

# SBC325

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

The SBC325 Rugged Single Board Computer (SBC) from Abaco Systems features the high performance, highly integrated 3rd Generation Core i7 processor platform from Intel.

3rd Generation Core i7 with fully integrated graphics and memory controller plus quad core processing at 2.1 GHz offers better performance per watt — all in one device. Coupled with an Intel mobile chipset, this provides an unmatched level of I/O band-width for both on-board and off-board functions.

### 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

In addition to a comprehensive range of onboard IO features, the SBC325 also offers an on-board XMC mezzanine expansion site for enhanced system flexibility. Memory resources include up to 16 GB DDR3 SDRAM with ECC, 32 GB NAND Flash, and hard drive via XMC.

The SBC325 is designed to meet the requirements of a wide range of applications from industrial to fully rugged Defense and Aerospace programs. It offers extended temperature capability and a range of air and conduction cooled build levels.

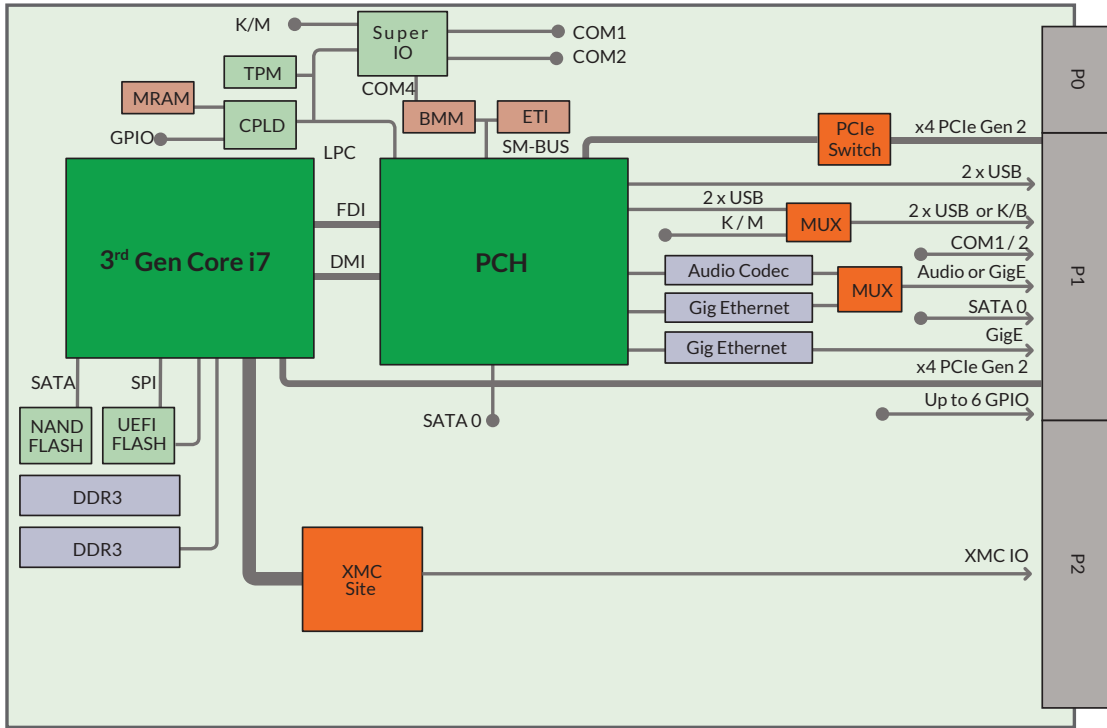
A rich software choice is planned for the SBC325, including comprehensive Deployed Test Software (BIT and BCS) plus OS support for Windows 7, Open Linux, Wind River Linux, and VxWorks®.

### FEATURES:

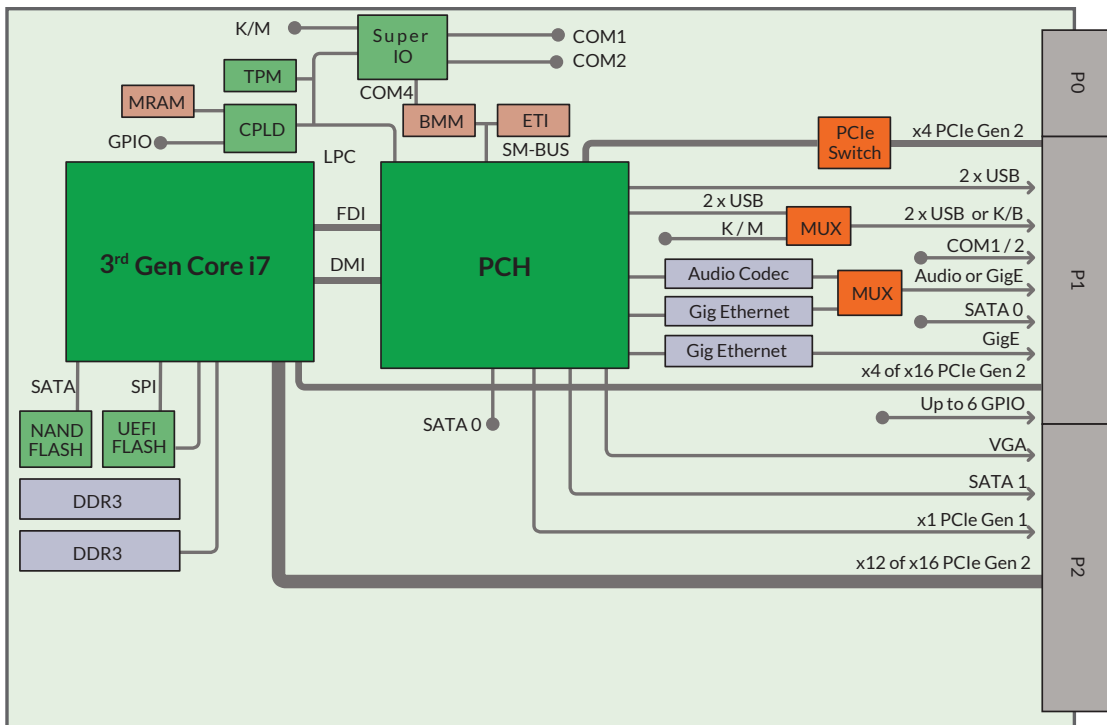
- 3U OpenVPX Single Board Computer
- 3rd Generation Intel Core i7 quad core processor
- Dual-channel DDR3 (up to 16 GB) @ 1333 MHz memory with ECC
- Up to 32 GB NAND Flash
- 512 kB MRAM (non-volatile storage)
- Multiple PCIe fabric backplane configurations
  - x16 PCIe GEN 2 option (no XMC)
  - 4x PCIe GEN 2 with DMA / NTB capability, also GEN 1 x1 PCIe
- 1x XMC Site with I/O
- 2x 10/100/1000BaseT
- HD Audio
- 2x RS-232/422 COM ports
- 1x PS/2 Keyboard and mouse
- 2x SATA (6 Gb/s)
- 1x VGA
- 4x USB 2.0
- 6x Single-Ended GPIO (5V tolerant)
- Watchdog, Timers, Sensors
- BMM (Board Management Microcontroller), ETI, TPM
- VITA65 OpenVPX Compatible
  - MOD3-PAY-2F2T-16.2.5-3
  - MOD3-PAY-2F-16.2.7-1
- Deployed Test Software
- Windows®, Linux® and Real-Time OS support

SBC325 3U OpenVPX 3rd Generation Intel® Core™ i7 based Single Board Computer

Block diagram



SBC 325 XMC



SBC 325 x16



# SBC325 3U OpenVPX 3rd Generation Intel® Core™ i7 based Single Board Computer

## Specifications

### Processor

- Intel 3rd Gen. Core i7 Processor
  - i7-3612QE (Quad core) @ 2.1 GHz (35W) (Actual speed/power depends on environment)
- 22nm monolithic die processing technology
- 6 MB Last Level Cache

### SDRAM

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

### Flash Memory

- Soldered NAND flash array up to 32 GB

### Ethernet

- Dual Gigabit Ethernet interface via Intel's 82574
- Gigabit Ethernet controllers - routed to VPX P1

### USB Ports

- Up to 4x USB 2.0 ports routed to VPX P1
- 2x ports available if GPIO and PS/2 are utilized

### Fabric Interface

- Allows high speed PCI Express connections to other cards in the system
  - x4 PCIe VPX P1; DMA and configurable as Non-Transparent (NTB) for peer-to-peer capability
  - x4 / x16 PCIe (split across P1/P2), x16 available without XMC
  - Also GEN 1 x1 PCIe

### Keyboard and Mouse

- 1x PS/2 port routed to P1, multiplexed signal with GPIO

### OpenVPX Profile

- Module Profile: MOD3-PAY-2F2T-16.2.5-3
- Module Profile: MOD3-PAY-2F-16.2.7-1

### Serial Ports

- Two 16550 compatible full duplex async serial ports
  - COM1 routed to VPX P1 RS-232/422
  - COM2 routed to VPX P2 RS-232/422
- Ports feature independent 16-byte FIFO supporting baud rates up to 115 Kbaud

### Serial ATA

- 2x SATA Revision 3.0 capable (6 Gb/s)
- One routed to VPX P1; the other to VPX P2
- SATA port on P2 is a multiplexed signal with XMC IO

### Audio

- High Definition Audio Codec
- Stereo line in and stereo line out

### Video Controller

- 1x VGA port routed to VPX P2; multiplexed signal with XMC IO

### General Purpose I/O

- Up to 6x GPIO (P1 rear IO), TTL 5V tolerant GPIO each capable of generating an interrupt.

### XMC Expansion Slot

- x8 PCIe XMC site (P2 rear IO)
- 8 differential pairs, plus 12 differential pairs, plus 24 single-end signals

### LED

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

### NVRAM / RTC / Watchdog / ETI / TPM / BMM

- 512kB non-volatile RAM (MRAM)
- Real-time clock in CPLD (software programmable)
- Watchdog timer (software programmable)
- Elapsed Time Indicator (record power cycles and on-time)
- TPM (Trusted Platform Module)
- Baseboard Management Controller

### Power Requirements

- +5V / 3.3V required
- +/-12V for XMC/PMC module only

### Temperature Sensor

- Onboard ambient temperature; CPU

Note: The SBC325 is designed to provide flexibility and scalability to the user. Use of the XMC I/O affects the availability of other I/O features. Due to the nature of multiplexed signals, I/O configurations also may be limited. Please contact your Abaco Systems representative for viable configurations.

	SBC325-xxxx0xxx	SBC325-xxxx1xxx
XMC IO	1	-
x16 PCIe	-	1
x 4 PCIe	2	1
x 1 PCIe	-	1
COM	2	2
USB	2	Either/or
K / M	-	
GigE	2	1
Audio	-	1
SATA	1	2
VGA	-	1
GPIO	6	2

## 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

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