TOPIC
EMBEDDED PRODUCTS

Embedded in your future

Miami MPSoC

- Xilinx Zynq Ultrascale+® MPSoC based System on Module
- System-on-Module provides state-of-the-art high bandwidth connectivity and system integration capabilities
- High-performance processing with superior performance/watt ratios
- Quad core 64-bit application processor + dual core real-time/safety processor + GPU + FPGA fabric for agile system development
- Dyplo ready on all processing units enabling heterogeneous distributed processing on all processors including the FPGA
- Main-stream Linux BSP support
- PCIe GEN2, USB 2.0 (USB 3.0 coming soon) and SATA

Overview

The Miami MPSoC System on Module (SoM) is based on the latest Xilinx 16 nm Ultrascale+ FPGA technology. It is a highly integrated and compact off-the-shelf solution for today's high performance embedded systems. The module combines high performance and high-density programmable logic with dedicated hardened IP blocks, such as DSP cores, memory controllers and PCIe endpoints. The unique combination of a quad-core application processor, a dual core real-time processor, an embedded GPU and feature-rich FPGA fabric makes this platform a versatile and agile platform for many different application domains. The high speed transceivers enable communication links using many different interface standards. The Miami SOM integrates all system components required to bring an embedded system alive including memory, power supply, debugging and connectivity.
The Miami family of System-on-Modules provides a best in class platform for balancing both performance and power, making it a perfect solution for applications that require high processing power, high speed interfaces, a high level of reliability and quality, the ability to optimize system interfaces and footprint and execute with real-time arithmetic and control. The module comes with an actively supported HDL board support package, including a maintained main-line Linux distribution. The Miami MPSoC SoM is compatible and functionally combinable with the whole family of Florida carrier boards, allowing for rapid prototyping and feasibility studies. Based on the Florida reference designs, customized variances can realized reliably with fast turn-around times. Typical application areas are any existing applications that require a fair amount of processing power combined with a small system footprint including but not limited to (secure) communications, high-performance computing, aerospace & defense, audio/video applications, medical and industrial imaging.

Key Features

- Fast booting meeting PCI Express requirements
- Dimensions: 70 mm x 68.4 mm
- On-board high efficiency power supplies
- Configurable board I/O voltages
- High performance SAMTEC board-to-board connectors
- Support for SATA3, PCIe, Gigabit Ethernet, DisplayPort
- IEEE1588v2 support
- On-board high-performance LPDDR4 memory
- Advanced debug support
- Industrial temperature range (-40 °C +85 °C)
- Visit www.topicproducts.com/miami for access to design resources and support

Dsign

- Topic Products provides a wide variety of development services
- Customization services
- Development of customer specific designs
- Application Software Development
- Operating System Porting as well as BSP/ driver development
- FPGA content development and board design
- E.g. IEC60601, ISO13485 and ISO14971 related development services

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MIAMI-SOM	XCZU6CG/EG	XCZU9CG/EG	XCZU15EG
FPGA techology			
Technology	UltraSCALE+®	UltraSCALE+®	UltraSCALE+®
Logic cells (K)	469	600	747
CLB LUTs (K)	215	274	341
Flip Flops (K)	429	548	682
Block RAM (Mb)	25.1	32.1	26.2
UltraRAM (Mb)	-	-	31.5
DSP slices	1973	2520	3528
GTX transceivers	PS-GTR 4x (6.0 Gb/s)	PS-GTR 4x (6.0 Gb/s)	PS-GTR 4x (6.0 Gb/s)
Processor Units			
Application Processor Core	Quad-core ARM® Cortex™-A53 MPCore™ up to 1.5GHz		
Memory w/ECC	L1 Cache 32KB I / D per core, L2 Cache 1MB, on-chip Memory 256KB		
Real-Time Processor Core	Dual-core ARM Cortex-R5 MPCore™ up to 600MHz		
Memory w/ECC	L1 Cache 32KB I / D per core, Tightly Coupled Memory 128KB per core		
Graphics Processing Unit	Mali™-400 MP2 up to 667MHz		
Memory L2 Cache	64K		
External Memory, Connectivity, Integrated Block Functionality			
Dynamic Memory Interface	2Gbyte LPDDR4 x32		
Static Memory Interfaces	On-board: eMMC (8Gbyte), 2x Quad-SPI (64Gbyte). On-connector: SD-card.		
High-Speed Connectivity	PCIe® Gen2 x4, 2x USB3.0, SATA 3.1, DisplayPort, 4x Tri-mode Gigabit Ethernet		
General Connectivity	2xUSB 2.0, 2x SD/SDIO, 2x UART, 2x CAN 2.0B, 2x I2C, 2x SPI, 4x 32b GPIO		
Power Management	Full / Low / PL / Battery Power Domains		
Security	RSA, AES, and SHA		
AMS - System Monitor	10-bit, 1MSPS – Temperature and Voltage monitor		
User programmable/configurable interfaces on SoM connector			
Gigabit transceiver links	4x (SATA-2/3, PCIe GEN3 x4, 40Gb Ethernet, USB 3.0)		
Bank 0 and 1	45x Configurable 1V8 and 3V3 user I/O (HR)		
Bank 2 and 3	45x Fixed 1V8 user I/O (HP)		
Power supply			
Input	3.3V, max. 4A, via connector On-board voltage regulation		
Output	Configurable I/O standards and voltages		
Software			
Bootloader / BSP	Vivado board specification file, PCIe boot support option		
Boot options*	JTAG, dual quad SPI, managed NAND flash, SD-card NAND flash		
Operating System	Topic Linux BSP including bootloader		
Dyplo® compatible Platform	Yes	Yes	Yes
Mechanical and environmental			
Dimensions	70mm x 68.4mm		
Connectors	2x 120 pin Samtec high performance mezzanine carrier board connectors		
Temperature*	Industrial grade		
Qualification tests			
Temperature and humidity	IEC 60068-2-38:2009		
EMC/EMI	EN 55032, IEC 61132, EN 61326, IEC 55024		
Shock and vibration	MIL-STD-202F (method 204D), MIL-STD-202F (method 213B)		

** Other configurations possible at higher volumes.*

Florida carrier boards

Miami System-on-Modules are supported by evaluation and reference boards and designs to accelerate your overall design cycle with commonly used peripheral functions. Visit www.topicproducts.com/florida for an overview of applicable boards and board support packages for your Miami MPSoC SoM.