

Themis TPA-XMC High-Performance Low-Power PrXMC Computer

Uses the new P.A. Semi PWRficient™ Platform Processor

Product Brief

The TPA-XMC expands the Themis 64-Bit PowerPC Embedded Computer product line with a PrPMC/PrXMC card based on the P.A. Semi PA6T-1682M PWRficient Platform Processor. The TPA-XMC is a single-wide card configured with a 2.0GHz Dual 64-bit enhanced Power Architecture™ processor. This new P.A. Semi Platform Processor is Power Architecture compatible, and runs new or existing 32 or 64-bit PowerPC code. This new device also features VMX (Altivec™ compatible) SIMD Vector Processing Units and features industry leading processing performance per watt. This board can auto-sense and operate in both Monarch or non-Monarch mode. Eighteen user-configurable SERDES lanes are available to serve a wide range of high-speed I/O requirements. Serdes I/O options include Gigabit and 10 Gigabit Ethernet and PCI-Express. There is support for both convection (air) and conduction cooled options. The Themis TPA-XMC provides powerful dual 64-bit superscalar SMP RISC processing, flexible high-speed I/O, and low power consumption in a small, rugged form factor.

TPA-XMC Features and Specifications:

- P.A. Semi PA6T-1682M Dual Core 2.0GHz Processor
- Dual Port 2MByte Shared L2 Cache
- DDR2 Memory Controller
- Built-In Computation and Transformation Offload Engines for:
 - Bulk Encryption
 - Cyclic Redundancy Checking (CRC)
 - Streaming XOR Generation
- Two 10GB and Four SGMII Protocol Engines Provide:
 - Packet Processing, including Line-Rate Packet Filtering
 - VLAN Flow Control
 - TCP/IP Acceleration
- Est. Maximum Power: 25 Watts, Est. Typical Power: 15 Watts
- 1 or 2GBytes of DDR2-400 ECC SDRAM Memory (soldered)
- 128Mbytes of OS Kernel NAND Flash Memory
- Real Time Clock with 256 Bytes NVRAM
- 64-bit / 133MHz PCI-X

Operating System Support

- Supports Yellow Dog™ v5.0 64-bit SMP Linux®, VxWorks®
- Boot from network

Operational

- Auto detects Monarch or non-Monarch mode
- Configurable SERDES lanes (18) on XMC connectors

P.A. Semi PA6T-1682M PWRficient Platform Processor Key Architectural Features:

64-bit Superscalar RISC Performance

The P.A. Semi PA6T-1682M RISC Processor – which combines two 2GHz enhanced Power Architecture CPU Cores, two DDR2 memory controllers, 2MB of L2 cache, and a flexible I/O subsystem – is a versatile building block for high performance computing and embedded applications. PWRficient provides industry-leading performance per watt for multi-gigahertz computational applications and multi-gigabit throughput applications. This is the result of a ground-up design that optimizes power dissipation in all aspects of its novel system architecture which comprises an entire platform on a chip.

CONEXIUM™ Coherent Crossbar

The CONEXIUM coherent crossbar is an on-chip fabric that interconnects the two 64-bit superscalar CPUs, two DDR2 memory controllers, a dual-ported 2MB L2 cache, and the ENVOI™ I/O subsystem to deliver on-chip symmetric multiprocessing with coherent I/O.

ENVOI™ I/O Subsystem

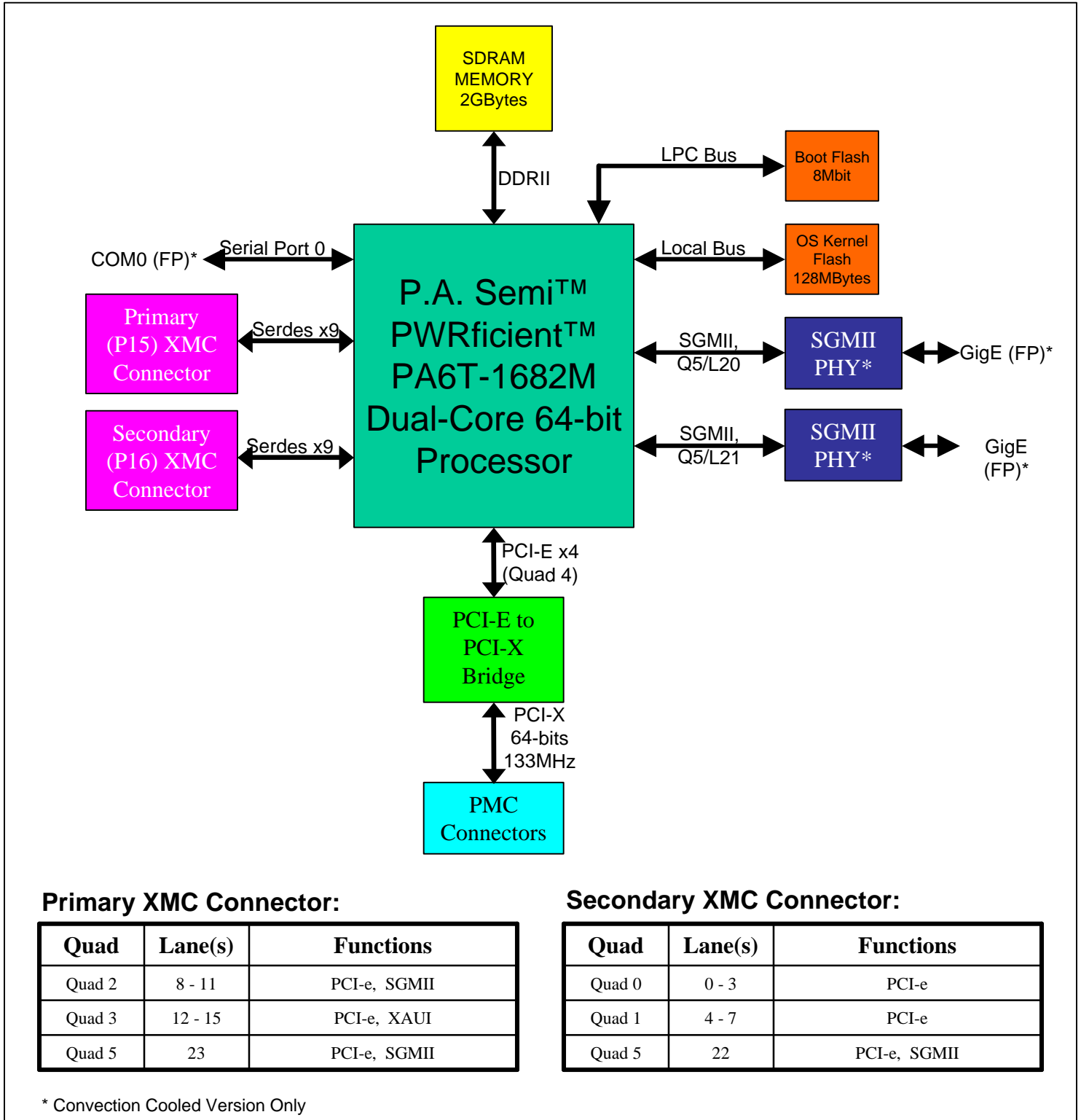
The ENVOI I/O subsystem provides 24 configurable SERDES lanes for high-speed serial I/O, which may be used for PCI-Express, XAUI, or SGMII interfacing in a wide range of configurations.

User I/O	Qty.	Access
Gigabit Ethernet	2	Front Panel
Serial Ports	1	Front Panel
SERDES Lanes	9	XMC Primary Connector
SERDES Lanes	9	XMC Secondary Connector
PCI-X	64	PMC I/O Connectors

Environmental

Parameter	Operating	Non-Operating
Temperature Range	0°C to 50°C (convection) -40°C to 85°C (conduction)	-40°C to 95°C -40°C to 95°C
Humidity (non-condensing)	10% to 95%	10% to 95%
Shock	30G @ 40mS	30G @ 40mS
Vibration	0.90G (rms)	2.97G (rms)

Themis TPA-XMC Block Diagram



THEMIS

Themis
 47200 Bayside Parkway
 Fremont, CA 94538
 Tel: 510-252-0870
 Fax: 510-490-5529
 Email: info@themis.com
www.themis.com

Themis Europe Sales Office
 5 rue Irène Joliot-Curie
 38320 Eybens, France
 Tel: +33.476.14.77.86
 Fax: +33.476.14.77.89
 Email: europe_sales@themis.com

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