AMC-V7-2C6678

DATASHEET

A high performance AMC card based on a Xilinx Virtex-7 and TI's TMS320C6678 DSPs, with high speed, flexible I/O

16 DSP cores with shared memory, ideal for a range of high performance DSP applications

Front panel I/O: SFP+ to FPGA and mini-SAS to SRIO. Front panel or AMC clock sync

Flexible, high band-width off-board communications via Gen2 Serial RapidIO

TI DSP Third Party Network Member

DSP™

TEXAS INSTRUMENTS

KEY FEATURES

- Xilinx Virtex-7 FPGA, XC7VX415T-2
- Dual TMS320C6678 octal-core DSPs
- Multiple banks of DDR3 SDRAM for both DSPs and FPGA
- Flash memory
- IDT CPS-1848 Serial RapidIO switch
- On-board Ethernet switch
- Separate "glue logic" for board configuration and management
- Front panel SFP+ optical interface to the FPGA
- Mini-SAS to SRIO switch
- Timing and synchronisation from front panel or backplane clock I/O
- Single width Full Size PICMG AMC.0 R2.0 Advanced Mezzanine Card

RESULTING BENEFITS

- ⇒ Cost effective, high density device
- ⇒ The latest high performance TI DSPs
- ⇒ Latest external memory technology with multiple high bandwidth buses
- ⇒ Stores multiple FPGA images & software
- ⇒ SRIO V2.1 at up to 25 Gbaud per port
- ⇒ Gigabit Ethernet to all main devices
- ⇒ Allows control, FPGA configuration and FLASH reprogramming over SRIO/SPI
- ⇒ Flexible high-speed optical link, suitable for a range of applications
- ⇒ Flexible high-speed cabled connectivity
- ⇒ Syncs easily to other equipment
- ⇒ Works with industry standard MicroTCA chassis; can also run standalone

The CommAgility AMC-V7-2C6678 is a high performance DSP/FPGA based processing card in the extremely compact Advanced Mezzanine Card form factor. It is powered by two of the latest Texas Instruments TMS320C6678 DSPs plus a high-density Xilinx Virtex-7 FPGA. It is ideal for a range of high performance DSP/FPGA processing applications including telecoms and image processing.

Serial RapidIO at up to 25 Gbaud per port is supported by an IDT CPS-1848 Gen2 SRIO switch. As standard, the board provides a single front panel SFP+ optical interface that links directly to the FPGA, plus a single mini-SAS connector linked to the SRIO switch. Should applications require timing and synchronisation, this is achieved via the front panel or backplane clock I/O.

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HARDWARE SPECIFICATIONS

DSP: 2 x TMS320C6678 DSPs, each with:
- 1.25 GHz clock speed
- 2 Gbytes x64 DDR3-1333 SDRAM
- 20 Gbaud, 4x SRIO V2.1 link to switch
- 10 Gbaud, 2x PCI Express link to FPGA
- Hyperlink50 bus (to other DSP)
- Single Gigabit Ethernet link to switch

FPGA: Xilinx Virtex-7™ X415T-2 FPGA
- 512 Mbytes x16 DDR3-800 SDRAM
- 1 Gbyte x32 DDR3-1250 SDRAM
- 256 Mbytes x16 NOR FLASH
- Dual 20 Gbaud 4x SRIO V2.1 to switch
- Three Gigabit Ethernet links to switch
- 4x GTX to AMC ports 20-17
- Configuration from FLASH or SRIO

Glue: Embedded glue logic for configuration of FPGA, general board control, Flash update. Controlled from SRIO or SPI.

Timing:
- Front panel clock input or output
- AMC Telecom clock A-D support
- Configurable PLL and jitter cleaner based on TI CDCE62005 device

Front panel I/O:
- SFP+ to FPGA GTH at up to 10.3 Gbaud
- Mini-SAS configured as 4x SRIO
- SMB for sync clock I/O
- Other build options possible in volume including GPS receiver for timing sync

Form Factor and Backplane:
- Single-width, full-size Advanced Mezzanine Card, AMC.0 Rev 2.0 compliant
- IDT CPS-1848™ Rev C switch for AMC.4 compliant 25 Gbaud x4 connections to AMC ports 4-7 and 8-11
- Broadcom BCM5389 switch for AMC.2 compliant GigE to AMC Ports 0 and 1
- Hot swap support

Debug:
- Breakout board for debug and RS-232
- Separate FPGA JTAG debug connector
- RS-232 headers, LEDs for each DSP
- Optional MICTOR connector to FPGA

Module Management Controller:
- AMC.0 IPMB_L, FRU EEPROM data
- Power & reset, health monitoring

ENVIRONMENT/EMC/SAFETY
- Operating temp: 0-40°C ambient
- Power consumption: up to 60W max
- Designed for NEBS/ETSI compliance when used in appropriate chassis
- 2004/108/EC and FCC EMC compliant
- 2011/65/EU RoHS, 2012/19/EU WEEE and 2006/95/EC LVD compliant

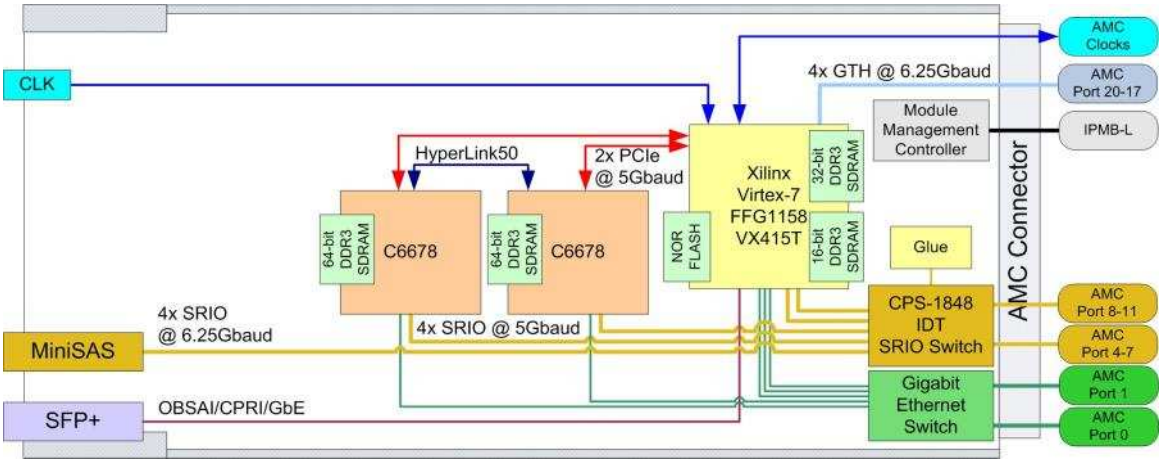
SOFTWARE

Management: Full embedded suite based on Pigeon Point™ Software

FPGA: Xilinx ISE/EDK project to show functionality; full MicroBlaze BSL

DSP: Full DSP Board Support Libraries; 3L Diamond available for improved management of DSP multi-processing

Contact CommAgility for further details of software partners.



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LICENSING can be offered for high volume projects.