GE Intelligent Platforms

SBC625
6U OpenVPX 3rd Generation Intel® Core™ i7 based Single Board Computer

Features
• 6U OpenVPX Single Board Computer
• 3rd Generation Intel Core i7 dual and quad core processors
• Two channels of soldered DDR3 SDRAM with ECC up to 16 GB
• Up to 16 GB Solid State Disk Drive
• Up to 6 MB shared cache
• VITA65 OpenVPX Payload
  - MOD6-PAY-4F1Q2U2T-12.2.1-8
  - MOD6-PAY-4F1Q2U2T-12.2.1-13
• Data Plane Fabric
  - 2x 10Gigabit Ethernet with RDMA or
  - 2x Infiniband ports with RDMA
• Expansion Plane Fabric
  - Multiple PCIe configurations (Gen 2)
  - 1 x16 link, 2 x8 links, 4 x4 links
• Control Plane Fabric
  - 2x 10/100/1000Base-BX (SERDES Ethernet)
  - 2x 10/100/1000BaseT (one shared with front IO)
• Management Plane
  - IPMI (Baseboard Management Controller)
• Rear IO
  - 2x COM port
  - 6x USB 2.0 ports (2 ports optionally upgradable to USB 3.0)
  - Up to 3x SATA ports
  - 8x GPIO lines
  - VGA
  - DVI / HDMI
  - HD Audio
  - PS2 Keyboard and Mouse

Features of the 3rd Gen. Core i7 processor
• Up to 15% (compute) and 50% (3D graphics) performance improvement over previous generation
• Advanced Vector Extensions (AVX) signal processing
• Intelligent performance on-demand with Intel Turbo Boost Technology
• PCIe GEN 3 (8 GT/sec) and USB 3.0 (10x the Bandwidth of 2.0) data transfer capability
• Hyper-Thread Technology – 2 threads per core

The SBC625 Rugged Single Board Computer (SBC) features the high performance, highly integrated 3rd Generation Intel Core i7 processor platform, which offers integrated graphics and ECC memory controllers plus dual- and quad-core processing up to 2.5 GHz all in one device (22 nm monolithic process).

Coupled with the Mobile Intel QM77 Express Chipset this provides an unmatched level of I/O bandwidth for both on-board and off-board functions.

In addition to a comprehensive range of onboard IO features, the SBC625 also offers on-board XMC mezzanine expansion sites for enhanced system flexibility. Memory resources include up to 16 GB DDR3 SDRAM with ECC, and 16 GB onboard SSD (NAND Flash).

The SBC625 is designed to meet the requirements of a wide range of applications from industrial through to fully rugged Defense and Aerospace programs. It offers extended temperature capability and a range of air and conduction cooled build levels.

A rich software choice is planned for the SBC625, including comprehensive Deployed Test Software (BIT and BCS) plus OS support for Windows 7, Open Linux, and VxWorks®.
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Specifications

Processor
- Intel 3rd Gen. Core i7 Processor, options include but are not limited to:
  - i7-3615QE (Quad Core) @ 2.3 GHz (45W)
  - i7-3555LE (Dual Core) @ 2.5 GHz (25W)
  - i7-3517UE (Dual Core) @ 1.7 GHz (17W)
(CPU speed is dependent on environment, consult manual for details)
- 22nm monolithic die processing technology
- Last Level Cache
  - 6 MB (Quad Core i7)
  - 4 MB (Dual Core i7)

SDRAM
- Maximum memory configuration of up to 16 GB DDR3 SDRAM @ 1333 MHz with ECC

Solid State Disk Drive (on board NAND Flash)
- Up to 16 GB via SATA I/F

USB Ports
- 6x USB 2.0 ports routed to P4/P5
  (Up to 2 ports can be upgraded to USB 3.0, replacing 2 SATA ports)
- 1x USB 2.0 ports routed to front panel

OpenVPX Profile
- Module Profile: MOD6-PAY-4F1Q2U2T-12.2.1-8

Expansion Plane
- x16 PCIe, 2 x8 PCIe, or 4 x4 PCIe to P2 (1 port non-transparent capable)

Data Plane
- 2x 10 Gigabit Ethernet
- 2x Infiniband ports
Either routed to P1 with RDMA capability

Control Plane
- 2x 10/100/1000BaseT – routed to P4
- 2x 10/100/1000BaseT – routed to P4 (one also routed to front panel)

Management Plane
- IPMI (Baseboard Management Controller)

Serial Ports
- Three 16550 compatible serial ports
  - COM1 routed to P3 RS-232/422
  - COM2 routed to P4 RS-232/422
  - COM3 routed to front panel RS-232/422

Serial ATA
- 2x SATA 3 capable (6 Gb/s)
- 1x SATA 2 capable (3 Gb/s)
- Routed to P6

Audio
- High Definition Audio [routed to P5] with option for CODEC either on-board or on RTM

Video Controller
- 1x VGA port routed to P6
- 2x DVI/HDMI ports routed to P6 and front panel

General Purpose I/O
- Up to 8x GPIO, 5V tolerant, each capable of generating an interrupt.

PMC / XMC Expansion Slots
- Both sites (one routed to P3/P4, one to P5/P6)
  - XMC - x8 PCIe Gen3
  - PMC - PCI-X 133 MHz

NVRAM / Watchdog / ETI / TPM
- 512kB non-volatile RAM (MRAM)
- Watchdog timer (software programmable)
- Elapsed Time Indicator
- Temperature Sensors
- TPM (Trusted Platform Module)
- Baseboard Management Controller (IPMI)

PS/2 interface
- PS/2 keyboard and mouse

LED
- 1x power
- 4x BIT status (software control)

Power Requirements
- +12V and +5V

Environmental

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
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<tbody>
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<td>Conduction</td>
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<td>Convection</td>
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<td>0.002g/Hz*</td>
<td>0.04g/Hz**</td>
<td>0.1g/Hz**</td>
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<td>20g***</td>
<td>40g***</td>
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</table>

* 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.

About GE Intelligent Platforms
GE Intelligent Platforms, a General Electric Company (NYSE: GE), is an experienced high-performance technology company and a global provider of hardware, software, services, and expertise in automation and embedded computing. We offer a unique foundation of agile, advanced and ultra-reliable technology that provides customers a sustainable advantage in the industries they serve, including energy, water, consumer packaged goods, government and defense, and telecommunications. GE Intelligent Platforms is a worldwide company headquartered in Charlottesville, VA and is part of GE Home and Business Solutions. For more information, visit defense.ge-ip.com.

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