Five RS232 Serial Interfaces
Two 10/100/1000 Ethernet RJ-45 Ports
One JTAG and One COP
One Reset Button

Backplane

4 x4 SRIIO ports (3.125 Gbps/lane)

Single-Slot 1" pitch VITA 46.3 Card



MORPH VITA 46

Applications

- **Digital Receiver**
 - Digital Down Converter
 - Re-Sampling
 - CIC / FIR Filters
 - AM, FM, PM Demodulation
- **Frequency Domain Analysis**
 - Fourier Analysis
 - Polyphase Filters
 - Cosine Modulated Filters
- **Linear Combiners**
- **Pulse Characterization / De-interleaving**
- **Hardware acceleration of software applications**

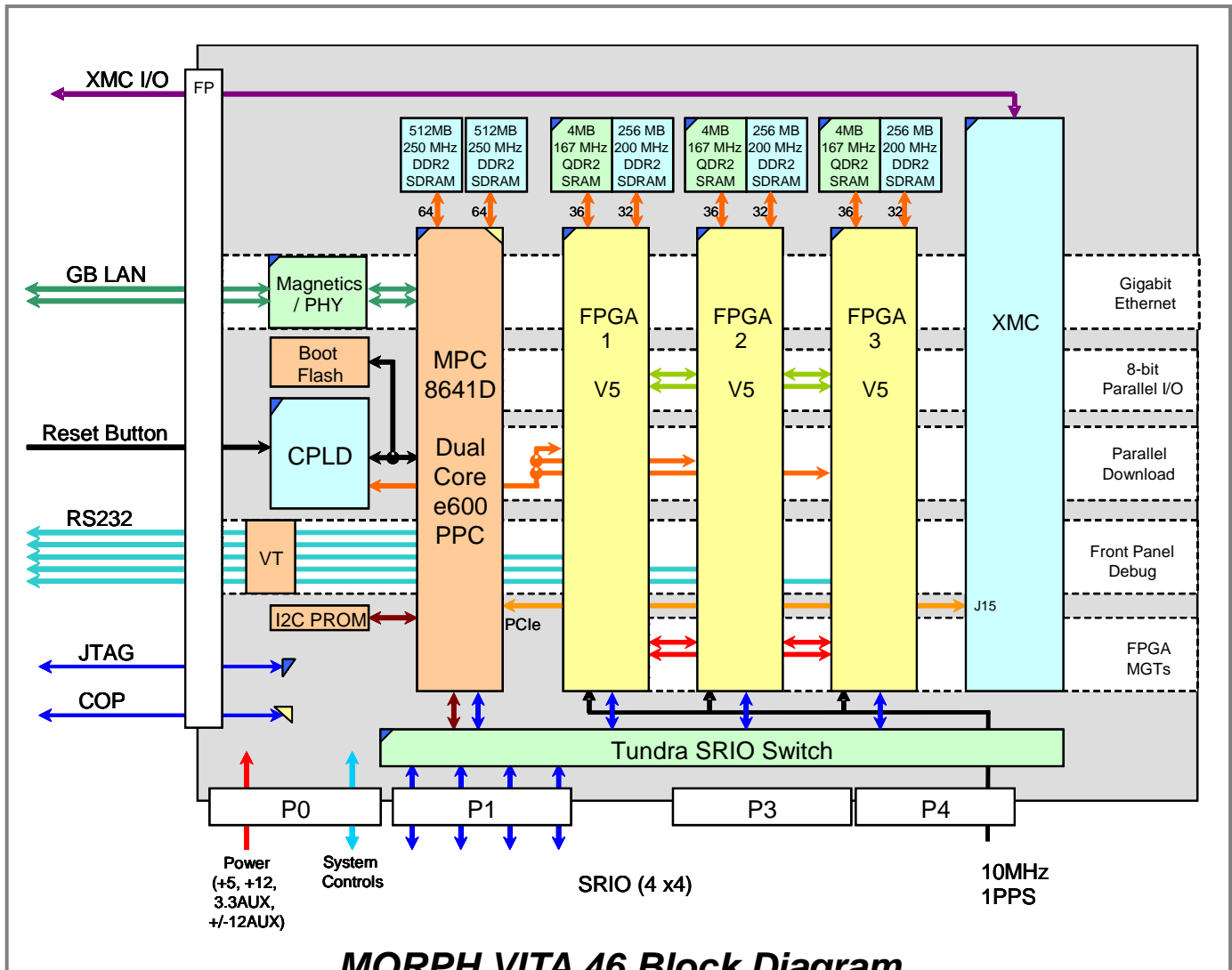
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Specifications

Operating Temperature **Not Available**
 Operating Altitude **Not Available**
 Weight **2.3 lbs**
 Input Power **5 / 12 VDC PRIMARY**
+/-12, 3.3 VDC AUX
 Power Consumption **40 – 100 Watts**
 Dimensions **6U VPX 1" Pitch**

Ordering Information

Part Number: MORPH-V5-VITA46
 Point of Contact: sales@BEEcube.com
 510-252-1136



MORPH VITA 46 Block Diagram