Crestone

Altera Stratix V FPGA Freescale T4240 Processor

Model Number: 3DR-S5-T4240

3DR COMPUTING OVERVIEW

3DR computing technology brings together high performance computing, ease of programmability, low-cost, and commercial I/O flexibility in a modular, open systems and standards architecture to realize uniquely scalable and widely configurable, high speed embedded processing solutions for the development of radar, EW, SIGINT, and communication systems.

3DR Computing possesses the unique ability to morph in size, shape, and processing capacity. This flexibility provides a low cost, standard solution capable of rapidly conforming to the vastly different power, space, and environmental requirements found aboard any surface, sub-surface, or airborne system or platform.

PRODUCT DESCRIPTION

At the heart of the 3DR family architecture is the 3DR-S5-T4240 processor module, known as Crestone. This module consists of a power PC (Freescale T4240) general purpose and communications processor, an Altera Stratix V FPGA, on board DDR3 memory modules, and a combination of PCIe Gen 3, LVDS, and SERDES commercially available I/O modules. The processing modules also provide dual 10G Ethernet ports, JTAG, and UART-over-USB. The variety of available standard interfaces promotes network connectivity with a wide range of third party systems and subsystems. This includes commercially available switches and routers and promotes the integration of a system-of-systems in a net-centric environment.

The 3DR standard micro-controller architecture is interfaced through the I2C bus to provide FPGA and PPC temperature, voltage, current, and clock monitoring for automatic shut-down during critical over heat and/or voltage conditions. As with all 3DR modules, Crestone board supports 3D connectivity, allowing the user to stack and/or tile modules to address a wide variety of processing, I/O, size, weight, and power requirements.

FEATURES

- Altera Stratix V 5SGS-ED8N1F45I2N
- Free Scale T4240 (1.8 GHz)
- Freescale K61
- PLX PCIe 3D Mesh
- SerDes 3D Mesh
- LVDS 3D Mesh
- DDR3: 12GB DDR3@1600 MT/s (3 memory controllers with 4GB each)
- NAND flash: 512MB
- Operating System (OS): CEI Customized Linux

APPLICATIONS

- General Purpose
- Digital Signal Processing
- Radar Receiver/Exciter
- Electronic Warfare/ Attack Systems
- Digital Array Processing & Beamforming
- SIGINT (ELINT, COMINT, etc.)
- Systems Digital Image Processing
- Remote Sensing

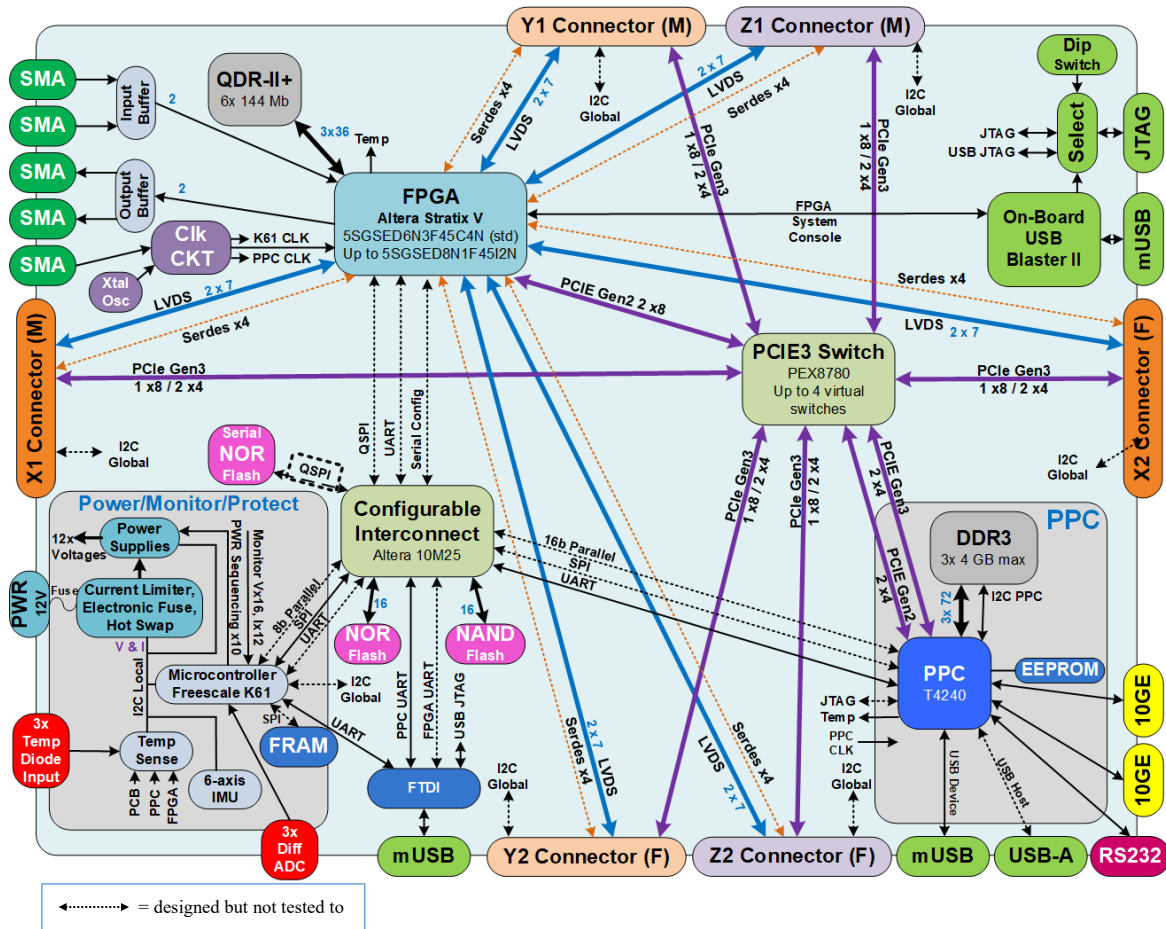intel FPGA Design Solutions Network
Platinum

CONFIGURATIONS

Model Number	Configuration
3DR-S5-T4240-P	T4240 only, no StratixV
3DR-S5-T4240-C	Commercial Temp — 0°C - 50°C
3DR-S5-T4240-S	Trusted computing platform version
3DR-Cables	6" high speed inter-module cables

*Please contact CEI for extended temperature range options

= designed but not tested to

PRODUCT SPECIFICATIONS

Altera Stratix V FPGA	864 Mb QDR-II+	**LVDS 3D Mesh**	2 clusters of 7 LVDS per connector
	LVDS		14 Gbps in X, Y, Z
	SerDes	**FreeScale K61**	Controls power sequencing
	PCIe Gen2		Monitors temperatures, voltages, and currents
	JTAG Programmable	**PCIe 3D Mesh**	1x8 or 2x4 per connector
	Master BPI Configuration	**Power**	Power consumption: 12V @ 6Amps (subject to FPGA loading)
	Write Protect Available		Supply options : 12V power cable
	QDR-II+: 864Mb at 450 MT/s		Additional power features: e-fuse/continuous power monitoring
FreeScale T4240	12 cores/24 virtual cores	**Physical**	Board dimensions: 6.25" L x 6.25" W
	2 - 10 GbE Ports		Board dimensions with connectors: 6.668" L x 6.668" W
	PCIe Gen3		Distance between boards (stacked, board-to-board): 0.990"
External Interfaces	Two 10G Ethernet ports		Weight: 12.2 oz
	PCIe Gen3	**Environmental**	Operating temperature: 0°C to +50°C
	All X, Y, Z connectors		Storage temperature: (est) -40°C to +105°C
	FPGA: SERDES, LVDS, PCIE		Cooling requirements: application specific
	PPC: PCIE		
	RS-232: PPC		
	UART-over-USB: PPC, FPGA, K61		
	Microcontroller, FPGA		