VIAVI
mA-3011
AXIe Embedded Host, 2.4 GHz Quad Core i7

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Overview

The VIAVI Solutions mA-3011 provides a compact and integrated solution for AXIe-based deployments by eliminating the need for an external host processor for module control. The mA-3011 provides a high-performance Intel i7 quad-core processor in a single module form-factor. The mA-3011 provides a high-performance Intel i7 quad-core processor in a single module form-factor, with optional dual i7 processor configuration.

The mA-3011 is the first AXIe embedded host module to support the AXIe-1 Revision 3.0 Specification for Wide PCI Express Fabric Extensions. Additionally, the mA-3011 supports Gen3 PCIe data rates, delivering four times the backplane throughput capacity of competing solutions.

Advantages

- Based on industry standard COMe module carrier for easy upgrade and obsolescence protection
- Eliminates need for external computer
- Single and Dual 2.4 GHz Quad Core i7 configurations
- High data throughput with PCIe Gen3 and Wide PCI Express Fabric Extensions
- Removable solid-state hard drive
- Upgradeable RAM and SSD
- Integrated PCIe peripheral slot
- DisplayPort, USB, Gigabit Ethernet, and HD Audio connections

Applications

- High-performance test deployments
  - Aerospace and defense
  - Wireless communications
  - Semiconductor test
  - Automotive
  - Industrial
  - Radar
  - Signal Intelligence
- Emulation and simluation
- Complex signal and environment geneation and analysis
- High-performance computing

A rich variety of front-panel interconnect options are provided, including DisplayPort video, quad USB 3.0 SS ports, RJ45 Gigabit Ethernet, and HD audio microphone and speaker. Additionally, the mA-3011 provides the unique capability to install standard 3/4-length PCIe cards for applications that may require DAQ cards, 10 / 40 GbE adapters, or GP-GPU accelerators.

The mA-3011 provides storage for operating systems and applications via a user-accessible solid-state drive for security, expandability, and increased reliability.

Hardware

The mA-3011 provides powerful quad-core processing with its Intel i7 4700 EQ chipset. Utilizing Hyper-Threading Technology allows simultaneous execution of up to eight threads. Additionally, 8 GB of DDR3-1600 RAM is provided standard, upgradable to 16 GB for the most demanding applications. Non-volatile storage is provided by a 128 GB SATA-III solid-state drive, upgradeable to 256 GB for additional data storage. The solid-state drive is conveniently located on the bottom side of the mA-3011 and can be easily accessed and removed for upgrade, replacment, or sanitization.

The mA-3011 interfaces to the AXIe backplane with 8-lanes of Gen3 PCIe, making it the first embedded host to support the AXIe Wide PCI Express Fabric Extensions and the first Gen3 embedded controller with up to 8 GB/s backplane throughput. The mA-3011 also interfaces to the backplane Gigabit Ethernet.

External interfaces include a RJ45 Gigabit Ethernet port networked to the backplane base fabric, four USB 3.0 SS ports for external device connections, high-definition audio microphone and speaker jacks, and DisplayPort connection driven by the embedded Intel HD Graphics 4600 accelerator capable of resolutions up to 3840 x 2160. The mA-3011 also provides the capability to install a standard form-factor 3/4 length x16 PCIe card to expand your system processing and I/O functionality.

Firmware

The mA-3011 contains a programmable microcontroller that interfaces to the ShMC (Shelf Management Controller) as an IPMC (Intelligent Platform Management Controller). This device intelligently manages power states, cooling requirements, and backplane interface requirements for the mA-3011 via the IPMI stack. The IPMC manages the power on / off control of the processor module to prevent file system corruption and to notify the ShMC when it is safe to remove chassis power. Additionally, the IPMC notifies the ShMC that the mA-3011 is a host device via E-Keying records, and thus requires a root complex port on the backplane PCIe fabric.

Software

The mA-3011 provides general purpose processing capability in an AXIe format. The mA-3011 can run any standard OS applicable to x86-64 architecture (Microsoft Windows® 7, Linux, VxWorks, etc). Using installed VIAVI drivers allows for the orderly startup, shutdown, reboot, and thermal management of the mA-3011 via the standard AXIe Intelligent Platform Management Interface.

mA-3011 / 3012 Product Specifications

Standard Compliance

AXIe Base Architecture Specification, Revision 3.0

AdvanceTCA PICMG 3.0 R3.0 Specification

Processor

CPU model number	Intel i7 4700EQ
CPU architecture	x86-64
CPU cores	4
Concurrent threats	8 (Hyper-Threading Technology)
CPU clock frequency	2.4 GHz (3.4 GHz Turbo)
L2 cache capacity	6 MB
integrated graphics	Intel HD4600
PCH chipset	Intel QM87

Volatile Memory

DRAM controllers	2
DRAM type	DDR3L-1600
DRAM capacity	8 GB, 2x 4 GB SO-DIMMs (16 BG optional)

Non-Volatile Memory

Storage type	SATA-111 (6 Gbps)
Storage capacity	128 GB (256 GB optional)
Form factor	M.2 2280

Backplane Interfaces - Ethernet Base Fabric Channel

Link speed	10 / 100 / 1000 Mbps
VLAN support	Yes

Backplane Interfaces - PCI Express Fabric Channels

Fabric channels	1 and 2
Link width	x8
Link speed	8 GT / s
Root complex / Endpoint	3/4-length, standard height

Auxiliary PCI Express Card Slot

Connector width	x16
Link width	x8
Link speed	8 GT / s
Form factor	3/4-length, standard height

Front-Panel Connections

Video	Single i7: DisplayPort++, (dual-mode, version 1.2) Dual i7: 2 display ports
Max Resolution	3840 x 2160 at 60 Hz
USB	Single i7: 4x USBA connectors 3.0 SuperSpeed Dual i7: 8x USBA connectors, USB 3.0 SuperSpeed
Ethernet	10 / 100 / 1000 Mbps (RJ45)
Audio In	Stereo 3.5 mm female jack Bandwidth: 20 Hz - 20 kHz Full-scale vin: ±2 V (4 Vpp) Sampling rate: 48 kHz Resolution: 24 bits

Audio Out	Stereo 3.5 mm female jack Full-scale vout: ±10 V (20 Vpp) Bandwidth: 20 Hz - 20 kHz Sampling rate: 192 kHz Resolution: 24 bits

Environmental

Operating temperature	0º - +50º C
Storage temperature	-40º - +71º C
Humidity	50% at 40º C (in accordance with MIL-PRF-28800F)
Altitude	4600 m
Functional shock	30 G (in accordance with MIL-PRF-28800F)
Random vibration	5 Hz - 500 Hz (in accordance with MIL-PRF-28800F)

Resolution

Safety compliance	IEC / EN 61010-1
EMC compliance	IEC / EN 61326-1 IEC / EN 61000-3-2 IEC / EN 61000-3-3 MIL-PRF-28800F

Electrical

Operating voltage range	48 V
Power dissipation	Single i7: 100 W Dual i7: 140 W

Mechanical

Form factor	1 slot AXIe
Dimensions	30 mm (W) x 322.5 mm (H) x 280 mm (D)
Weight	Single i7: 2.0 kg (4.4 lbs) Dual i7: 2.4 kg (5.3 lbs)

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