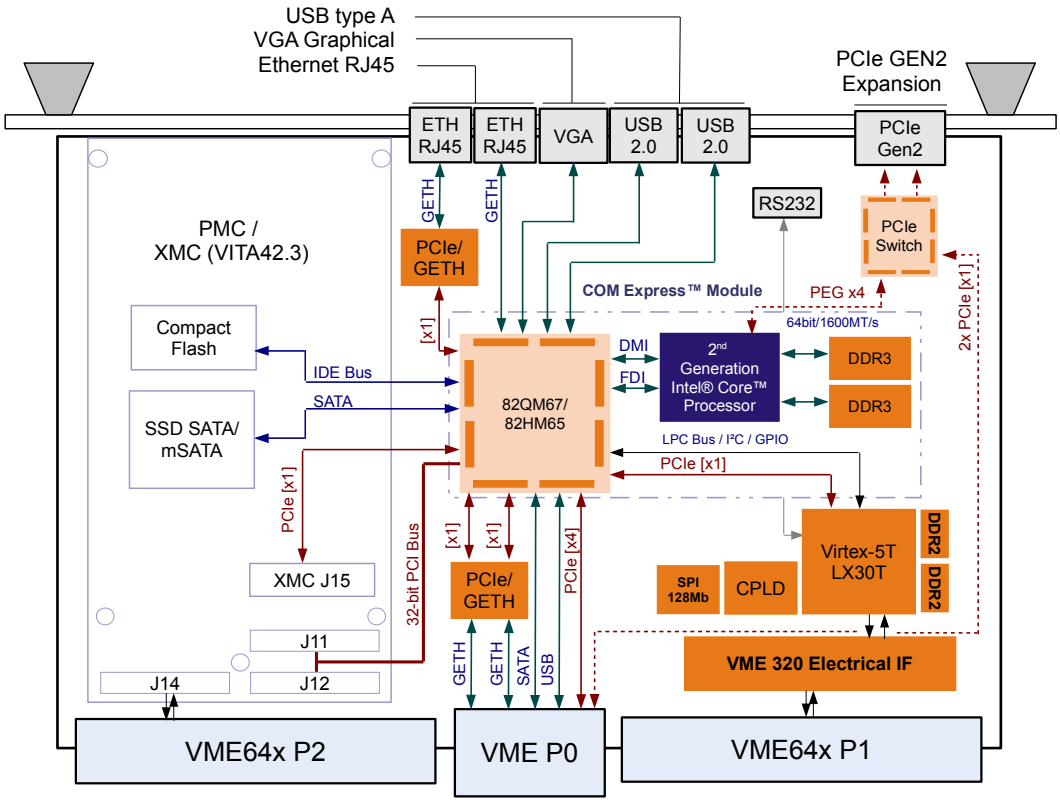
VCC_1105 "AROLLA"
VME64x COM Express™ Carrier Board

Data Sheet
VCC_1105_DS



Features

- VME64x 6U Single Board Computer
  - Single Slot (P_W up to 17[W])
  - Dual Slot (P_W up to 35[W])
- COM Express™ carrier envelope
  - Basic (125[mm] x 95[mm])
- VME64x Interface
  - FPGA based Ultra Low latency VME64x to PCI Express Bridge
  - VME64x Master/Slave Slot1 function
  - RMW and Atomic transactions
  - 2eVME & 2eSST
- Network Interfaces
  - GETH Front Panel / VME P0 31.1
- Graphical Interface
  - VGA SubD15
- I/O Interfaces
  - USB-A Front Panel / miniUSB-B
  - XMC PCIe x1 / PMC 32bit/33MHz
  - VME P0 PCIe x4
  - PCIe Expansion Front Panel/VME P0
- Storage interfaces
  - CompactFlash
  - mSATA
  - SATA 2.5" (optional)

Overview

IOxOS Technologies introduces the VCC_1105, a 6U VME64x COM Express™ carrier board which provides a complete VME Single Board Computer based on latest generation of Intel® Core™ i5/i7 processors.

The wide availability of COM Express™ Modules from several suppliers, allows the upgrade of VME64x based applications to the latest computing technology. In addition, long term obsolescence can be easily managed with *de facto* standard COM Express™ modules.

The addition of a custom designed heat sink allows the support of single width VME boards carrying COM Express™ modules with power consumption up to 17[W] (such as dual core™ i7 @ 1.5 GHz).

The VME64x interface is built with an ultra low latency PCI Express to VME64x direct bridge implemented in the on-board Xilinx Virtex-5T FPGA. An specific area of this FPGA can be allocated for the implementation of user applications, powered by a proprietary FPGA Design Kit.

The VCC_1104 provides enhanced IO support as quad Gigabit Ethernet interfaces including P0 VITA31.1, Three USB 2.0, VGA Graphical Interface, Serial IO, and PCI Express. It also embeds an on board CompactFlash socket, mSATA slot, and optional SATA 2.5" drive.

A single PMC (32bit/33MHz std. PCI 2.3) / XMC (PCIe x1 GEN2 VITA 42.3) slot is available.

The VCC_1105 implements a complete PCI Express expansion support allowing to build complex computing infrastructure chaining multiple VCC_1105 in NT mode / Multiple time domain isolation.

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Introduction

The VCC_1105 has been designed to provide high performance x86 32/64bit computing in legacy VME64x environments.

PCI Express Infrastructure

The VCC_1105 incorporates a 12-port PCI Express GEN2 Switch with up to three non transparent ports, embedded DMA and Multi-cast capability. This central high-performance and low latency communication channel allows to build architectures based on multiple VCC_1105 with real-time interconnect capability.

The PCI Express expansion is available through both front panel cable based connections and VME P0 (UHM).

VME64x Controller

The VME64x interface is built with a custom FPGA based bridge which has been successfully validated in most of IOxOS Technologies VME64x COTS:

- Direct PCI Express interface without intermediate PCI segment
- Complete VME Slot_1 with PRI/RRS, BTO/2eBTO
- VME Master A16:A24:A32/D08:D16:D32:BLT, MBLT
- VME Slave A24:A32/D08:D16:D32:BLT, MBLT
- 2eVME and 2eSST transactions
- Embedded IDMA Engines
- Private Shared Memory 256 MBytes
- 7 levels INTG/INTH
- RMW and ATOMIC transactions support

VME64x P0 IO Assignment

The VCC_1105 provides the following IO interfaces through VME P0 (legacy 2.0 [mm] or (*)UHM) connector:

- 2x Gigabit Ethernet (VITA 31.1)
- 1x SATA I/II(*)
- 1x USB 2.0 Host
- 1x PCI Express [x4]
- 2x PCI Express [x1] Expansion (*)
- GPIO controlled by the on-board FPGA

VME64x P2 User IO

The VCC_1105 is equipped with 5-rows VME P2 connector.

- Jn14 64 User's IO on rows A & C following VITA 35

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Front panel IO Resources

The VCC_1105 provides following IO capability on its front panel:

- Dual Ethernet RJ45 10/100/1000 Base-T
- VGA Graphical Interface
- Dual USB 2.0 Host Type A
- PCI Express GEN2 Expansion
- PMX/XMC Mezzanine
- Push-button RESET
- Deported SubD9 Serial IO RS232

FPGA Design Kit

The VCC_1105 on-board Xilinx Virtex-5T FPGA allocates an specific area for the implementation of user applications. A comprehensive VHDL Design Kit is available for this purpose. The user area provides direct support for both PCI Express and LPC Bus interfaces.

Additional Features

- VME Power supplies LI Controller
- Voltage & Temperature monitoring

Software Support

- LINUX OpenSuSE 11.4 32/64-bit
- VxWorks 6.9
- Windows XP/7 32/64-bit

Specifications

Power Estimation (PMC/XMC and COM Express™ not populated)	+5V → 1.5[A] (VITA 1.7 max 7.5[A] +3.3V → 0.6 [A] +12V / -12V (only for PMC/XMC)
Compliance	VME64X VITA 1.1 + VITA 1.5-2003 XMC VITA 42.3
Temperature Operating	0ºC to +55ºC with 400 LFM (Commercial)
Regulatory Compliance	Immunity: EN50082-2 / EN55024 Emission: EN55022 Class A Safety: EN60950

Ordering Information

Article Reference	*Product Description*
VCC_1105-A0	Single slot VME board populated with Intel® dual-core™ i7-2610UE @ 1.5GHz (17[W])
VCC_1105-B0	Dual slot VME board populated with Intel® dual-core™ i5-2515E @ 2.5GHz (35[W])
VCC_1105-Xy	Consult IOxOS Technologies for additional COM Express™ support