

Edgecore AS7800-64X

Switch Specification

Revision 1.1



OPEN
Compute Project

Revision History

Revision	Date	Author	Description
.01	2/21/2017	Jeff Catlin	Initial Draft
1.0	3/6/2017	Jeff Catlin	Initial Release
1.1	8/4/2017	Jeff Catlin	Minor edits to license text

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Description	Manufacturer	Part Number
X86 Broadwell-DE CPU	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
T2080 CPU	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
X86 Rangeley 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
AC Power Supply	3Y	YM-2851F CR Front to back airflow
AC Power Supply	3Y	YM-2851F DR Back to front airflow
DC Power Supply	3Y	TBD Front to back airflow UM400D01-
DC Power Supply	3Y	TBD Back to Front airflow UM400D01-
12V DC Power Module	Edge-Core	PSU 12V-TBD
Switching Silicon	Broadcom	56970
10/100/1000 PHY	Broadcom	BCM54616S
Fans	Sunon	PF60761BX-0000-S99 (Front to Back airflow)
Fans	Sunon	PF60761BX-0000-S99 (Back to front airflow)

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Scope

This document outlines the technical specifications for the Edgecore AS7800-64X Open Switch Platform submitted to the Open Compute Foundation.

Overview

This document describes the technical specifications of the AS7800-64X Leaf/Spine switch designed by Edgecore Networks Corporation. The AS7800-64X is a cost optimized switch design focused on Leaf/Spine deployments which support 100G. The AS7800-64X switch supports sixty four QSFP28 ports that each can operate at 4x10Gb/4x25G with break out cables, 2x50G with break out cables, 40G with standard QSFP+ optics/DAC cables, and 100G with QSFP28 optics/DAC cables.

The AS7800-64X is a PHY-Less design with the QSFP28 connections directly attaching to the Serdes interfaces of the Broadcom 56970 switching silicon providing the lowest cost, latency, and power. The AS7800-64X supports traditional features found in Top of Rack / Leaf / Spine switches such as:

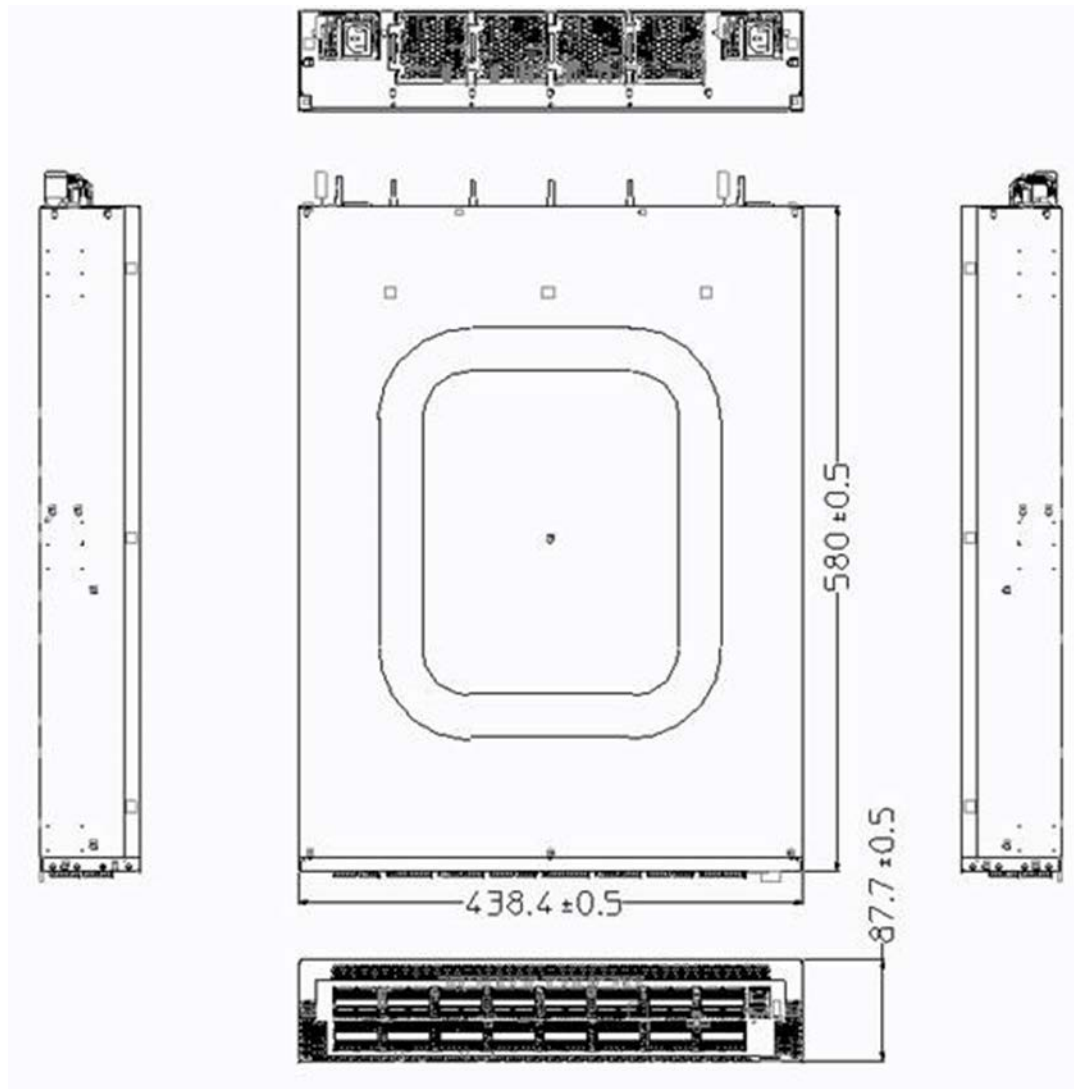
- Redundant field replaceable power supply and fan units
 - Support for “Front to Back” or “Back to Front” air flow direction
 - Supports a modular CPU card that allows flexibility in the CPU and/or memory configurations that can be offered.
- The AS7800-64X is a 2RU design that supports standard 19” rack deployments as well as standard 21” Open Rack deployments with the ORSA-1RU.

Physical Overview



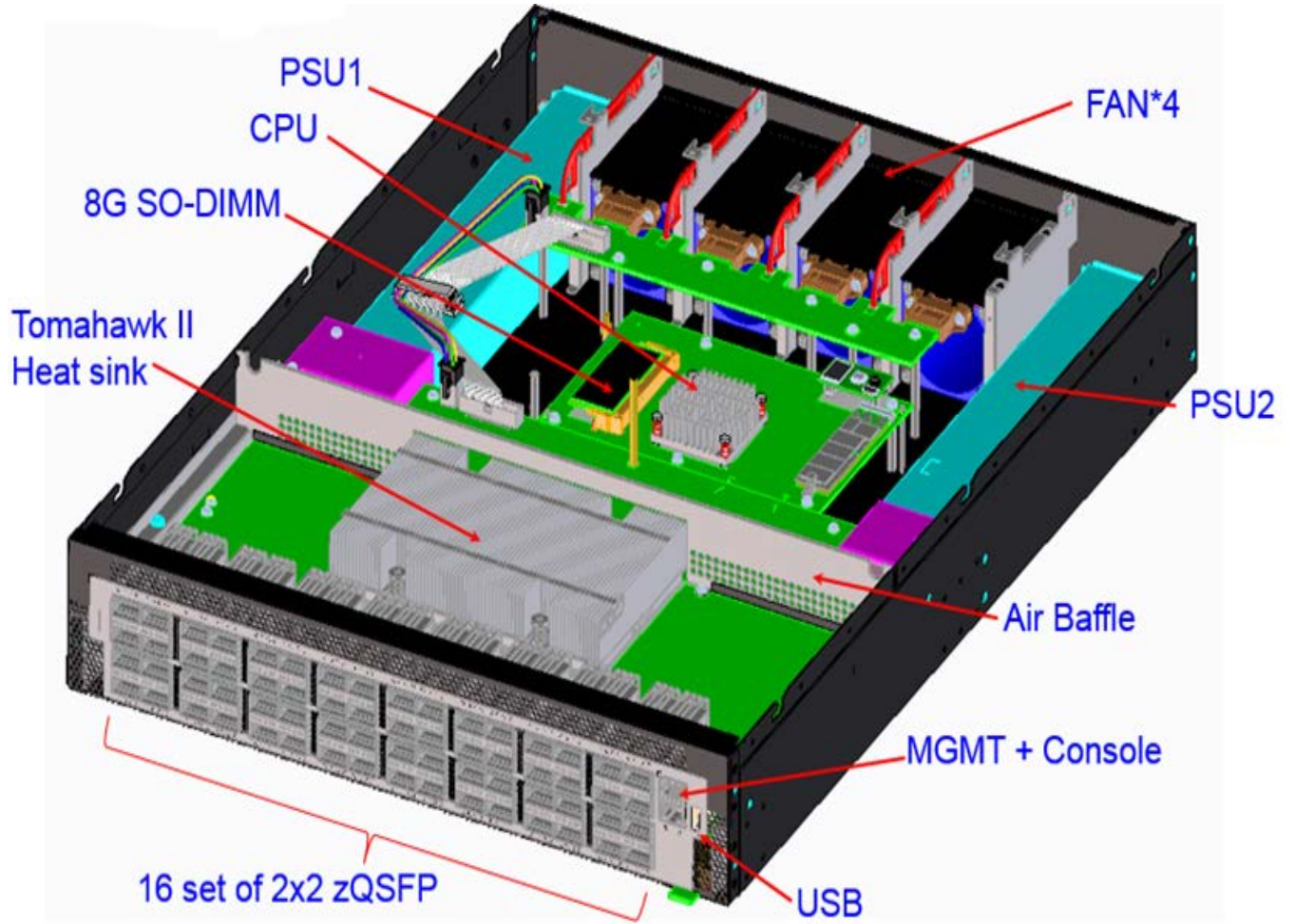
Dimensions

	Inches	Millimeters
Length	22.84	580
Width	17.26	438.4
Height	3.45	87.7



Top View

The top view of the AS7800-64X shows the PCBs and associated components in the AS7800-64X system





Front View



The front panel view of the AS7800-64X includes the following key components:

- Sixty Four QSFP28 ports
 - Capable of operating at 100G/50G/25G/40G/10G Ethernet with standard QSFP28/QSFP+ modules and/or appropriate break out cables.
- System 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
- Reset switch
- Pull out “Luggage tag” to show model number, serial number, and base MAC address

Console Port

The console port interface conforms to the RJ45 electrical specification.

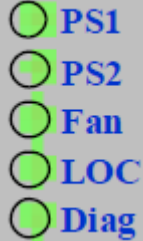
The interface supports asynchronous mode with default eight data bits, one stop bit, and no parity.

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

Front Panel System LED Definitions



LED Name	Description	State	
PSU1	Led to indicate status of Power Supply 1	Green - Normal Red - Fault Off – No Power	
PSU2	Led to indicate status of Power Supply 1	Green - Normal Red- Fault Off – No Power	
Diag	LED to indicate system diagnostic test results	Green – Normal Red– Fault detected Green Blinking – System boot in progress	
FAN	LED to indicate the status of the system fans	Green – All fans operational Red – 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	
QSFP28 Port LED	LED 1	Blue	100G (4 x 25G)
		Orange	40G (4 x 10G)
		White	25G
		Purple	50G
		Green	10G
		off	not present
	LED 2-4	Purple	50G
		White	25G
		Green	10G
		off	not present
OOB LED	LED to indicate link status of 10/100/1000 management port	On - Green 1G Link On - Yellow 10/100 Link Flashing – Indicates activity	

QSFP28 Interface Module Support

40Gb QSFP+ Optical Modules	Standard 40Gb QSFP+ modules including but not limited to: 40GBASE-SR4, 40GBASE-LR4, 40GBASE-ER, AOC Cables
40Gb Direct Attach Copper (DAC)	Standard DAC cables including but not limited to: Passive cables up to 7m, QSFP<> QSFP DAC, QSFP<>SFP+ DAC Breakout
QSFP28 Optics	Support for all standards compliant QSFP28 XCVRS including but not limited to 100GBASE-SR4, 100GBASE-LR4
QSFP28 Direct Attach Copper (DAC)	Standard DAC cables including but not limited to: Passive cables up to 3m, QSFP28<> QSFP28 DAC, QSFP28<>SFP28 DAC Breakout

Rear View



The rear view of the AS7800-64X includes the following key components:

- Four (3+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 AS7800-64X supports two redundant power supply modules as listed below

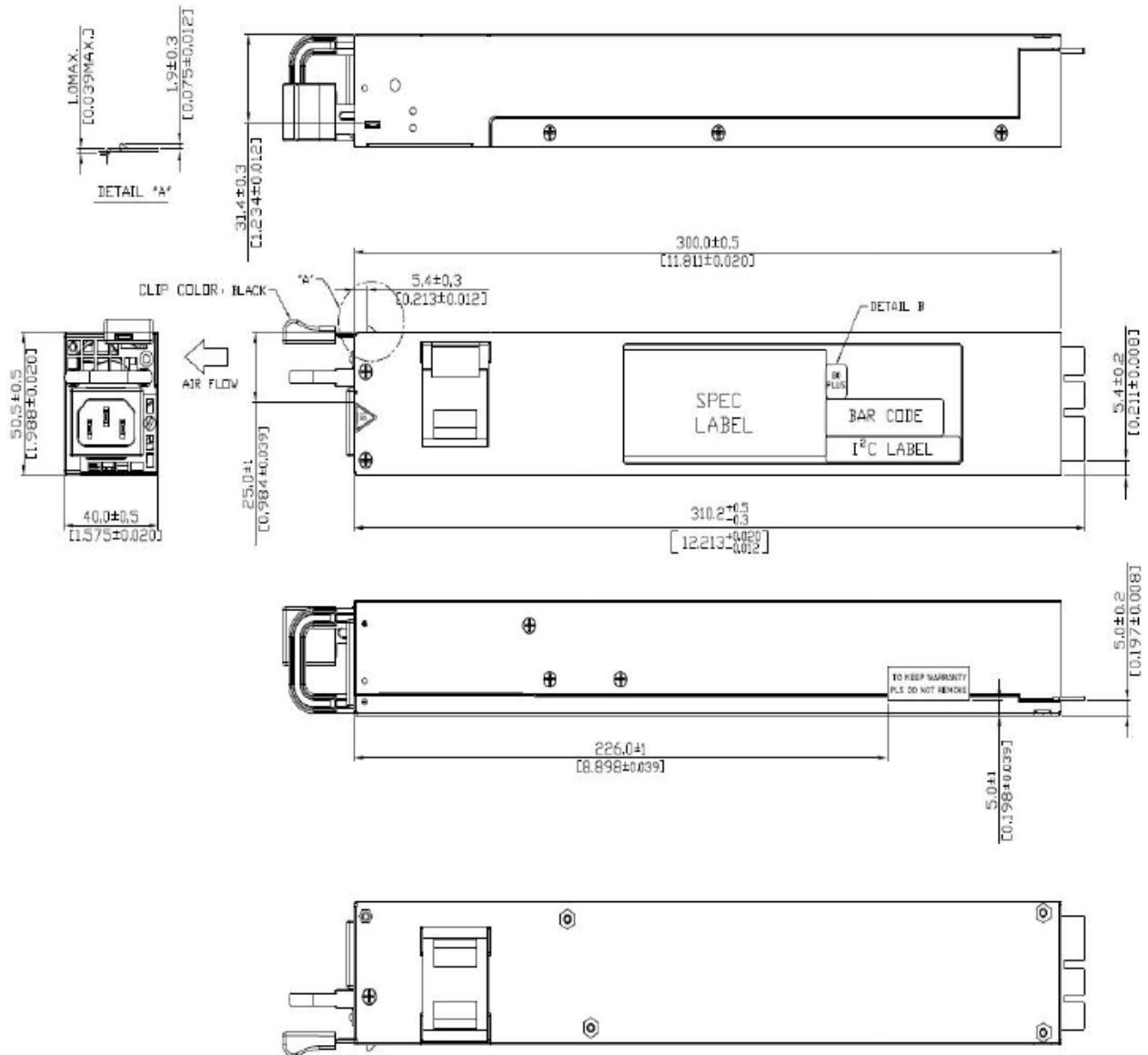
3Y 850 Watt PSU: AC Input Range 90-264VAC / 47-63Hz		
<ul style="list-style-type: none">• YM-2851F CR Front to back airflow• YM-2851F DR Back to front airflow		
3Y 850W PSU: 48V DC Input range 36-75Vdc		
<ul style="list-style-type: none">• YM-TBD -Front to back airflow• YM-TBD -Back to front airflow		
Edge-Core 600 Watt 12V DC Module		
<ul style="list-style-type: none">• PSU-12V-TBD		
	<u>Inches</u>	<u>Millimeters</u>
Length	12.21	310.2
Width	1.58	50.5
Height	2.15	40

Power Supply LEDs

Each power supply has a single LED to indicate status of the power supply unit.

Power supply status	Power supply LED color
No AC power to all PSU	OFF
Only +5V standby output on (AC OK)	0.5Hz Blinking Green*
Power supply DC output ON and OK	Green
Power supply fail	Red
FAN fail	1 Hz Blinking Red
Power supply warning	0.5Hz Blinking Red/Green*

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



PSU Pin-Out

3.3. Pin assignment for DC output gold fingers

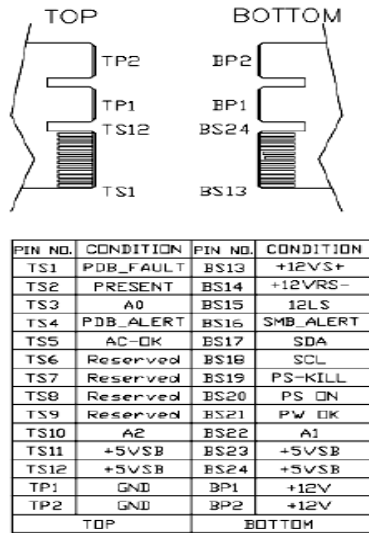
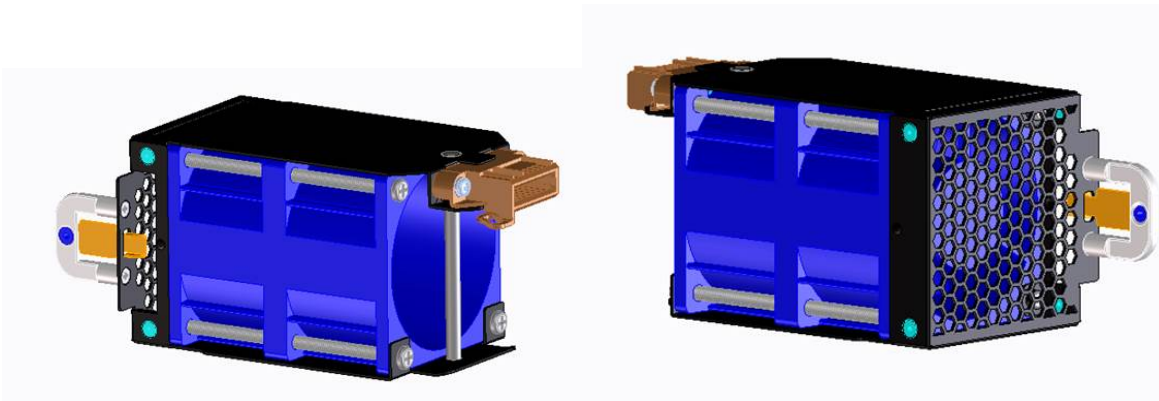


Figure 3: signal descriptions

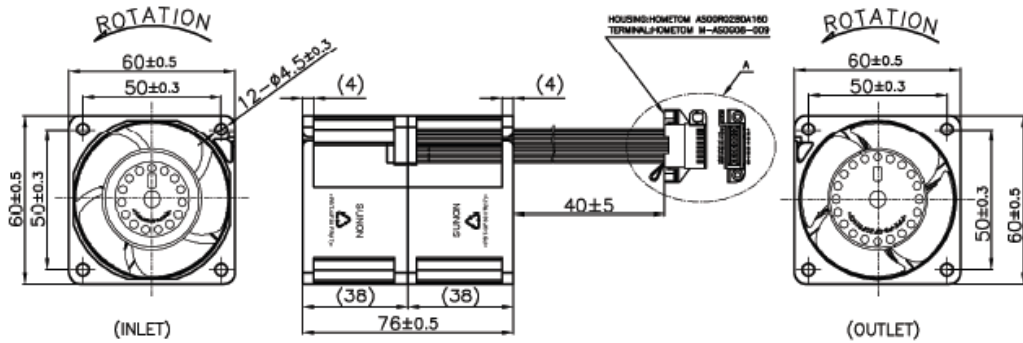
Fan Modules

The AS7800-64X supports four individual fan modules. Each fan module supports two 60mmx60mmx76mm fans shown below.

Description	Manufacturer	Part Number
Fan – Front to back airflow	Sunon	
Fan – Back to front airflow	Sunon	

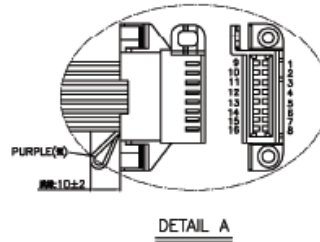
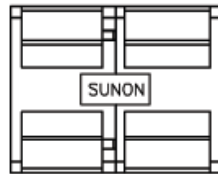


Fan Connector pinout

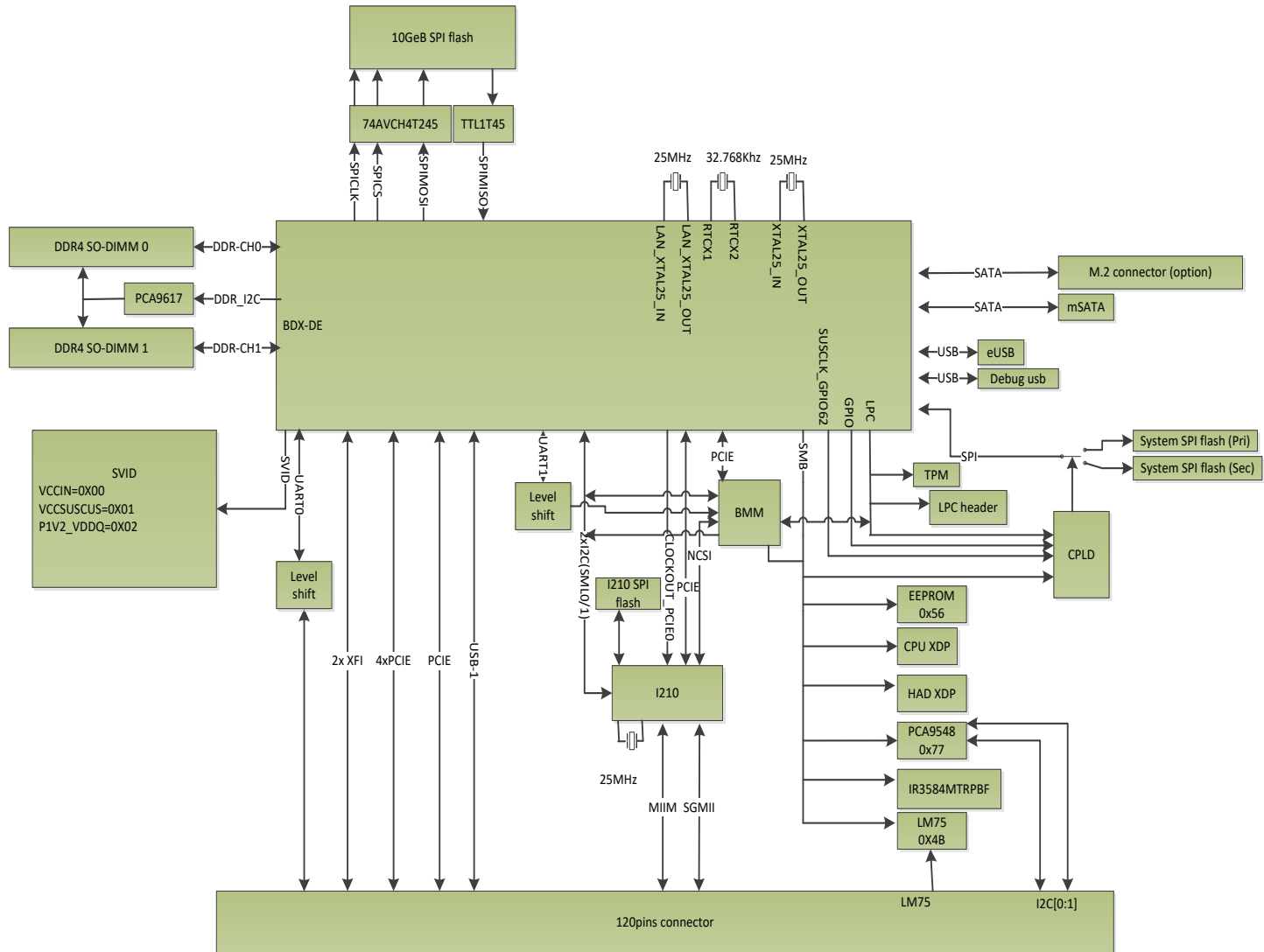


NOTE:

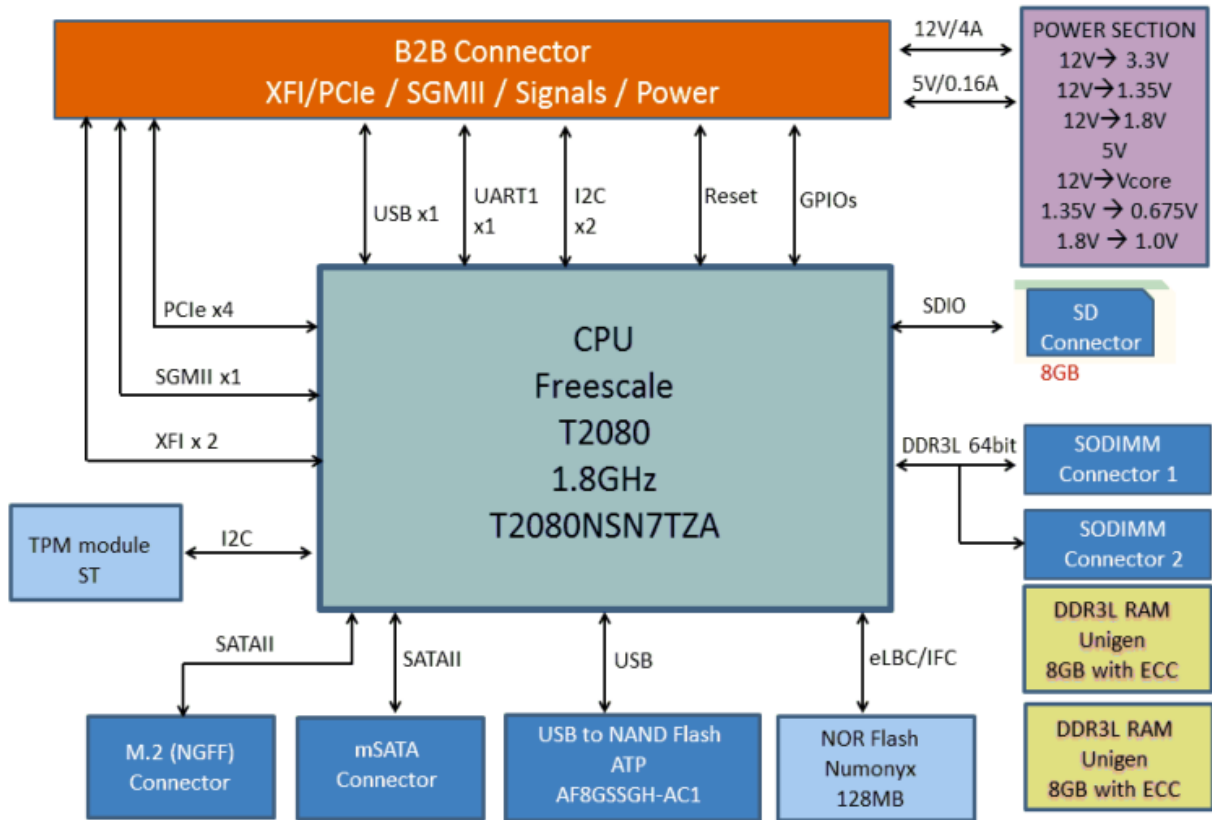
- 1.LEAD WIRE : UL1007 #24AWG
- 2.HOUSING:HOMETOM AS00R02B0A160
TERMINAL:HOMETOM M-ASOG08-009
- PIN1:BROWN WIRE----(OUT,3rd)
- PIN2:YELLOW WIRE----(IN,3rd)
- PIN3:GREEN WIRE----(OUT,PWM)
- PIN4:BLUE WIRE----(IN,PWM)
- PIN5:GRAY WIRE----(OUT,-)
- PIN6:ORANGE WIRE----(OUT,+)
- PIN7:RED WIRE----(IN,+)
- PIN8:BLACK WIRE----(IN,-)
- PIN9:TERMINAL(M-ASOG08-009)
- PIN10:TERMINAL(M-ASOG08-009)
- PIN11:TERMINAL(M-ASOG08-009)
- PIN12:TERMINAL(M-ASOG08-009)
- PIN13:TERMINAL(M-ASOG08-009)
- PIN14:TERMINAL(M-ASOG08-009)
- PIN15:TERMINAL(M-ASOG08-009)
- PIN16 JUMPER(PURPLE WIRE) to PIN8
- 3.FRAME TYPE : FLANGE



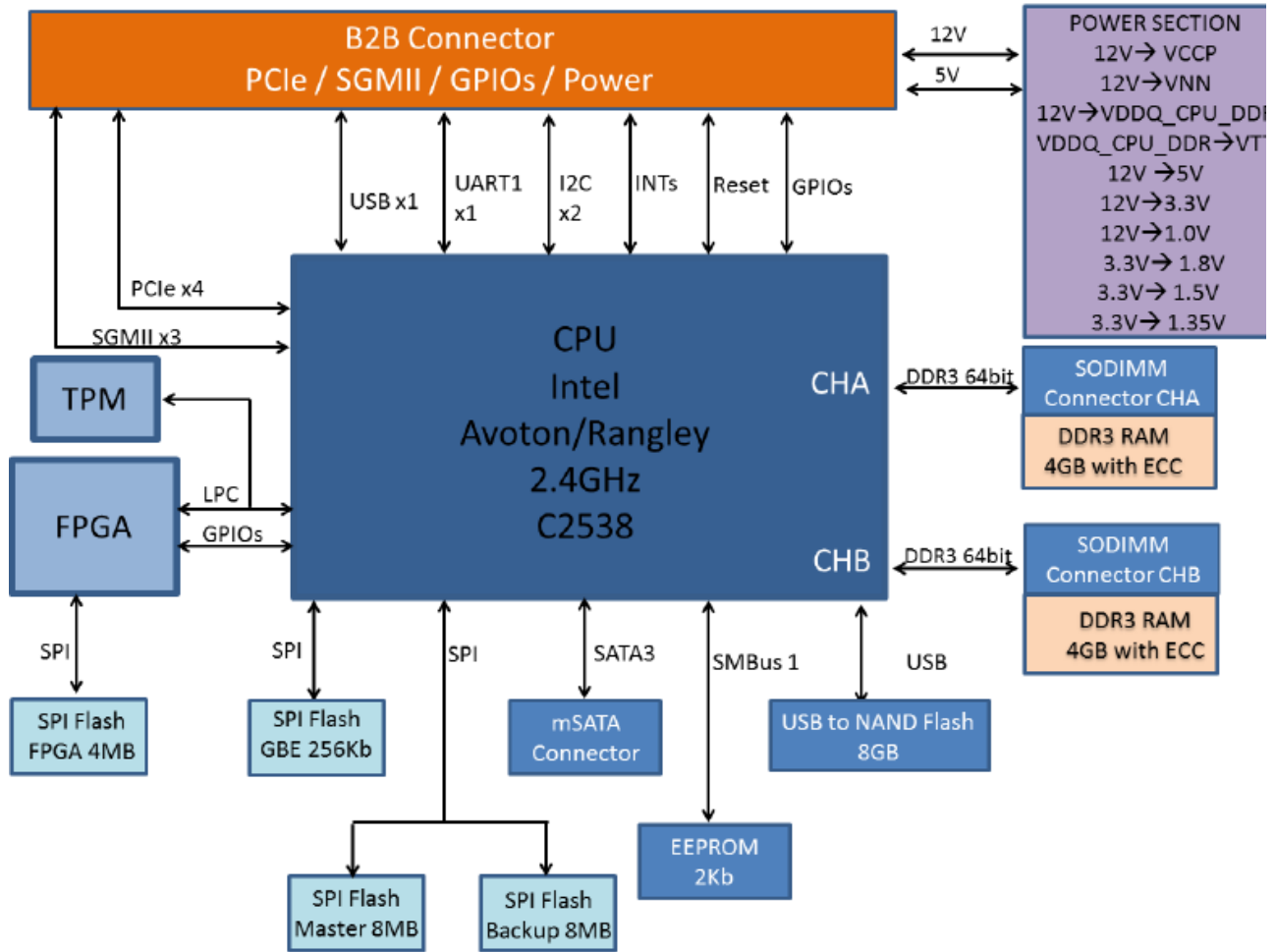
X86 Broadwell-DE CPU Module Block Diagram



T2080 CPU Module Block Diagram



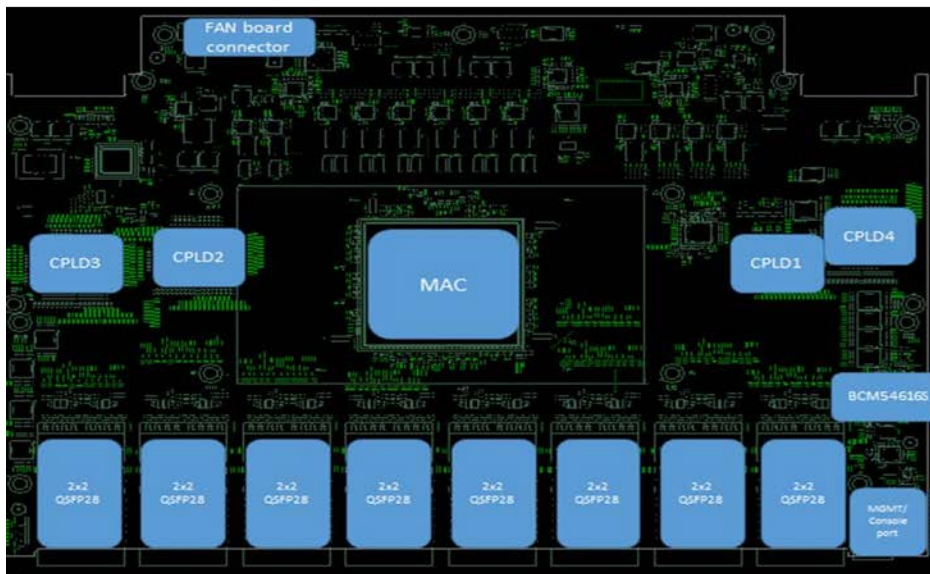
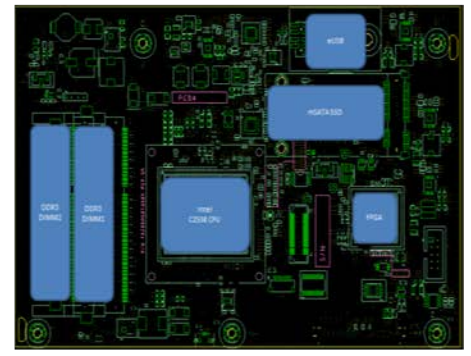
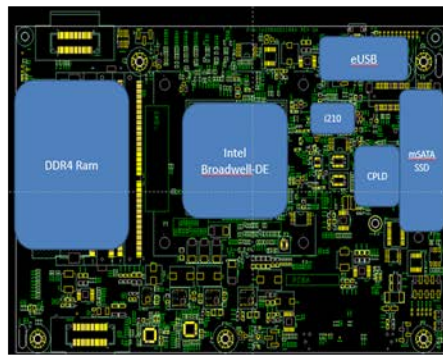
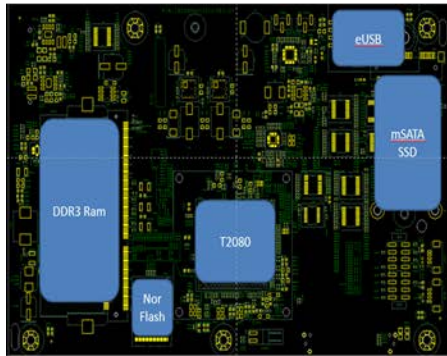
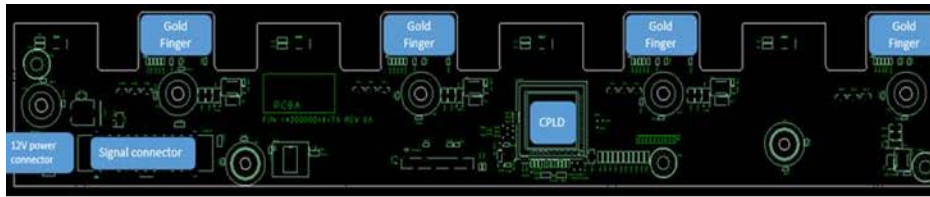
X86 Rangeley CPU Module Block Diagram



PCB Board Set

The AS7800-64X is composed of 5 unique PCB assemblies as follows:

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



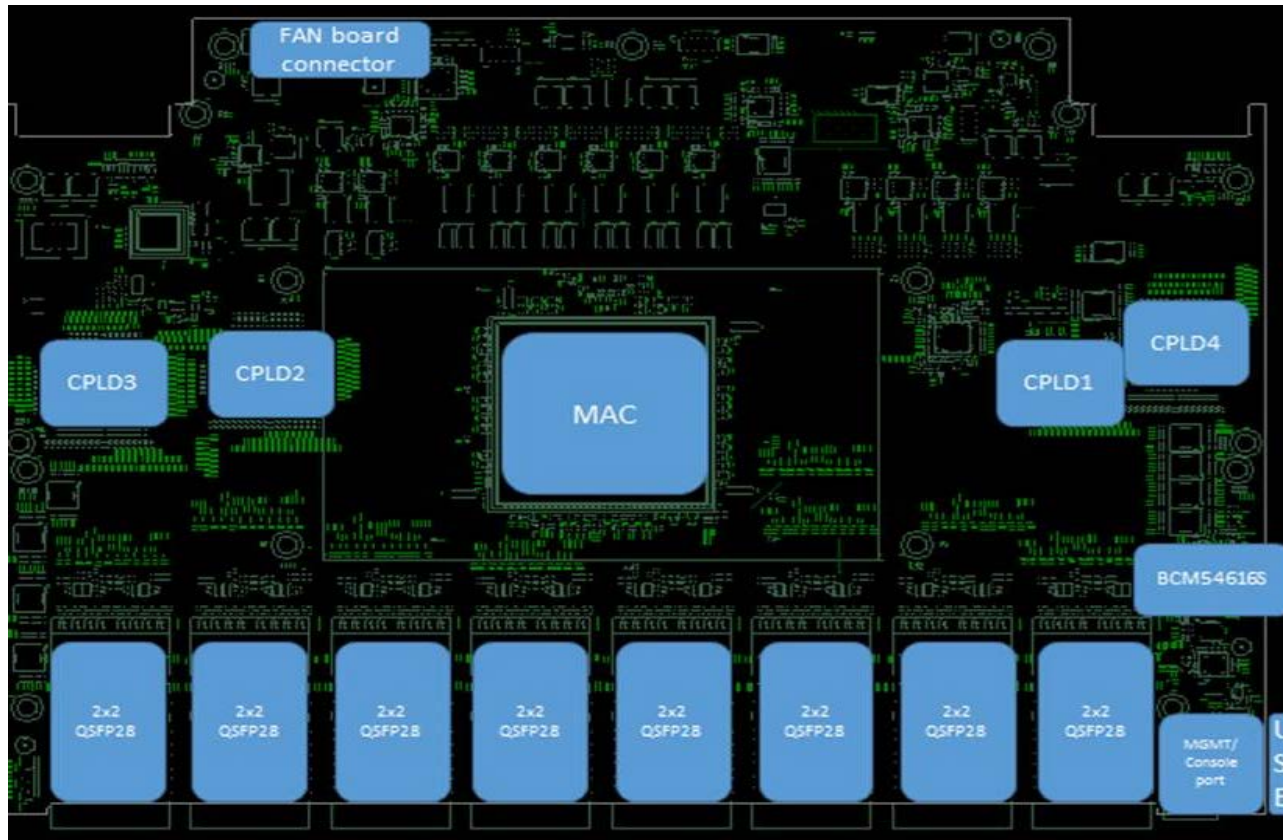
Main Switch PCB

The Main Switch PCB is a twenty two 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	11.81	300
Width	15.75	411

Main PCB Top view



Main PCB Bottom View



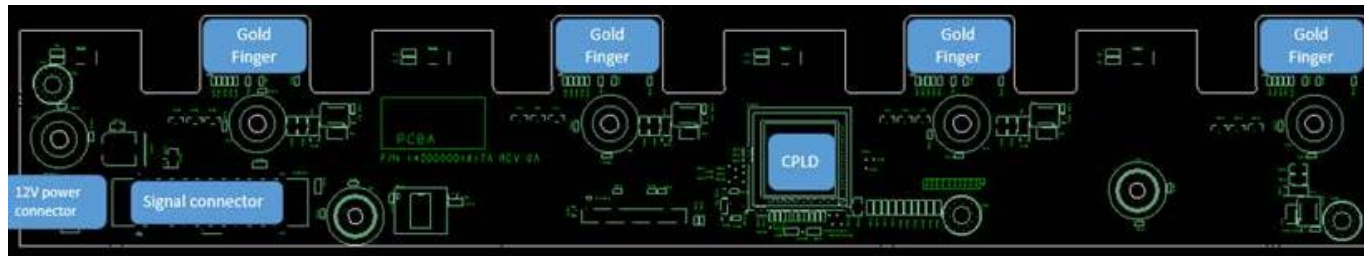
Fan PCB

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

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.

The CPLD information is "CPLD LCMXO3LF-1300C-5BG256C 2.5/3.3V caBGA256 LATTICE"

Fan PCB top side



Fan PCB bottom side



Fan PCB Dimensions

	<u>Inches</u>	<u>Millimeters</u>
Length	9.54	242.5
Width	2.40	60.9

Fan PCB connector pinout

Name	Type	Net Name	Description
1	Power	GND	3.3V return
2	Power	GND	3.3V return
3	Power	VDD3P3	3.3V
4	Power	VDD3P3	3.3V
5	Power	VDD3P3	3.3V
6	Power	VDD3P3	3.3V
7	Power	GND	3.3V return
8	Power	GND	3.3V return
9	Power	GND	3.3V return
10	inout	FAN_SDA_1	I2C to FAN CPLD and thermal sensor
11	Power	GND	3.3V return
12	in	FAN_SCL_1	I2C to FAN CPLD and thermal sensor
13	Power	GND	3.3V return
14	Power	GND	3.3V return
15	in	FAN_CPLD_TMS	JTEG download
16	out	FAN_CPLD_TDO	JTEG download
17	in	FAN_CPLD_TCK	JTEG download
18	in	FAN_CPLD_TDI	JTEG download
19	out	FAN_INT_L	interrupt signal
20	in	FAN_CPLD_RST	reset to FAN CPLD
21	in	Fan_idle	Enable/ disable the Fan board's I2C Master
22	Power	GND	3.3V return
23	Power	GND	3.3V return
24	Power	GND	3.3V return

Fan PCB Signal Cable

Information on the connectors used in the signal cable that connects the fan PCB to the main PCB is listed below.

<u>Vendor</u>	<u>Part Number</u>
LCN	LCB25-K2424S01C-03

FAN signal cable pinout		
Description	Pin	Description
Ground	13	Ground
Ground	14	Ground
3.3V	15	FAN CPLD TMS
3.3V	16	FAN CPLD TDO
3.3V	17	FAN CPLD TCK
3.3V	18	FAN CPLD TDI
Ground	19	FAN Interrupt
Ground	20	FAN CPLD Reset
Ground	21	FAN idle
FAN SDA	22	Ground
Ground	23	Ground
FAN SCL	24	Ground

Fan PCB power Cable

Information on the power cable that connects the fan PCB to the main PCB is listed below.

<u>Vendor</u>	<u>Part Number</u>
LCN	LCP42-O04W8T00R-02

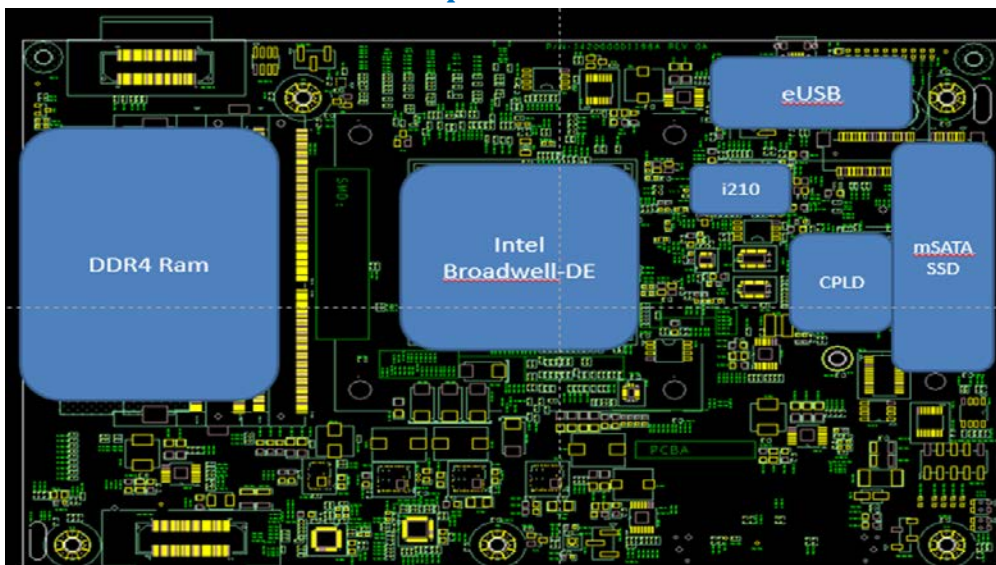
FAN power cable	
Pin	Description
1	12V
2	Ground
3	12V
4	Ground

X86 Broadwell-DE CPU Module PCB

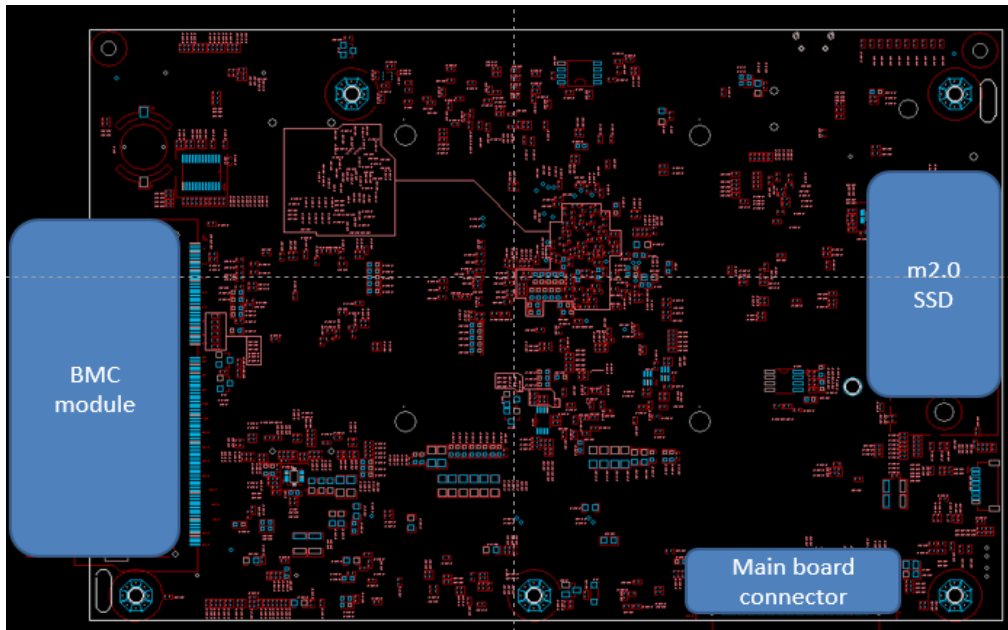
The x86 CPU module is a 12 layer PCB and supports the communication processor and associated components for the CPU subsystem. The communication processor utilized is an Intel® Xeon® processor D series communication processor. The Intel® Xeon® processor D product family is the first Intel® Xeon® SoC 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

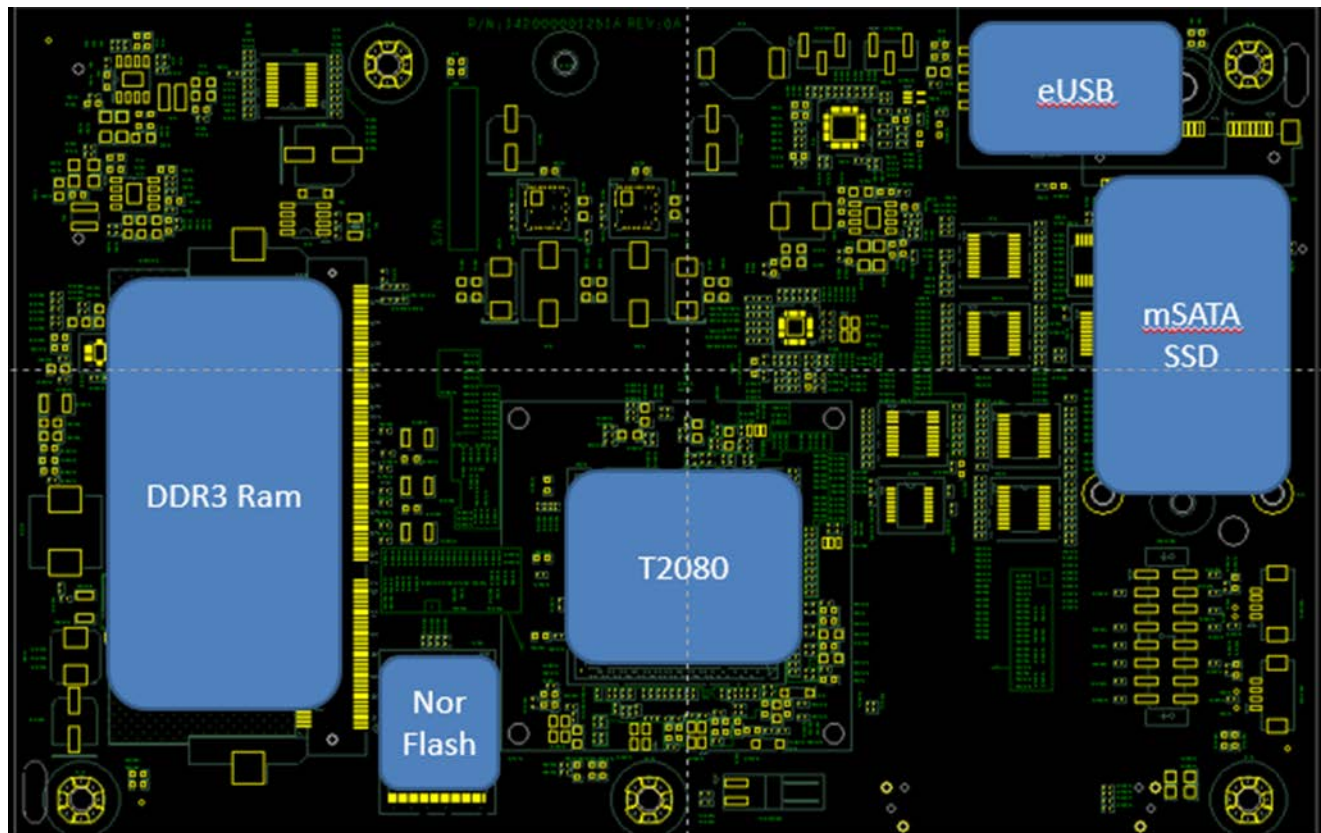
X86 Broadwell-DE CPU PCB major components

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	AS0A626-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

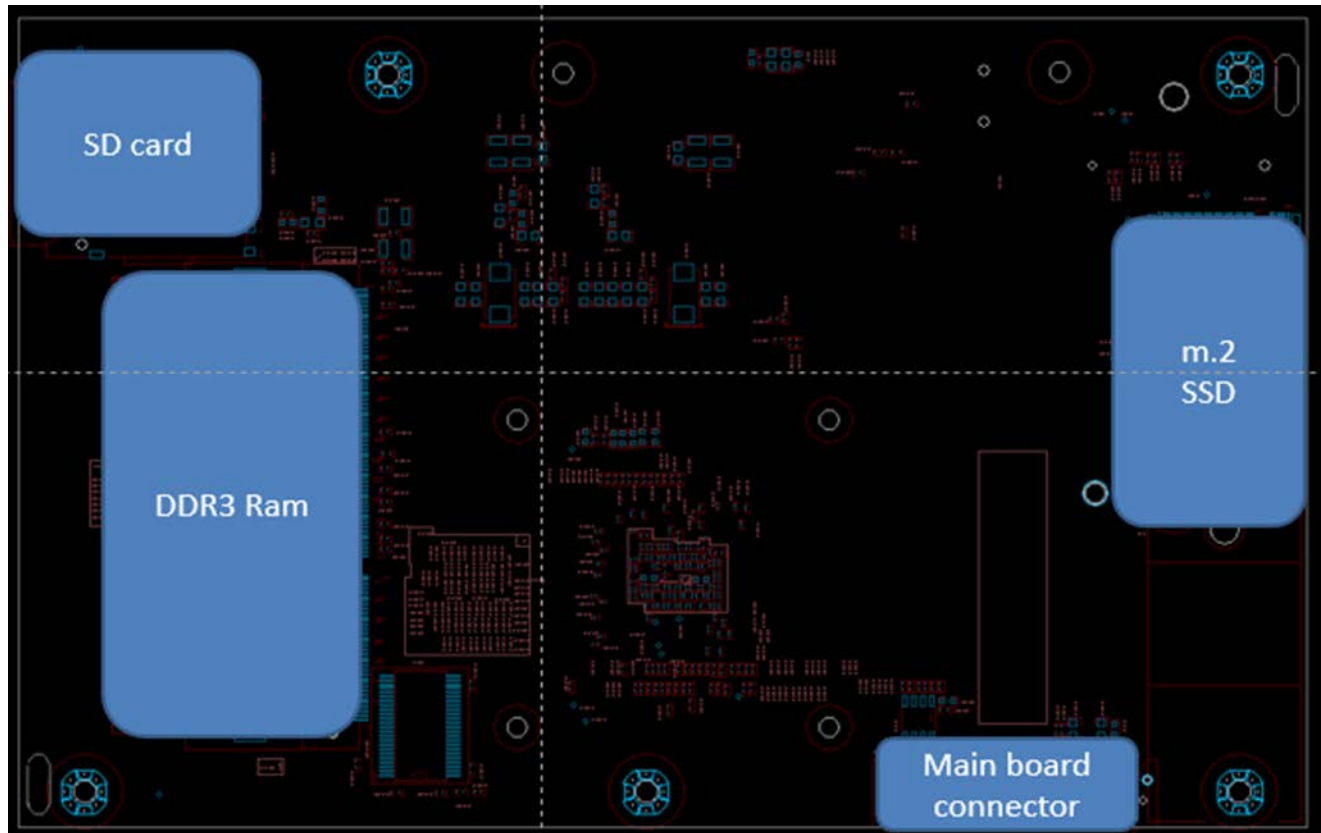
T2080 CPU Module PCB

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

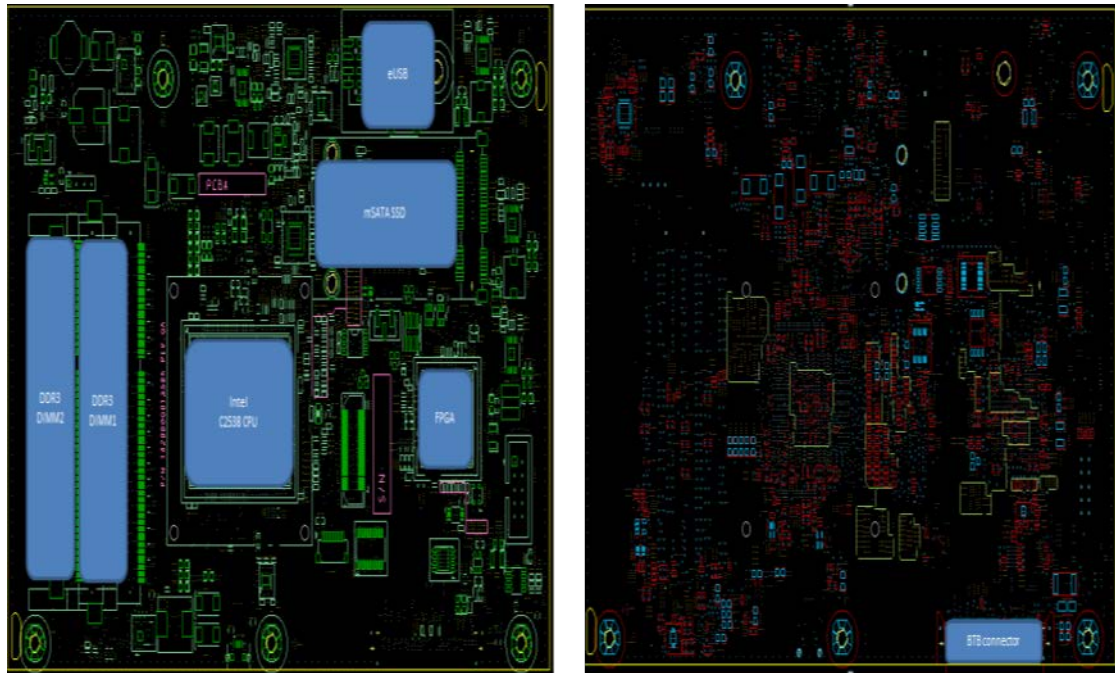
CPU PCB major components

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

	Inches	Millimeters
Length	7.33	186
Width	4.86	123.5

X86 Rangeley CPU PCB major components

Description	Manufacturer	Part Number
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

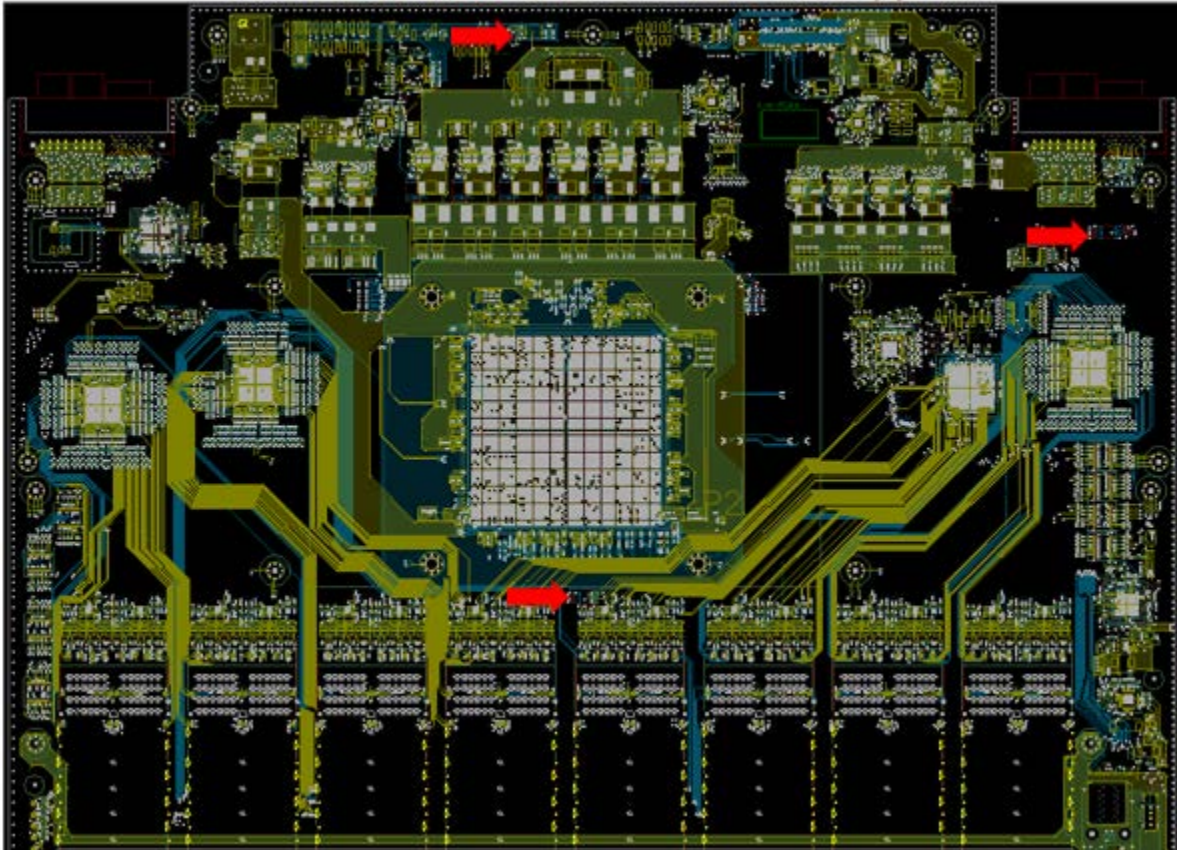
120 Pin CPU PCB to Main PCB Connector

ES7632BT 120 Pin	ES7632BT 120 Pin	General Function	CONNECTOR				General Function	ES7632BT 120 Pin	ES7632BT 120 Pin
			IN/OUT	PIN #	PIN #	IN/OUT			
(D)M75BD_SCLK	IN	TEMP_ANODE	IN/OUT	119	120	OUT	I2C_2_SCL	IN	I2C_1_SCL
(O)M75BD_SDA	IN/OUT	TEMP_CATHODE	IN/OUT	117	118	IN	MGMT_RS232_DCD	IN	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	IN/OUT	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	OUT	PCIE_OOB_TX_P
MPHY_CPU_SGMII_RX_0_S_P	IN	MPHY_SGMII_RX_P	IN	105	106	OUT	MGMT_RS232_DTR	OUT	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	IN	PCIE_OOB_RX_P
Not Used		INTERRUPT(MPHY)	IN	99	100	OUT	THRMTRIP#	IN	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	IN	UART1_RX
IP_UART0_SOUT	IN	GPIO	IN/OUT	93	94	IN	MGMT_RS232_CTS	IN	UART1_CTS
CPLD23_INT_CPU	IN		IN	91	92	IN	INTERRUPT	IN	CPU_TDI
1PPS_CPU	IN	GPIO	IN/OUT	89	90	OUT	MGMT_RS232_TXD	OUT	UART1_TX
GND		GND	-	87	88	IN	INTERRUPT	IN	MAC_INT_L
GND		GND	-	85	86	-	GND		GND
CPU_XFI_BC_TX_0P	OUT	DIFF_PAIR_TX_0_P	OUT	83	84	IN/OUT	MGMT_USB_N	IN/OUT	USB2_N
CPU_XFI_BC_TX_0N	OUT	DIFF_PAIR_TX_0_N	OUT	81	82	IN/OUT	MGMT_USB_P	IN/OUT	USB2_P
GND		GND	-	79	80	-	GND		GND
GND		GND	-	77	78	OUT	HWIO	OUT	UCD9090_ALERT_L
CPU_XFI_EC_RX_0P	IN	DIFF_PAIR_RX_0_P	IN	75	76	OUT	MGMT_RS232_RTS	OUT	UART1_RTS
CPU_XFI_EC_RX_0N	IN	DIFF_PAIR_RX_0_N	IN	73	74	OUT	HWIO	OUT	RESET_SYS_CPLD
GND		GND	-	71	72	IN/OUT	GPIO	OUT	CPU_TMS
GND		GND	-	69	70	OUT	JTAG_TRST#	OUT	CPU_JTAG_RST
CPU_XFI_EC_RX_2P	IN	DIFF_PAIR_RX_1_P	IN	67	68	OUT	HWIO	IN	PI014_RST
CPU_XFI_EC_RX_2N	IN	DIFF_PAIR_RX_1_N	IN	65	66	IN/OUT	GPIO	OUT	CPU_TDO
GND		GND	-	63	64	IN/OUT	GPIO	OUT	CPU_TCK
GND		GND	-	61	62	IN/OUT	GPIO	OUT	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	IN	SYS_CPLD_INT_CPU
GND		GND	-	53	54	OUT	HWIO	IN	USB1_PWRFAULT
CPU_PEX_PCIEA_TX_0_P	OUT	PCIE_TX_2_P	OUT	51	52	IN	RESET_MODULE_REQ#	IN	Manu_RST
CPU_PEX_PCIEA_TX_0_N	OUT	PCIE_TX_2_N	OUT	49	50	OUT	I2C_1_SCL	OUT	I2C_0_SCL
GND		GND	-	47	48	IN/OUT	I2C_1_SDA	IN/OUT	I2C_0_SDA
GND		GND	-	45	46	OUT	RESET_SYS_REQ#	OUT	RESET_MAC
CPU_PEX_PCIEA_TX_1_N	OUT	PCIE_TX_3_P	OUT	43	44	IN	SYS_PWR_GOOD	OUT	CPU_THERMALTRIP
CPU_PEX_PCIEA_TX_1_P	OUT	PCIE_TX_3_N	OUT	41	42	OUT	HWIO	OUT	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	OUT	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	OUT	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	IN	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	IN	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	IN	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	IN	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

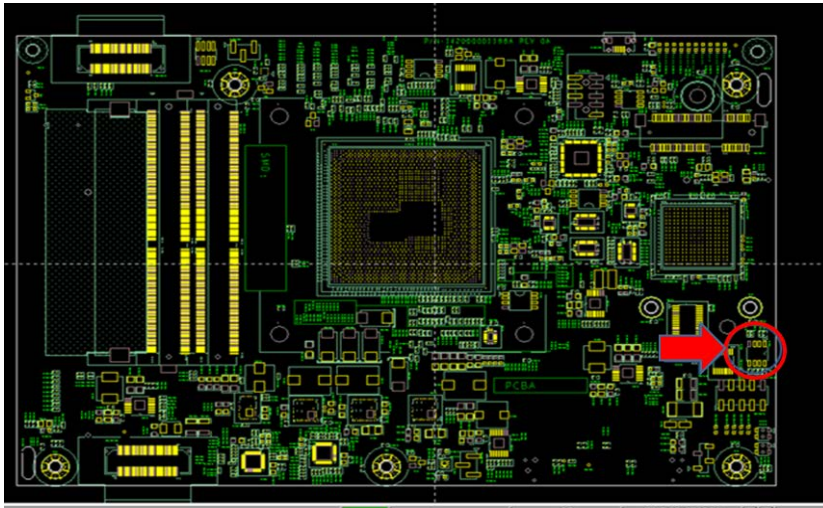
Thermal Monitoring

The AS7800-64X contains 4 system fans used to cool device. The system is also designed with several temperature sensors to detect temperature at several locations within the system. The system supports three temperature sensors on the main PCB board and one temperature sensor on the CPU board.

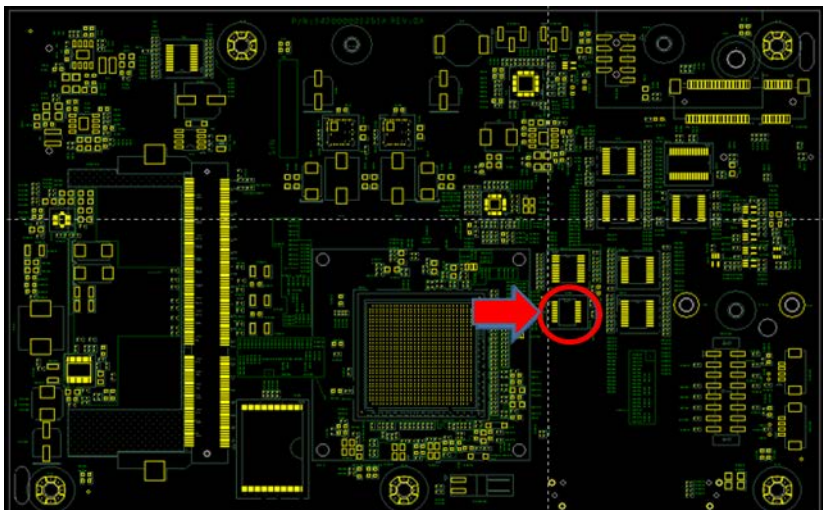
Main PCB Thermal sensor locations



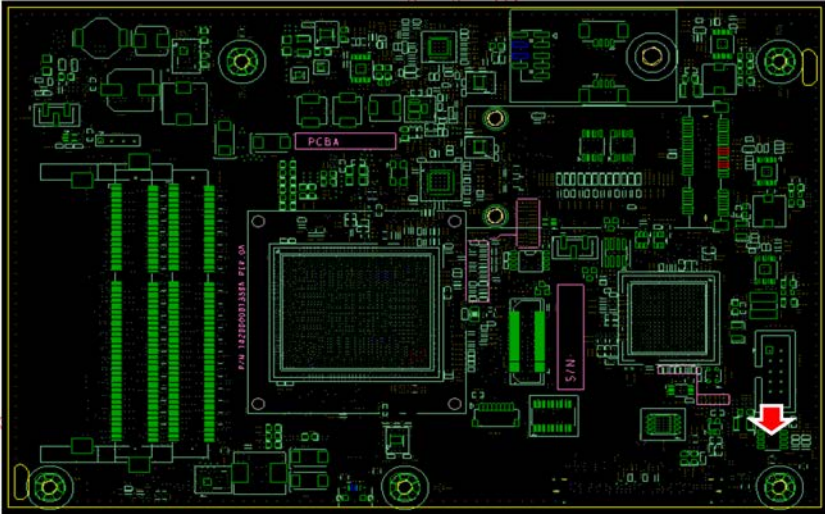
X86 Broadwell-DE CPU Module thermal sensor location



T2080 CPU Module thermal sensor location



X86 Rangeley CPU Module thermal sensor



Software Support

The AS7800-64X supports a base software package composed of the following components:

BIOS support

The AS7800-64X Supports AMI AptioV BIOS version A01 or greater with the x86 CPU module

U-Boot

The AS7800-64X Supports U-Boot version 1.4.0.2 or greater with the T2080 CPU module

ONIE

The AS7800-64X supports ONIE version 2014.08 or greater with the T2080 CPU Module

Open Network Linux

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

Specifications

Power Consumption

The total estimated system power consumption of the AS7800-64X is ~795 Watts. This is based upon worst case power assumptions for traffic, optics used (5W per port), and environmental conditions. Typical power consumption will be less.

Environmental

- 0 to 40 Degrees C operating range
- -40 to 40 Degrees C storage temperature 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)