

Metabee ZD Series High-Speed Differential Backplane Connector System Catalog

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1. Introduction

The Metabee ZD series is a high-speed, differential backplane connector system. It meets bandwidth requirements ranging from 6.25Gbps to 20Gbps.

The ZD series connector system features a highly reliable dual beam contact system with fully encompassing grounds dedicated to each differential pair. In addition, the ZD series connector footprint is optimized for routability and system performance with a 1.50mmx2.50mm [.059inchx.098inch] row-to-column grid. The connector design has a durable mating interface with built-in pre-alignment and polarization.

2. Features:

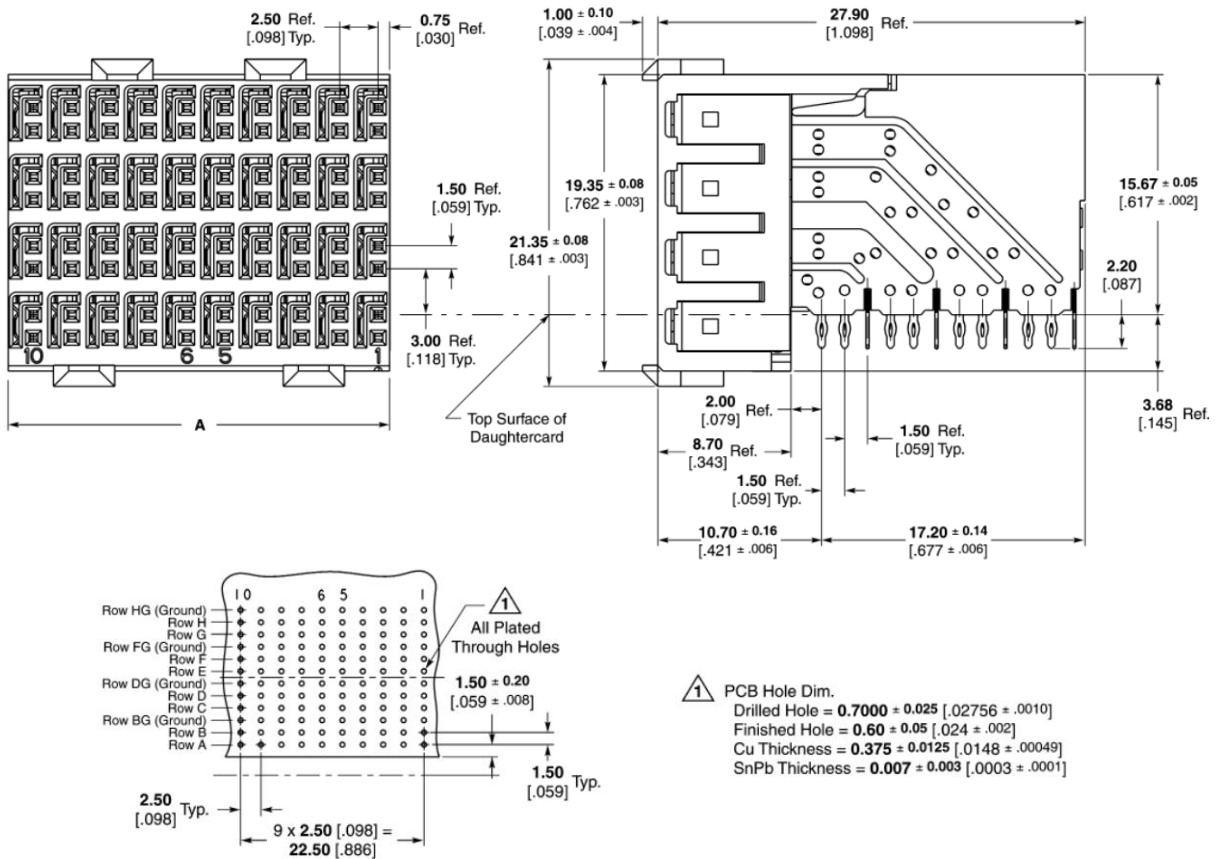
- Mechanical and environmental performance is compliant with the specifications of the standard **IEC 61076-4-101**;
- Designed specifically for high-speed differential applications;
- High density, small size;
- Meet bandwidth requirements ranging from **25Gbps to 56Gbps**;
- 100Ω matched differential impedance for ensuring signal integrity;
- L-shaped shielding structure for effectively reducing crosstalk;
- A modular connector system with a standard module size of 25.00mm [.984inch];
- The contact pitch is 1.50mm [.059inch] within a pair and 3.00mm [.118inch] pair to pair within a column, the column-to-column pitch is 2.50mm [.098inch];
- Card Pitch is less than 20.32mm [.800inch] for 2-pair and 3-pair headers and 25.40mm [1.000inch] for 4-pair headers;
- Available in three versions: **2, 3, and 4 pairs**;
- Available in vertical and right-angle press-fit pin headers and right-angle and vertical press-fit receptacles;
- Optimized footprint for improved electrical performance and ease of trace routing (unobstructed routing channels on both daughtercard and backplane);
- The pin header and receptacle share the same footprint, which simplifies the PC board layout;
- Designed to meet the Telcordia requirements;
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476.

3. Key Specifications:

Product Type:	High-speed Board-to-board Connector
Contact Material:	Copper Alloy
Housing Material:	Glass-filled polyester, 94V-0 rated
Contact Area Finish:	0.80 μ m Au min. over 1.3 μ m Ni min.
Compliant Pin Finish:	0.8 μ m SnPb min. over 1.3 μ m Ni min.
Current Rating:	0.7A per signal contact, fully energized 2A per shield, all shields energized
Operating Voltage:	500V AC maximum, signal to signal 250V AC maximum, signal to ground
Temperature:	-65°C to 105°C
Mating Force:	0.38N maximum per contact (signal =1 contact, ground = 1 contact)
Durability:	250 cycles

4. Part Numbers

(1) 4 Pair Right Angle Receptacle Assemblies

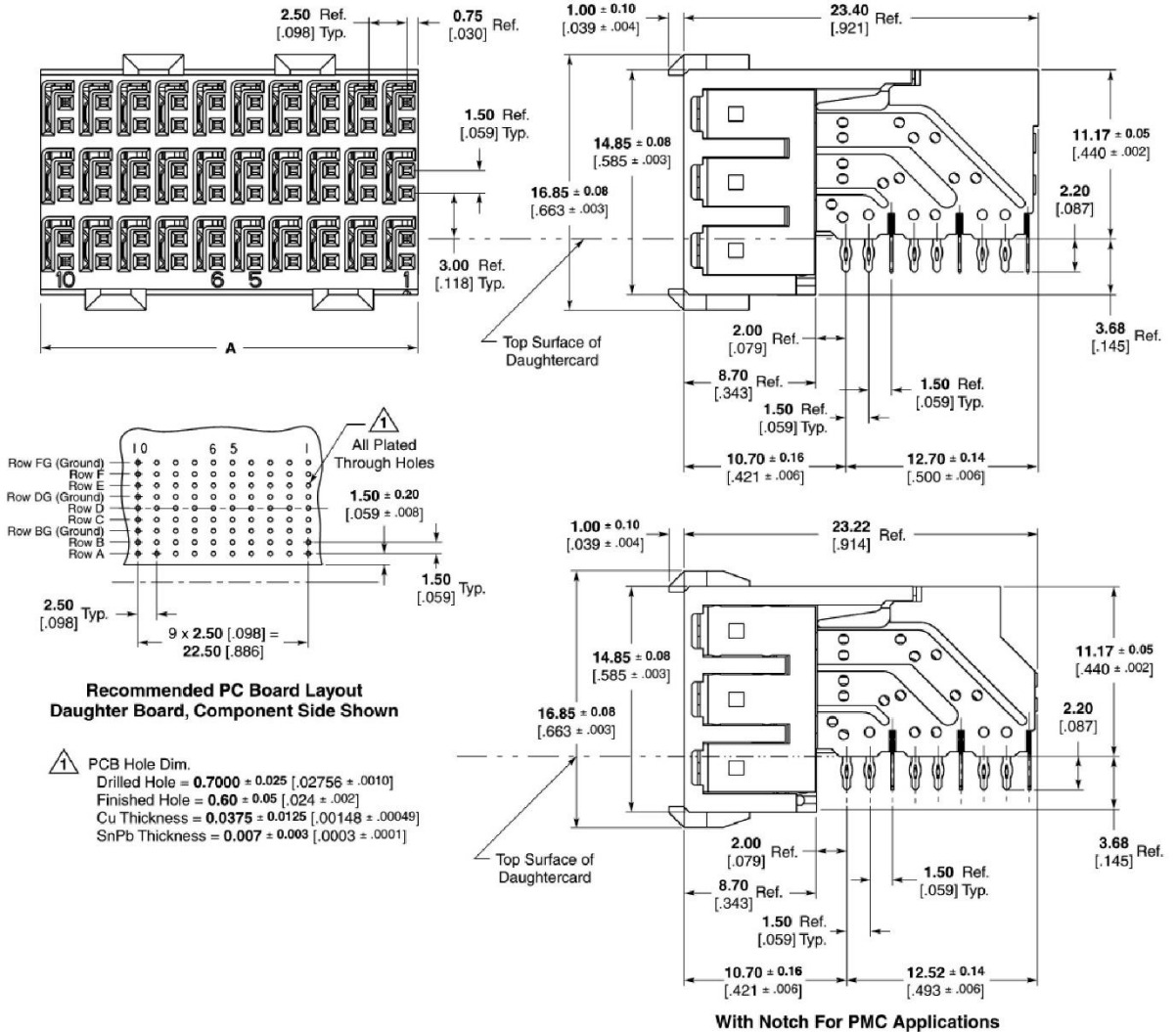


**Recommended PC Board Layout
 Daughter Board, Component Side Shown**

Part Number	Column Count	Module Length	Signals	Grounds	Mates With
1469251-1	5	12.40mm/.488inch	40	20	1469252-1
6469001-1	10	25.00mm/.984inch	80	40	6469002-1, 6469046-1, 6469074-1, 6469048-1
6469286-1	12	30.00mm/1.181inch	96	48	6469287-1, 6469375-1
6469294-1	15	37.50mm/1.476inch	120	60	6469296-1
6469061-1	20	50.00mm/1.969inch	160	80	6469062-1, 6469099-1

Note: All part numbers are RoHS compliant. Tin-lead parts are RoHS compliant through an exemption for lead-in press-fit connectors.

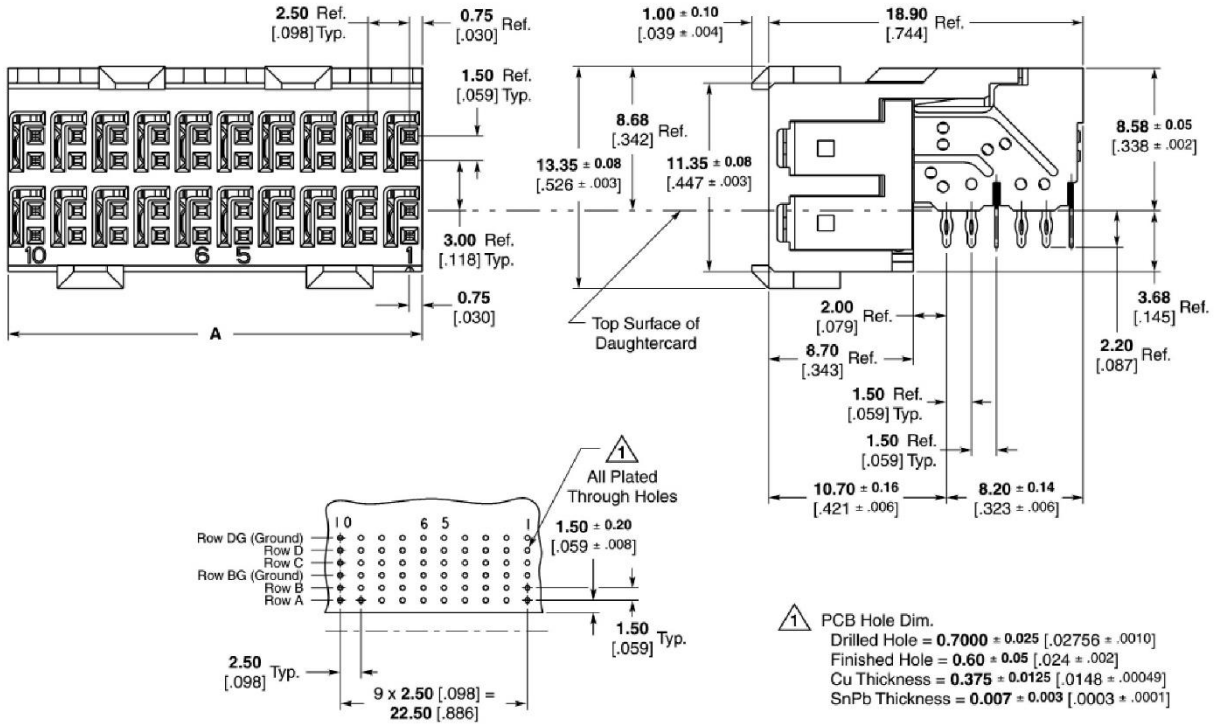
(2) 3 Pair Right Angle Receptacle Assemblies



Part Number	Column Count	Module Length	Signals	Grounds	Mates With
6469081-1	10	25.00mm/.984inch	60	30	6469083-1, 6469085-1, 6469183-1
1469514-1	10	25.00mm/.984inch	60	30	6469083-1, 6469085-1, 6469183-1
6469179-1	15	37.50mm/1.476inch	90	90	6469152-1

Note: All part numbers are RoHS compliant. Tin-lead parts are RoHS compliant through an exemption for lead-in press-fit connectors.

(3) 2 Pair Right Angle Receptacle Assemblies

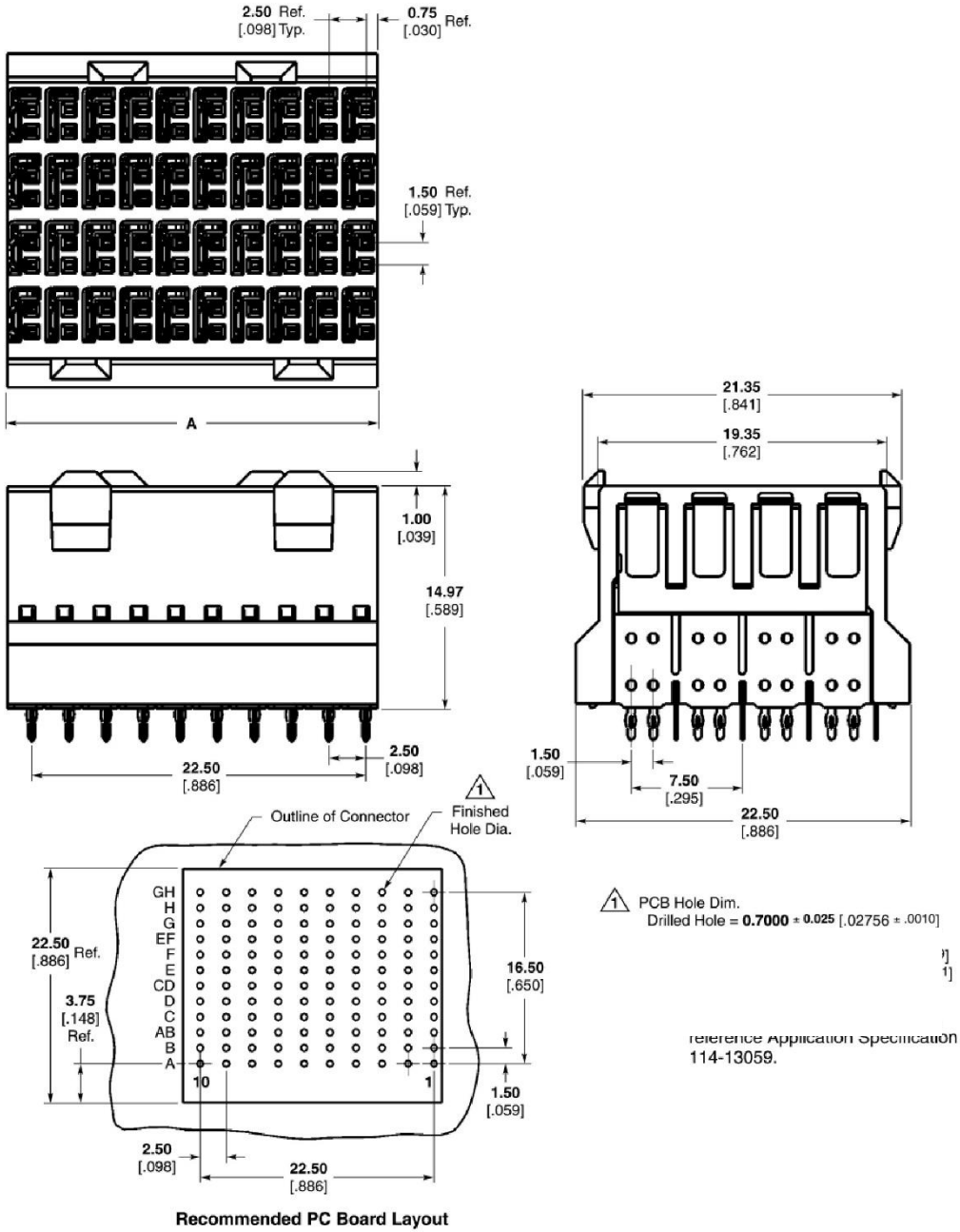


**Recommended PC Board Layout
 Daughter Board, Component Side Shown**

Part Number	Column Count	Module Length	Signals	Grounds	Mates With
6469028-1	10	25.00mm/.984inch	40	20	6469025-1, 6469076-1, 6469169-1
6469077-1	20	50.00mm/1.969inch	80	40	6469078-1, 6469101-1

Note: All part numbers are RoHS compliant. Tin-lead parts are RoHS compliant through an exemption for lead-in press-fit connectors.

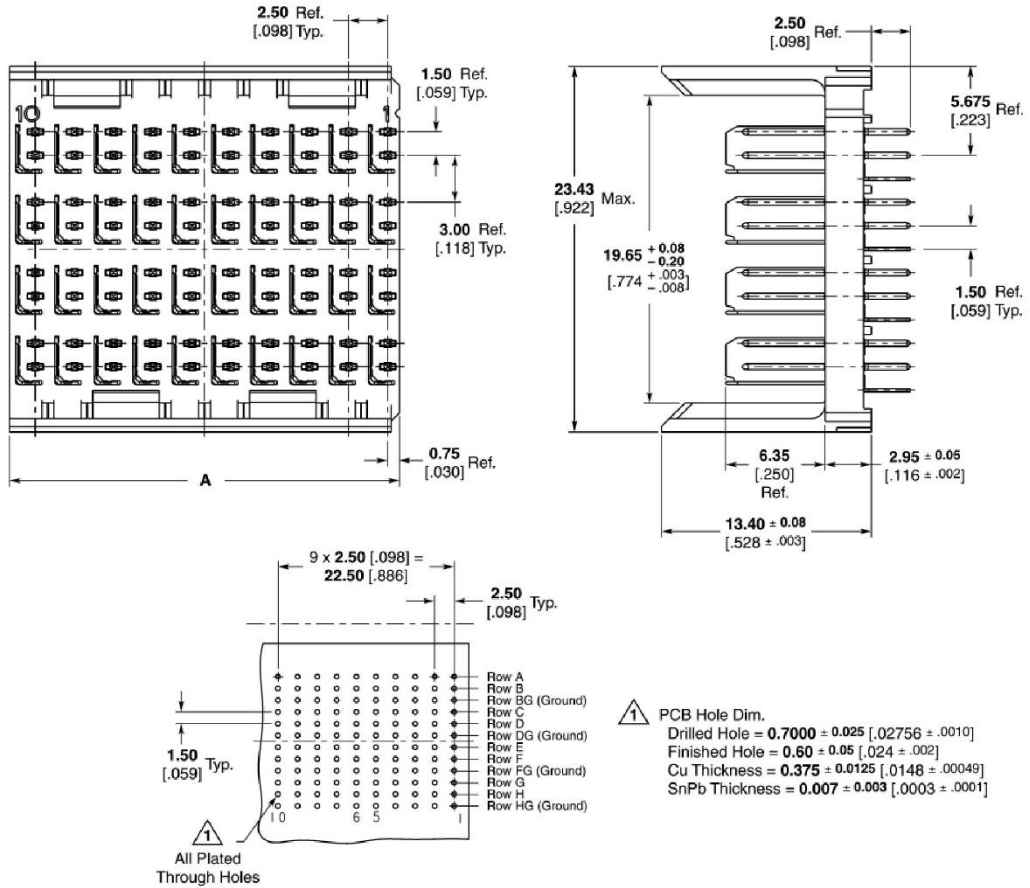
(4) 4 Pair Vertical Receptacle Assemblies



Part Number	Column Count	Module Length	Signals	Grounds	Mates With
1469362-1	10	25.00mm/.984inch	80	40	6469002-1, 6469046-1, 6469074-1, 6469048-1

Note: All part numbers are RoHS compliant. Tin-lead parts are RoHS compliant through an exemption for lead-in press-fit connectors.

(5) 4 Pair Vertical Pin Header Assemblies

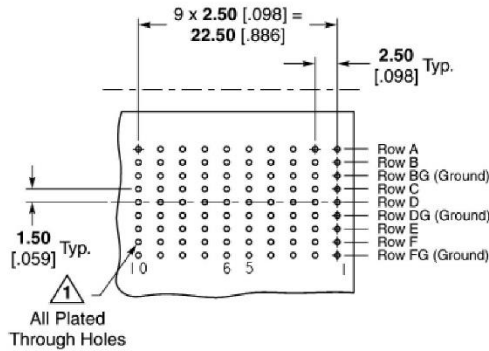
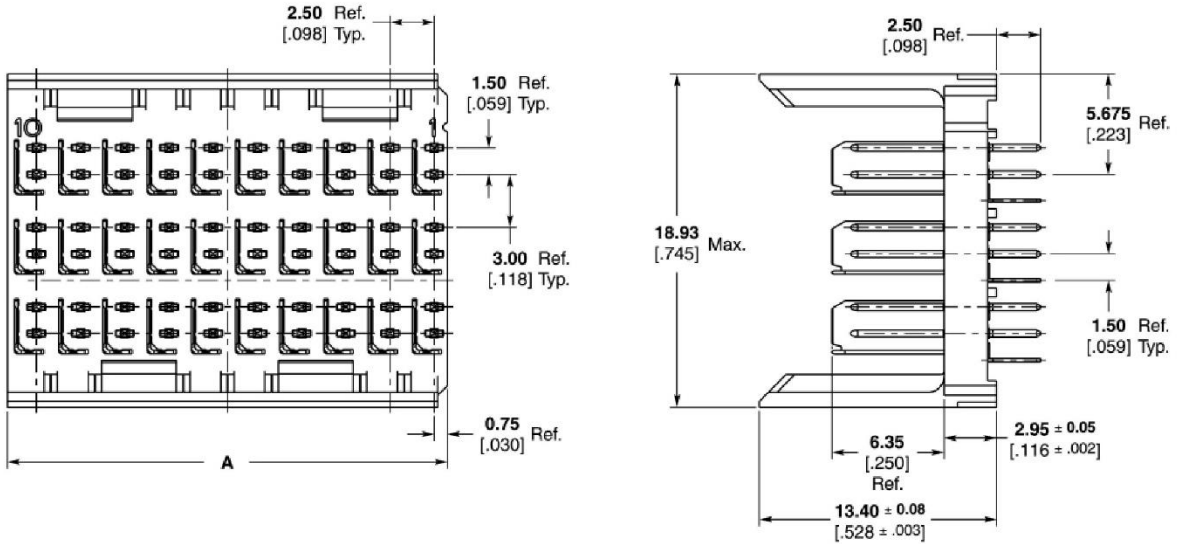


**Recommended PC Board Layout
 Backplane Component Side Shown**

Part Number	Tall Length	Mating Pin Length	Column Count	Module Length	Signals	Grounds	Mates With
6469252-1	2.50mm/.098inch	5.30mm/.209inch	5	12.40mm/.488inch	40	20	1469251-1
6469002-1	2.50mm/.098inch	5.30mm/.209inch	10	25.00mm/.984inch	80	40	6469001-1, 1469362-1
6469046-1	2.50mm/.098inch	5.30mm/.209inch	10	25.00mm/.984inch	80	40	6469001-1, 1469362-1
6469074-1	1.80mm/.071inch	5.30mm/.209inch	10	25.00mm/.984inch	80	40	6469001-1, 1469362-1
6469287-1	2.50mm/.098inch	5.30mm/.209inch	12	30.00mm/1.181inch	96	48	6469286-1
6469296-1	2.50mm/.098inch	5.30mm/.209inch	15	37.50mm/1.476inch	120	60	6469294-1
6469062-1	2.50mm/.098inch	5.30mm/.209inch	20	50.00mm/1.969inch	160	80	6469061-1
6469099-1	1.80mm/.071inch	5.30mm/.209inch	20	50.00mm/1.969inch	160	80	6469061-1

Note: All part numbers are RoHS compliant. Tin-lead parts are RoHS compliant through an exemption for lead-in press-fit connectors.

(6) 3 Pair Vertical Pin Header Assemblies



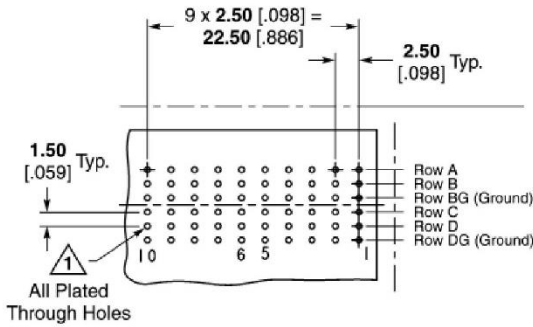
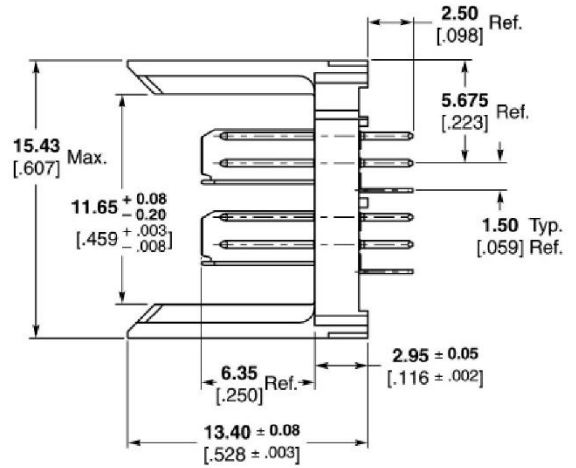
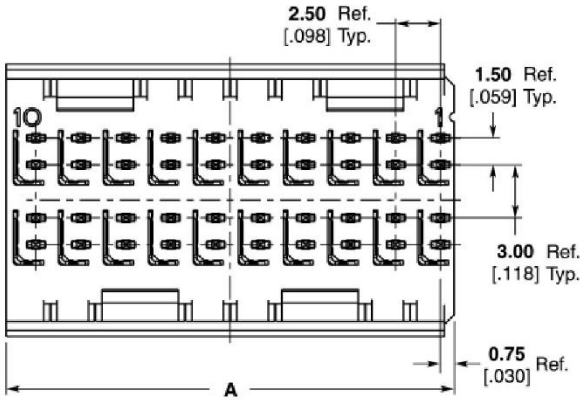
⚠ PCB Hole Dim.
 Drilled Hole = 0.7000 ± 0.025 [.02756 ± .0010]
 Finished Hole = 0.60 ± 0.05 [.024 ± .002]
 Cu Thickness = 0.0375 ± 0.0125 [.00148 ± .00049]
 SnPb Thickness = 0.007 ± 0.003 [.0003 ± .0001]

**Recommended PCB Board Layout
 Backplane, Component Side Shown**

Part Number	Tail Length	Mating Pin Length	Column Count	Module Length	Signals	Grounds	Mates With
6469083-1	2.50mm/.098inch	5.30mm/.209inch	10	25.00mm/.984inch	60	30	6469081-1
6469085-1	1.80mm/.071inch	5.30mm/.209inch	10	25.00mm/.984inch	60	30	1469514-1
6469152-1	2.50mm/.098inch	5.30mm/.209inch	15	37.50mm/1.476inch	30	15	6469179-1

Note: All part numbers are RoHS compliant. Tin-lead parts are RoHS compliant through an exemption for lead-in press-fit connectors.

(7) 2 Pair Vertical Pin Header Assemblies



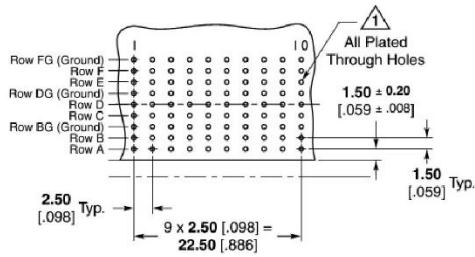
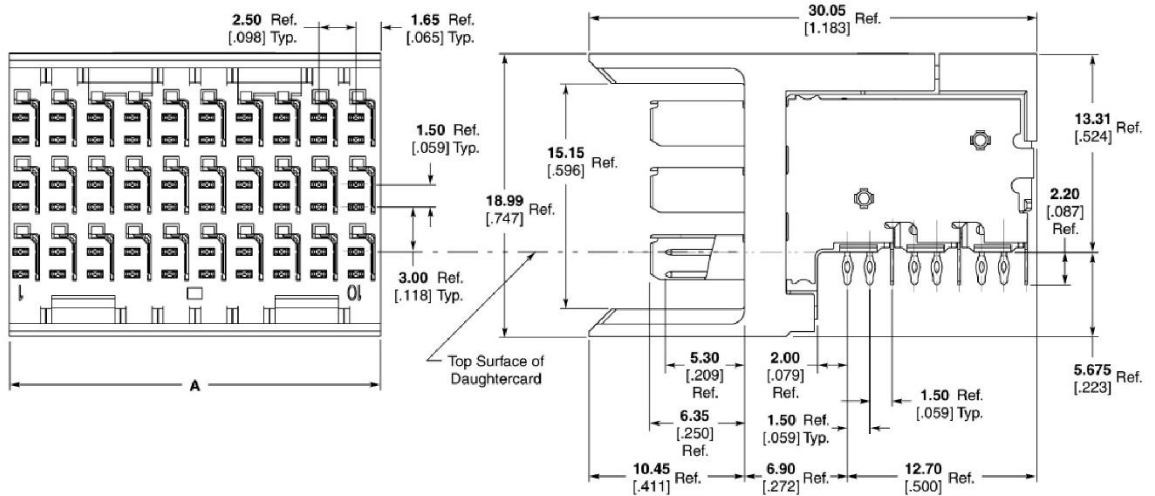
Recommended PC Board Layout Backplane

- 1 PCB Hole Dim.
 Drilled Hole = 0.7000 ± 0.025 [.02756 ± .0010]
 Finished Hole = 0.60 ± 0.05 [.024 ± .002]
 Cu Thickness = 0.375 ± 0.0125 [.0148 ± .00049]
 SnPb Thickness = 0.007 ± 0.003 [.0003 ± .0001]

Part Number	Tall Length	Mating Pin Length	Column Count	Module Length	Sign als	Gro unds	Mates With
6469025-1	2.50mm/.098inch	5.30mm/.209inch	10	25.00mm/.984inch	40	20	6469028-1
6469076-1	1.80mm/.071inch	5.30mm/.209inch	10	25.00mm/.984inch	40	20	6469028-1
6469078-1	2.50mm/.098inch	5.30mm/.209inch	20	50.00mm/1.969inch	80	40	6469077-1
6469078-1	1.80mm/.071inch	5.30mm/.209inch	20	50.00mm/1.969inch	80	40	6469077-1

Note: All part numbers are RoHS compliant. Tin-lead parts are RoHS compliant through an exemption for lead-in press-fit connectors.

(9) 3 Pair Right Angle Pin Header Assemblies



PCB Hole Dim.

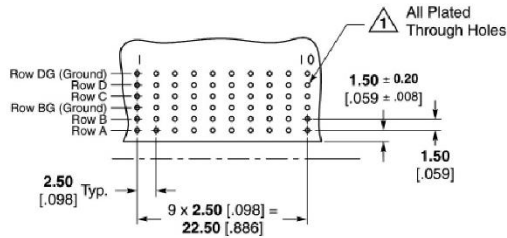
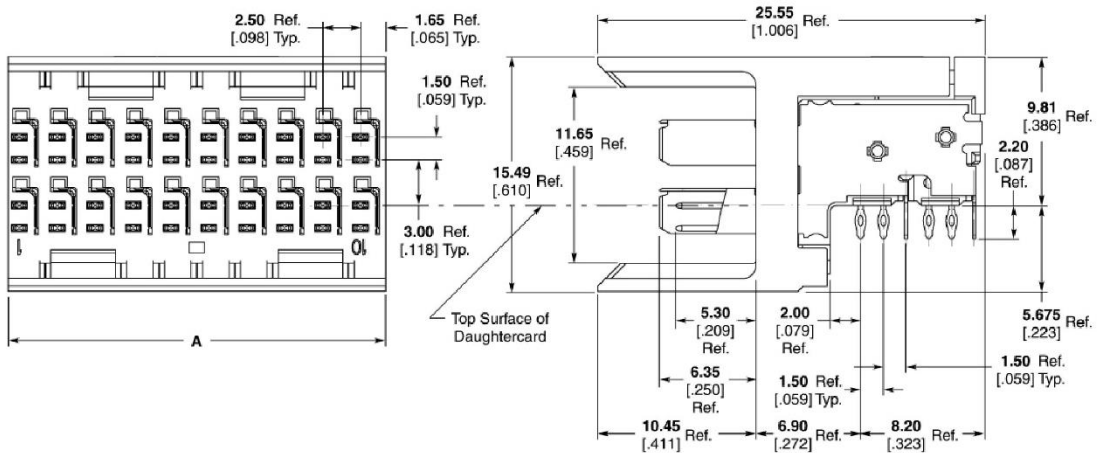
- Drilled Hole = 0.7000 ± 0.025 [.02756 ± .0010]
- Finished Hole = 0.60 ± 0.05 [.024 ± .002]
- Cu Thickness = 0.0375 ± 0.0125 [.00148 ± .00049]
- SnPb Thickness = 0.007 ± 0.003 [.0003 ± .0001]

Recommended PC Board Layout
 Component Side Shown

Part Number	Tall Length	Mating Pin Length	Column Count	Module Length	Sign als	Gro unds	Mates With
6469183-1	2.20mm/.087inch	5.30mm/.209inch	10	25.00mm/.984inch	60	30	6469081-1, 1469514-1

Note: All part numbers are RoHS compliant. Tin-lead parts are RoHS compliant through an exemption for lead-in press-fit connectors.

(10) 2 Pair Right Angle Pin Header Assemblies



PCB Hole Dim.
 Drilled Hole = 0.7000 ± 0.025 [.02756 ± .0010]
 Finished Hole = 0.60 ± 0.05 [.024 ± .002]
 Cu Thickness = 0.0375 ± 0.0125 [.00148 ± .00049]
 SnPb Thickness = 0.007 ± 0.003 [.0003 ± .0001]

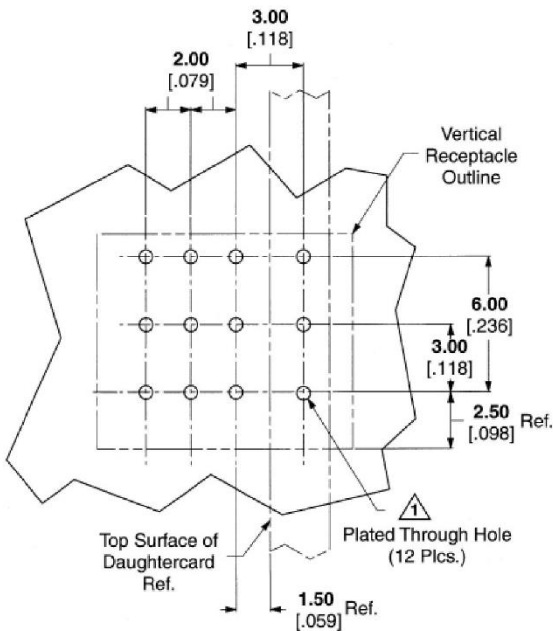
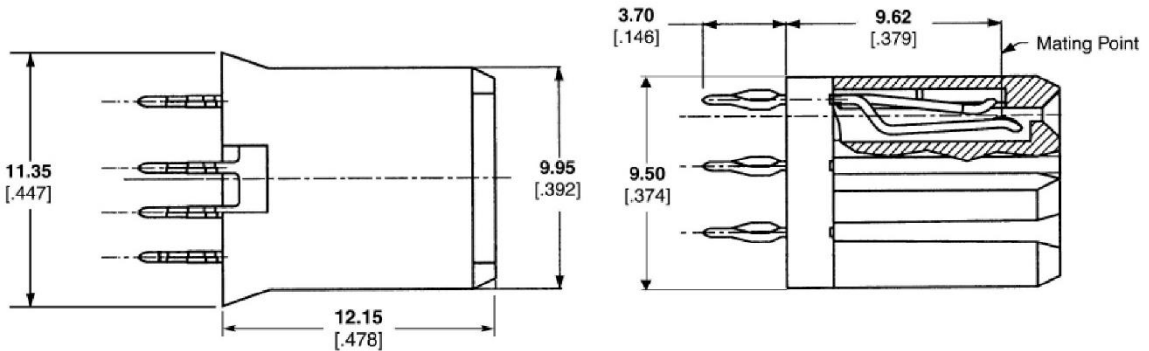
Recommended PC Board Layout
 Component Side Shown

Part Number	Tall Length	Mating Pin Length	Column Count	Module Length	Sign als	Gro unds	Mates With
6469169-1	2.20mm/.087inch	5.30mm/.209inch	10	25.00mm/.984inch	40	20	6469028-1, 1469514-1

Note: All part numbers are RoHS compliant. Tin-lead parts are RoHS compliant through an exemption for lead-in press-fit connectors.

5. Power and Guide Hardware

(1) Universal Power Module Vertical Receptacle (3 Pos.)



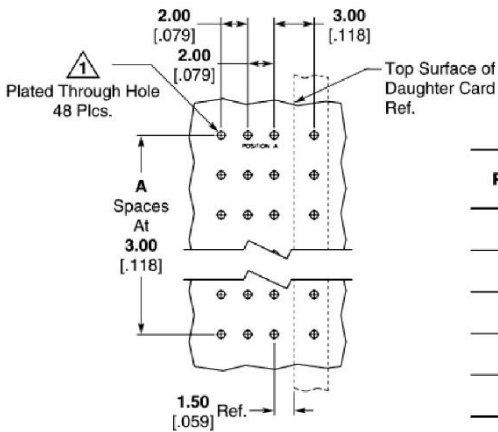
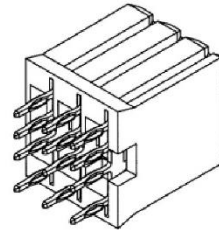
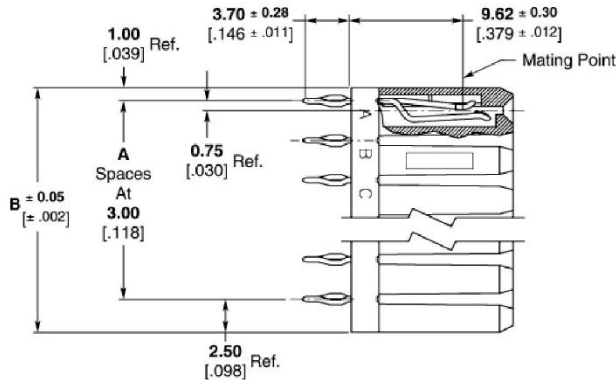
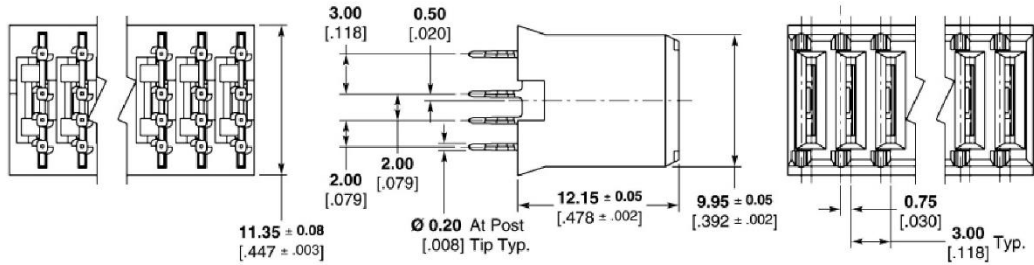
Recommended PC Board Hole Layout

	Position Loaded	Part Numbers
Vertical Receptacle	ABC	223955-2
	AC	223984-1
High Current	ABC	5-223955-2

- △ PCB Hole Dim.
 Drilled Hole = 0.7000 ± 0.025 [0.02756 ± .0010]
 Finished Hole = 0.60 ± 0.05 [0.024 ± .002]
 Cu Thickness = 0.375 ± 0.0125 [0.0148 ± .00049]
 SnPb Thickness = 0.007 ± 0.003 [0.0003 ± .0001]

Note: All part numbers are RoHS compliant. Tin-lead parts are RoHS compliant through an exemption for lead-in press-fit connectors.

(2) Expanded Universal Power Module Vertical Receptacles



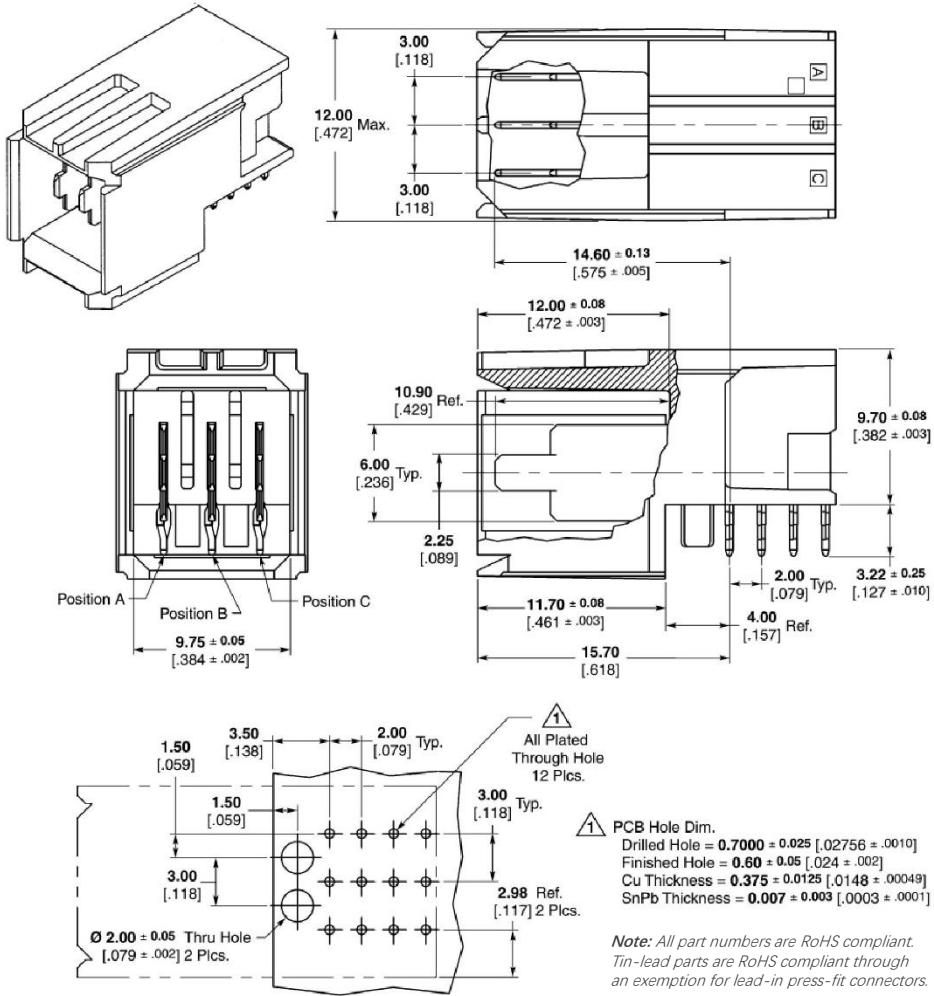
PCB Hole Dim.
 Drilled Hole = 0.7000 ± 0.025 [.02756 ± .0010]
 Finished Hole = 0.60 ± 0.05 [.024 ± .002]
 Cu Thickness = 0.375 ± 0.0125 [.0148 ± .00049]
 SnPb Thickness = 0.007 ± 0.003 [.0003 ± .0001]

Position	A	B Ref.	Standard +10A Part Number	High Current +15A Part Number
4	3	12.50 .492	5223995-1	120953-1
5	4	15.50 .610	5223995-2	120953-2
6	5	18.50 .728	5223995-3	120953-3
7	6	21.50 .846	5223995-4	120953-4
8	7	24.50 .965	5223995-5	120953-5

Recommended PCB Hole Layout

Note: All part numbers are RoHS compliant. Tin-lead parts are RoHS compliant through an exemption for lead-in press-fit connectors.

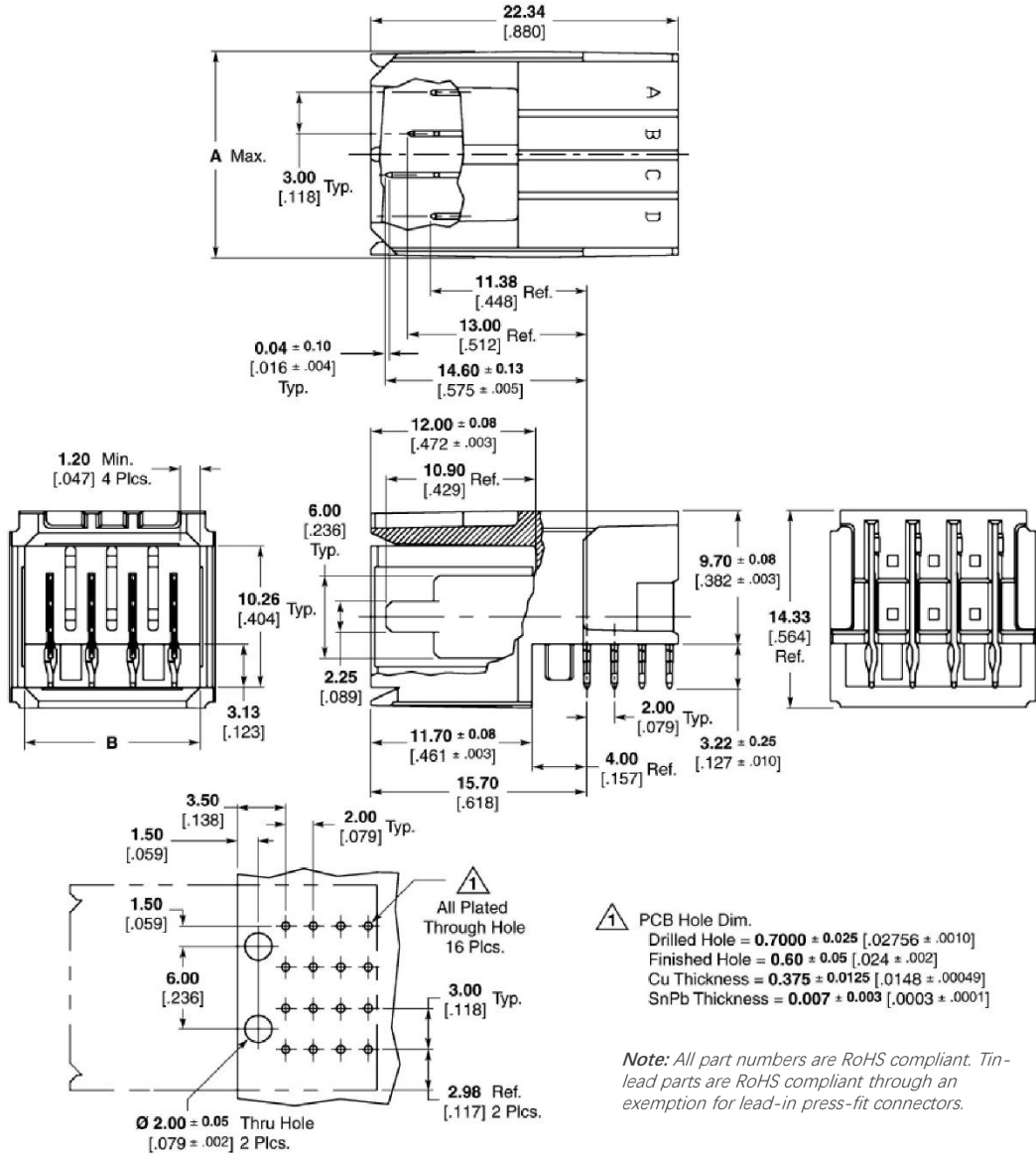
(3) Universal Power Module Right Angle Headers (3 Pos.)



Recommended PC Board Hole Layout

Blade Length Dimensions			Standard *10A Right Angle Header Part Numbers	High Current *15A Right Angle Header Part Numbers
Position A	Position B	Position C		
10.90 [.429]	10.90 [.429]	10.90 [.429]	5223961-1	5-5223961-1
10.90 [.429]	9.30 [.366]	10.90 [.429]	5223962-1	—
10.90 [.429]	9.30 [.366]	9.30 [.366]	5223968-1	—
10.90 [.429]	7.68 [.302]	10.90 [.429]	5223972-1	—
10.90 [.429]	7.68 [.302]	9.30 [.366]	5223971-1	—
10.90 [.429]	7.68 [.302]	7.68 [.302]	5223970-1	—
9.30 [.429]	10.90 [.429]	9.30 [.366]	5223963-1	—
9.30 [.366]	10.90 [.429]	7.68 [.302]	5223964-1	—
9.30 [.366]	9.30 [.366]	9.30 [.366]	5223967-1	—
9.30 [.366]	—	9.30 [.366]	5223975-1	—
9.30 [.366]	9.30 [.366]	7.68 [.302]	5223981-1	—
9.30 [.366]	7.68 [.302]	9.30 [.366]	5223965-1	—
7.68 [.302]	9.30 [.366]	7.68 [.302]	5223983-1	—
7.68 [.302]	7.68 [.302]	9.30 [.366]	5223980-1	—
7.68 [.302]	7.68 [.302]	7.68 [.302]	5223974-1	5-5223974-1

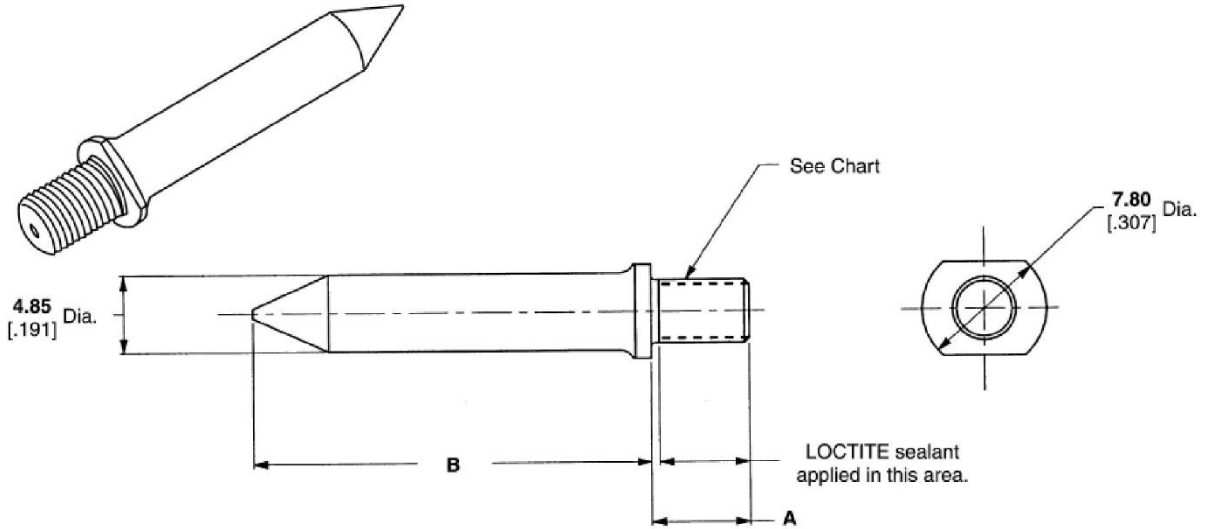
(4) Expanded Universal Power Module Right Angle Headers



Recommended PC Board Hole Layout

Positions	Dimensions		Standard *10A Base Part Number ¹	High Current *15A Base Part Number ¹
	A	B		
4	15.00 .591	12.75 .502	5646954	120954
5	18.00 .709	15.75 .620	5646955	120955
6	21.00 .827	18.75 .738	5646956	120956
7	24.00 .945	21.75 .856	5646957	120957
8	27.00 1.063	24.75 .974	5646958	120958

(5) Guide Pin (Unkeyed)

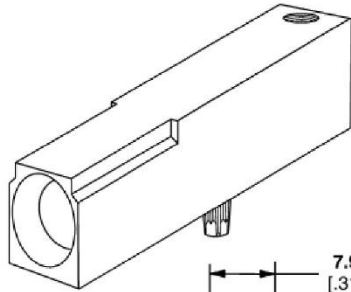


Dimension		Thread	Part Numbers
A	B		
7.50 [.295]	24.73 [.974]	M4 x 7-6g	223982-1 ¹
9.20 [.362]	25.16 [.991]	M4 x 7-6g	223969-7
12.70 [.500]	25.16 [.991]	8-32 UNC-2A	223969-4
12.70 [.500]	25.16 [.991]	M4 x 7-6g	223969-1
6.20 [.244]	25.16 [.991]	M4 x 7-6g	223956-1
12.70 [.500]	31.25 [1.230]	8-32 UNC-2A	1-223969-0
3.80 ² [.150]	27.16 [1.069]	M4 x 7-6h	120646-1
2.00 ² [.079]	27.16 [1.069]	M3 x 0.5	223988-1

¹ 6.35 Hex Base.
² Internal Thread.

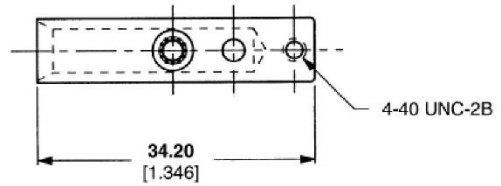
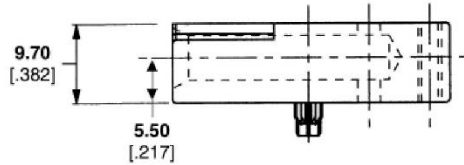
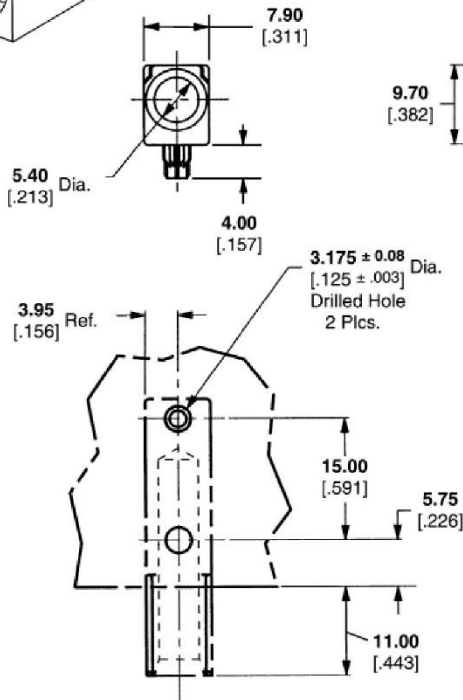
Note: All part numbers are RoHS compliant.

(6) Female Guide Module (Unkeyed)



Part Number: 223957-1 (as shown)

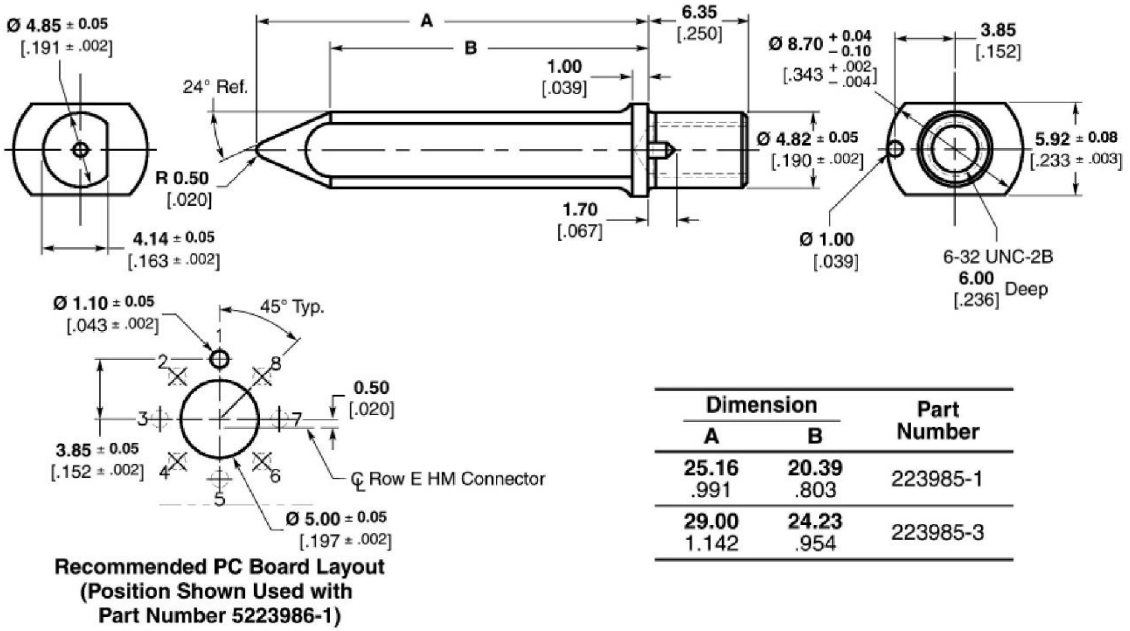
Part Number: 223979-1 (Dual alignment posts)



Recommended PC Board Hole Layout

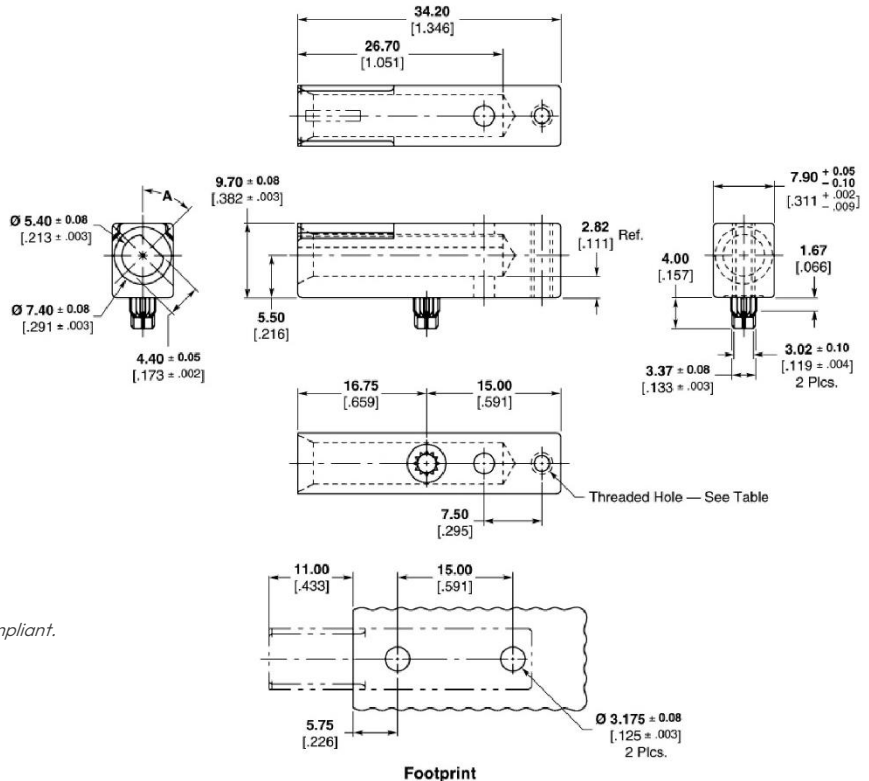
Note: All part numbers are RoHS compliant.

(7) Guide Pin (Keyed)

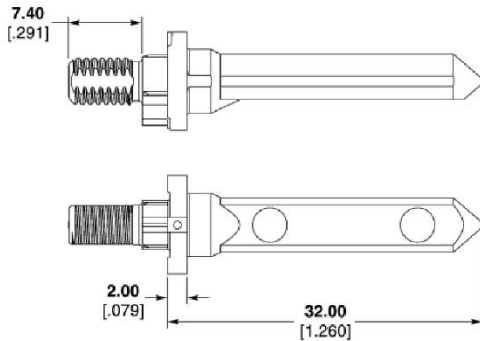


(8) Female Guide Module (Keyed)

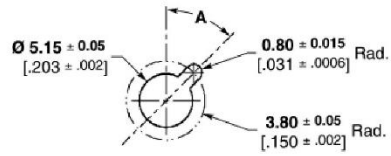
Dim. A	Thread	Part Number
0°	4-40	5223986-1
45°	4-40	5223986-2
90°	4-40	5223986-3
135°	4-40	5223986-4
180°	4-40	5223986-5
225°	4-40	5223986-6
270°	4-40	5223986-7
315°	4-40	5223986-8
0°	M2.6	5120913-1
45°	M2.6	5120913-2
90°	M2.6	5120913-3
135°	M2.6	5120913-4
180°	M2.6	5120913-5
225°	M2.6	5120913-6
270°	M2.6	5120913-7
315°	M2.6	5120913-8



Note: All part numbers are RoHS compliant.

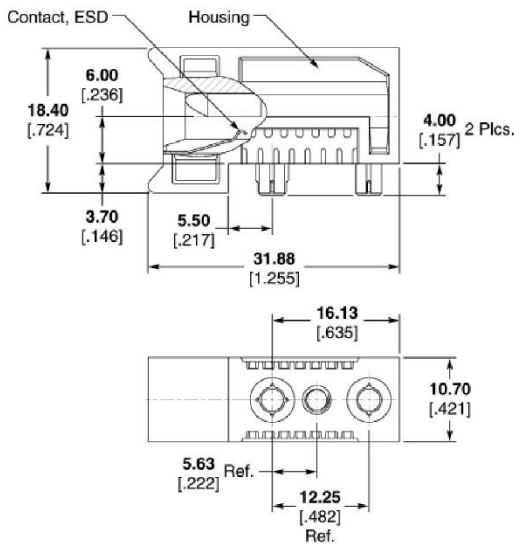


1-1410773-1 Series

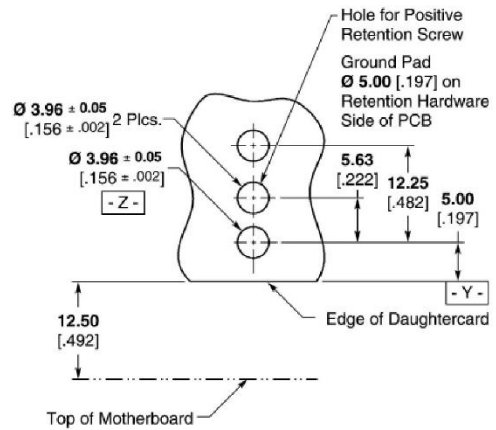


PCB Layout for Guidepost

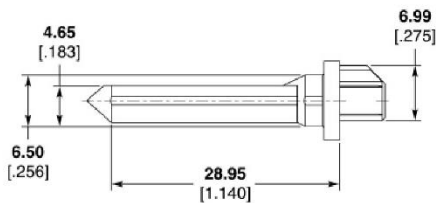
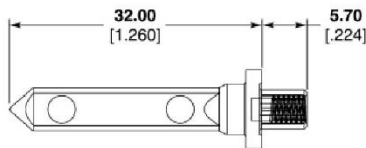
Note: Key hole orientation (Dim. A) per mating guide module Part Number table (Orientation shown on PCB layout is for Part Number 1-1410297-2).



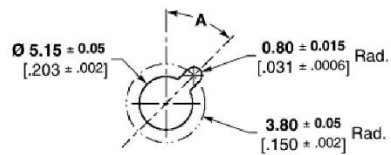
1-1410297 Series



PCB Layout Connector Side



1410548 Series



PCB Layout for Guidepost

Note: Key hole orientation (Dim. A) per mating guide module Part Number table (Orientation shown on PCB layout is for Part Number 1-1410297-2).

MULTIGIG RT Product Guide Modules

Description	Part Number
Keyed/ESD Guide Module Assembly, Daughtercard*	1-1410297-X
Keyed Guide Pin, Backplane**	1-1410773-X
Keyed Guide Pin, Backplane**	1410548-X

6. Applications

The ZD Series High Speed Backplane Connector System finds applications in a variety of electronic devices that require high-speed data transfer between components. Here are some main applications:

- **Data Networking Equipment**
- **Servers**
- **Telecommunication Equipment**
- **Test and Measurement Equipment**

Thank You!