Technical Information –Jumpers, Connectors and Status LEDs
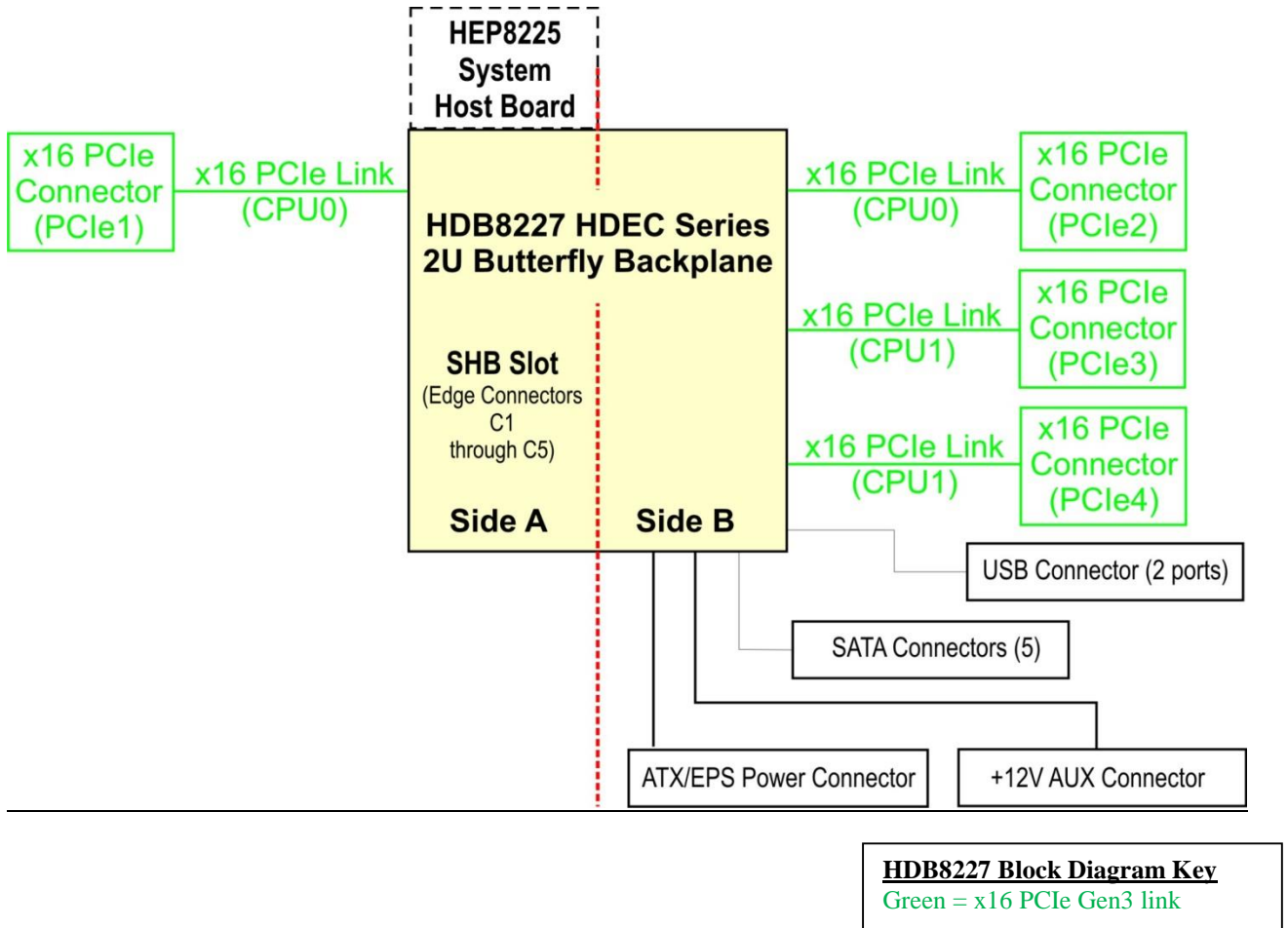## HDB8227 (8227) HDEC Series 2U Butterfly Format Backplane

Block Diagram

**HDB8227 Block Diagram Key**
Green = x16 PCIe Gen3 link

NOTE: The HDB8227 backplane is optimized for use with HDEC Series SHBs such as the Trenton HEP8225. Native PCI Express 3.0 root links from the HEP8225 processors drive the backplane's four PCIe option card slots. PCI Express 3.0 link retimers between the processors and the card slots ensure that reliable link communications are established between the CPUs and plug-in cards.

The backplane supports industry standard PCI Express 3.0, 2.0, and 1.1 plug-in cards having x1, x4, x8 or x16 link widths. The HEP8225 processors will auto-negotiate link communication between the CPUs and the plug-in cards to establish a communication link that best matches the plug-in card's specific interface type and link width.

The PCIe1 card slot may not be accessible in certain applications. Accessibility depends on the SHB cooling solution used in the application and the type of option card installed in the PCIe1 slot.

Layout Diagram – 8227-038
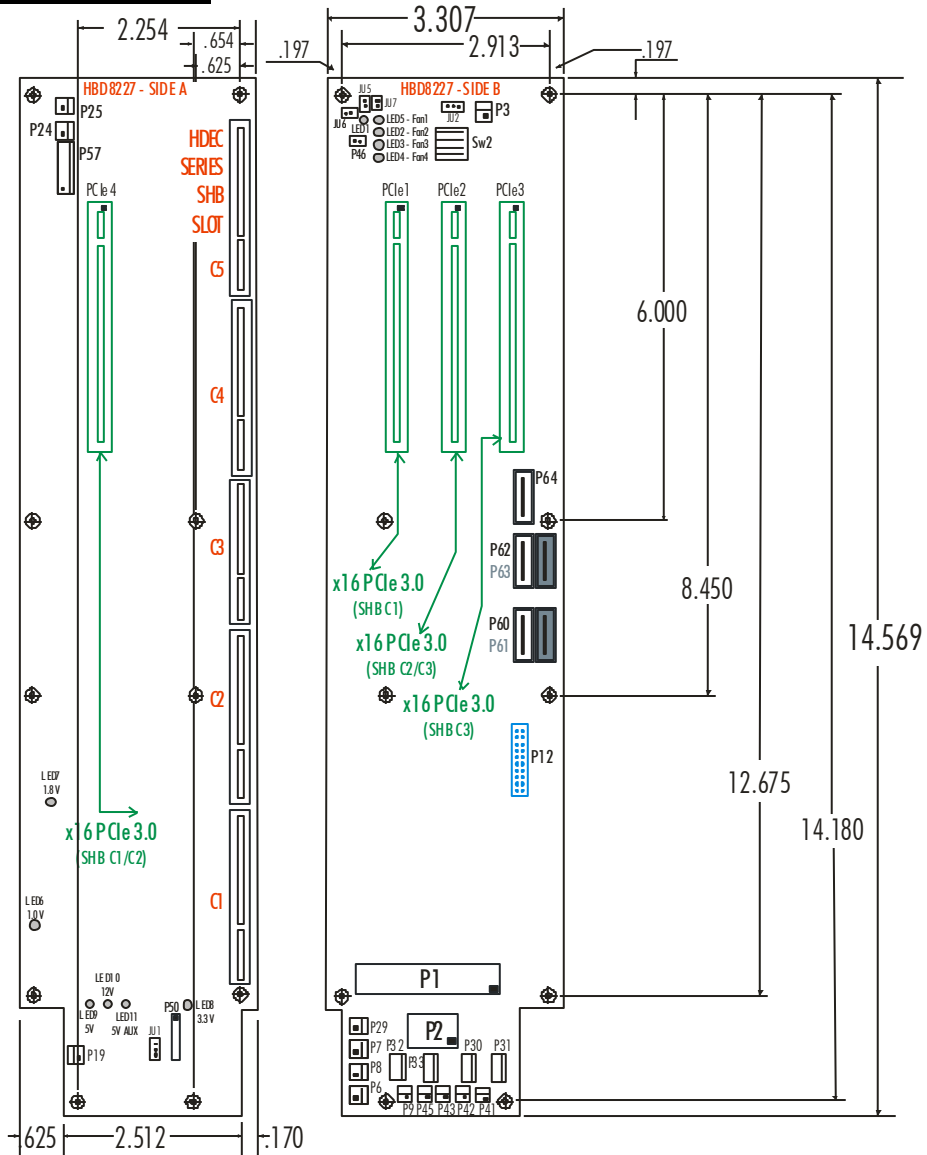
Notes:

1. Backplane layout diagram dimensions are in inches.
2. The vertical power connectors shown in the layout diagram represents backplane model number 8227-038.
3. The option card slot connector spacing is 0.800 inches.
4. The nominal backplane thickness is 0.080 inches.
5. Mounting holes have a .156" diameter.
6. USB, SATA, Ethernet connectivity, POST code status and system diagnostics provided by the HEP8225 SHB.
7. Refer to the status LED section for functional definition.

8227-038 Configuration Jumpers

The setup of the configuration jumpers on the backplane is described below.

NOTE: Refer to the backplane layout drawing for the pin 1 position of the jumpers and connectors as indicated by the black square (▪).

Jumper	Description

JU1   **Microcontroller Enable** (Factory Use Only)
3-pin Jumper, Molex #22-03-2031
Jumper default position is unpopulated

Pin	Signal
1	PERSET#
2	MCLR
3	Vpp

JU2   **PIC Power Select Enable** (Factory Use Only)
3-pin Jumper, Molex #22-03-2031
Jumper default position is unpopulated

Pin	Signal
1	+3.3V
2	PICPOWER
3	Vdd

JU5   **System Fan Control Enable**
2-pin Jumper, Tyco (AMP) #5-146280-2
Jumper default position is populated. Remove jumper to have system fans run continuously at full speed.

Pin	Signal
1	OE
2	GND

JU6   **4-Wire System Fan Enable**
2-pin Jumper, Tyco (AMP) #5-146280-2
Jumper default position is populated. Remove jumper for systems that use two or three-wire fans.

Pin	Signal
1	S (4-wire system fan IN)
2	GND

JU7   **SHB Control of System Fans**
2-pin Jumper, Tyco (AMP) #5-146280-2
Jumper default position is populated. Remove jumper for systems that system fan control form non-SHB signal sources.

Pin	Signal
1	S (SHB system fan control IN)
2	GND

8227-038 Connectors

NOTE: Pin 1 on the connectors is indicated by the square pad on the PCB.

P1   -   ATX/EPS Power Connector
24 pin vertical dual row, Molex #44206-0007

Pin	Signal	Pin	Signal
1	+3.3V	13	+3.3V
2	+3.3V	14	NC
3	GND	15	GND
4	+5V	16	PSON#
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWRGD	20	NC
9	+5VAUX	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

P2   -   +12V Power Connector
8 pin vertical dual row, Molex #44206-0005

Pin	Signal	Pin	Signal
1	Gnd	8	+12V
2	Gnd	7	+12V
3	Gnd	6	+12V
4	Gnd	5	+12V

P3   -   LED Dimmer Connector
2 pin vertical single row header, Tyco (AMP) #640456-2

Pin	Signal
1	PWM LED
2	+12V

P6   -   Power-On Connector (PSON)
2 pin vertical single row header, Tyco (AMP) #640456-2

Pin	Signal
1	Gnd
2	PSON#

P7   -   Power Button Connector
2 pin vertical single row header, Tyco (AMP) #640456-2

Pin	Signal
1	Gnd
2	PWRBT#

P8   -   Reset Connector
2 pin vertical single row header, Tyco (AMP) #640456-2

Pin	Signal
1	Gnd
2	SHB_RST#

8227-038 Connectors (continued)

P9   -   Power Good Connector
 2 pin vertical single row header, Tyco (AMP) #640456-2

Pin	Signal
1	PWRGD
2	+5V

P12 -   Universal Serial Bus 3.0 (USB) Connector
 19 pin dual row header, LOTES #ABA-USB-050-K04

Pin	Signal	Pin	Signal
1	+5V-USB0 (VBUS1)	11	USB1-DP
2	USB0-SRXN	12	USB1-DN
3	USB0-SRXP	13	Gnd-USB1
4	Gnd-USB4	14	USB1-STXP
5	USB0-STXN	15	USB1-STXN
6	USB0-STXP	16	Gnd-USB1
7	Gnd-USB0	17	USB1-SRXP
8	USB0-DN	18	USB1-SRXN
9	USB0-DP	19	+5V-USB1 (VBUS19)
10	NC		

P19 -   I2C Slot Header (Factory Use Only)
 3 pin single row header, Molex #22-23-2031

Pin	Signal
1	I2C_Header_SDA
2	I2C_Header_SCL
3	Gnd

P24 -   Temperature Sensor 0 Connector
 2 pin single row header, Tyco (AMP) #640456-2

Pin	Signal
1	Gnd
2	TEMPSENSE0

P25 -   Temperature Sensor 1 Connector
 2 pin single row header, Tyco (AMP) #640456-2

Pin	Signal
1	Gnd
2	TEMPSENSE1

P29 -   Clear CMOS Connector
 2 pin single row header, Tyco (AMP) #640456-2

Pin	Signal
1	Gnd
2	CMOSCLR#

NOTE: To clear the system host board's CMOS using backplane connector P29, power down the system and install the P29 jumper. Wait for at least two seconds, remove the jumper and turn the power on. Clearing CMOS on the System host board will not result in a checksum error on the following boot. If you want to change a BIOS setting, you must press DEL or the F2 key during POST to enter the SHB's BIOS setup after clearing CMOS.
NOTE 2: Backplane Clear CMOS capability is a planned capability for the HDEC specification, to be implemented on future SHB products. The HEP8225 SHB does not support this capability.
For full P29 connector support information, contact Trenton.

8227-038 Connectors (continued)

P30,   **12V Chassis Fan Connectors (4)**
P31,   4 pin right-angle header, Molex #47053-1000
P32,   <u>Pin</u>   <u>Signal</u>
P33   1   PWMn_3W (n=0,1,2,or 3)
             2   +12V
             3   TACHn
             4   PWMn_4W
                   Note: 0=P30, 1=P31, 2=P32, 3=P33

P41 -   **Fan Alarm LED Connector**
             2 pin single row header, Tyco (AMP) #640456-2
             <u>Pin</u>   <u>Signal</u>
             1   FF_LED
             2   +5V

P42 -   **Temp Alarm LED Connector**
             2 pin single row header, Tyco (AMP) #640456-2
             <u>Pin</u>   <u>Signal</u>
             1   TEMP_LED
             2   +5V

P43 -   **Voltage Alarm LED Connector**
             2 pin single row header, Tyco (AMP) #640456-2
             <u>Pin</u>   <u>Signal</u>
             1   VOLT_LED
             2   +5V

P45 -   **HDD LED Connector**
             2 pin single row header, Tyco (AMP) #640456-2
             <u>Pin</u>   <u>Signal</u>
             1   HDD_LED
             2   +5V

P46 -   **3.3V AUX Card Slot Enable Connector**
             2 pin single row header, Tyco (AMP) #640456-2
             <u>Pin</u>   <u>Signal</u>
             1   3.3V_AUX
             2   +3.3V
                   Installing jumper P46 enables +3.3V AUX
                   on all the PCIe card slots

P50 -   **Micro-Controller Programing Port** (Factory Use Only)
             5 pin single row header, Tyco (AMP) #87224-5
             <u>Pin</u>   <u>Signal</u>
             1   Vpp
             2   Vdd
             3   Gnd
             4   ICSPDAT
             5   ICSPCLK

8227-038 Connectors (continued)

P57 - **Front or Rear Panel LED/Button Connector** (Factory Use Only)
7 pin single row header, Tyco (AMP) # 640456-7

Pin	Signal
1	Common from panel
2	Button position 1
3	Button position 2
4	Button position 3
5	Button position 4
6	Button position 5
7	Button position 6

P60, **SATA Connectors (4)**
P61, 7 pin vertical connector with latch, Molex # 67800-8005
P62, P60 = Backplane SATA0, P61 = Backplane SATA1
P63, P62 = Backplane SATA2, P63 = Backplane SATA3
P64 P64 = Backplane SATA4

Pin	Signal
1	Gnd
2	TXn_p
3	TXn_n
4	Gnd
5	RXn_p
6	RXn_n
7	Gnd

n = 0, 1, 2, 3, or 4

8227-038 Diagnostic LED Status Indicators

LED Reference Designation	Backplane Silkscreen Wording	LED On	LED Off
LED1 (Red)	SHB Detect	SHB is not properly seated in its socket	Normal operation – SHB Detected
LED2, 3, 4 & 5 (Green)	FAN2, FAN3, FAN4, and FAN1	System fan present	System fan not present
LED6 (Green)	1V	Acceptable voltage level	Voltage level not acceptable
LED7 (Green)	1.8V	Acceptable voltage level	Voltage level not acceptable
LED8 (Green)	3.3V	Acceptable voltage level	Voltage level not acceptable
LED9 (Green)	5V	Acceptable voltage level	Voltage level not acceptable
LED10 (Green)	12V	Acceptable voltage level	Voltage level not acceptable
LED11 (Green)	5V AUX	Acceptable voltage level	Voltage level not acceptable