AMC543

Xilinx Zynq® UltraScale+ with Dual TI 66AK2H14 DSP

AMC543

Key Features

- Xilinx Zynq® UltraScale+ XCZU19EG FPGA
- FPGA has dual bank of DDR-4 (64-bit wide)
- Dual TI DSP 66AK2H14 with dual bank of DDR-3 (64-bit wide)
- 24 TX/RX Fiber via MTP/MPO Connector
- PCIe (AMC.1), SRIO (AMC.4) or other protocols on Ports 4-7 and 8-11 per FPGA load
- GbE on Ports 0,1 (AMC.2) and SATA to Ports 2, 3 (AMC.3)
- Ports 12-15 and 17-20 route to FPGA
- 10GbE from each DSP to the front panel
- Layer two managed switch

Benefits

- FPGA/DSP combination provides dense signal processing
- Hyperlink provides tight coupling between DSP processors
- Design utilizes proven VadaTech subcomponents and engineering techniques
- Electrical, mechanical, software, and system-level expertise in house
- Full system supply from industry leader
- AS9100 and ISO9001 certified company

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AMC543

The AMC543 incorporates the Xilinx Zynq® UltraScale+ XCZU19EG FPGA with Dual TI 66AK2H14 DSP devices. This re-configurable FPGA connects directly to the backplane allowing the core to interface to a host with multiple protocols such as 10/40GbE, PCIe, SRIO and/or Aurora. Dual multicore Digital Signal Processors (DSP) 66AK2H14 connect to the FPGA via PCIe x2, SRIO x4, GbE, EMIF16 (local bus of the DSP) as well as 10GbE thru the on board 10GbE Switch. The FPGA also interfaces to the AMC FCLKA and TCLKA/B/C/D and has dual 8GB of 64-bit DDR4 memory.

Further AMC ports 12-15 and 17-20 are routed to the FPGA. Ports 17-20 have options to be routed as SERDES or M-LVDS.

The Dual DSP devices interconnect with each other through two x4 HyperLink as well as GPIO interface between the two DSP. Each DSP has 8 GB of DDR-3 memory with ECC. Each DSP also routes 10GbE thru the front panel via SFP+ style optics.

The AMC543 has GbE on Ports 0/1 per AMC.2, Ports 2/3 per AMC.3, PCIe Gen3 dual x4 or x8, dual SRIO/10GbE/40GbE per AMC.1/ AMC.2/ AMC.4 specifications to ports 4-11. Ports 12-15 as SERDES (option) and 17-20 as M-LVDS or SERDES (option) can also route to the FPGA.

The AMC543 has an Ethernet switch which interconnects the dual DSP, FPGA and supports a 10GbE front panel via SFP+ style optics.
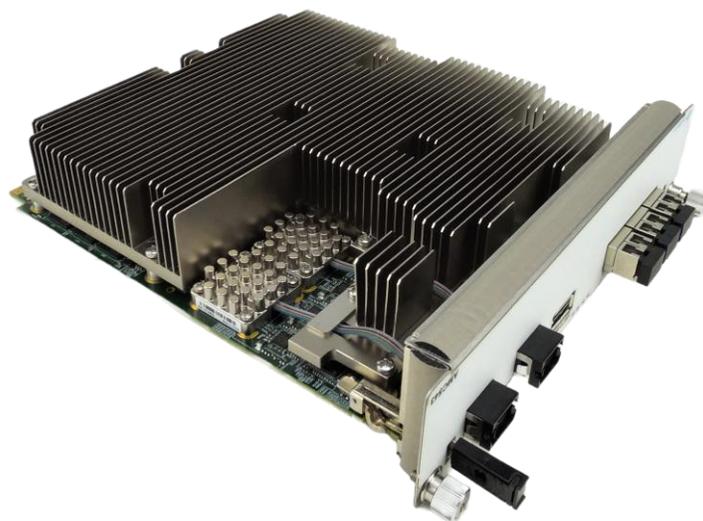

Figure 1: AMC543
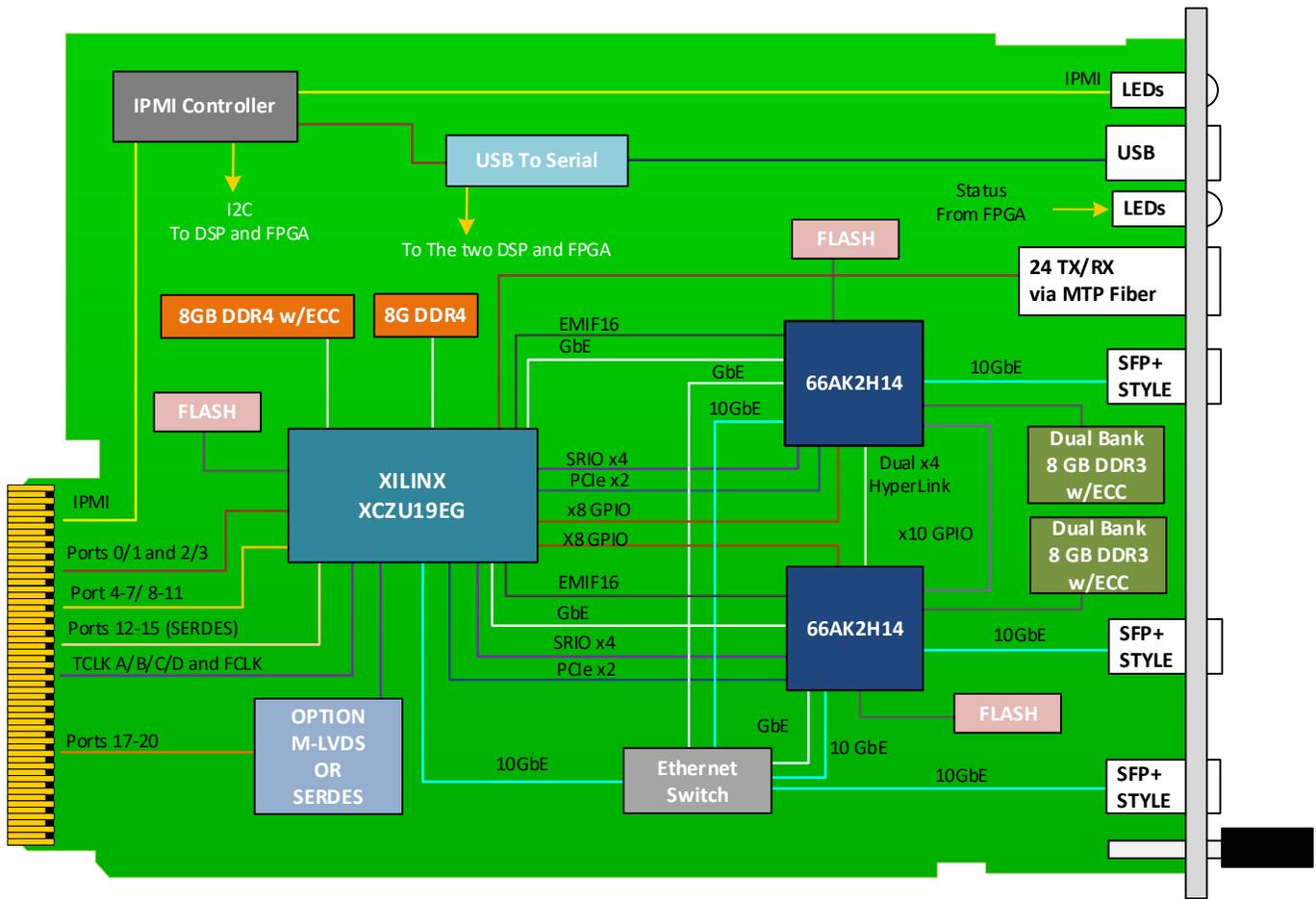

Figure 2: AMC543 Isometric View

Block Diagram

Figure 1: AMC543 Functional Block Diagram

Specifications

Architecture		
Physical	**Dimensions**	Double module, mid-size (optional full-size or 8HP)
		Width: 5.85" (148.5 mm)
		Depth 7.11" (180.6 mm)
Type	**FPGA AMC**	Xilinx XCZU19EG with dual banks of DDR4 (64-bit)
Standards		
AMC	**Type**	AMC.0, AMC.1, AMC.2, AMC.3 and AMC.4
Module Management	**IPMI**	IPMI v2.0
PCIe	**Lanes**	Dual x4 or x8 (Ports 4-11)
XAUI/SRIO	**Lanes**	Dual x4 (Ports 4-11), additional Ports on 12-15, 17-20
40 GbE	**Lanes**	Dual x4 (Ports 4-11), additional Ports on 12-15, 17-20
Configuration		
Power	**AMC543**	65W (application specific)
Environmental	**Temperature**	See Ordering Options and Environmental Spec Sheet
		Storage Temperature: –40° to +85°C
	Vibration	Operating 9.8 m/s^2 (1G), 5 to 500Hz on each axis
	Shock	Operating 30G on each axis
	Relative Humidity	5 to 95% non-condensing
Front Panel	**Interface Connectors**	Dual 10GbE SFP+ style optics from the DSP Devices
		24 RX/TX high speed SERDES via MTP/MPO style fiber
		USB 2.0 for multi-port RS-232
		10GbE SFP+ style optics from the Ethernet Switch
	LEDs	IPMI management control
		Status
	Mechanical	Hot-swap ejector handle
Software Support	**Operating System**	Independent
Other		
MTBF		MIL Hand book 217-F@ TBD hrs
Certifications		Designed to meet FCC, CE and UL certifications, where applicable
Standards		VadaTech is certified to both the ISO9001:2000 and AS9100B:2004 standards
Warranty		Two (2) years, see VadaTech Terms and Conditions

INTEGRATION SERVICES AND APPLICATION-READY PLATFORMS

VadaTech has a full ecosystem of OpenVPX, ATCA and MTCA products including chassis platforms, shelf managers, AMC modules, Switch and Payload Boards, Rear Transition Modules (RTMs), Power Modules, and more. The company also offers integration services as well as pre-configured Application-Ready Platforms. Please contact VadaTech Sales for more information.

Ordering Options

AMC543 – A0C-DEF-G0J

A = DSP Option	D = PCIe Option	G = Fiber Optic MTP/MPO
0 = 66AK2H14DAAW24 1 = Reserved 2 = Reserved	0 = No PCIe 1 = PCIe on Ports 4-7 2 = PCIe on Ports 8-11 3 = PCIe on Ports 4-11	0 = No Fiber Optic MTP/MPO 1 = 12 TX/RX 2 = 24 TX/RX
B = Ports 2/3 to FPGA	**E = Ports 12-15 to FPGA**	
0 = Ports not routed 1 = Ports routed	0 = Ports not routed 1 = Port routed as SERDES	
C = Front Panel	**F = Ports 17-20 to FPGA**	**J = Temperature Range and Coating**
1 = Reserved 2 = Mid-size (4 HP) 3 = Full-size (6 HP) 4 = 8HP 5 = Reserved 6 = Mid-size, MTCA.1 (captive screw) 7 = Full-size, MTCA.1 (captive screw) 8 = 8HP, MTCA.1 (captive screw)	0 = Ports not routed 1 = Ports routed as SERDES 2 = Ports routed as MLVDS	0 = Commercial (–5° to +55°C), No coating 1 = Commercial (–5° to +55°C), Humiseal 1A33 Polyurethane 2 = Commercial (–5° to +55°C),Humiseal 1B31 Acrylic 3 = Industrial (–20° to +70°C), No coating 4 = Industrial (–20° to +70°C), Humiseal 1A33 Polyurethane 5 = Industrial (–20° to +70°C), Humiseal 1B31 Acrylic 6 = Extended (–40° to +85°C), Humiseal 1A33 Polyurethane* 7 = Extended (–40° to +85°C), Humiseal 1B31 Acrylic*

Notes: *Conduction cooled temperature is at edge of module. Consult factory for availability.

For operational reasons VadaTech reserves the right to supply a higher speed FPGA device than specified on any particular order/delivery at no additional cost, unless the customer has entered into a Revision Lock agreement with respect to this product.

Related Products

AMC725

- Intel® Xeon E3 processor options with PCH
- DVI graphics (SM750 w/ 16 MB DDR), up to 1920x1440 resolution
- Optional up to 256 GB SSD with RAID option

VT815

- 9U MTCA Chassis Platform, 12 slots, double-module
- Full redundancy
- High-bandwidth (20-lane) connections between adjacent slots

UTC004

- Single module, full size per AMC.0
- Unified 1 GHz quad-core CPU for MicroTCA Carrier Management Controller (MCMC), Shelf Manager, Clocking, and Fabric management
- Automatic fail-over with redundant UTC004s

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