

Edgecore Networks Corporation

# Edgecore ASXvOLT16

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## GPON OLT Specification

Revision 1.0



**OPEN**  
Compute Project

# Revision History

Revision	Date	Author	Description
1.0	9/7/2017	Jeff Catlin	Initial Release

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<u>Description</u>	<u>Manufacturer</u>	<u>Part Number</u>
<b>X86 Broadwell-DE CPU</b>	Intel	XeonD-1548
SDRAM 4GB SO-DIMM w/ECC (x2 DDR4)	Micron	MTA18ASF1G72HZ-2G1A1
USB to NAND Flash 8GB	ATP	AF8GSSGH-AC2
SPI NOR Flash 8MB	Winbound	W25Q128FVSSIG
TPM	ST Microelectronics	ST33ZP24AR28PVSP
mSATA Connector	TE Connectivity	1775838-2
M.2 connector	Concraft	213BAAA42FA
BMC Connector	FOXCONN	AS0A626-H2S6-7H
Ethernet Controller	Intel	WGI210AT
CPLD	Altera	5M1270ZF256C5N
10GeB SPI Flash	Winbond	W25Q32FVSSIG
I210 SPI flash	Winbond	W25Q16DVSSIG
<b>T2080 CPU</b>	Freescale	T2080NSN8TTB
SDRAM (8GB per channel)	UNIGEN	UG10U7211P8UU-BDE *2
USB to NAND Flash 8GB	ATP	AF8GSSGH-AC2
NOR Flash 128MB	MICRON	JS28F00AM29EWHA
Trusted Platform Module (TPM)	ST	ST33ZP24AR28PVSK
mSATA Connector	TE	1775838-2
M.2 connector	CONCRAFT	213BAAA32FA
SD Connector	CVILUX	CSD-09A001D
<b>X86 Rangeley CPU</b>	Intel	C2538 – 2.4GHz 3.0V
SDRAM 4GB SO-DIMM w/ECC (x2)	Innodisk	M3D0-4GHS2LPC 4GB 1.35V
USB to NAND Flash 8GB	ATP	AF8GSSGH-AC1
SPI NOR Flash 8MB (x2)	Winbound	W25Q64FVSSIG
Trusted Platform Module (TPM)	STMicroelectronics	ST33ZP24AR28PVSP ST

FPGA	Microsemi	A2F200M3F-FGG256
mSATA Connector	TE Connectivity	1775838-2
B2B Connector	SAMTEC	BTH-060-01-F-D-RA-WT-K
Switch silicon	Broadcom	BCM56967
AC Power Supply	3Y	YM-2651YBR Front to back airflow
AC Power Supply	3Y	YM-2651YCR Back to front airflow
DC Power Supply	3Y	YM-2651VBR Front to back airflow
DC Power Supply	3Y	YM-2651VCR Back to Front airflow
Switching Silicon	Broadcom	BCM566960
10/100/1000 PHY	Broadcom	BCM54616S
Fans	Sunon	PF40561BX-Q020-S99 (Front to Back airflow)
Fans	Sunon	PF40561BX-Q010-S99 (Back to front airflow)

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## Scope

This document outlines the technical specifications for the Edgecore ASXvOLT16 Open GPON OLT Platform submitted to the Open Compute Foundation.

## Overview

This document describes the technical specifications of the ASXVOLT16 ASXvOLT16 Open GPON OLT Platform designed by Edgecore Networks. The ASXvOLT16 is a cost optimized GPON OLT design focused on XGS GPON deployments. The vOLT supports 16 XFP ports that support 10G XGSPON and QSFP28 ports that support 100G/40G/25G/10G Ethernet connectivity.

The ASXVOLT16 supports traditional features found in OLT platforms such as:

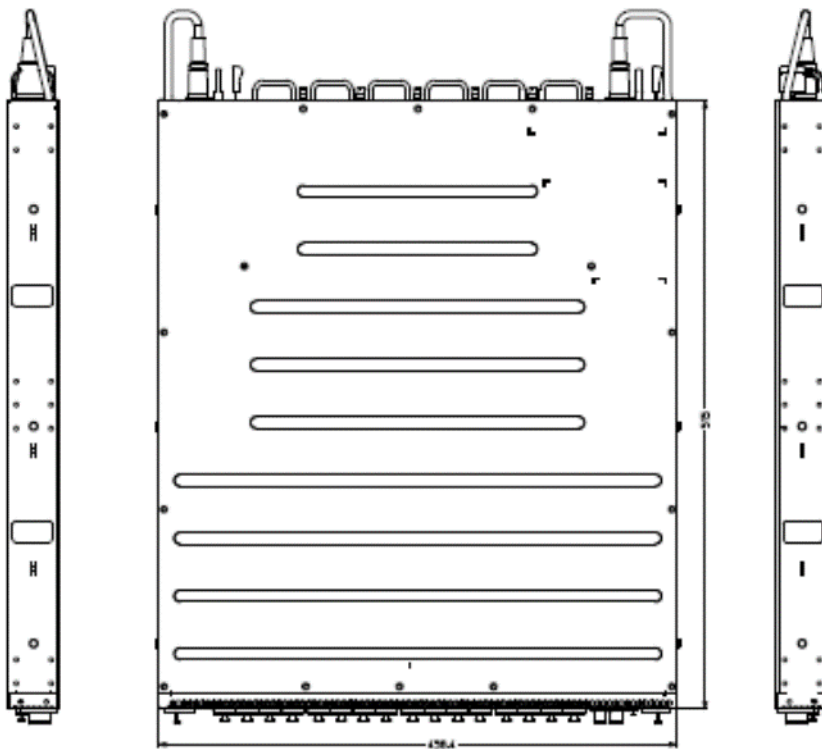
- Redundant field replaceable power supply and fan units
- Support for “Front to Back” or “Back to Front” air flow direction
- Supports a modular CPU card that allows flexibility in the CPU and/or memory configurations that can be offered.
- The ASXVOLT16 is a 1RU design that supports standard 19” rack deployments as well as standard 21” Open Rack deployments.



# Physical Overview

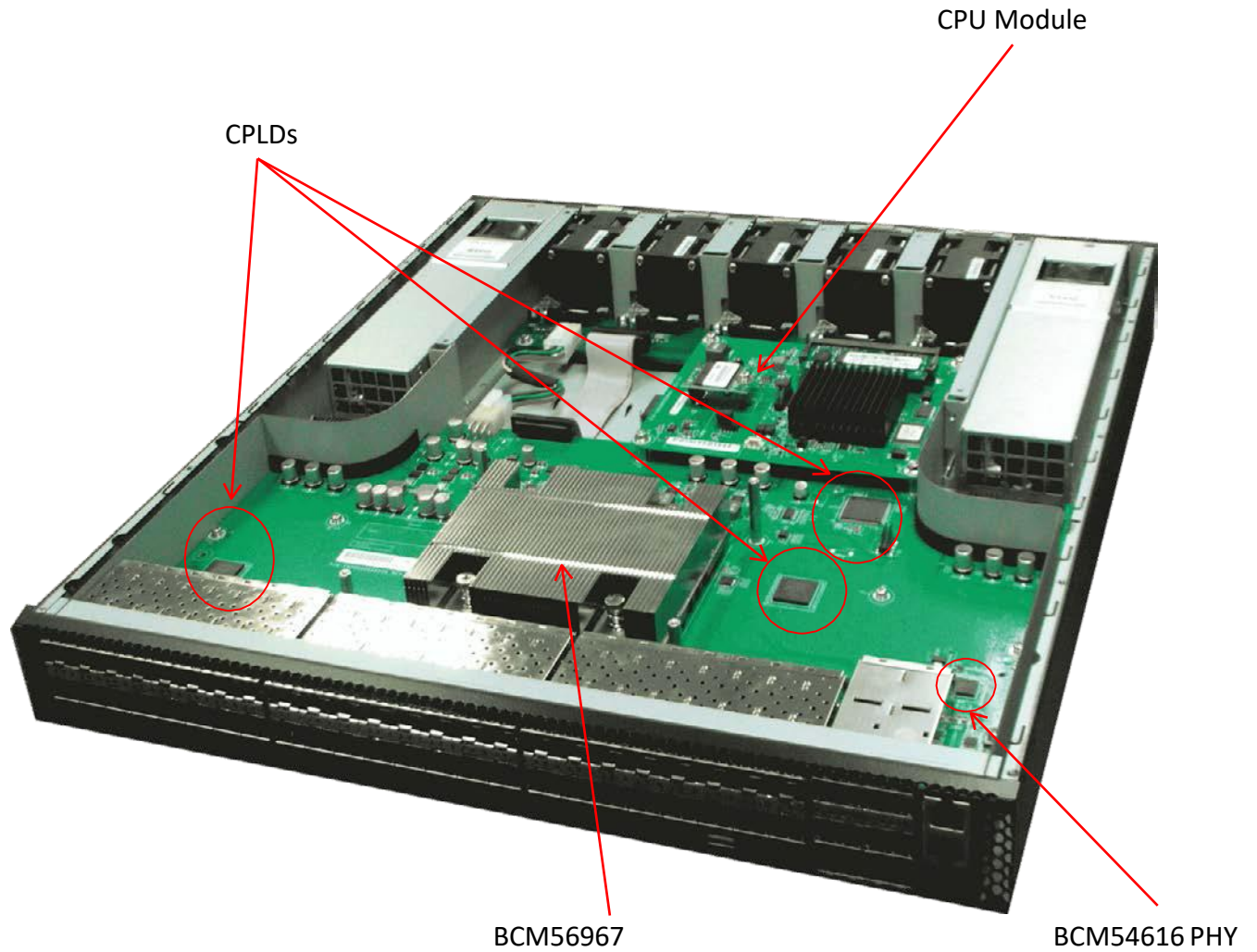
## Dimensions

	Inches	Millimeters
Length	20.28	515
Width	17.26	438.4
Height	1.70	43.25

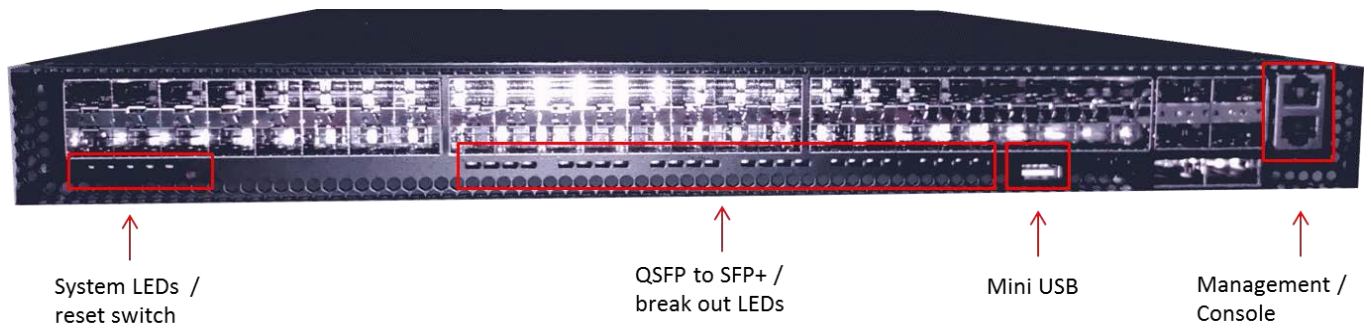


## Top View

The top view of the ASXVOLT16 shows the PCBs and associated components in the ASXVOLT16 system



## Front View



The front panel view of the ASXVOLT16 includes the following key components:

- Forty Eight SFP28 Ports
  - Capable of operating at 10Gb/25Gb Ethernet speeds with standard SFP+/SFP28 modules
- Six QSFP28 ports
  - Capable of operating at 4x10Gb, 1x40Gb, 4x25Gb, 2x50Gb, or 1x 100Gb Ethernet with appropriate QSFP+/28 modules and/or break out cables.
- System LEDS
- Rest Switch
- QSFP28 Break out LEDS
- Mini USB 2.0 type “A” port
  - Used for optional external storage
- RJ45 RS232 Console management port
  - Supports asynchronous mode with the default being eight data bits, one stop bit, no parity
- RJ45 10/100/1000 Ethernet management port
  - Connected directly to the system CPU

## Front Panel LED Definitions

LED Name	Description	State
PSU1	Led to indicate status of Power Supply 1	Green - Normal Amber - Fault Off – No Power
PSU2	Led to indicate status of Power Supply 1	Green - Normal Amber - Fault Off – No Power
Diag	LED to indicate system diagnostic test results	Green – Normal Amber – Fault detected
FAN	LED to indicate the status of the system fans	Green – All fans operational Amber – One or more fan fault
LOC	LED to indicate Location of switch in Data Center	Amber Flashing – Set by management to locate switch Off – Function not active
SF28 LEDS	LED built into SFP+ cage ( one per SFP+ port) to indicate port status	On Green/Flashing – Port has link at 25G flashing indicates activity On Amber/Flashing Port has link at 10G flashing indicates activity Off – No Link
QSFP28 Port LED	Each QSFP28 port has one LED to indicate status	On Green/Flashing – Port has link at 100G flashing indicates activity On Amber/Flashing – Port has link at 25G flashing indicates activity On Blue/Flashing – Port has link at 40G flashing indicates activity On Purple/Flashing – Port has link at 10G flashing indicates activity Off - No link
QSFP28 Break out LEDs	Each QSFP28 port has four LEDs to indicate status of the individual lanes in the port	Purple : 10G Break out mode (Per port/Per Lane) Amber : 25G Break out mode (Per port/Per Lane) OFF : 100G (Per port/Per Lane) OFF : 40G (Per port/Per Lane)
OOB LED	LED to indicate link status of 10/100/1000 management port	On Green - port has link Green Flashing – Link with activity Off – No link

### SFP28 Interface Module support

10Gb SFP+ Modules	Standard 10Gb SFP+ modules including but not limited to: 10GBASE-SR, 10GBASE-LR, 10GBASE-ER, AOC Cables
25Gb SFP28 Optical Modules	Standard 25Gb SFP28 modules including but not limited to: 25GBASE-SR, AOC Cables
Direct Attach Copper (DAC)	Standard DAC cables including but not limited to Passive cable up to 5m

### QSFP28 Interface Module Support

QSFP+ Optical Modules	Standard 40Gb QSFP+ modules including but not limited to: 40GBASE-SR4, 40GBASE-LR4, 40GBASE-ER, AOC Cables
QSFP28 Optical Modules	Standard 100Gb QSFP28 modules including but not limited to: 100GBASE-SR4, 100GBASE-LR4, 100GBASE-ER4, AOC Cables
Direct Attach Copper (DAC)	Standard DAC cables including but not limited to: Passive cable up to 5m

### Console Port

The console port interface conforms to the RJ45 electrical specification.

The interface supports asynchronous mode with default eight data bits, one stop bit, and no parity.

The unit will operate at any one of the following baud rates:

- 9600, 19200, 38400, 57600, **115200 (Default)**

Pin number	Pin name	Pin number	Pin name
1	RTS	2	UART_TXD
3		4	
5	GND	6	UART_RxD
7		8	CTS

## Rear View



The rear view of the ASXVOLT16 includes the following key components:

- Six (5+1) redundant hot swappable fan modules
  - LED per fan module to indicate status
  - Color coding to indicate airflow direction
- Two redundant hot swappable power supply modules
  - LED per power supply to indicate status
  - Color coding to indicate airflow direction

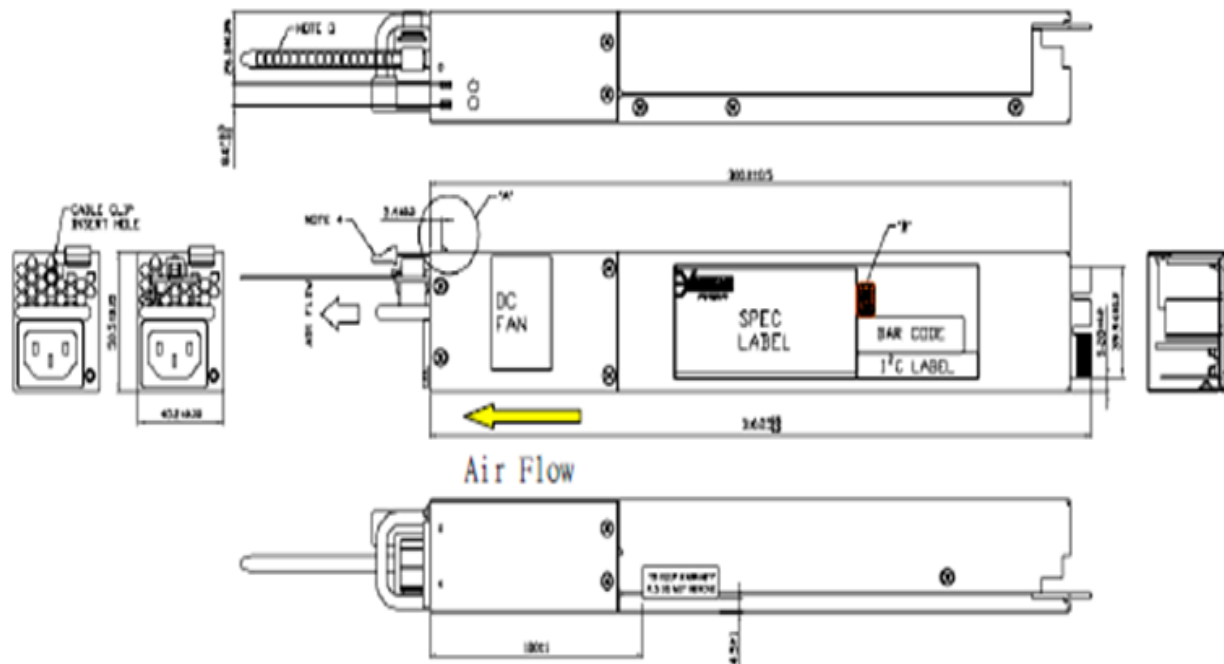
## Field Replaceable Units

### Power Supply Modules

The ASXVOLT16 supports two redundant power supply modules as listed below

3Y 650 Watt PSU: AC Input Range 90-264VAC / 47-63Hz		
<ul style="list-style-type: none"> <li>• YM-2651YBR Front to back airflow</li> <li>• YM-2651YCR Back to front airflow</li> </ul>		
3Y 650W PSU: 48V DC Input range 36-75Vdc		
<ul style="list-style-type: none"> <li>• YM-2651VBR -Front to back airflow</li> <li>• YM-2651VCR -Back to front airflow</li> </ul>		
Edge-Core 600 Watt 12V DC Module		
<ul style="list-style-type: none"> <li>• PSU-12V-600</li> </ul>		
	<u>Inches</u>	<u>Millimeters</u>
Length	12.21	310.2
Width	1.58	50.5
Height	2.15	40

The casing dimension is W 50.5 mm x L 310.2 mm x H 40 mm(including gold finger)



3.

Figure 2: Outline drawing

3.

## PSU Pin-Out

### 3.3. Pin assignment for DC output gold fingers

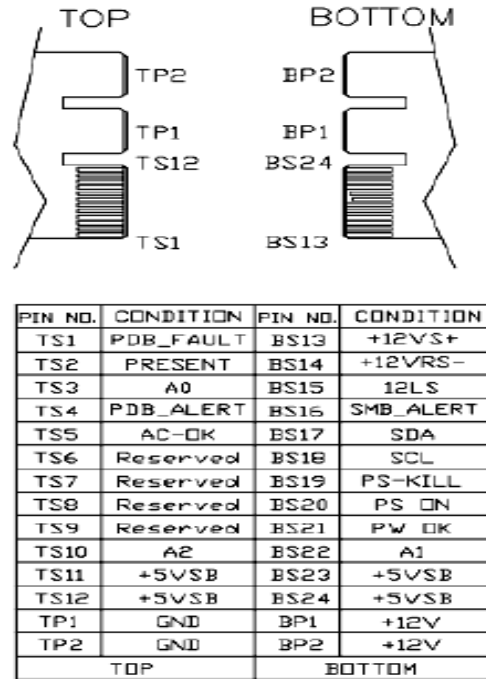
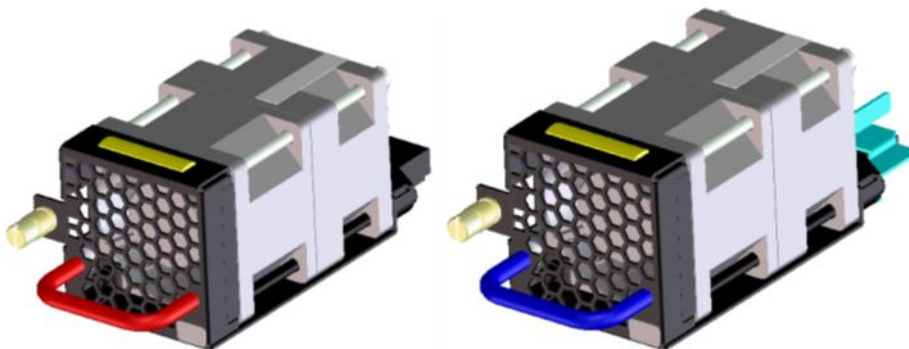


Figure 3: signal descriptions

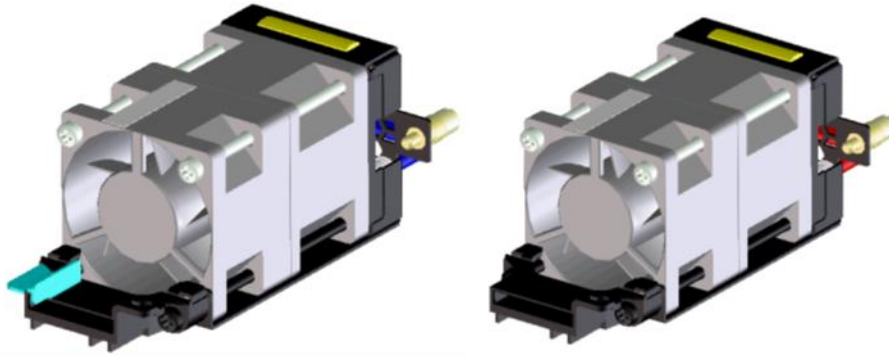
## Fan Modules

The ASXVOLT16 supports six individual fan modules. Each fan module supports two 40mmx40mmx54mm fans shown below.

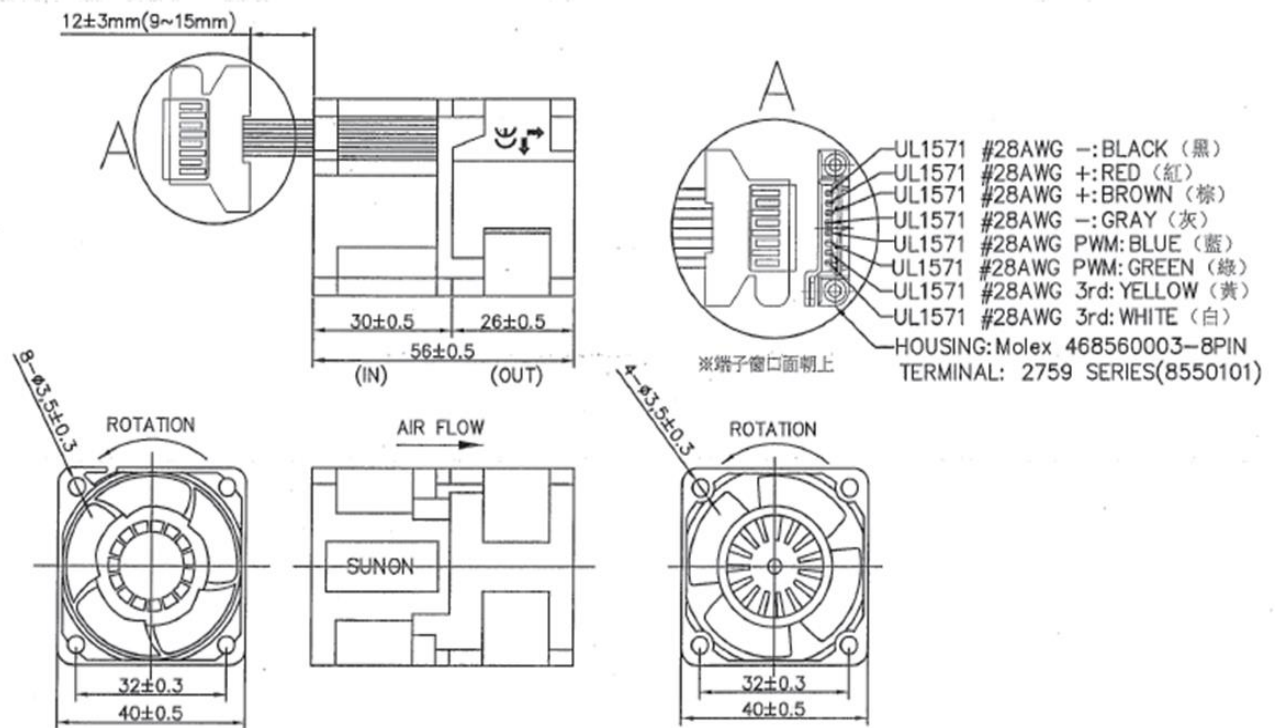
Description	Manufacturer	Part Number
Fan – Front to back airflow	Sunon	PF40561BX-Q020-S99
Fan – Back to front airflow	Sunon	PF40561BX-Q010-S99





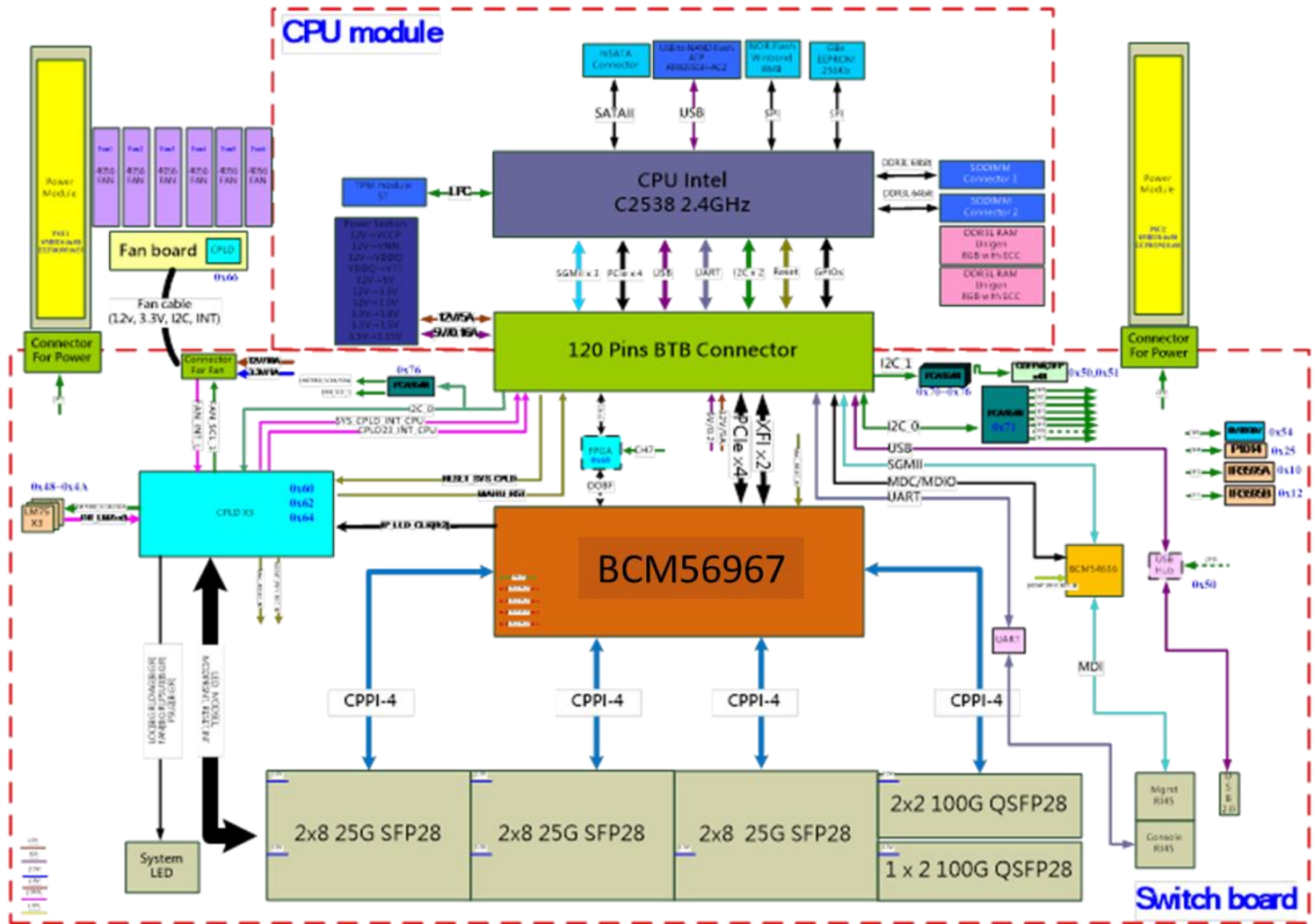


Fan Connector pinout

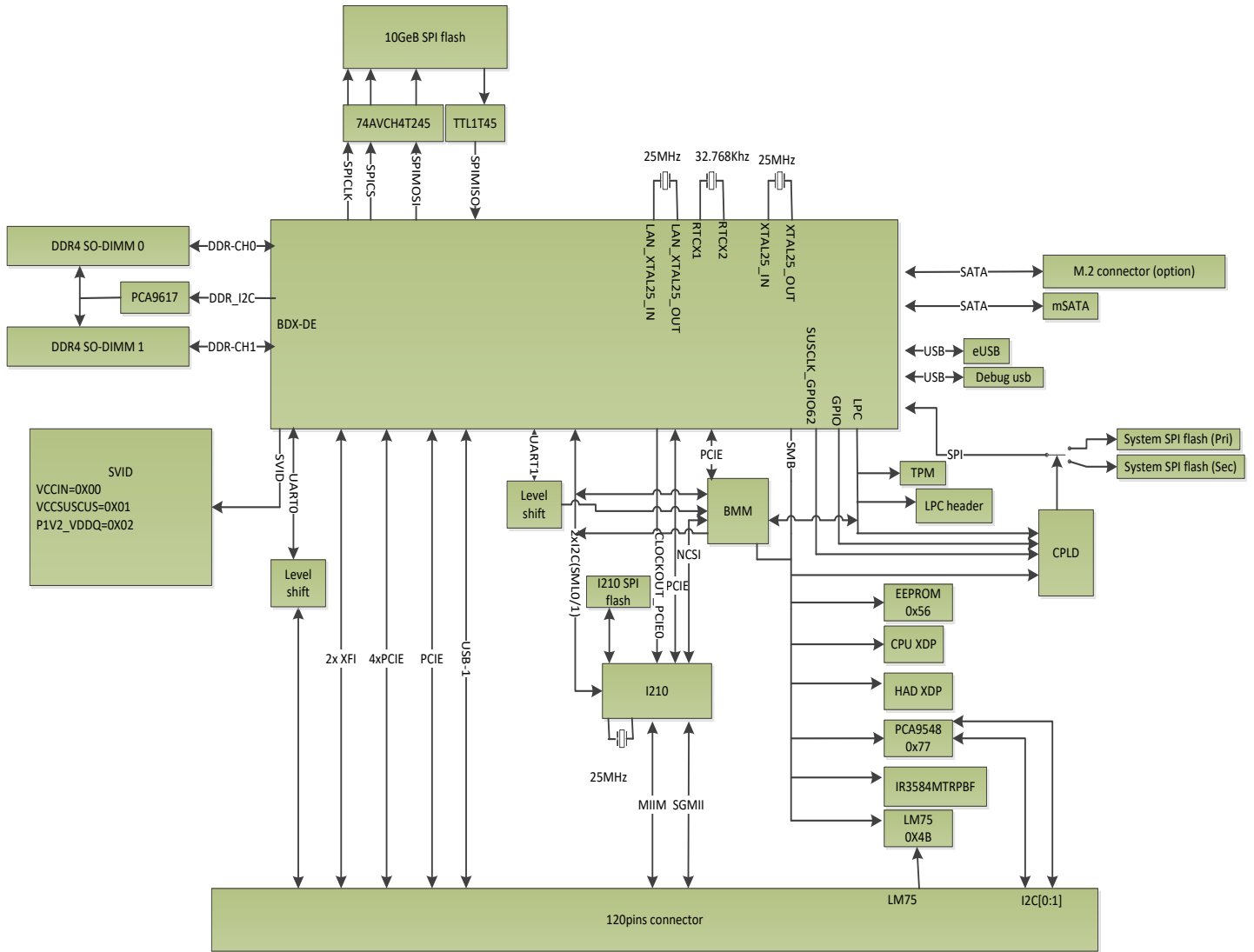


# System Overview:

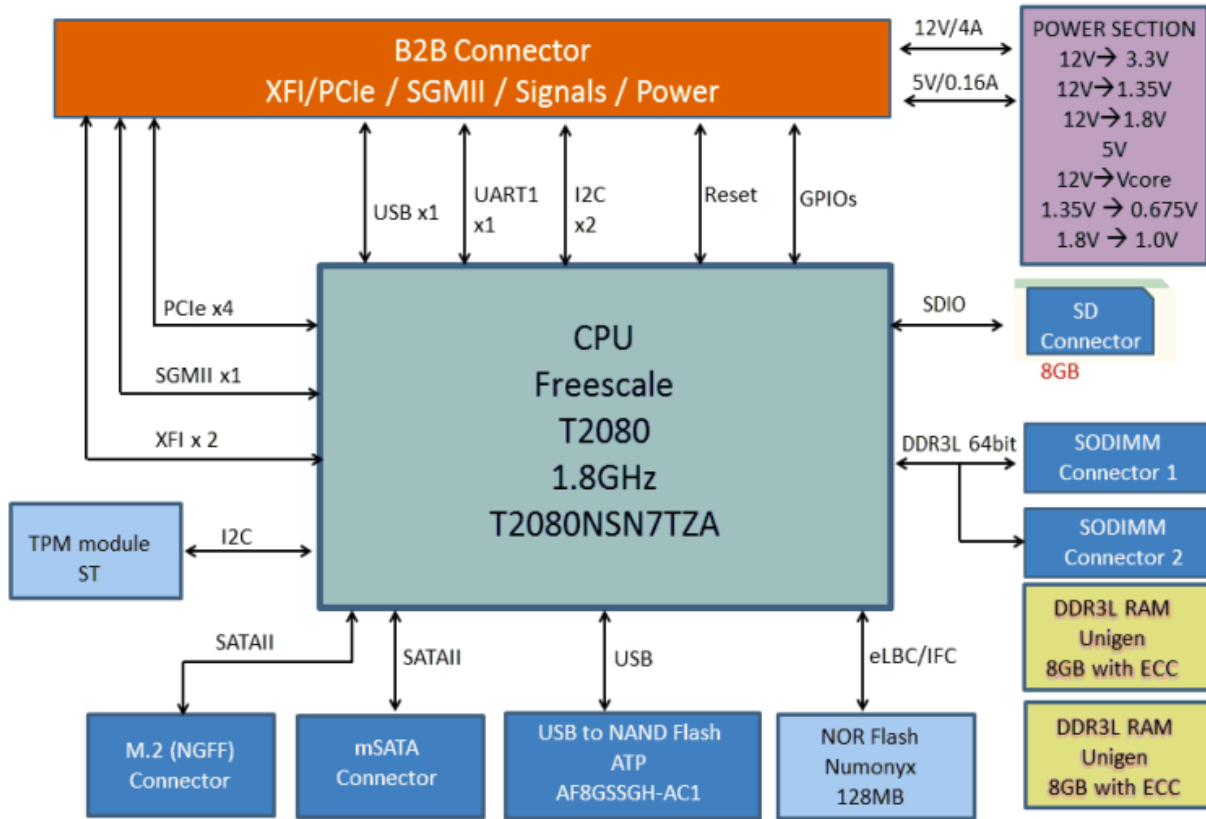
## Main PCB Block Diagram



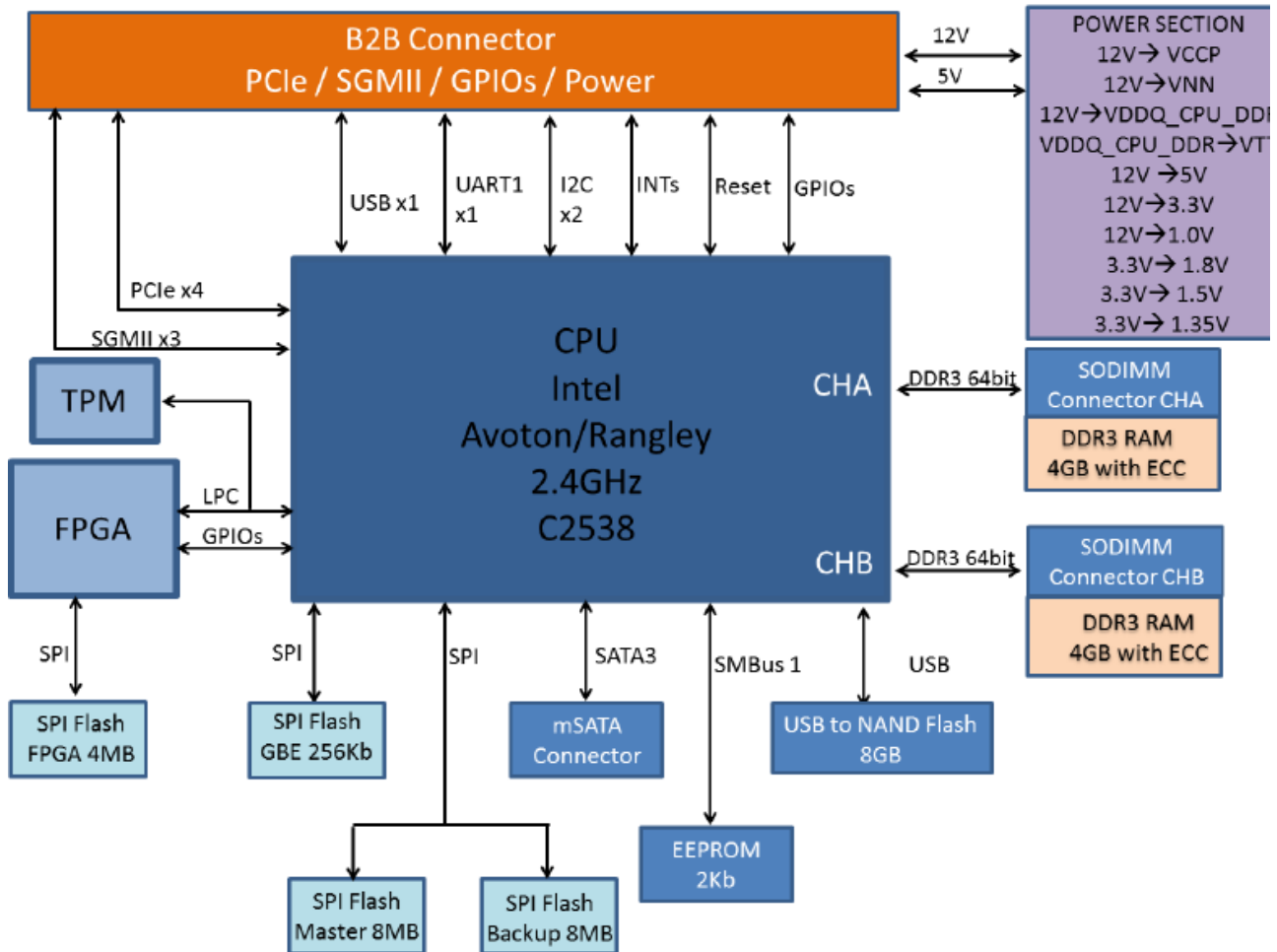
# X86 Broadwell-DE CPU Module Block Diagram



## T2080 CPU Module Block Diagram



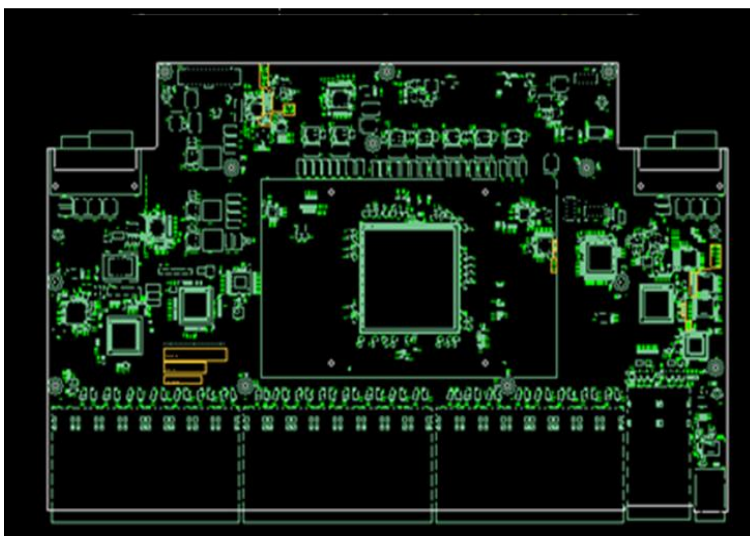
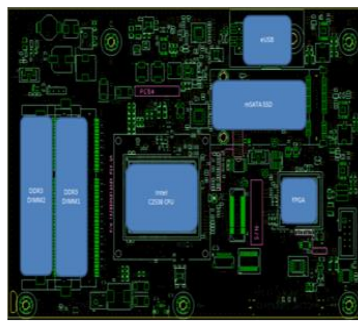
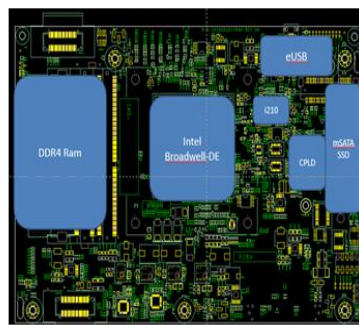
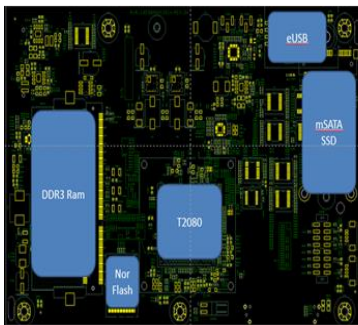
## X86 Rangeley CPU Module Block Diagram



## PCB Board Set

The ASXVOLT16is composed of 5 unique PCB assemblies as follows:

- Main switch PCB which supports the switching silicon and all front panel connections
- Rangeley based X86 CPU module PCB which provides the control processor and associated components
- Broadwell-DE based X86 CPU module PCB which provides the control processor and associated components
- T2080 CPU module PCB which provides the control processor and associated components
- Fan PCB which provides connectivity for the 5 Fan modules in the system

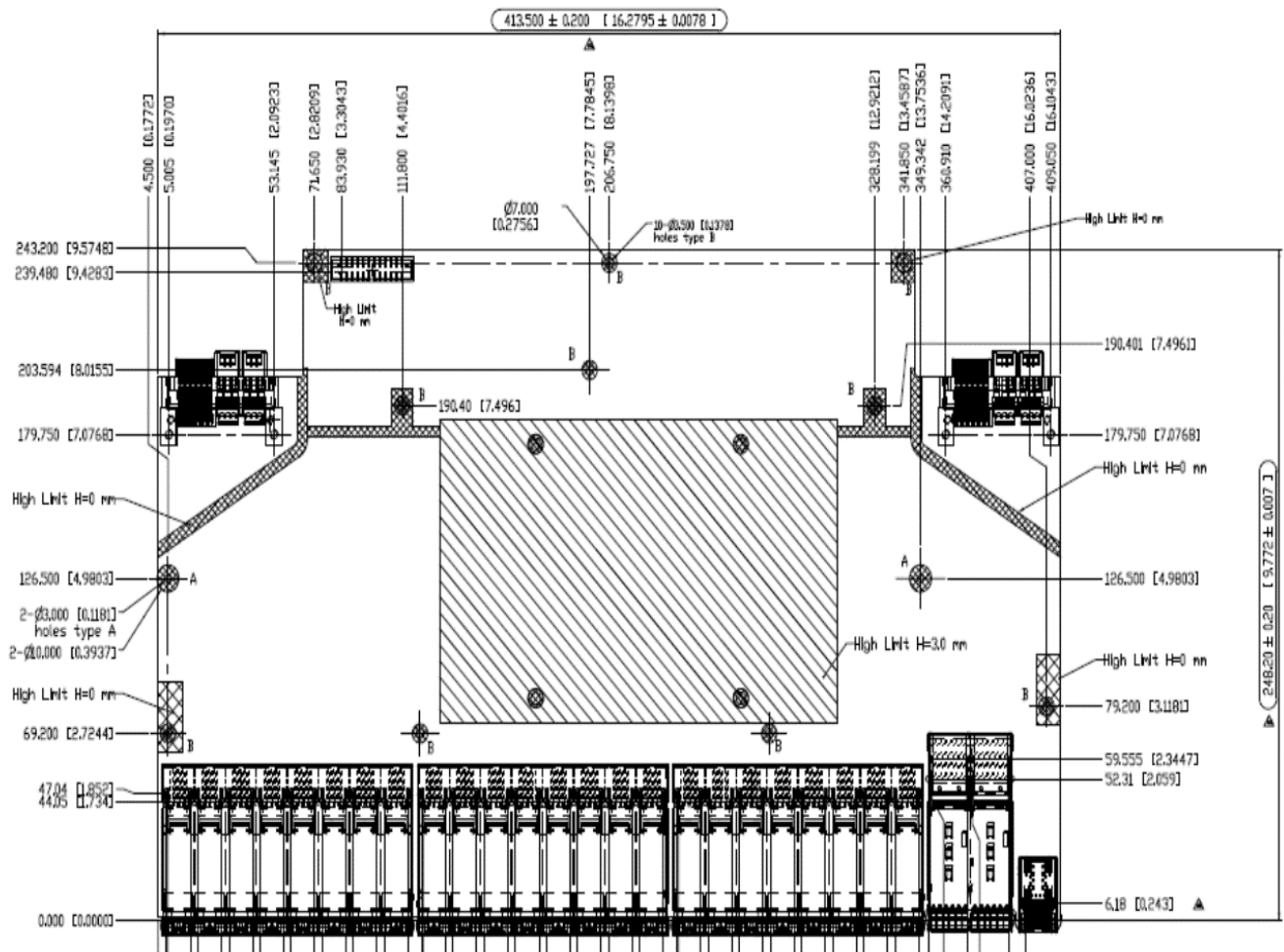


## Main Switch PCB

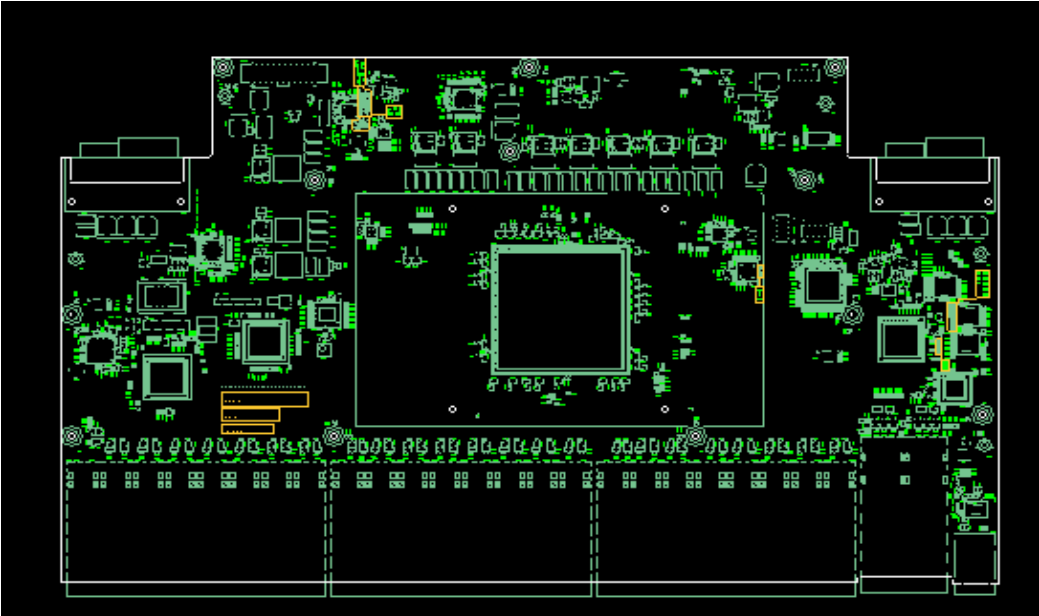
The Main Switch PCB is a fourteen layer board supporting the switching silicon, front panel networking and management ports, LEDs, and connections to other PCBs required in building the system.

## Main PCB Dimensions

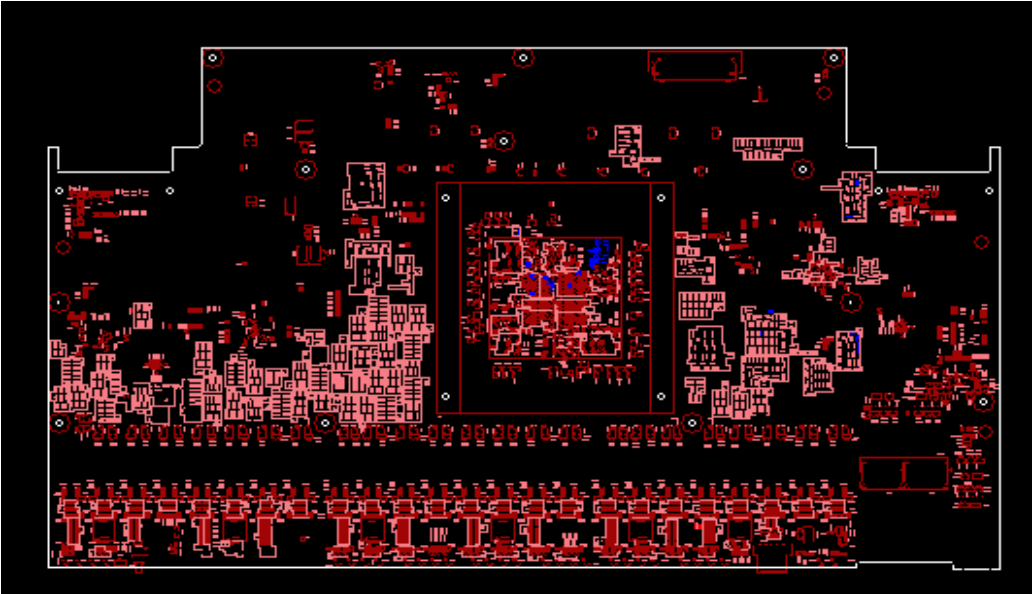
	Inches	Millimeters
Length	9.82	249.50
Width	16.28	413.50



Main PCB Top view



Main PCB Bottom View

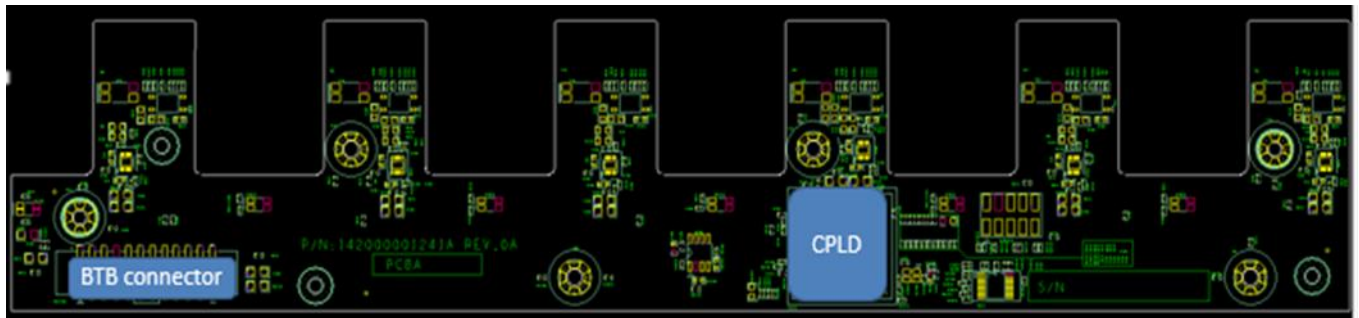




## Fan PCB

The Fan PCB is 4 layers and provides the power, management and connectivity for the 5 system fan modules. The Fan PCB connects to the Main Switch PCB via a small cable assembly for power and a small cable assembly for management signals.

The Fan board has a CPLD to do the fan controller function. The CPLD on the Fan board can control the Fan's PWM signal for adjust Fan speed and count the Fan's Tach signal for Fan speed reporting. CPU can read the thermal sensor to get thermal information, and then adjust Fan speed to reduce system's thermal. The Fan's CPLD had included I2C thermal watchdog to avoid system shutdown. If the register count to zero, the Fan speed will be set to high speed.



## Fan PCB Dimensions

	Inches	Millimeters
Length	9.54	242.5
Width	2.40	60.9

## Fan PCB major components

Description	Manufacturer	Part Number
B2B Connector	DONG-WEI	BHE6T0-224S4
CPLD	Altera	5M1270ZF256C5N 3.3V

## Fan PCB connector pinout

Name	Type	Net Name	Description
1	power	VCC12	12V Power
2	power	VCC12	12V Power
3	power	VCC12	12V Power
4	power	VCC12	12V Power
5	power	GND	12V/ 3.3V return
6	power	GND	12V/ 3.3V return
7	power	GND	12V/ 3.3V return
8	power	VDD3P3	3.3V Power

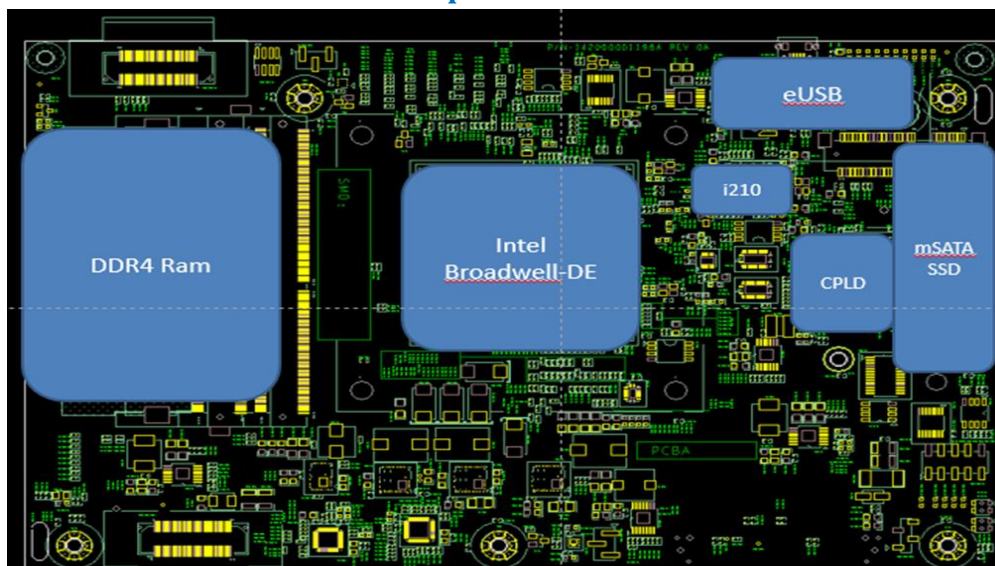


## X86 Broadwell-DE CPU Module PCB

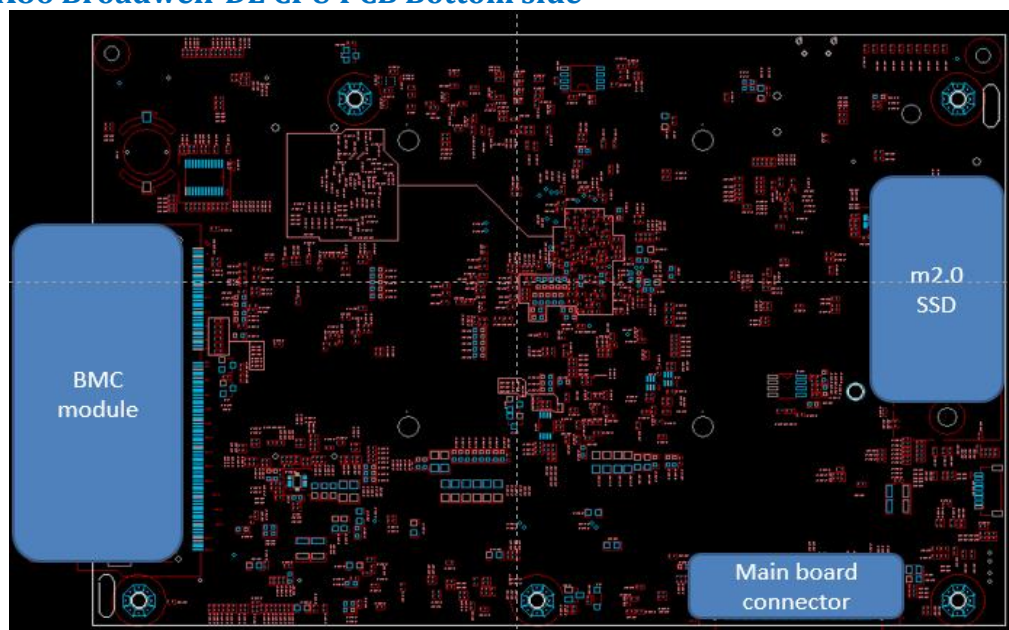
The x86 CPU module is a 12 layer PCB and supports the communication processor and associated components for the CPU subsystem. The communication processor utilized is an Intel® Xeon® processor D series communication processor. The Intel® Xeon® processor D product family is the first Intel® Xeon® SoC optimized to deliver Intel Xeon processor performance and enhanced total cost of ownership (TCO) for hyperscale workloads.

The Intel® Xeon® processor D product family supports high levels of I/O integrations, including 10GbE. The Intel Xeon processor D product family also includes data center processor features such as error correcting code (ECC). With high levels of I/O integration and energy efficiency.

### X86 Broadwell-DE CPU PCB Top side



## X86 Broadwell-DE CPU PCB Bottom side



## X86 Broadwell-DE CPU PCB Dimensions

	Inches	Millimeters
Length	7.32	186.02
Width	4.86	123.5

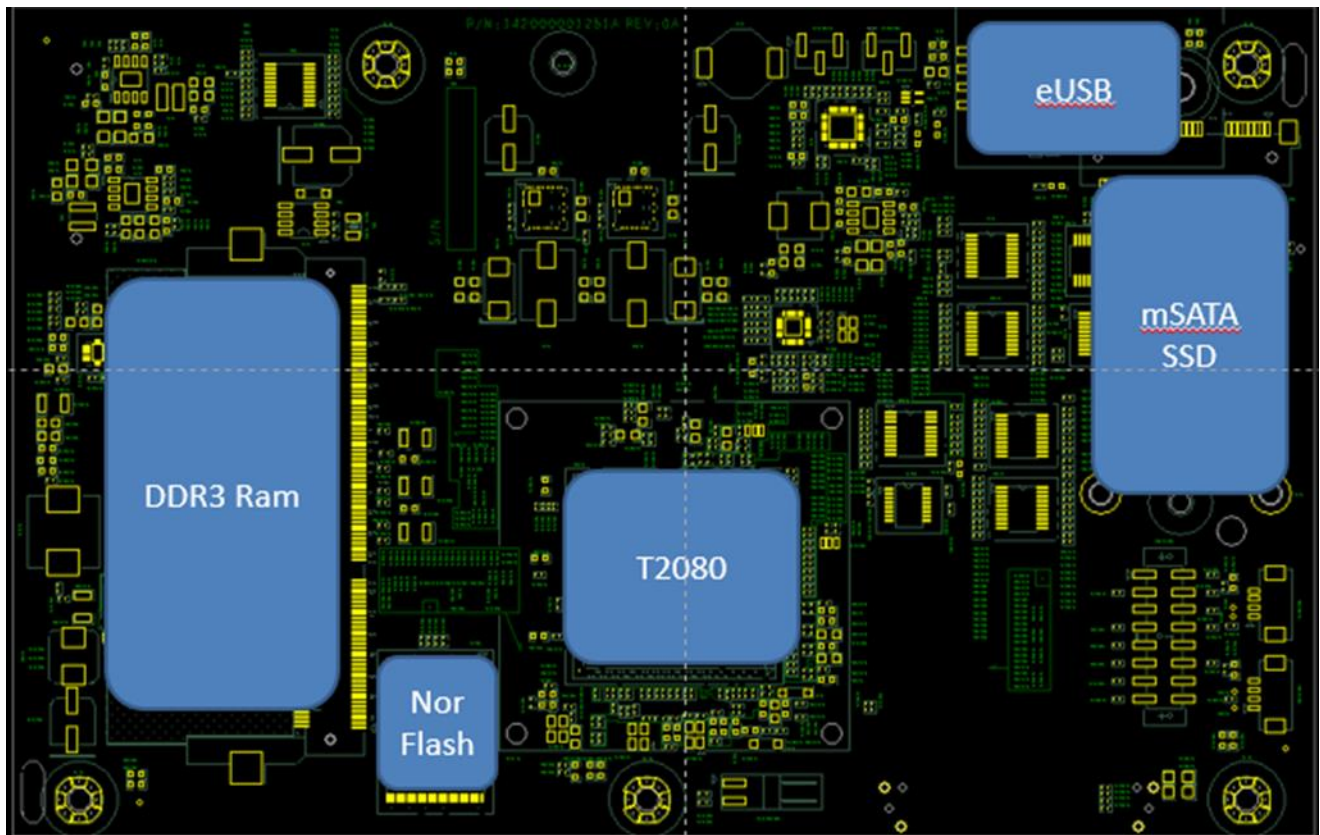
## X86 Broadwell-DE CPU PCB major components

Description	Manufacturer	Part Number
CPU	Intel	XeonD-1548
SDRAM 8GB per channel	Micron	MTA18ASF1G72HZ-2G1A1
USB to NAND Flash 8GB	ATP	AF8GSSGH-AC2
SPI NOR Flash	Winbond	W25Q128FVSIQ
Trusted Platform Module (TPM)	ST	ST33ZP24AR28PVSP
mSATA Connector	TE	1775838-2
M.2 connector	Concraft	213BAAA42FA
BMC Connector	FOXCONN	ASOA626-H2S6-7H
B2B Connector	SAMTEC	BTH-060-01-F-D-RA-WT-K
Ethernet Controller	Intel	WGI210AT
CPLD	Altera	5M1270ZF256C5N
10Gb SPI Flash	Winbond	W25Q32FVSSIQ
I210 SPI flash	Winbond	W25Q16DVSSIQ

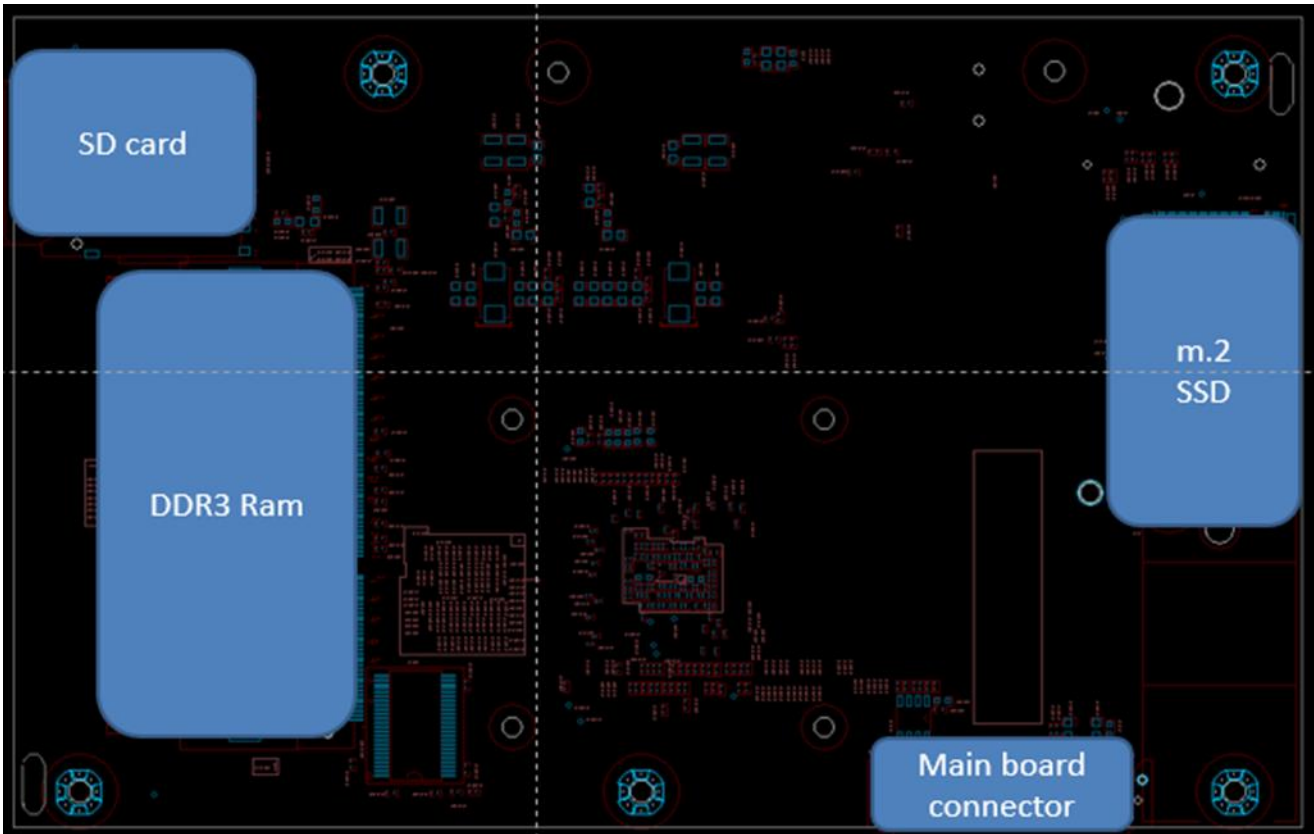
## T2080 CPU Module PCB

The T2080 CPU module is an 8 layer PCB and supports the communication processor and associated components for the CPU subsystem. The communication processor utilized is the Freescale Semiconductor T2080 QorIQ processor. The T2080 QorIQ integrated multicore communications processor combines 4 dualthreaded cores built on Power Architecture® technology with high-performance data path acceleration and network and peripheral bus interfaces required for networking, telecom/ datacom, wireless infrastructure, and military/aerospace applications.

### T2080 CPU PCB Top side



**T2080 CPU PCB Bottom side**



**CPU PCB Dimensions**

	Inches	Millimeters
Length	5.98	151.9
Width	4.83	122

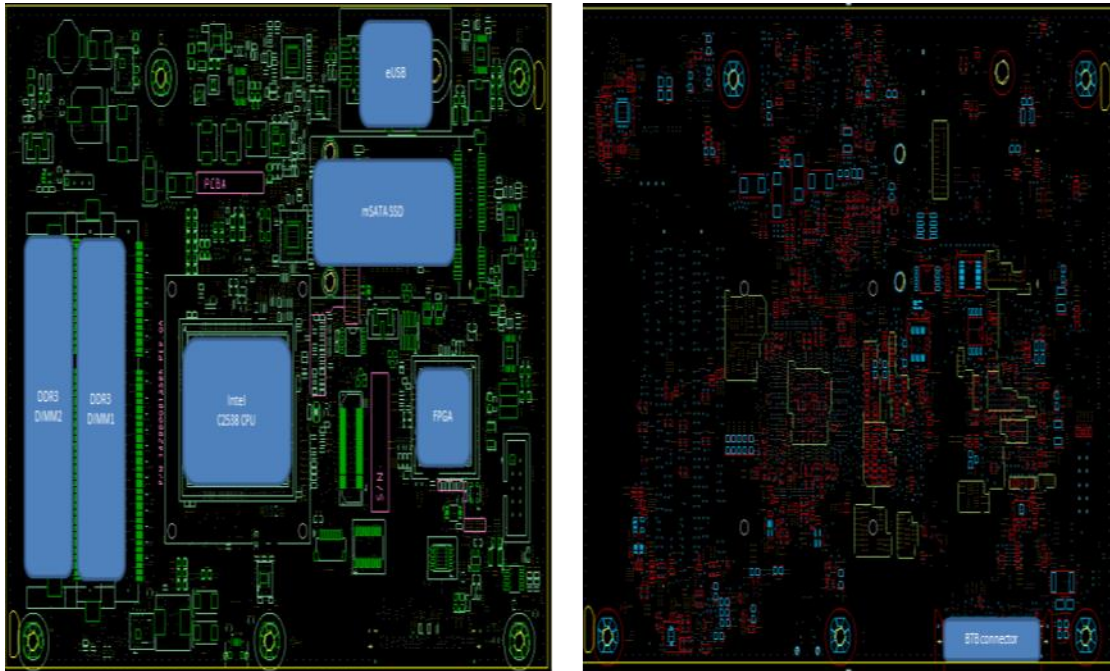
**CPU PCB major components**

Description	Manufacturer	Part Number
CPU	Freescale	T2080NSN7PNC 1.5GHz 1.0V FCPBGA780 FREESCALE
CPU	FREESCALE	T2080NSN8TTB
SDRAM (8GB per channel)	UNIGEN	UG10U7211P8UU-BDE
USB to NAND Flash 8GB	ATP	AF8GSSGH-AC2
NOR Flash (128MB)	MICRON	JS28F00AM29EWHA
Trusted Platform Module (TPM)	ST	ST33ZP24AR28PVSK
mSATA Connector	TE	1775838-2
M.2 connector	CONCRAFT	213BAAA32FA
SD Connector	CVILUX	CSD-09A001D
B2B Connector	SAMTEC	BTH-060-01-F-D-RA-WT-K

## X86 Rangeley CPU Module PCB

The x86 CPU module is a 12 layer PCB and supports the communication processor and associated components for the CPU subsystem. The communication processor utilized is an Intel Atom C2000 series communication processor. This family of Intel SoCs offers a wide range of pin compatible options scaling from two to eight cores, a thermal design power (TDP) of 7W to 20W, integrated HW acceleration, and Intel Xeon Instruction Set Architecture compatibility.

### X86 Rangeley CPU PCB Top and Bottom side



### X86 Rangeley CPU PCB Dimensions

	<u>Inches</u>	<u>Millimeters</u>
Length	7.33	186
Width	4.86	123.5

### X86 Rangeley CPU PCB major components

<u>Description</u>	<u>Manufacturer</u>	<u>Part Number</u>
CPU	Intel	C2538 – 2.4GHz 3.0V
SDRAM 4GB SO-DIMM w/ECC (x2)	Innodisk	M3D0-4GHS2LPC 4GB 1.35V
USB to NAND Flash 8GB	ATP	AF8GSSGH-AC1
SPI NOR Flash 8MB (x2)	Winbound	W25Q64FVSSIG
Trusted Platform Module (TPM)	STMicroelectronics	ST33ZP24AR28PVSP ST
FPGA	Microsemi	A2F200M3F-FGG256
mSATA Connector	TE Connectivity	1775838-2
B2B Connector	SAMTEC	BTH-060-01-F-D-RA-WT-K

## 120 Pin CPU PCB to Main PCB Connector

ES7632BT 120 Pm	ES7632BT 120 Pm	General	CONNECTOR			General	ES7632BT 120 Pm	ES7632BT 120 Pm
		Function		PIN #	PIN #	Function		
(D)LM75BD_SCLK	IN	TEMP_ANODE	IN/OUT	119	120	OUT	I2C_2_SCL	I2C_1_SCL
(O)LM75BD_SDA	IN/OUT	TEMP_CATHODE	IN/OUT	117	118	IN	MGMT_RS232_DCD	CPU_PROCHOT
GND		GND	-	115	116	IN/OUT	GPIO	Not Used
CPU_MPHY_SGMII_TX_0_S_P	OUT	MPHY_SGMII_TX_P	OUT	113	114	IN/OUT	I2C_2_SDA	I2C_1_SDA
CPU_MPHY_SGMII_TX_0_S_N	OUT	MPHY_SGMII_TX_N	OUT	111	112	IN/OUT	GPIO	Not Used
GND		GND	-	109	110	IN	INTERRUPT	GND
MPHY_CPU_SGMII_RX_0_S_N	IN	MPHY_SGMII_RX_N	IN	107	108	IN	INTERRUPT	PCIE_OOB_TX_P
MPHY_CPU_SGMII_RX_0_S_P	IN	MPHY_SGMII_RX_P	IN	105	106	OUT	MGMT_RS232_DTR	PCIE_OOB_TX_N
GND		GND	-	103	104	IN/OUT	PROCHOT#	GND
CPU_MPHY_MDC	OUT	GPIO(MPHY_MDC)	OUT	101	102	IN/OUT	GPIO	PCIE_OOB_RX_P
Not Used		INTERRUPT(MPHY)	IN	99	100	OUT	THRMTRIP#	PCIE_OOB_RX_N
CPU_MPHY_MDIO	IN/OUT	GPIO(MPHY_MDIO)	IN/OUT	97	98	IN	INTERRUPT	GND
GND		GND	-	95	96	IN	MGMT_RS232_RXD	UART1_RX
IP_UART0_SOUT	IN	GPIO	IN/OUT	93	94	IN	MGMT_RS232_CTS	UART1_CTS
CPLD23_INT_CPU	IN		IN	91	92	IN	INTERRUPT	CPU_TDI
1PPS_CPU	IN	GPIO	IN/OUT	89	90	OUT	MGMT_RS232_TXD	UART1_TX
GND		GND	-	87	88	IN	INTERRUPT	MAC_INT_L
GND		GND	-	85	86	-	GND	GND
CPU_XFI_EC_TX_0P	OUT	DIFF_PAIR_TX_0_P	OUT	83	84	IN/OUT	MGMT_USB_N	USB2_N
CPU_XFI_EC_TX_0N	OUT	DIFF_PAIR_TX_0_N	OUT	81	82	IN/OUT	MGMT_USB_P	USB2_P
GND		GND	-	79	80	-	GND	GND
GND		GND	-	77	78	OUT	HWIO	UCD9090_ALERT_1
CPU_XFI_EC_RX_0P	IN	DIFF_PAIR_RX_0_P	IN	75	76	OUT	MGMT_RS232_RTS	UART1_RTS
CPU_XFI_EC_RX_0N	IN	DIFF_PAIR_RX_0_N	IN	73	74	OUT	HWIO	RESET_SYS_CPLD
GND		GND	-	71	72	IN/OUT	GPIO	CPU_TMS
GND		GND	-	69	70	OUT	JTAG_TRST#	CPU_JTAG_RST
CPU_XFI_EC_RX_2P	IN	DIFF_PAIR_RX_1_P	IN	67	68	OUT	HWIO	P1014_RST
CPU_XFI_EC_RX_2N	IN	DIFF_PAIR_RX_1_N	IN	65	66	IN/OUT	GPIO	CPU_TDO
GND		GND	-	63	64	IN/OUT	GPIO	CPU_TCK
GND		GND	-	61	62	IN/OUT	GPIO	IP_UART0_SIN
CPU_XFI_EC_TX_2P	OUT	DIFF_PAIR_TX_1_P	OUT	59	60	IN/OUT	I2C_0_SDA	Not Used
CPU_XFI_EC_TX_2N	OUT	DIFF_PAIR_TX_1_N	OUT	57	58	OUT	I2C_0_SCL	Not Used
GND		GND	-	55	56	IN	INTERRUPT	SYS_CPLD_INT_CPU
GND		GND	-	53	54	OUT	HWIO	USB1_PWRFAULT
CPU_PEX_PCIEA_TX_0_P	OUT	PCIE_TX_2_P	OUT	51	52	IN	RESET_MODULE_REQ#	Manu_RST
CPU_PEX_PCIEA_TX_0_N	OUT	PCIE_TX_2_N	OUT	49	50	OUT	I2C_1_SCL	I2C_0_SCL
GND		GND	-	47	48	IN/OUT	I2C_1_SDA	I2C_0_SDA
GND		GND	-	45	46	OUT	RESET_SYS_REQ#	RESET_MAC
CPU_PEX_PCIEA_TX_1_N	OUT	PCIE_TX_3_P	OUT	43	44	IN	SYS_PWR_GOOD	CPU_THERMALTRIP
CPU_PEX_PCIEA_TX_1_P	OUT	PCIE_TX_3_N	OUT	41	42	OUT	HWIO	USB1_VBUS
GND		GND	-	39	40	-	GND	GND
GND		GND	-	37	38	-	GND	GND
PEX_CPU_PCIEA_RX_0_N	IN	PCIE_RX_2_P	IN	35	36	OUT	PCIE_TX_0_P	CPU_PEX_PCIEB_TX_0_P
PEX_CPU_PCIEA_RX_0_P	IN	PCIE_RX_2_N	IN	33	34	OUT	PCIE_TX_0_N	CPU_PEX_PCIEB_TX_0_N
GND		GND	-	31	32	-	GND	GND
GND		GND	-	29	30	-	GND	GND
PEX_CPU_PCIEA_RX_1_N	IN	PCIE_RX_3_P	IN	27	28	IN	PCIE_RX_0_P	PEX_CPU_PCIEB_RX_0_P
PEX_CPU_PCIEA_RX_1_P	IN	PCIE_RX_3_N	IN	25	26	IN	PCIE_RX_0_N	PEX_CPU_PCIEB_RX_0_N
GND		GND	-	23	24	-	GND	GND
GND		GND	-	21	22	-	GND	GND
CPU_PEX_PCIEB_TX_1_N	OUT	PCIE_TX_1_P	OUT	19	20	IN	PCIE_RX_1_P	PEX_CPU_PCIEB_RX_1_P
CPU_PEX_PCIEB_TX_1_P	OUT	PCIE_TX_1_N	OUT	17	18	IN	PCIE_RX_1_N	PEX_CPU_PCIEB_RX_1_N
GND		GND	-	15	16	-	GND	GND
GND		GND	-	13	14	-	GND	GND
GND		GND	-	11	12	-	GND	GND
VCC12		12VDC	-	9	10	-	12VDC	VCC12
VCC12		12VDC	-	7	8	-	12VDC	VCC12
VCC5P0		5VDC	-	5	6	-	12VDC	VCC12
VCC5P0		5VDC	-	3	4	-	12VDC	VCC12
VCC5P0		5VDC	-	1	2	-	12VDC	VCC12



## **Software Support**

The ASXVOLT16 supports a base software package composed of the following components:

### **BIOS support**

The ASXVOLT16 supports AMI AptioV BIOS version A01 or greater with the x86 CPU module

### **U-Boot**

The ASXVOLT16 supports U-Boot version 1.4.0.2 or greater with the P2041 CPU module

### **ONIE**

The ASXVOLT16 supports ONIE version 2014.08 or greater with the P2041 CPU Module

### **Open Network Linux**

See <http://opennetlinux.org/> for latest supported version

## Specifications

### Power Consumption

The total estimated system power consumption of the AS5410-54X is ~480 Watts. This is based upon worst case power assumptions for traffic, optics used, and environmental conditions. Typical power consumption will be less.

### Environmental

- 0 to 45 Degrees C operating range
- -40 to 40 Degrees C storage temperate range
- Humidity 5% to 95% non-condensing (operational and storage)
- Vibration – IEC 68-2-36, IEC 68-2-6
- Shock – IEC 68-2-29
- Acoustic Noise Level – Under 60dB in 40 degree C
- Altitude - 15,000 (4572 meters) tested operational altitude

### Safety

- UL/ Canada
- CB (Issued by TUV/RH)
- China CCC

### Electromagnetic Compatibility

- CE
- EN55022 Class A
- EN55024
- EN61000-3-2
- EN61000-3-3
- FCC Title 47, Part 15, Subpart B Class A
- VCCI Class A
- CCC

### ROHS

Restriction of Hazardous Substances (6/6)

Compliance with Environmental procedure 020499-00 primarily focused on Restriction of Hazardous Substances (ROHS Directive 2002/95/EC) and Waste and Electrical and Electronic Equipment (WEEE