

IPN252

6U OpenVPX GPGPU Multiprocessor

The IPN252 is the third generation 6U OpenVPX multiprocessor module from Abaco, combining the latest NVIDIA® 640-core “Maxwell” GPU with the 3rd Generation Intel® Core™ i7 CPU, yielding maximum processing performance in a rugged, single VPX slot.

Targeting a wide range of data-intensive applications, particularly in the Intelligence, Surveillance and Reconnaissance (ISR) domain, the IPN252 delivers the highest available bandwidth between its major components.

The 3rd generation Intel Core i7 CPU and the NVIDIA GPU are connected via a 16-lane PCI Express® Gen 3 switch, which also provides a 16-lane PCI Express Gen 3 port to the VPX expansion plane, and provides an 8-lane PCI Express Gen 3 port to a dual-channel 10 Gigabit Ethernet & InfiniBand® NIC. The PCI Express switch also provides a Gen 3 x8 port to an XMC site.

The 640-core GPU, utilizing NVIDIA’s “Maxwell” architecture, has 2 GB of GDDR5 memory to ensure high-capacity and high-bandwidth access to data during massively parallel GPGPU algorithm processing.

Using NVIDIA’s GPUDirect®, data from external sources can be streamed directly into GPU memory without the burden of multiple copy operations through system memory, resulting in significantly lower

latency and higher throughput. Data sources may be PCI Express or InfiniBand end-points.

The dual-channel 10 Gigabit/InfiniBand NIC also allows complex open architecture systems to be constructed, using OFED RDMA to transfer data in and out of the 16 GB system memory with very low latency and minimal CPU overhead.

With a wide range of open standard software available for the IPN252, systems integrators can rapidly port and deploy their existing code onto this rugged platform, allowing fast-to-deployment solutions.

The IPN252 is available in a range of air- and conduction-cooled extended temperature build standards, with versions to satisfy VITA 46 and VITA 48.

The product is designed to extend Abaco’s High Performance Embedded Computing (HPEC) solution set, allowing sophisticated application-targeted systems to be architected. The solution set includes:

- SBC627: 5th Generation Intel Core i7 SBC
- GBX460: 10 Gigabit Ethernet Switch
- DSP282: Dual quad-core multiprocessor
- Wide range of I/O
- AXIS Multiprocessing Software
- Development chassis
- Rugged deployable chassis

FEATURES:

- 6U OpenVPX rugged VITA 46 / VITA 48 REDI
- Multi-fabric data, expansion and control planes
 - 2x 10Gigabit Ethernet/ InfiniBand
 - x16 PCI Express Gen 3
 - 4x Gigabit Ethernet
- GPGPU
 - NVIDIA 640-core “Maxwell” GM107
- CPU
 - 3rd generation Intel® Core i7
- XMC Site
- Software
 - BIOS, Linux®, Windows®
 - NVIDIA CUDA™ 5.0, OpenCL™, OpenGL™ 4.4
 - NVIDIA GPUDirect
 - AXISLIB VSIPL Math & DSP libraries
 - NVIDIA PhysX™
 - MATLAB®
 - DirectX® 11.2, Shader Model 5.0

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Specifications

Graphics Processing Unit

- NVIDIA 640-core “Maxwell” GM107
- 2 GB GDDR5 SDRAM
- As used on NVIDIA GeForce GTX 850M

Central Processing Unit

- 3rd generation Intel Core i7 quad-core at 2.1 GHz
- 16 GB DDR3 with ECC
- 32 GB Flash

Multi-fabric architecture

- P1 data plane: 2x 10GbE / InfiniBand
- P2 expansion plane: x16 Gen 3 PCIe
- P4 control plane: x2 1GbE
- P4 control plane: x2 1GBASE-BX

CPU I/O

- 1x GbE
- 3x PCI Express x1
- 4x USB
- 2x SATA
- 2x serial ports
- 8x GPIO
- Stereo line-in/line out
- XMC I/O
- TPM
- Front I/O
 - 1x 1GbE
 - 2x COM ports

GPU I/O

- Two channels of RGB
- Two channels of DVI
- TV Capture
- Support for legacy RGB/RS-170

Form Factor

- 6U OpenVPX
- VITA 46, VITA 48

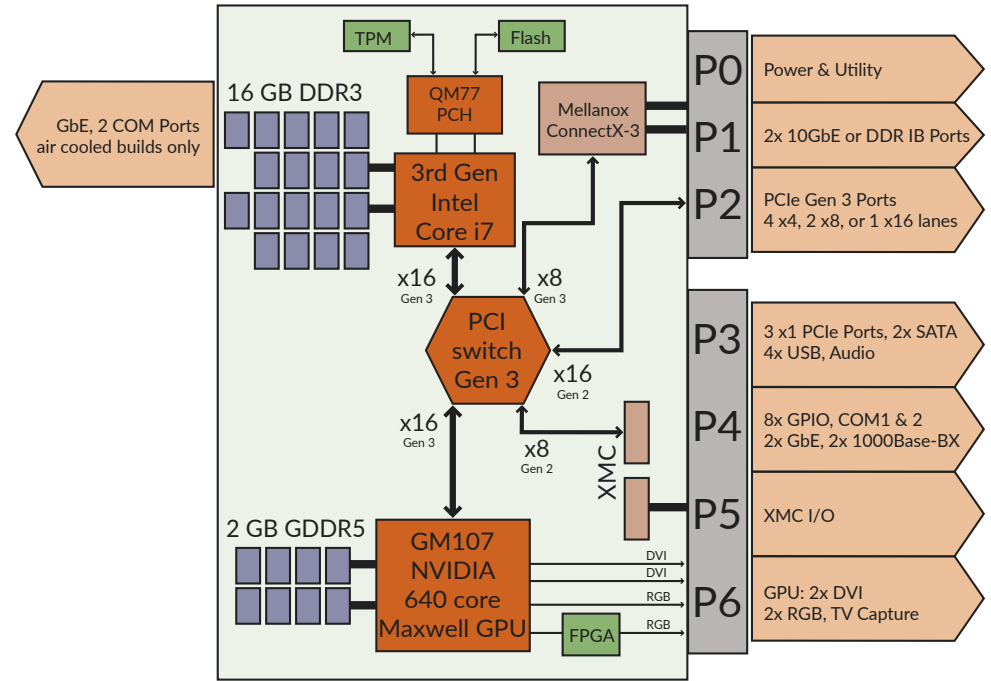
Ruggedization

- Air-cooled levels 1, 2 and 3
- Conduction-cooled levels 4 and 5

OpenVPX

- SLT6-PAY-4F1Q2U2T-10.2.1
- MOD6-PAY-4F1Q2U2T-12.2.1-8

Block diagram



Environmental

	Level 1	Level 2	Level 3	Level 4	Level 5
Cooling Method	Convection	Convection	Convection	Conduction	Conduction
Conformal Coating	Optional	Standard	Standard	Standard	Standard
High/Low Temp	0 to +55° C	-20 to +65° C	-40 to +75° C	-40 to +75° C	-40 to +85° C
Operational	(300 ft/m)	(300 ft/m)	(600 ft/m)	At cold wall	At cold wall
Random Vibration	0.002g2/Hz*	0.002g2/Hz*	0.04g2/Hz**	0.1g2/Hz**	0.1g2/Hz**
Shock	20g***	20g***	20g***	40g***	40g***

* With a flat response to 1000 Hz, 6 dB/Oct roll-off from 1000 to 2000 Hz ** From 10 to 1000 Hz *** Peak sawtooth 11 ms duration
 Note : Processor performance and temperature are inter-dependent. For a given temperature, a maximum speed is achievable, and conversely for a given processor speed a maximum temperature is achievable. Consult the product manual for details

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Americas: 866-OK-ABACO or +1-866-652-2226 Asia & Oceania: +81-3-5544-3973

Europe, Africa, & Middle East: +44 (0) 1327-359444

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