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Dimensions are in millimeters and inches unless otherwise specified. Values in brackets are U.S. equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

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C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Z-PACK HS3 Connector

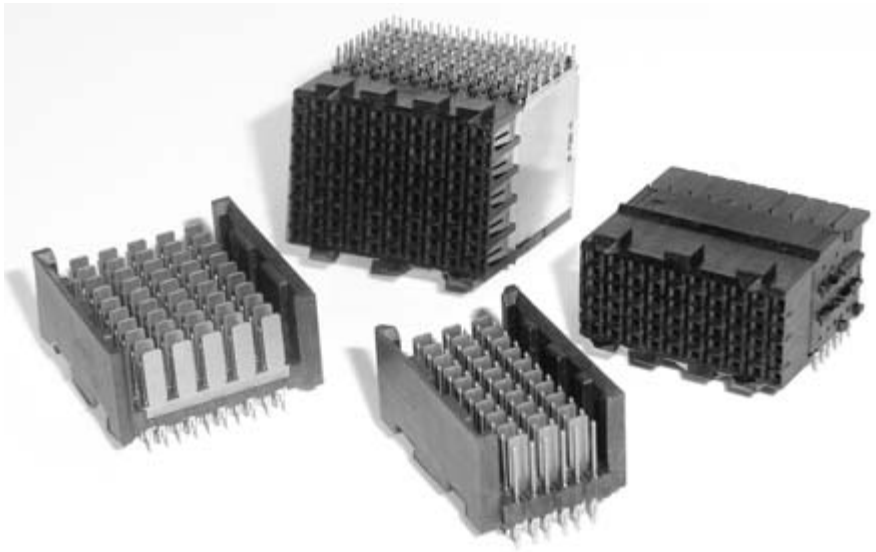
Product Line Overview

Product Facts

- **High speed, high density two piece board-to-board backplane connector**
- **Dual beam provides redundant contact for improved reliability**
- **For data rates of 6.2+ Gb/s**
- **10 row, 100 high speed lines per 25.00 [.984]**
- **6 row, 60 high speed lines per 25.00 [.984]**
- **Controlled impedance: 50 ohm Single Ended 100 ohm Differential**
- **Feedthrough versions for midplane applications**
- **250 mating cycles**
- **End stackable on 2.50 [.098] centerline, signal pin to signal pin**
- **Advanced ESD/Power (10 Amps) using optional guide pins and power contacts**

Applications

- **High Speed Telecommunications Equipment**
- **Mid-range and high-end services**
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**



The emergence of high speed serial backplanes has forced interconnections to be able to transfer data at gigabit speeds.

The Z-PACK HS3 connector system has been specifically designed to support this generation of high speed serial data transfer. Tyco Electronics has incorporated a controlled impedance microstrip path through the connector to minimize signal degradation and crosstalk. Compliant pins are used on both daughtercard and backplane.

This connector family is press fit and is compatible with other Z-PACK HM family connectors on the same board edge. Z-PACK HS3 connectors support data rates of 6.2+ Gb/s per differential pair. The 6 row version is optimized for 20.32mm or 0.8 inch card centerline applications, while the 10 row version is optimized for high density for 25.4mm or 1.0 inch card centerline applications.

The Tyco Electronics Universal Power Module (UPM) is designed to be compatible with the Z-PACK HS3 connector.

Static Discharge Guide/ Power Pins, Guide Pin/ Power Receptacles, Universal Guide Pin and Receptacles, and Coding Keys (10 row only) are also available.

Availability

Fully validated SPICE models: E-mail requests to modeling@tycoelectronics.com

Samples: go to http://tycoelectronics.custhelp.com

Pro/E models and IGES models: E-mail requests to TycoCAD@tycoelectronics.com

White Papers: available on product website at http://hs3.tycoelectronics.com

Electrical Performance Report: http://hs3.tycoelectronics.com
6 row EPR #1308505; 10 row EPR #1308506

Routing Guide: http://hs3.tycoelectronics.com
Routing Guide #20GC004-1

http://hs3.tycoelectronics.com

Technical Documents

Product Specification
108-1957

Application Specification
114-13020

Qualification Test Report
501-501

Material and Finish

Contact Area Finish — 0.80µm Au min. over 1.3µm Ni min.

Compliant Pin Finish — 0.8µm SnPb min. over 1.3µm Ni min.

Contact — Copper Alloy

Housing — Glass filled polyester, 94V-0 rated

Ratings

Current — 1.15A per fully energized

Operating Voltage — 250 VAC max.

Temperature — –65°C to 105°C

Mating Force — 0.75N max. per contact (signal = 1 contact, ground = 1 contact)

Durability — 250 cycles

* Reference Product Spec. 108-1957 for complete list of performance data.

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Z-PACK HS3 Connector (Continued)

Performance Specifications

Electrical Characteristics

Characteristic Impedance — 100 ± 10% Ohms
Nominal Resistance — 21 mOhm
Crosstalk — See table at right
Insertion Loss — See chart below

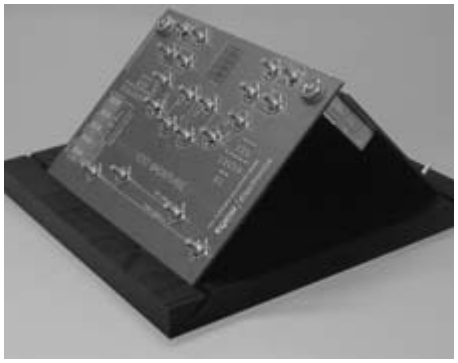
Asynchronous Diff. NEXT (%)

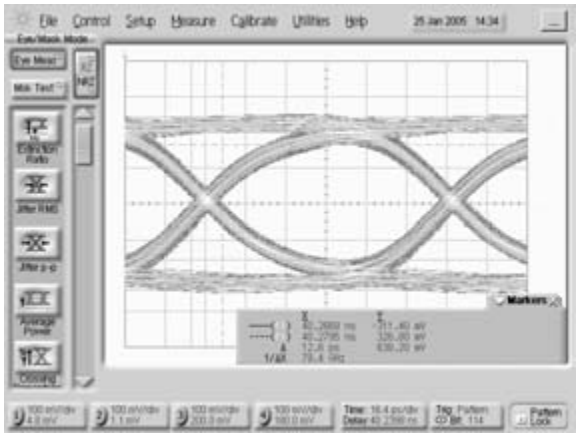
Edge rate 20-80%	HS3 10-Row Measured Noise Totals			
	50 ps	100 ps	150 ps	250 ps
BC Pair Total NEXT	2.3%	1.9%	1.7%	1.3%
DE Pair Total NEXT	4.0%	3.3%	3.0%	2.4%
FG Pair Total NEXT	4.0%	3.4%	3.1%	2.7%
HJ Pair Total NEXT	2.3%	1.9%	1.7%	1.5%

Synchronous Diff. NEXT (%)

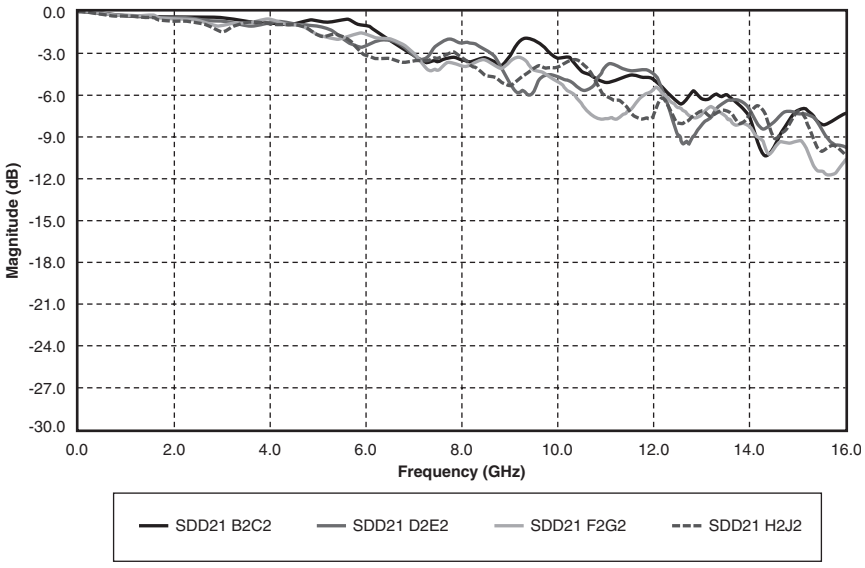
Edge rate 20-80%	HS3 10-Row Measured Noise Totals			
	50 ps	100 ps	150 ps	250 ps
BC Pair Total FEXT	0.5%	0.3%	0.3%	0.2%
DE Pair Total FEXT	1.5%	0.8%	0.5%	0.5%
FG Pair Total FEXT	1.4%	0.8%	0.7%	0.5%
HJ Pair Total FEXT	1.0%	0.6%	0.4%	0.3%

Edge rates specified are at the connector.
Noise includes 1.60 [.063] footprints on both sides of the connector.
Totals include contributions from 8 adjacent aggressor pairs.





PRBS 2^7-1 data pattern
10 Gb/s data rate
BC Pair
64% Eye Opening
12.6ps Jitter



Calibrated to include only the connector and the 1.60 [.063] footprints on both sides of the connector.

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Z-PACK HS3 Connector (Continued)

Z-PACK HS3 Connector: Printed Circuit Design Rules for Backplane Routing

Using Standard Commercial Design Rules

This table lists routing specifications which meet design rules practiced by most printed circuit board vendors. This table should be used to route the Z-PACK HS3 connector for most applications and especially under one or more of these considerations:

1. Edge rates require the widest conductors possible.
2. Backplanes having layer counts above 16.
3. Backplanes which exceed 508mm (20") in length or width.
4. Cost is a major factor.

Finished Hole Dia.	Drilled Hole Dia.	Pad Dia.	Annular Ring	Pad-Pad Spacing 63 mils (1.58mm) C/C	Conductor Routing Options	
					5 mil spacing	6 mil spacing
24 mils 0.6mm	28 mils 0.7mm	44 mils 1.1mm	2 mils 0.05mm	19 mils 0.475mm	9 mils 0.225mm	7 mils 0.175mm
24 mils 0.6mm	28 mils 0.7mm	42 mils 1.05mm	1 mil 0.025mm	21 mils 0.525mm	11 mils 0.275mm	9 mils 0.225mm
24 mils 0.6mm	28 mils 0.7mm	40 mils 1.0mm	tangency tangency	23 mils 0.575mm	13 mils 0.325mm	11 mils 0.275mm

Commercial Design Rules:
Minimum pad diameter for tangency: Drill Diameter (D)+12 mils (0.3mm)
Hole location tolerance: +/- 3 mils (0.075mm)
Pad/Pad artwork tolerance: +/- 2 mils (0.05mm)
Feature tolerance (1 oz foil): +/- 0.075 mils (0.0175mm)

Using Advanced Design Rules

This table lists routing specifications which can be built by a limited number of leading edge printed circuit vendors using advanced design rules. This table can be used as a reference for Z-PACK HS3 connector in backplane applications where very high density is a major factor. The PCB vendor should be consulted regarding applicability of these rules to a specific design. Consideration should be given to the following:

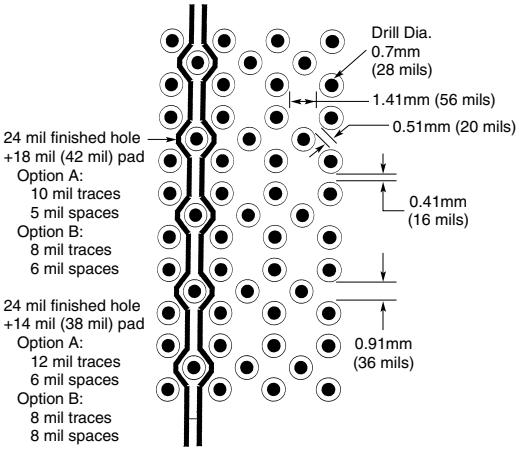
1. Signal layer count reduction is possible with these design rules.
2. Backplanes which exceed 508mm (20") in length or width generally cannot be built with these rules.
3. Cost factors can potentially be higher.

Finished Hole Dia.	Drilled Hole Dia.	Pad Dia.	Annular Ring	Pad-Pad Spacing 63 mil (1.58mm) C/C	Conductor Routing Options	
					5 mil spacing	6 mil spacing
24 mils 0.6mm	28 mils 0.7mm	38 mils 0.95mm	tangency tangency	25 mils 0.625mm	15 mils 0.35mm	13 mils 0.3mm
					Two Conductor Routing	
24 mils 0.6mm	28 mils 0.7mm	42 mils 1.05mm	2 mils 0.05mm	21 mils 0.525mm	4.5 mil lines/4 mil spacing 0.11mm lines/0.09mm spacing	
24 mils 0.6mm	28 mils 0.7mm	40 mils 1.0mm	1 mil 0.025mm	23 mils 0.575mm	5.5 mil lines/4 mil spacing 0.125mm lines/0.1mm spacing	

Advanced Design Rules:
Minimum pad diameter for tangency: Drill Diameter (D)+10 mils (0.25mm)
Hole location tolerance: +/- 2 mils (0.05mm)
Pad/Pad artwork tolerance: +/- 2 mils (0.05mm)
Feature tolerance (1 oz foil): +/- 0.075 mils (0.0175mm)

Z-PACK HS3 Connector Routing Pattern

For more details request Report #20GC004-1 or visit http://www.tycoelectronics.com/products/simulation/files/papers/20GC004_1.pdf



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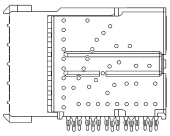
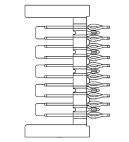
Z-PACK HS3 Connector (Continued)

Part Number Selection Chart
10 Row Z-PACK HS3 Connector



Part Number 120874
50 Position
Right Receptacle
Univ Pwr Guide Pin



Part Number 120670
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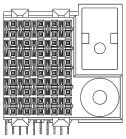
Right Header
Univ Pwr Guide Pin



Part Number 120792
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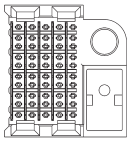
Right Receptacle
ESD/HDI Guide Pin



Part Number 120661
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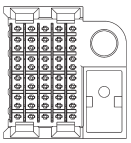
Right Header
ESD/HDI Guide Pin



Part Number 120665
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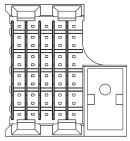
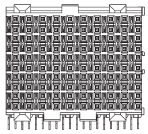
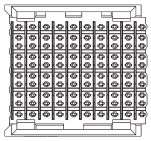
Right Feed-Through
ESD/HDI Guide Pin



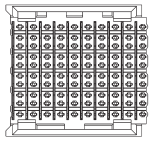
Part Number 120667
50 Position
Right Shroud
ESD/HDI Guide Pin



Part Number 120790
100 Position
Center Receptacle



Part Number 120658
100 Position
Center Header



Part Number 120664
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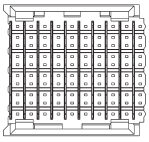
Center Feed-Through



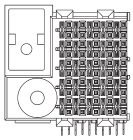
Part Number 120663
100 Position
Center Shroud

Part Number 120791
50 Position
Center Receptacle

Part Number 120747
50 Position
Center Header

Part Number 120748
50 Position
Center Feed-Through

Part Number 120750
50 Position
Center Shroud



Part Number 120793
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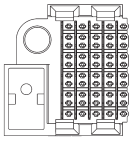
Left Receptacle
ESD/HDI Guide Pin



Part Number 120662
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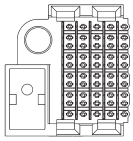
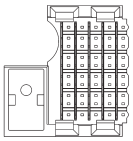
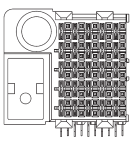
Left Header
ESD/HDI Guide Pin



Part Number 120666
50 Position
Left Feed-Through
ESD/HDI Guide Pin



Part Number 120668
50 Position
Left Shroud
ESD/HDI Guide Pin



Part Number 120875
50 Position
Left Receptacle
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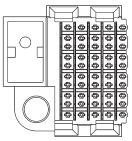

Part Number 120672
50 Position
Left Header
Univ Pwr Guide Pin

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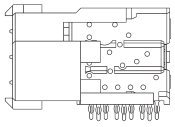
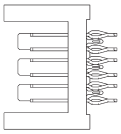
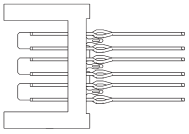
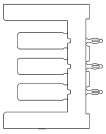
Z-PACK HS3 Connector (Continued)

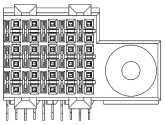
Part Number Selection Chart
6 Row Z-PACK HS3 Connector



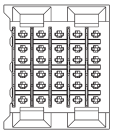




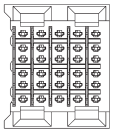




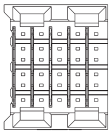
Part Number 120788
30 Position
Right Receptacle



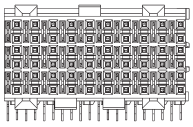
Part Number 120677
30 Position
Right Header



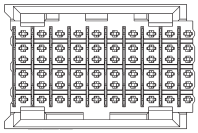
Part Number 120680
30 Position
Right Header
Feed-Through



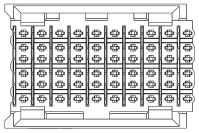
Part Number 120683
30 Position
Right Shroud



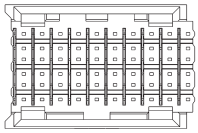
Part Number 120786
60 Position
Center Receptacle



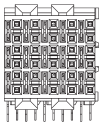
Part Number 120674
60 Position
Center Header



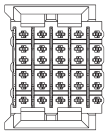
Part Number 120679
60 Position
Center Header
Feed-Through



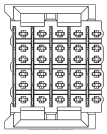
Part Number 120682
60 Position
Center Shroud



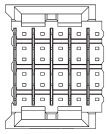
Part Number 120787
30 Position
Center Receptacle



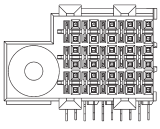
Part Number 120732
30 Position
Center Header



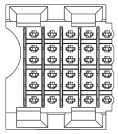
Part Number 120742
30 Position
Center Header
Feed-Through



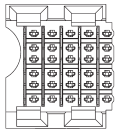
Part Number 120743
30 Position
Center Shroud



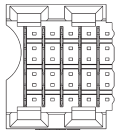
Part Number 120789
30 Position
Left Receptacle



Part Number 120678
30 Position
Left Header



Part Number 120681
30 Position
Left Header
Feed-Through



Part Number 120684
30 Position
Left Shroud

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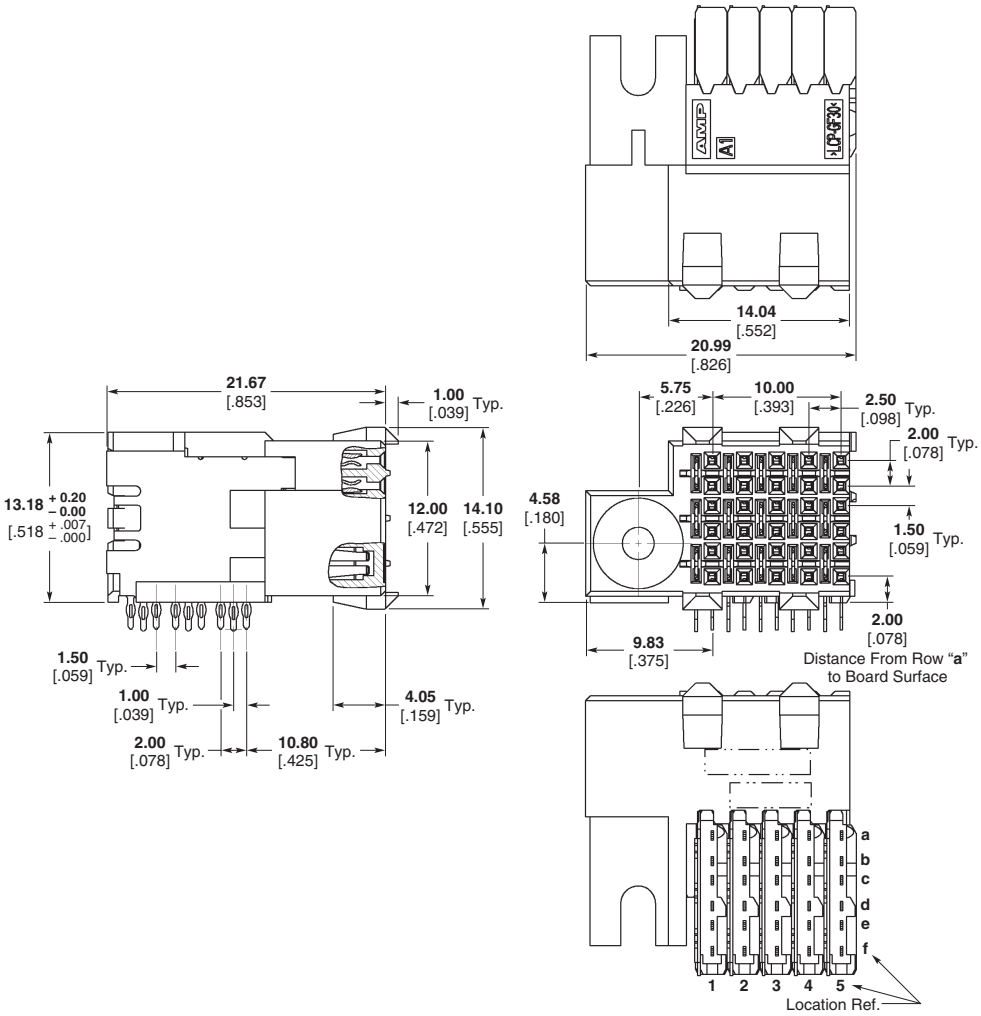
Japan: 81-44-844-8013
UK: 44-141-810-8967

Z-PACK HS3 Connector (Continued)

Right Angle Receptacle
6 Row, Left Module
(accepts ESD Guide Pin)



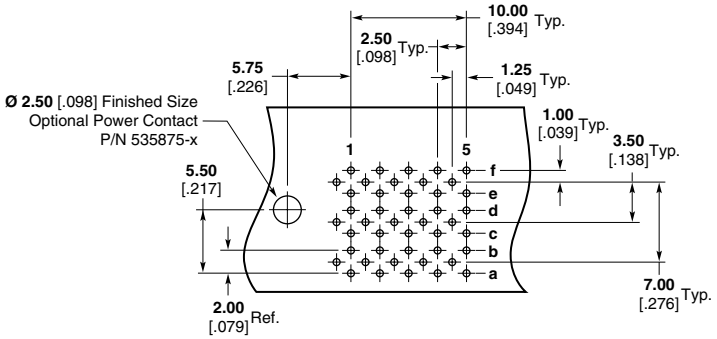
Pin Header Assemblies

Number of Positions	Part Number	Application Tooling					
		Insertion	IS Sheet	Hsg Removal	IS Sheet	Chiclet Removal	IS Sheet
30	120789-1	1338742-1	408-8394	1338744-1	408-8393	1338745-1	408-8410

P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

Note: For finishes other than tin-lead, reference Application Specification 114-13020.



Recommended PC Board Layout
(Component Side Shown)

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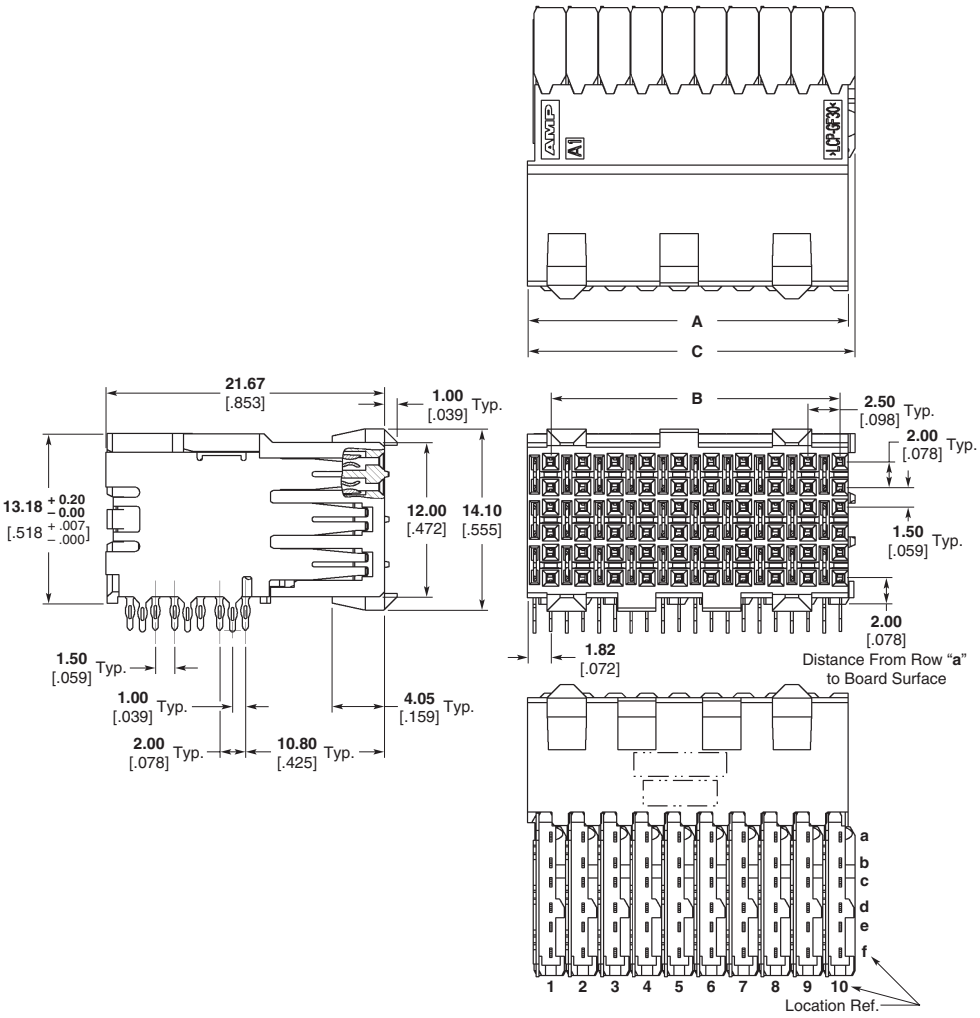
Z-PACK HS3 Connector (Continued)

Right Angle Receptacle
(Continued)
6 Row, Center Module



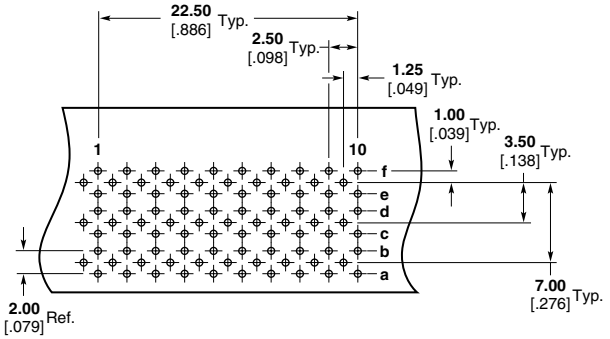
Pin Header Assemblies

Number of Positions	Dimensions			Part Number	Application Tooling					
	A	B	C		Insertion	IS Sheet	Hsg Removal	IS Sheet	Chiclet Removal	IS Sheet
60	**24.88** .980	**22.50** .886	**25.40** 1.00	120786-1	1338742-2	408-8394	1338744-1	408-8393	1338745-1	408-8410
30	**12.38** .487	**10.00** .394	**12.90** .508	120787-1	1338742-1	408-8394	1338744-1	408-8393	1338745-1	408-8410

P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

Note: For finishes other than tin-lead, reference Application Specification 114-13020.



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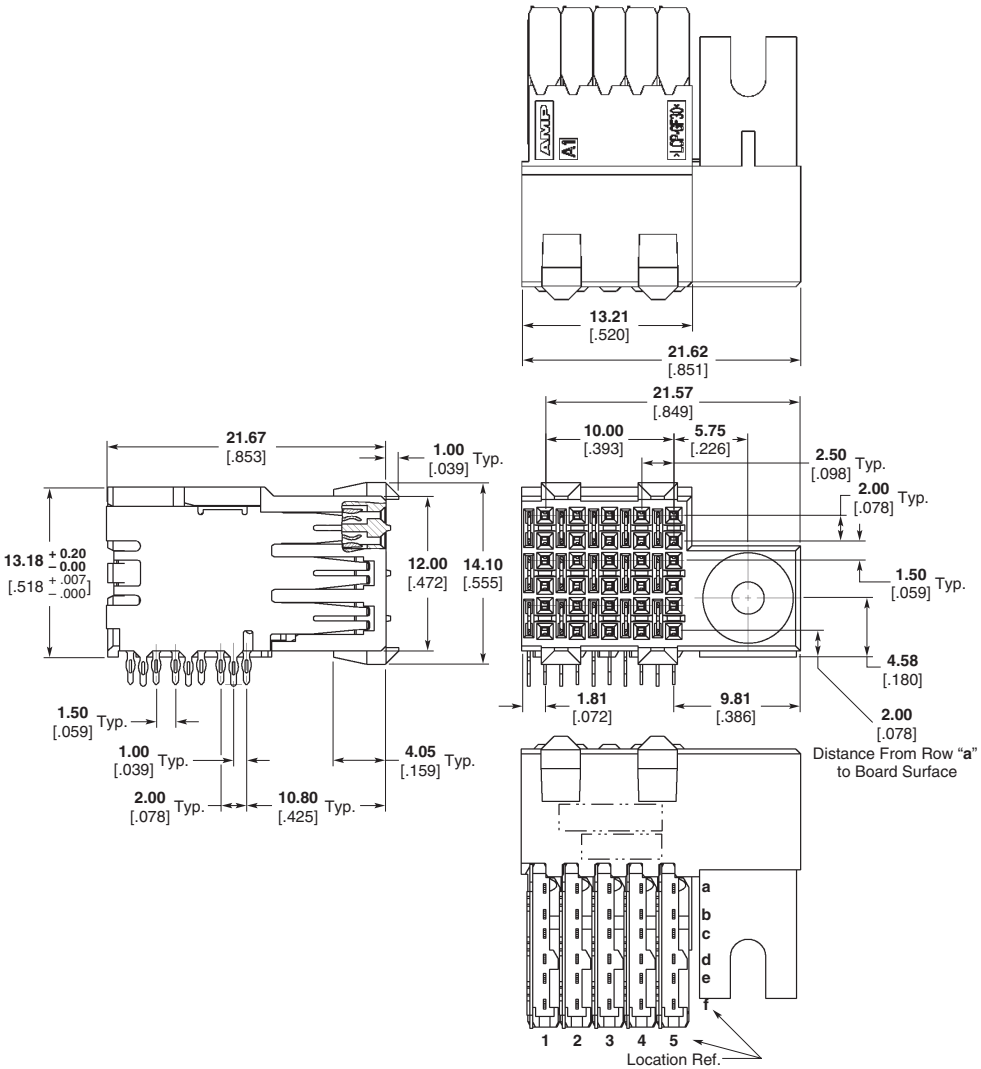
Z-PACK HS3 Connector (Continued)

Right Angle Receptacle
(Continued)
6 Row, Right Module (accepts ESD Guide Pin)



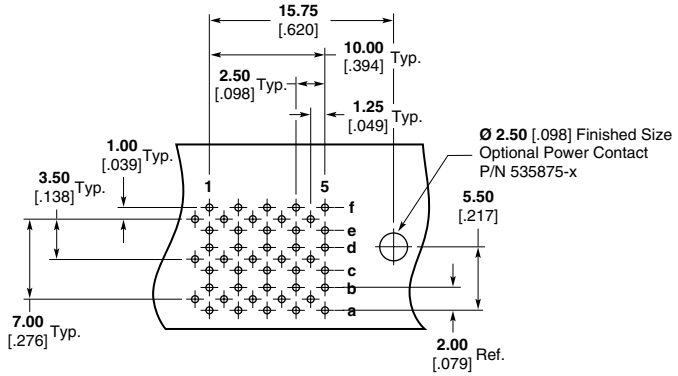
Pin Header Assemblies

Number of Positions	Part Number	Application Tooling					
		Insertion	IS Sheet	Hsg Removal	IS Sheet	Chiclet Removal	IS Sheet
30	120788-1	1338742-1	408-8394	1338744-1	408-8393	1338745-1	408-8410

P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

Note: For finishes other than tin-lead, reference Application Specification 114-13020.



Recommended PC Board Layout (Component Side Shown)

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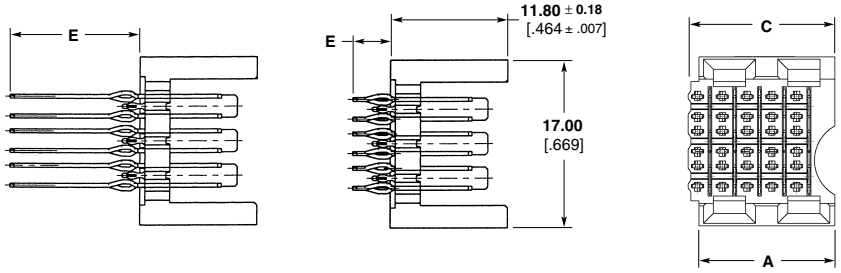
UK: 44-141-810-8967

Z-PACK HS3 Connector (Continued)

Vertical Pin Header Assemblies 6 Row, Left Module (accepts ESD Guide Pin)



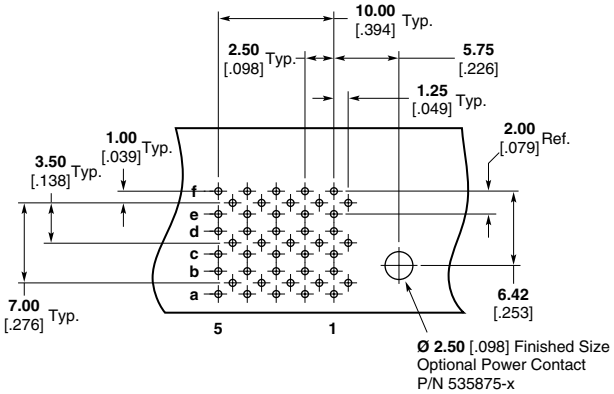
P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

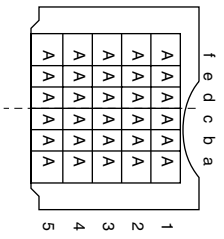
Note: For finishes other than tin-lead, reference Application Specification 114-13020.

Pin Header Assemblies

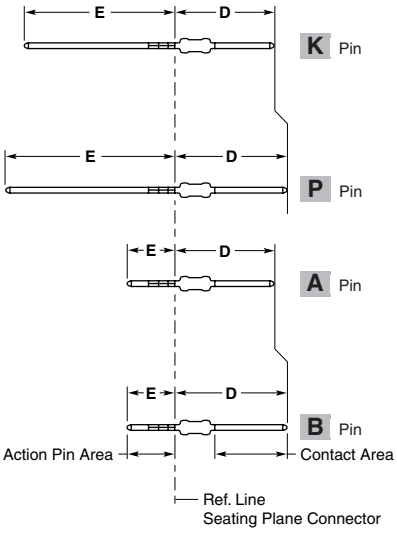
Number of Positions	Dimensions A	B	C	D	E	Pin Ref.	Part Numbers	Application Tooling: Seating	IS Sheet	Signal Pin: Repair Kit	IS Sheet	Ground Blade: Repair Kit	IS Sheet
30	**13.70** .539	**10.00** .393	**14.80** .583	**8.20** .322	**3.70** .145	**A**	120678-1	91313-1	408-4546	354687-2	408-9979	1320534-1	408-4573
	13.70 .539	**10.00** .393	**14.80** .583	**9.70** .381	**3.70** .145	**B**	120678-2	91313-1	408-4546	354687-2	408-9979	1320534-1	408-4573
	13.70 .539	**10.00** .393	**14.80** .583	**8.20** .322	**13.00** .511	**K**	120681-1	91313-1	408-4546	354687-2	408-9979	1320534-1	408-4573
	13.70 .539	**10.00** .393	**14.80** .583	**9.70** .381	**14.50** .570	**P**	120681-2	91313-1	408-4546	354687-2	408-9979	1320534-1	408-4573



Recommended PC Board Layout
(Component Side Shown)
For Non-Midplane Applications
For Midplane Applications Reference Page 60



120678-1 Shown



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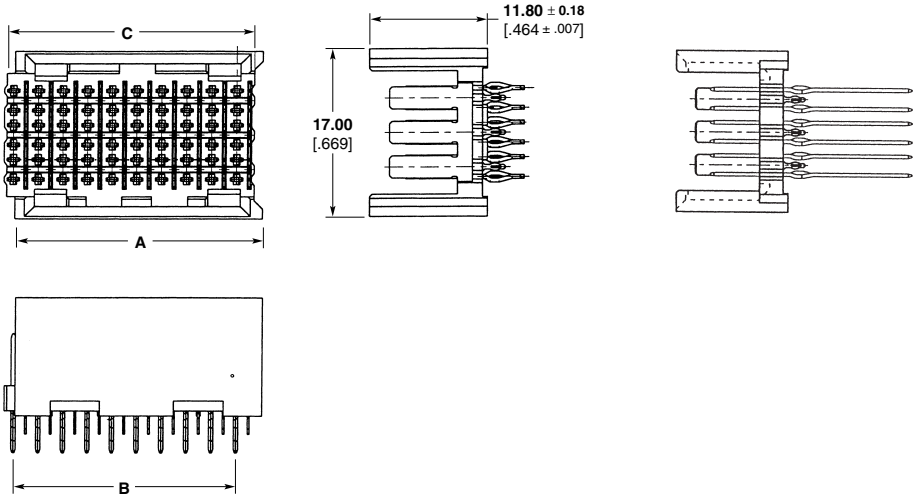
Z-PACK HS3 Connector (Continued)

Vertical Pin Header Assemblies (Continued) 6 Row, Center Module



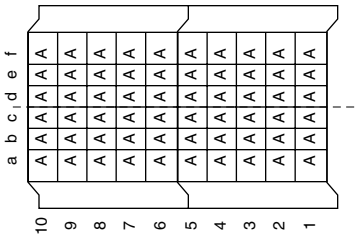
P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

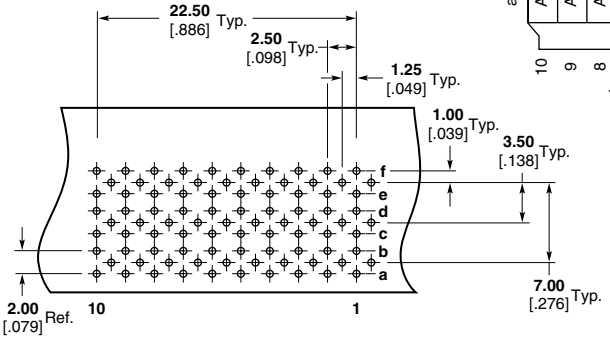
Note: For finishes other than tin-lead, reference Application Specification 114-13020.

Pin Header Assemblies

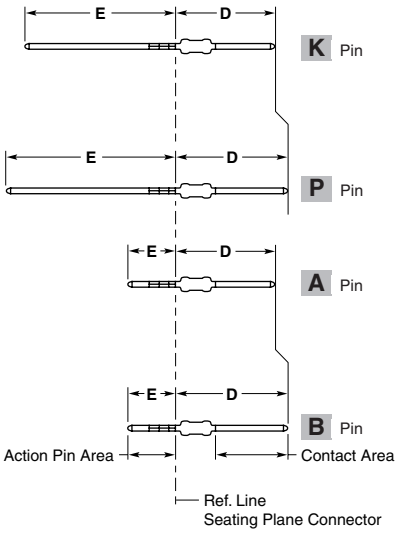
Number of Positions	Dimensions A	B	C	D	E	Pin Ref.	Part Numbers	Application Tooling: Seating	IS Sheet	Signal Pin: Repair Kit	IS Sheet	Ground Blade: Repair Kit	IS Sheet
60	24.90 .980	22.50 .885	24.90 .980	8.20 .322	3.70 .145	A	120674-1	91313-2	408-4546	354687-2	408-9979	1320534-1	408-4573
	24.90 .980	22.50 .885	24.90 .980	9.70 .381	3.70 .145	B	120674-2	91313-2	408-4546	354687-2	408-9979	1320534-1	408-4573
	24.90 .980	22.50 .885	24.90 .980	8.20 .322	13.00 .511	K	120679-1	91313-2	408-4546	354687-2	408-9979	1320534-1	408-4573
	24.90 .980	22.50 .885	24.90 .980	9.70 .381	14.50 .570	P	120679-2	91313-2	408-4546	354687-2	408-9979	1320534-1	408-4573
30	12.41 .488	10.00 .393	12.40 .488	8.20 .322	3.70 .145	A	120732-1	91313-1	408-4546	354687-2	408-9979	1320534-1	408-4573
	12.41 .488	10.00 .393	12.40 .488	9.70 .381	3.70 .145	B	120732-2	91313-1	408-4546	354687-2	408-9979	1320534-1	408-4573
	12.41 .488	10.00 .393	12.40 .488	8.20 .322	13.00 .511	K	120742-1	91313-1	408-4546	354687-2	408-9979	1320534-1	408-4573
	12.41 .488	10.00 .393	12.40 .488	9.70 .381	14.50 .570	P	120742-2	91313-1	408-4546	354687-2	408-9979	1320534-1	408-4573



120674-1 Shown



Recommended PC Board Layout (Component Side Shown) For Non-Midplane Applications
For Midplane Applications Reference Page 60



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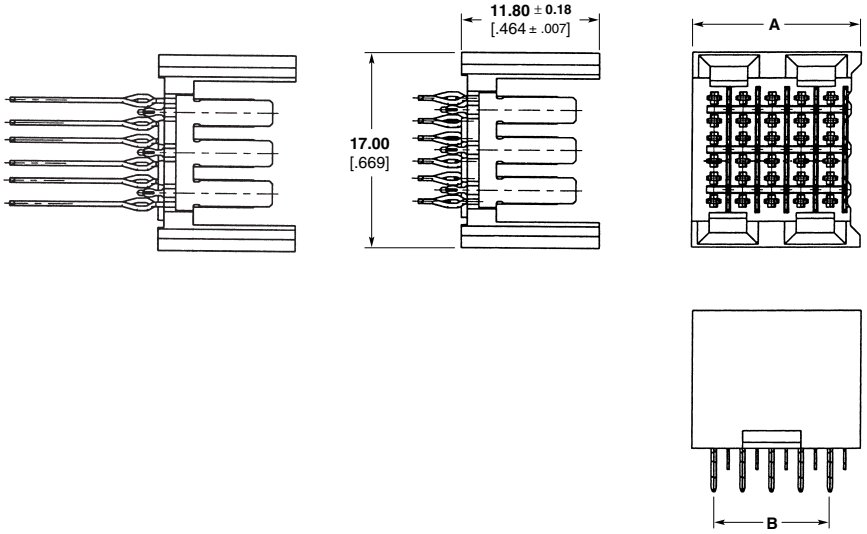
Z-PACK HS3 Connector (Continued)

Vertical Pin Header Assemblies (Continued)
6 Row, Right Module (accepts ESD Guide Pin)



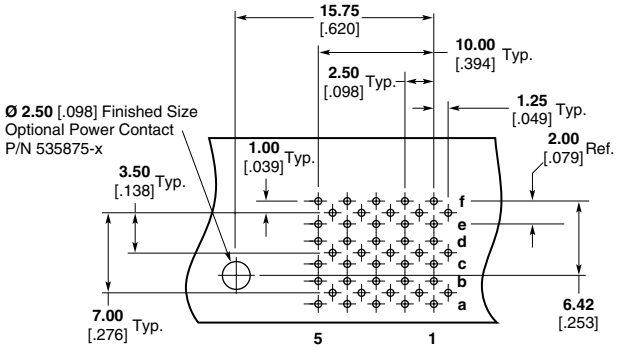
P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

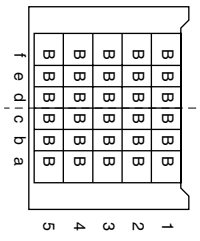
Note: For finishes other than tin-lead, reference Application Specification 114-13020.

Pin Header Assemblies

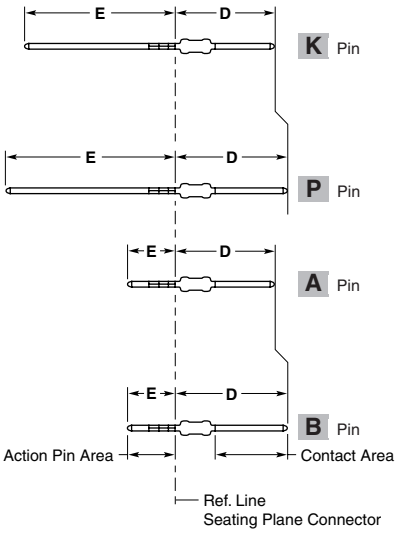
Number of Positions	Dimensions A	B	D	E	Pin Ref.	Part Numbers	Application Tooling: Seating	IS Sheet	Signal Pin: Repair Kit	IS Sheet	Ground Blade: Repair Kit	IS Sheet
30	**14.45** .568	**10.00** .393	**8.20** .322	**3.70** .145	**A**	120677-1	91313-1	408-4546	354687-2	408-9979	1320534-1	408-4573
	14.45 .568	**10.00** .393	**9.70** .381	**3.70** .145	**B**	120677-2	91313-1	408-4546	354687-2	408-9979	1320534-1	408-4573
	14.45 .568	**10.00** .393	**8.20** .322	**13.00** .511	**K**	120680-1	91313-1	408-4546	354687-2	408-9979	1320534-1	408-4573
	14.45 .568	**10.00** .393	**9.70** .381	**14.50** .570	**P**	120680-2	91313-1	408-4546	354687-2	408-9979	1320534-1	408-4573



Recommended PC Board Layout
(Component Side Shown)
For Non-Midplane Applications
For Midplane Applications Reference Page 60



120677-2 Shown



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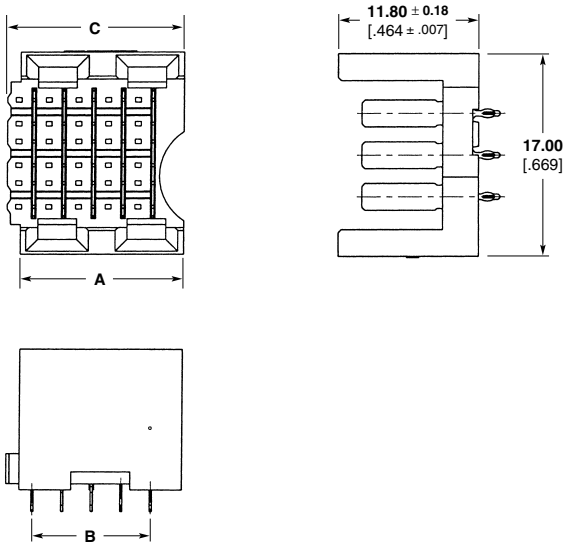
Z-PACK HS3 Connector (Continued)

Vertical Pin Header Shrouds 6 Row, Left Module



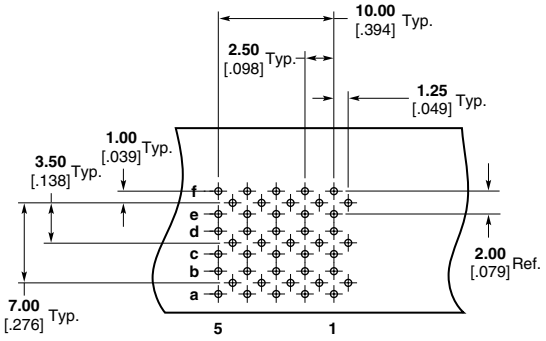
P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

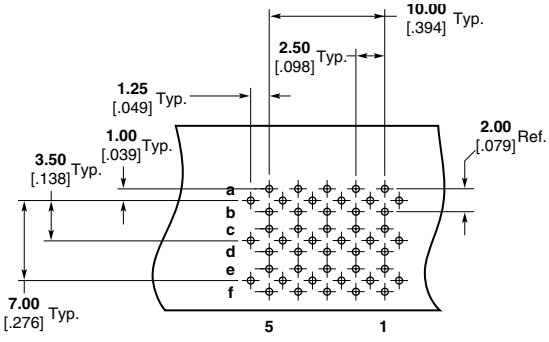
Note: For finishes other than tin-lead, reference Application Specification 114-13020.

Pin Header Assemblies

Number of Positions	Dimensions			Part Number	Application Tooling			
	A	B	C		Insertion	IS Sheet	Ground Blade Repair Kit	Ground Blade IS Sheet
30	13.70 .537	10.00 .393	14.80 .582	120684-1	91313-1	408-4546	1320534-1	408-4573



Non-Coplanar Daughtercards
(Pin 1a Header = Pin 1f Shroud Side)
Recommended PC Board Layout — Reference Page 60
(Shroud Side Shown)



Coplanar Daughtercards
(Pin 1a Header = Pin 5a Shroud Side)
Recommended PC Board Layout — Reference Page 60
(Shroud Side Shown)

Catalog 1773095
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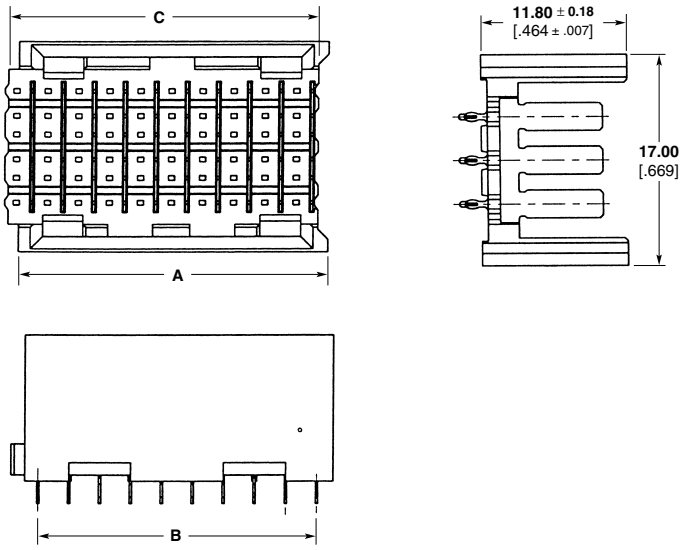
Japan: 81-44-844-8013
UK: 44-141-810-8967

Z-PACK HS3 Connector (Continued)

Vertical Pin Header Shrouds (Continued)
6 Row, Center Module



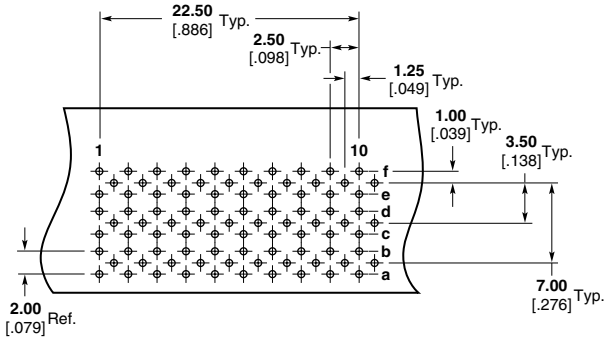
P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

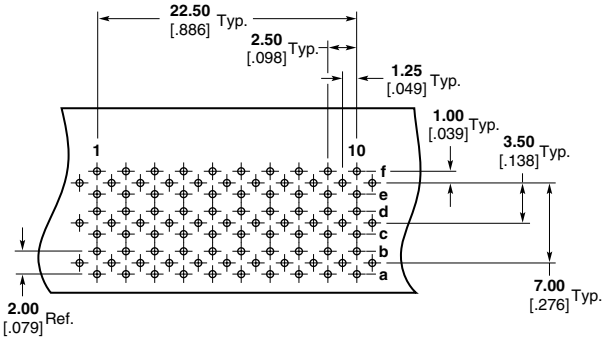
Note: For finishes other than tin-lead, reference Application Specification 114-13020.

Pin Header Assemblies

Number of Positions	Dimensions			Part Number	Application Tooling			
	A	B	C		Insertion	IS Sheet	Ground Blade Repair Kit	Ground Blade IS Sheet
60	**24.90** .980	**22.50** .885	**24.90** .980	120682-1	91313-2	408-4546	1320534-1	408-4573
30	**12.57** .494	**10.00** .393	**12.40** .488	120743-1	91313-1	408-4546	1320534-1	408-4573



Non-Coplanar Daughtercards
(Pin 1a Header = Pin 1f Shroud Side)
Recommended PC Board Layout — Reference Page 60
(Shroud Side Shown)



Coplanar Daughtercards
(Pin 1a Header = Pin 5a Shroud Side)
Recommended PC Board Layout — Reference Page 60
(Shroud Side Shown)

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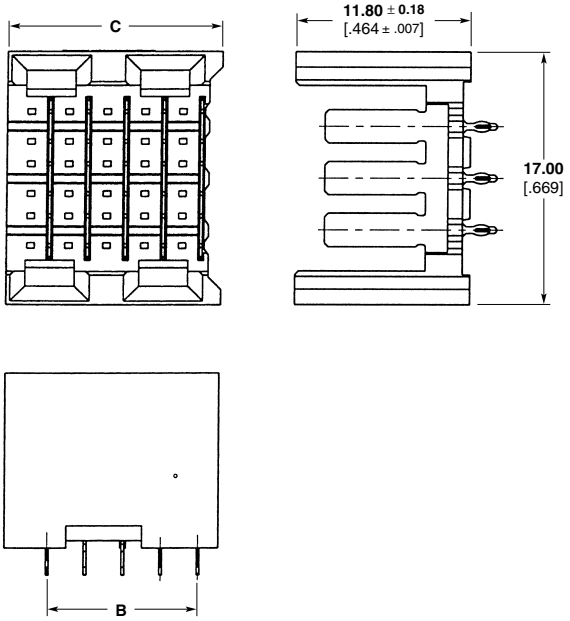
Japan: 81-44-844-8013
UK: 44-141-810-8967

Z-PACK HS3 Connector (Continued)

Vertical Pin Header Shrouds (Continued)
6 Row, Right Module

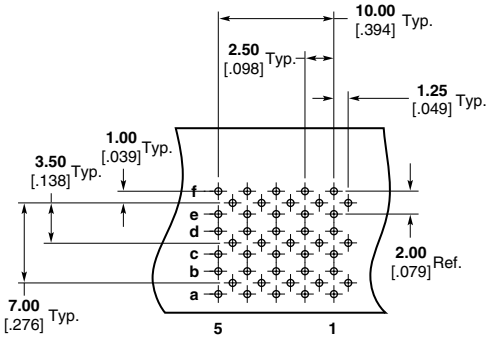


P.C.B. Hole Dimensions
Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

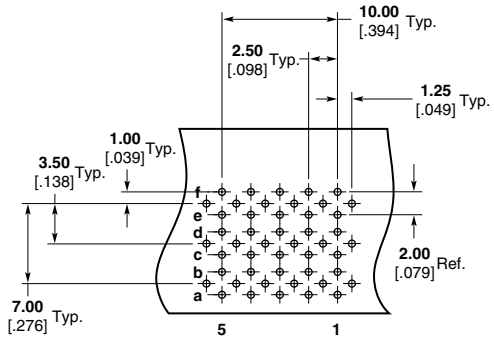
Note: For finishes other than tin-lead, reference Application Specification 114-13020.

Pin Header Assemblies

Number of Positions	Dimensions			Part Number	Application Tooling			
	A	B	C		Insertion	IS Sheet	Ground Blade Repair Kit	Ground Blade IS Sheet
30	—	10.00 .393	14.20 .559	120683-1	91313-1	408-4546	1320534-1	408-4573



Non-Coplanar Daughtercards
(Pin 1a Header = Pin 1f Shroud Side)
Recommended PC Board Layout — Reference Page 60
(Shroud Side Shown)



Coplanar Daughtercards
(Pin 1a Header = Pin 5a Shroud Side)
Recommended PC Board Layout — Reference Page 60
(Shroud Side Shown)

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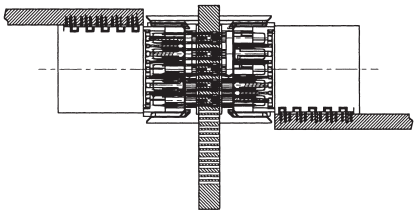
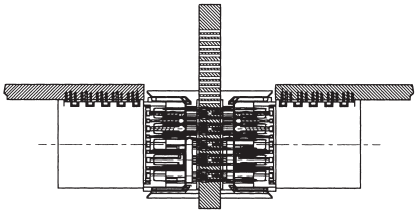
Z-PACK HS3 Connector (Continued)

Layout Guide for Midplane Applications
6 Row Connectors

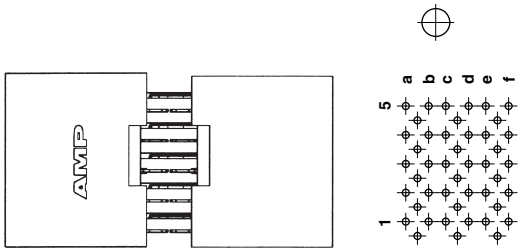
Non-Coplanar Applications



Coplanar Applications

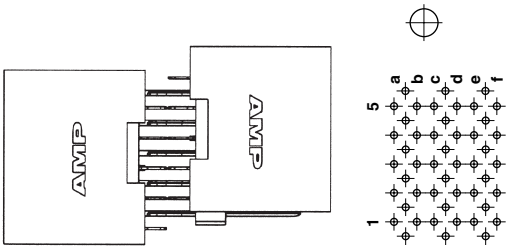


Right Module



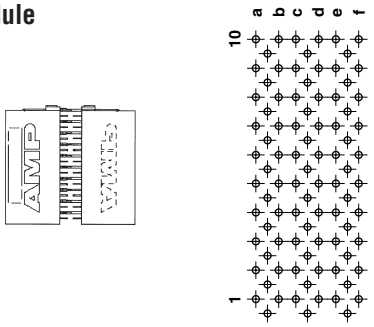
Vertical Pin Header, Feed-Through Part No.	Shroud Part No.
120680	120683-1

Right Module



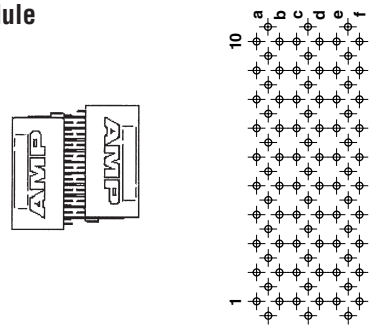
Vertical Pin Header, Feed-Through Part No.	Shroud Part No.
120680	120684-1

Center Module



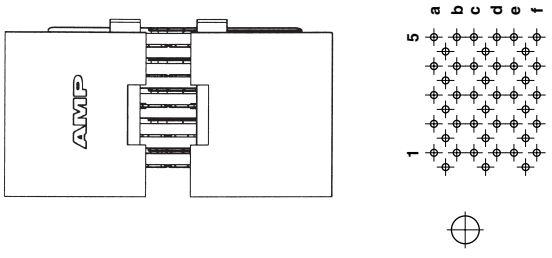
Vertical Pin Header, Feed-Through Part No.	Shroud Part No.
120679	120682-1

Center Module



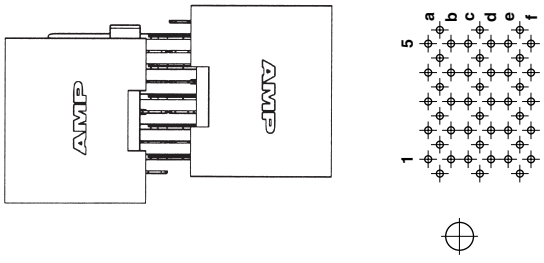
Vertical Pin Header, Feed-Through Part No.	Shroud Part No.
120679	120682-1

Left Module



Vertical Pin Header, Feed-Through Part No.	Shroud Part No.
120681	120684-1

Left Module



Vertical Pin Header, Feed-Through Part No.	Shroud Part No.
120681	120683-1

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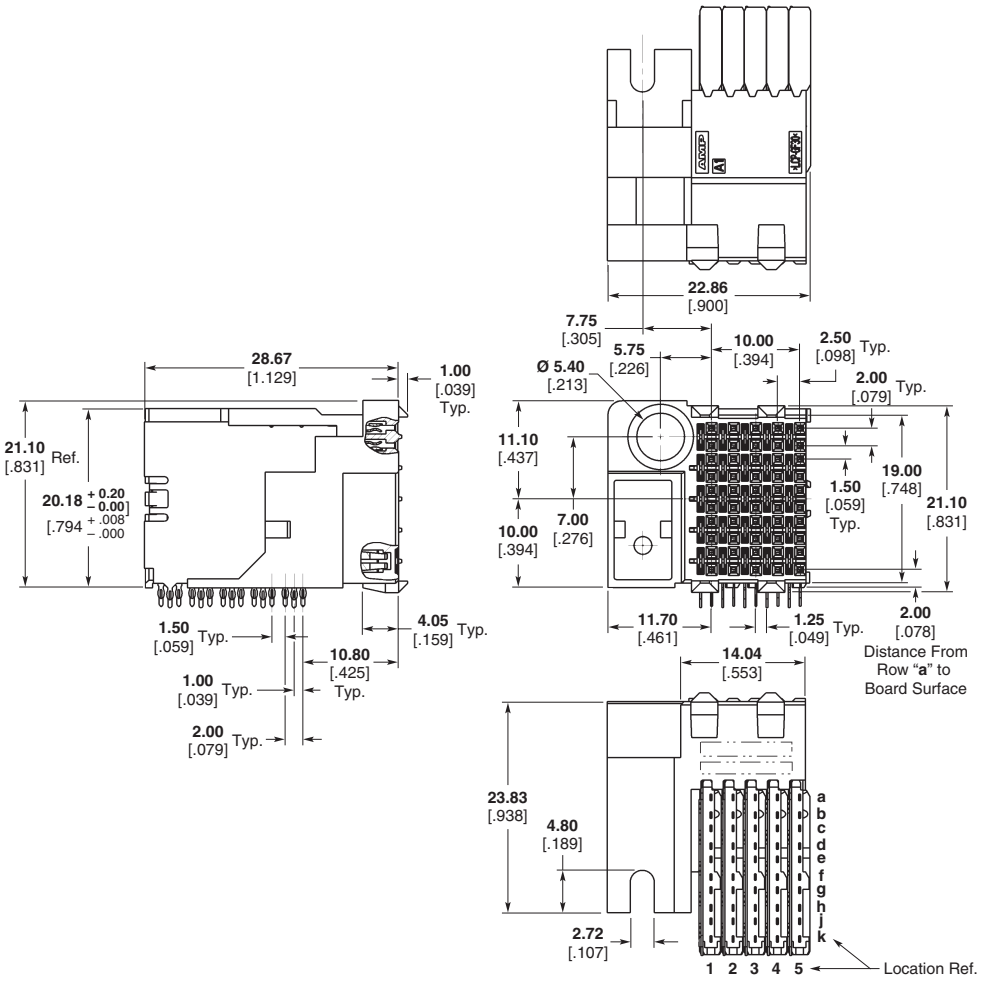
UK: 44-141-810-8967

Z-PACK HS3 Connector (Continued)

Right Angle Receptacle

10 Row, Left Module (accepts Universal Guide Pin)



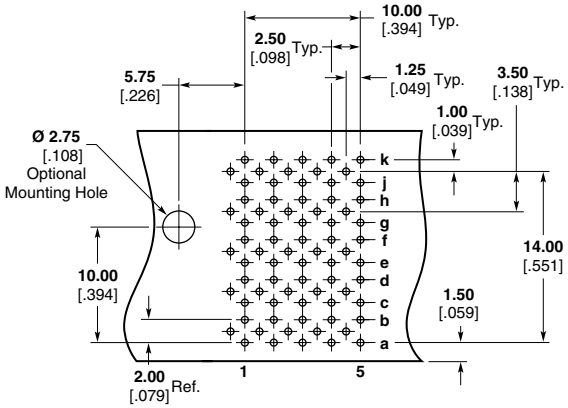
Receptacle Assemblies

Number of Positions	Part Number	Application Tooling					
		Insertion	IS Sheet	Hsg Removal	IS Sheet	Chiclet Removal	IS Sheet
50	120875-1	1338743-1	408-8394	1338744-1	408-8393	1338746-1	408-8410

P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

Note: For finishes other than tin-lead, reference Application Specification 114-13020.



Recommended PC Board Layout (Component Side Shown)

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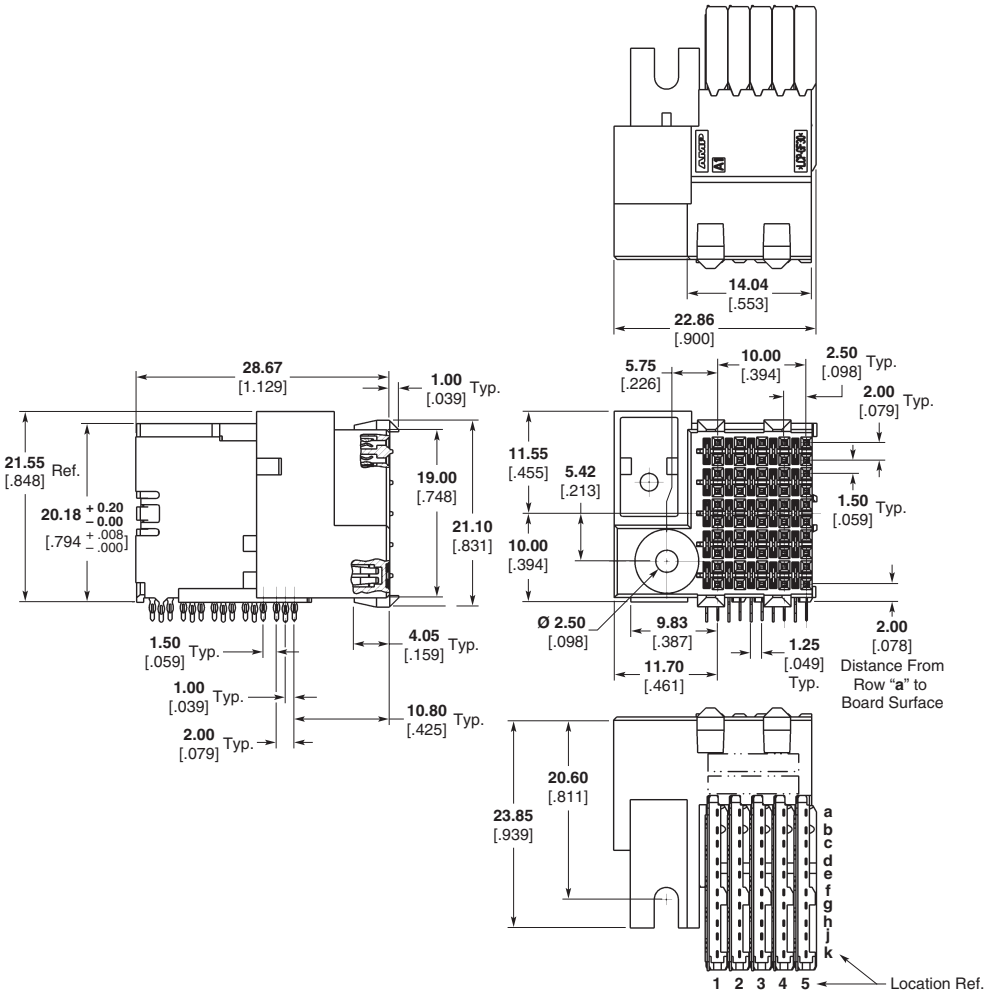
Z-PACK HS3 Connector (Continued)

Right Angle Receptacle
(Continued)

10 Row, Left Module (accepts ESD Guide Pin)



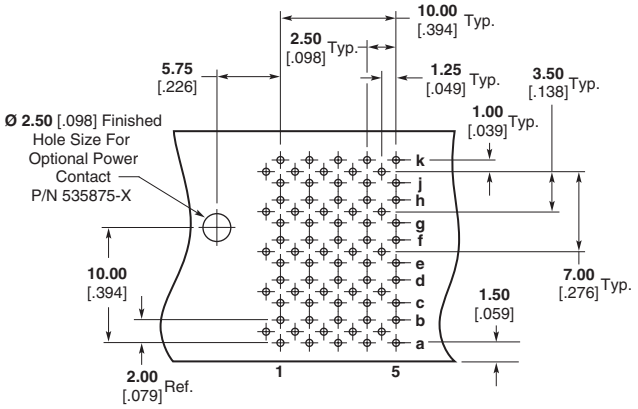
Receptacle Assemblies

Number of Positions	Part Number	Application Tooling					
		Insertion	IS Sheet	Hsg Removal	IS Sheet	Chiclet Removal	IS Sheet
50	120793-1	1338743-1	408-8394	1338744-1	408-8393	1338746-1	408-8410

P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

Note: For finishes other than tin-lead, reference Application Specification 114-13020.



Recommended PC Board Layout (Component Side Shown)

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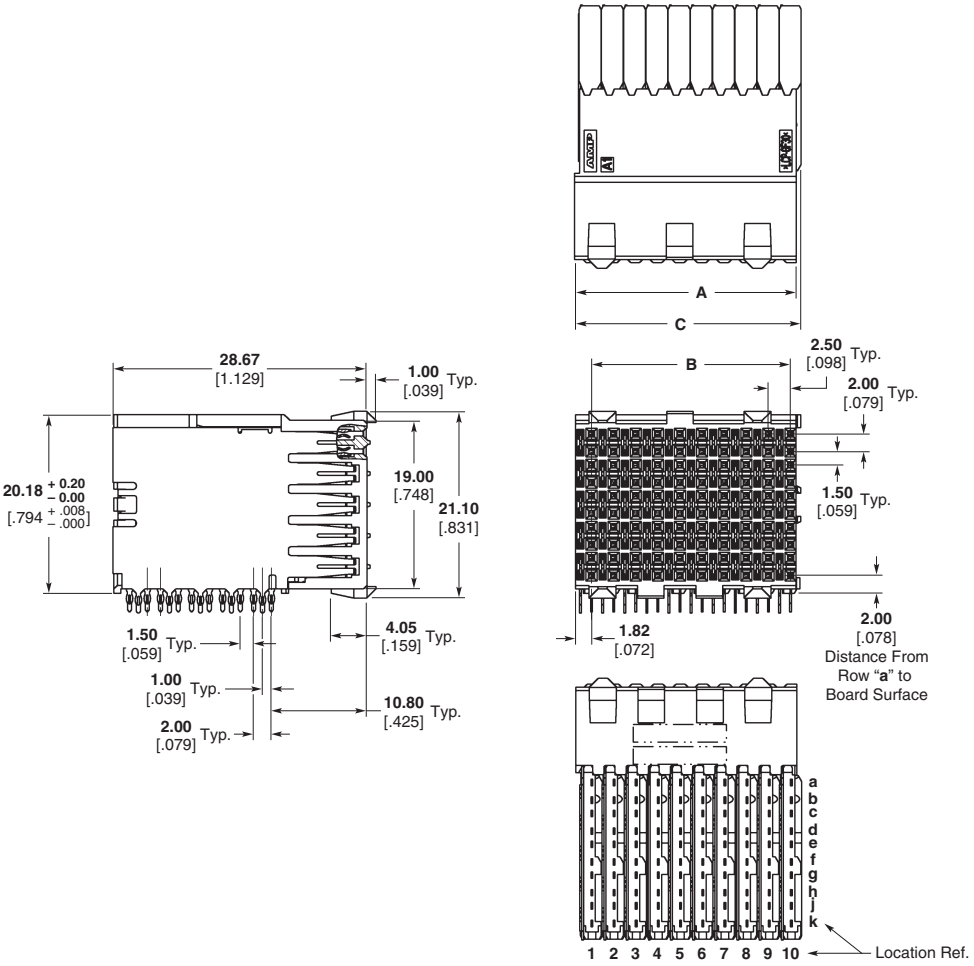
Z-PACK HS3 Connector (Continued)

Right Angle Receptacle
(Continued)

10 Row, Center Module



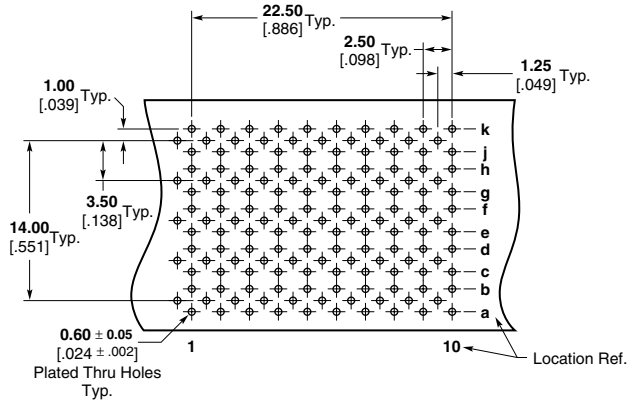
Receptacle Assemblies

Number of Positions	Dimensions			Part Number	Application Tooling					
	A	B	C		Insertion	IS Sheet	Hsg Removal	IS Sheet	Chiclet Removal	IS Sheet
100	**24.94** .982	**22.50** .886	**25.48** 1.03	120790-1	1338743-2	408-8394	1338744-1	408-8393	1338746-1	408-8410
50	**12.44** .490	**10.00** .394	**12.90** .508	120791-1	1338743-1	408-8394	1338744-1	408-8393	1338746-1	408-8410

P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

Note: For finishes other than tin-lead, reference Application Specification 114-13020.



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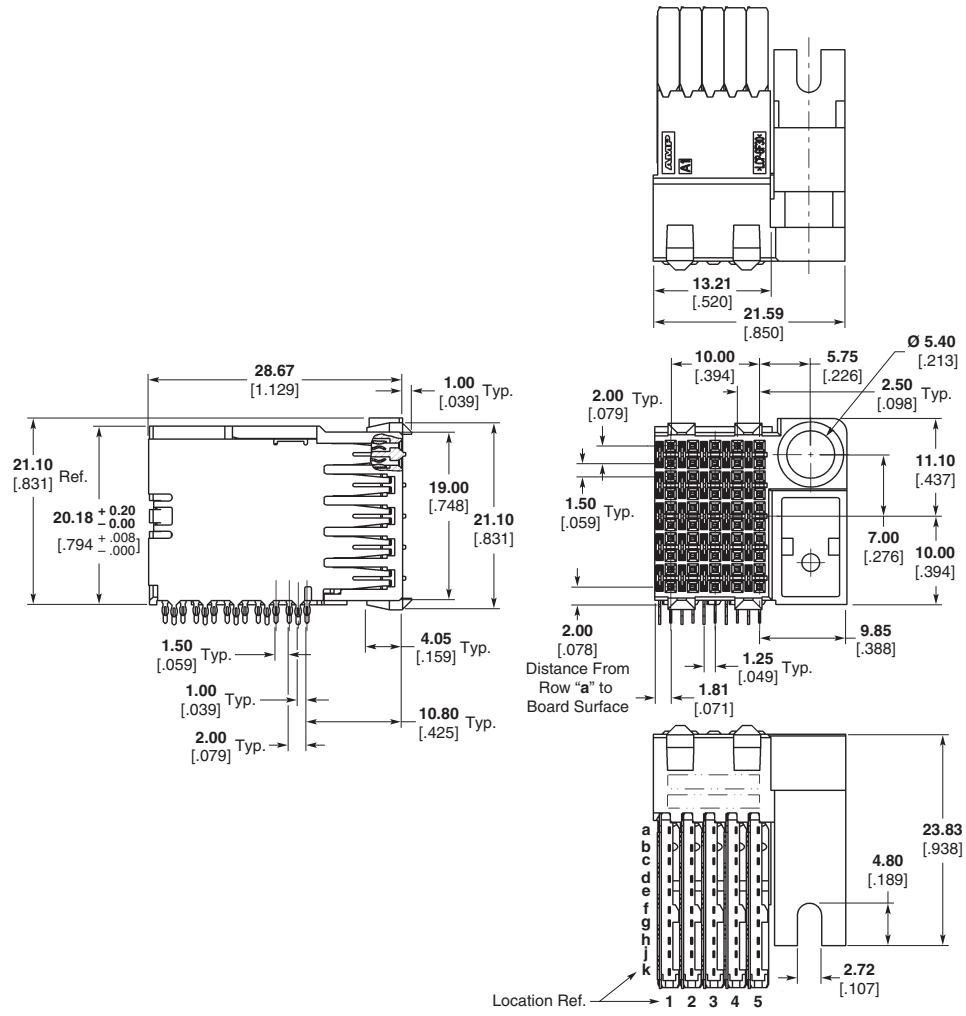
Z-PACK HS3 Connector (Continued)

Right Angle Receptacle
(Continued)

10 Row, Right Module (accepts Universal Guide Pin)



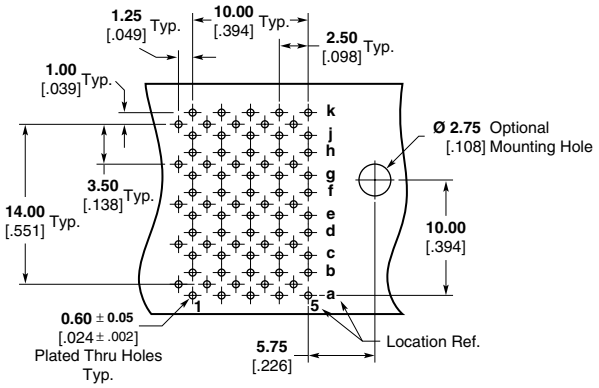
Receptacle Assemblies

Number of Positions	Part Number	Application Tooling					
		Insertion	IS Sheet	Hsg Removal	IS Sheet	Chiclet Removal	IS Sheet
50	120874-1	1338743-1	408-8394	1338744-1	408-8393	1338746-1	408-8410

P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

Note: For finishes other than tin-lead, reference Application Specification 114-13020.



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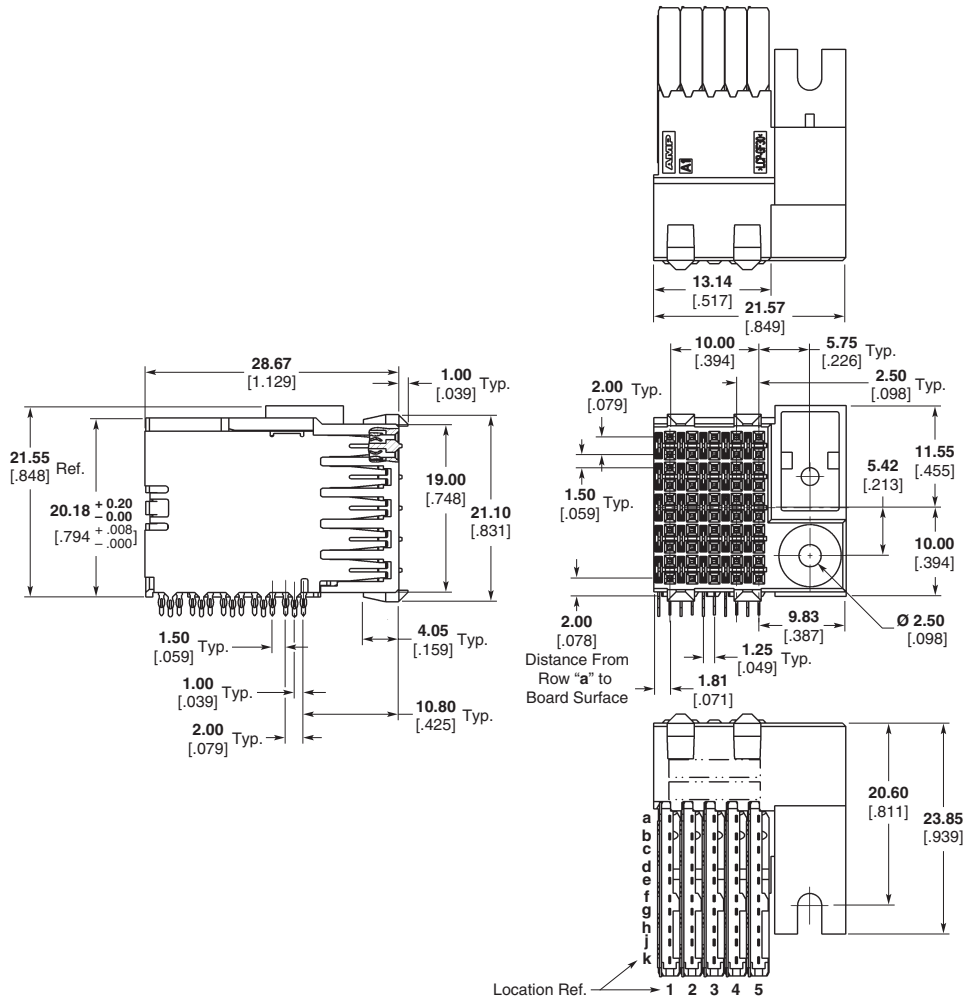
Z-PACK HS3 Connector (Continued)

Right Angle Receptacle
(Continued)

10 Row, Right Module (accepts ESD Guide Pin)



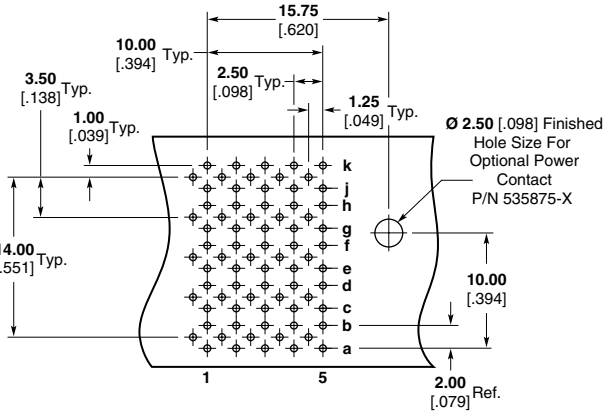
Receptacle Assemblies

Number of Positions	Part Number	Application Tooling					
		Insertion	IS Sheet	Hsg Removal	IS Sheet	Chiclet Removal	IS Sheet
50	120792-1	1338743-1	408-8394	1338744-1	408-8393	1338746-1	408-8410

P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

Note: For finishes other than tin-lead, reference Application Specification 114-13020.



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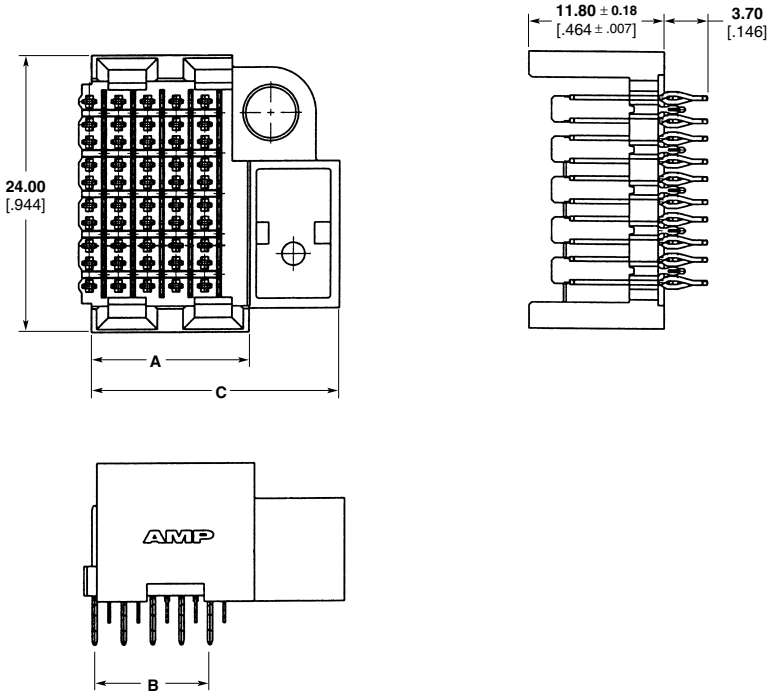
Z-PACK HS3 Connector (Continued)

Vertical Pin Header Assemblies

10 Row, Left Module (accepts Universal Guide Pin)

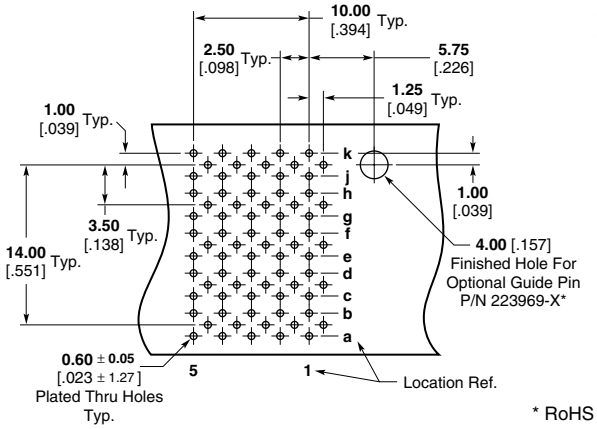


P.C.B. Hole Dimensions

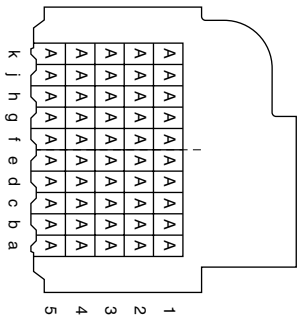
Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

Note: For finishes other than tin-lead, reference Application Specification 114-13020.

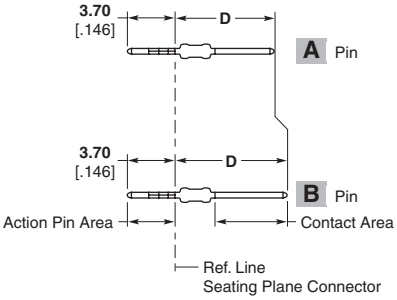
Number of Positions	Dimensions A	B	C	D	Pin Ref.	Part Numbers	Application Tooling: Seating	IS Sheet	Signal Pin: Repair Kit	IS Sheet	Ground Blade: Repair Kit	IS Sheet
50	**13.70** .539	**10.00** .394	**21.61** .851	**8.20** .323	**A**	120672-1	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573
	13.70 .539	**10.00** .394	**21.61** .851	**9.70** .383	**B**	120672-2	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573



Recommended PC Board Layout (Component Side Shown)
For Non-Midplane Applications
For Midplane Applications Reference Page 74



120672-1 Shown



* RoHS Compliant

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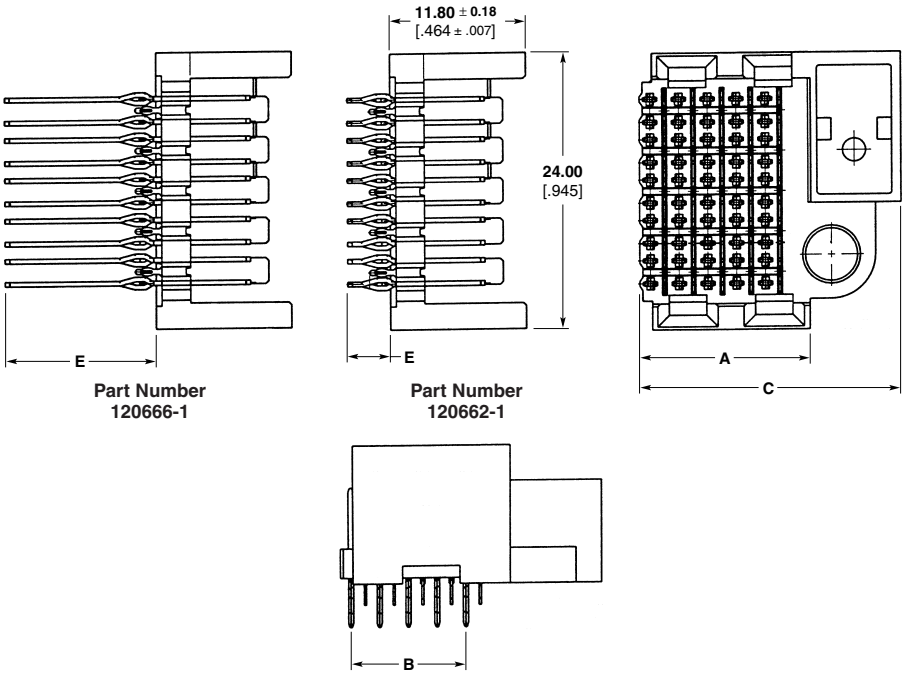
UK: 44-141-810-8967

Z-PACK HS3 Connector (Continued)

Vertical Pin Header Assemblies (Continued)

10 Row, Left Module (accepts ESD Guide Pin)



Part Number 120666-1

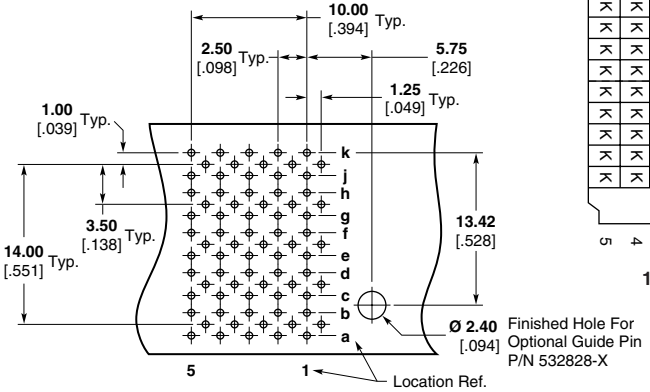
Part Number 120662-1

P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

Note: For finishes other than tin-lead, reference Application Specification 114-13020.

Number of Positions	Dimensions A	B	C	D	E	Pin Ref.	Part Numbers	Application Tooling: Seating	IS Sheet	Signal Pin: Repair Kit	IS Sheet	Ground Blade: Repair Kit	IS Sheet
50	**14.80** .583	**10.00** .394	**22.71** .894	**8.20** .323	**3.70** .146	A	120662-1	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573
	14.80 .583	**10.00** .394	**22.71** .894	**9.70** .382	**3.70** .146	B	120662-2	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573
	14.80 .583	**10.00** .394	**22.71** .894	**8.20** .323	**13.00** .512	K	120666-1	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573
	14.80 .583	**10.00** .394	**22.71** .894	**9.70** .382	**14.50** .571	P	120666-2	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573



Recommended PC Board Layout (Component Side Shown)
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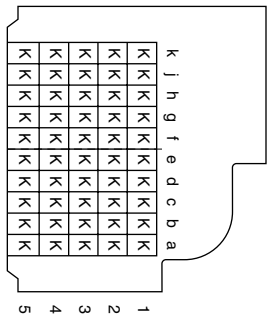
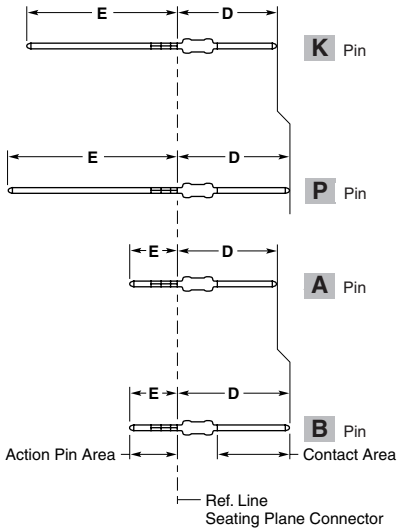


120666-1 Shown



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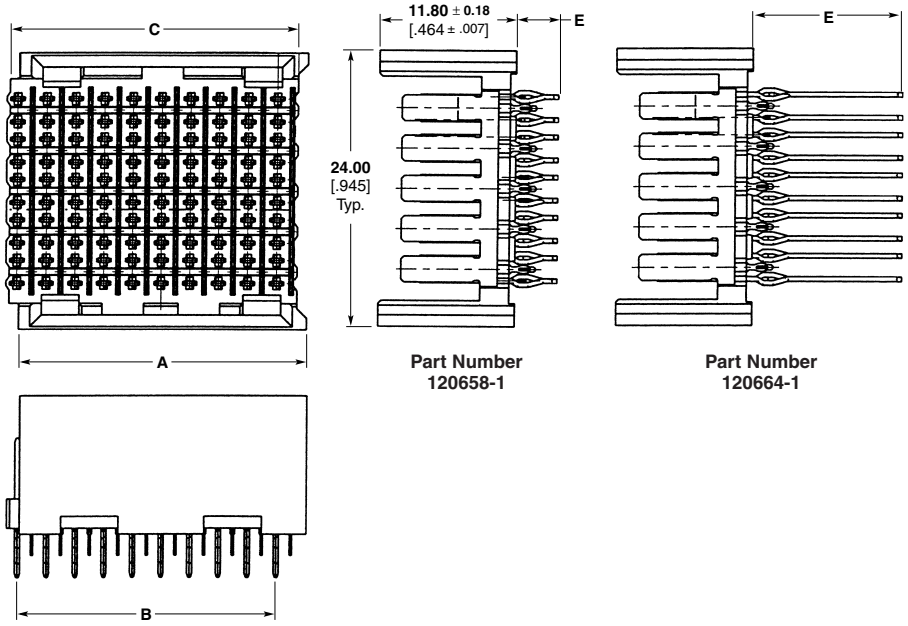
Japan: 81-44-844-8013
UK: 44-141-810-8967

Z-PACK HS3 Connector (Continued)

Vertical Pin Header Assemblies (Continued)

10 Row, Center Module

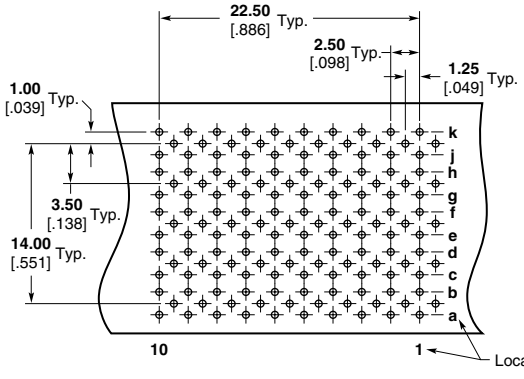


P.C.B. Hole Dimensions

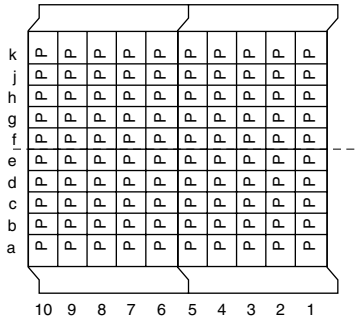
Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

Note: For finishes other than tin-lead, reference Application Specification 114-13020.

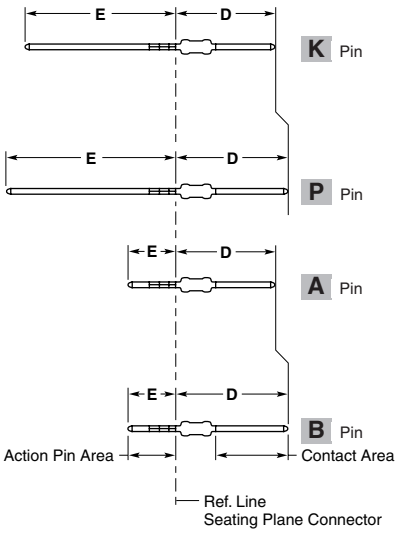
Number of Positions	Dimensions					Pin Ref.	Part Numbers	Application Tooling					
								Seating	IS Sheet	Signal Pin		Ground Blade	
	A	B	C	D	E					Repair Kit	IS Sheet	Repair Kit	IS Sheet
100	**24.90** .980	**22.50** .885	**24.90** .980	**8.20** .322	**3.70** .145	A	120658-1	91312-2	408-4546	354687-2	408-9979	1320534-2	408-4573
	24.90 .980	**22.50** .885	**24.90** .980	**9.70** .381	**3.70** .145	B	120658-2	91312-2	408-4546	354687-2	408-9979	1320534-2	408-4573
	24.90 .980	**22.50** .885	**24.90** .980	**8.20** .322	**13.00** .511	K	120664-1	91312-2	408-4546	354687-2	408-9979	1320534-2	408-4573
	24.90 .980	**22.50** .885	**24.90** .980	**9.70** .381	**14.50** .570	P	120664-2	91312-2	408-4546	354687-2	408-9979	1320534-2	408-4573
50	**12.41** .488	**10.00** .393	**12.40** .488	**8.20** .322	**3.70** .145	A	120747-1	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573
	12.41 .488	**10.00** .393	**12.40** .488	**9.70** .381	**3.70** .145	B	120747-2	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573
	12.41 .488	**10.00** .393	**12.40** .488	**8.20** .322	**13.00** .511	K	120748-1	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573
	12.41 .488	**10.00** .393	**12.40** .488	**9.70** .381	**14.50** .570	P	120748-2	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573



Recommended PC Board Layout
(Component Side Shown)
For Non-Midplane Applications
For Midplane Applications Reference Page 74



120664-2 Shown



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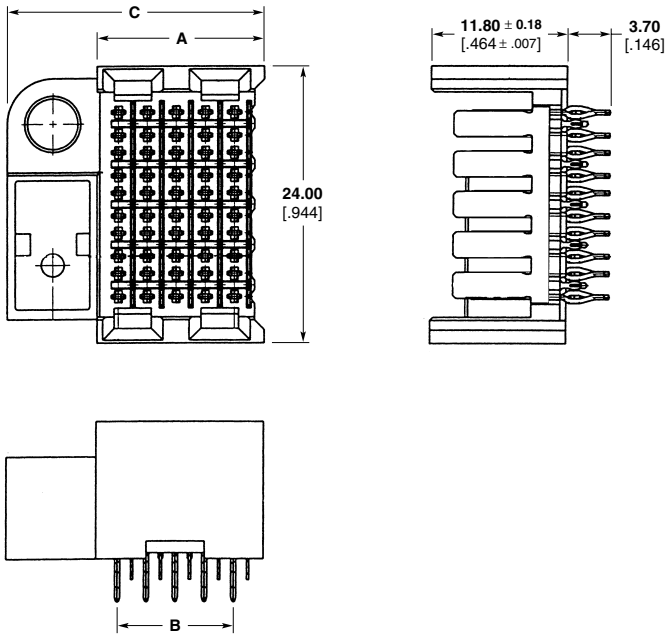
Z-PACK HS3 Connector (Continued)

Vertical Pin Header Assemblies (Continued)

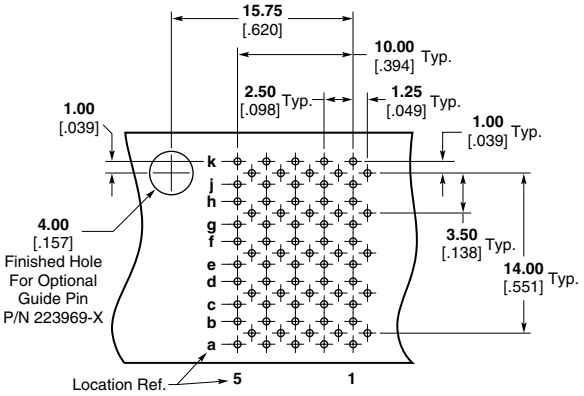
10 Row, Right Module (accepts Universal Guide Pin)



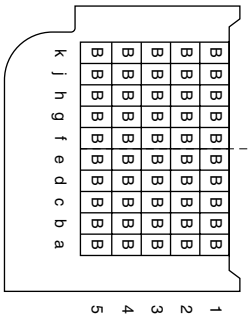
P.C.B. Hole Dimensions
Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

Note: For finishes other than tin-lead, reference Application Specification 114-13020.

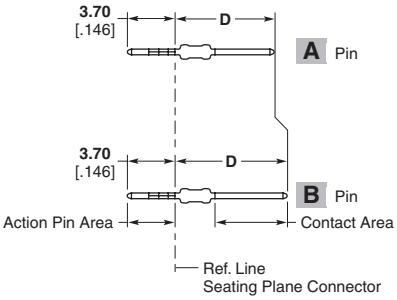
Number of Positions	Dimensions A	B	C	D	Pin Ref.	Part Numbers	Application Tooling: Seating	IS Sheet	Signal Pin: Repair Kit	IS Sheet	Ground Blade: Repair Kit	IS Sheet
50	**14.45** .568	**10.00** .393	**22.28** .877	**8.20** .322	**A**	120670-1	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573
	14.45 .568	**10.00** .393	**22.28** .877	**9.70** .381	**B**	120670-2	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573



Recommended PC Board Layout
(Component Side Shown)
For Non-Midplane Applications
For Midplane Applications Reference Page 74



120670-2 Shown



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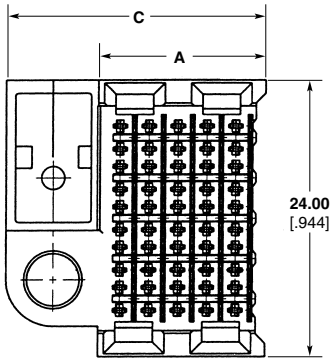
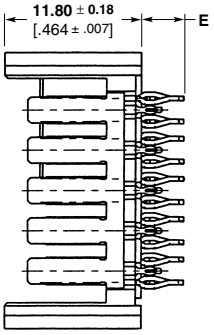
Z-PACK HS3 Connector (Continued)

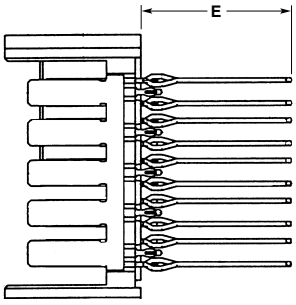
Vertical Pin Header Assemblies (Continued)

10 Row, Right Module (accepts ESD Guide Pin)

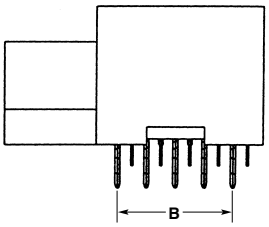




Part Number
120661-1



Part Number
120665-1

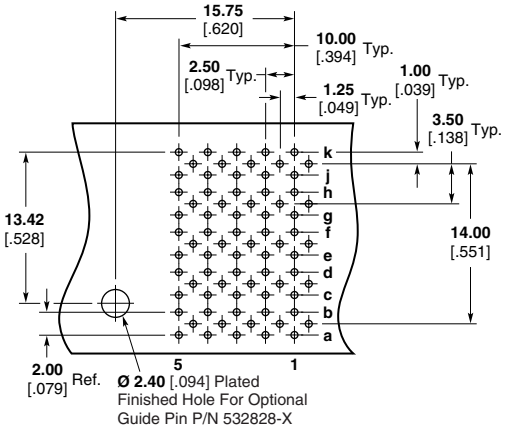


P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

Note: For finishes other than tin-lead, reference Application Specification 114-13020.

Number of Positions	Dimensions					Pin Ref.	Part Numbers	Application Tooling					
	A	B	C	D	E			Seating	IS Sheet	Signal Pin		Ground Blade	
										Repair Kit	IS Sheet	Repair Kit	IS Sheet
50	**14.46** .569	**10.00** .393	**22.28** .877	**8.20** .322	**3.70** .145	A	120661-1	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573
	14.46 .569	**10.00** .393	**22.28** .877	**9.70** .381	**3.70** .145	B	120661-2	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573
	14.46 .569	**10.00** .393	**22.28** .877	**8.20** .322	**13.00** .511	K	120665-1	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573
	14.46 .569	**10.00** .393	**22.28** .877	**9.70** .381	**14.50** .570	P	120665-2	91312-1	408-4546	354687-2	408-9979	1320534-2	408-4573



Recommended PC Board Layout
(Component Side Shown)
For Non-Midplane Applications
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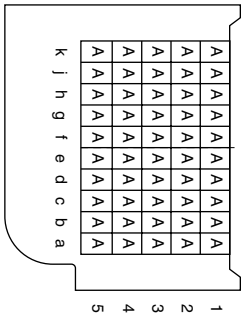
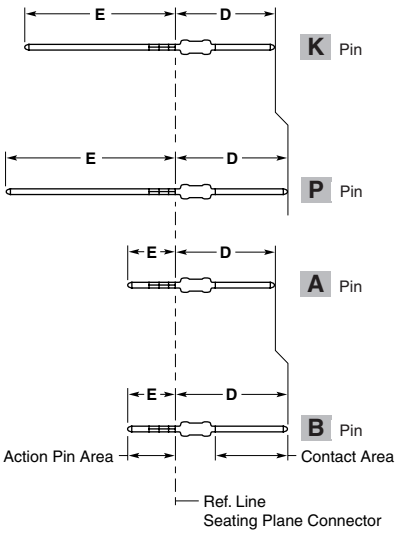


120661-1 Shown



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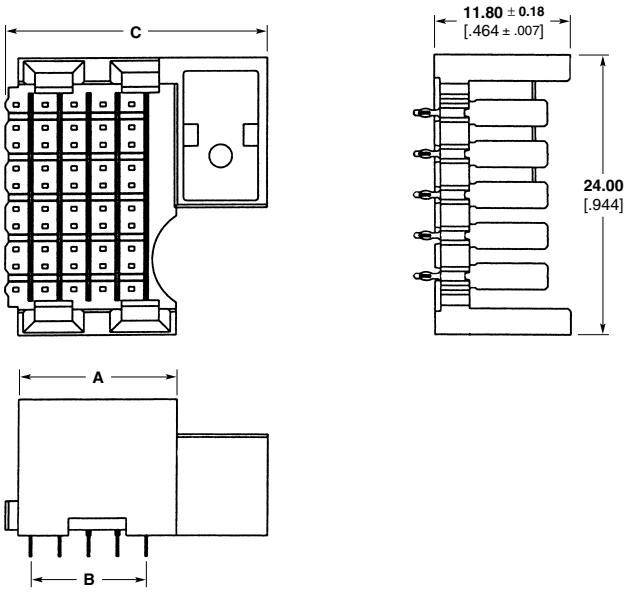
Z-PACK HS3 Connector (Continued)

Vertical Pin Header Shrouds

10 Row, Left Module



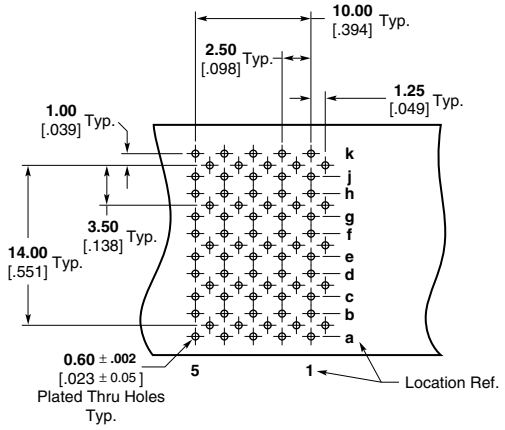
P.C.B. Hole Dimensions

Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

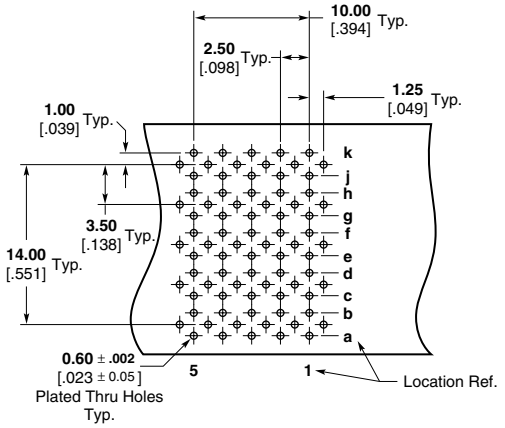
Note: For finishes other than tin-lead, reference Application Specification 114-13020.

Receptacle Assemblies

Number of Positions	Dimensions			Part Number	Application Tooling			
	A	B	C		Seating	IS Sheet	Ground Blade Repair Kit	Ground Blade IS Sheet
50	13.70 .539	10.00 .877	22.80 .322	120668-1	91312-1	408-4546	1320534-2	408-4573



Non-Coplanar Daughtercards
(Pin 1a Header = Pin 1k Shroud Side)
Recommended PC Board Layout — Reference Page 74
(Shroud Side Shown)



Coplanar Daughtercards
(Pin 1a Header = Pin 5a Shroud Side)
Recommended PC Board Layout — Reference Page 74
(Shroud Side Shown)

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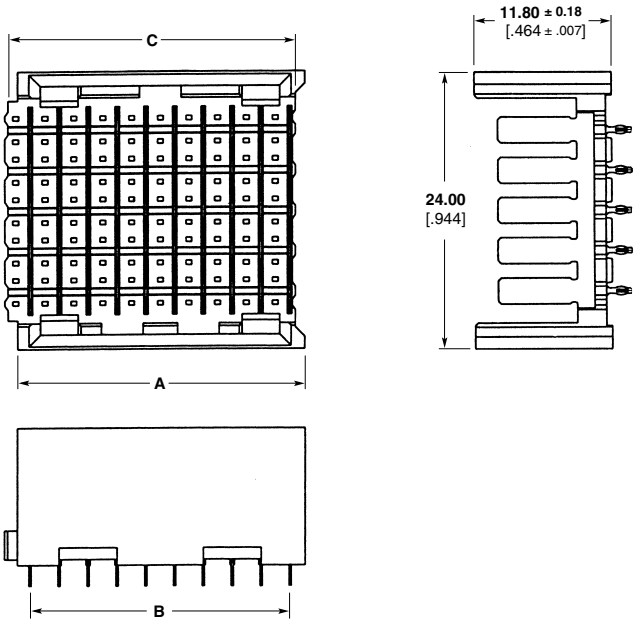
Japan: 81-44-844-8013
UK: 44-141-810-8967

Z-PACK HS3 Connector (Continued)

Vertical Pin Header Shrouds (Continued)

10 Row, Center Module

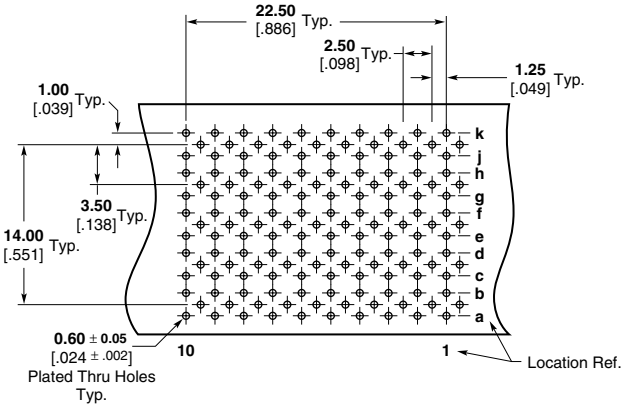


P.C.B. Hole Dimensions
Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

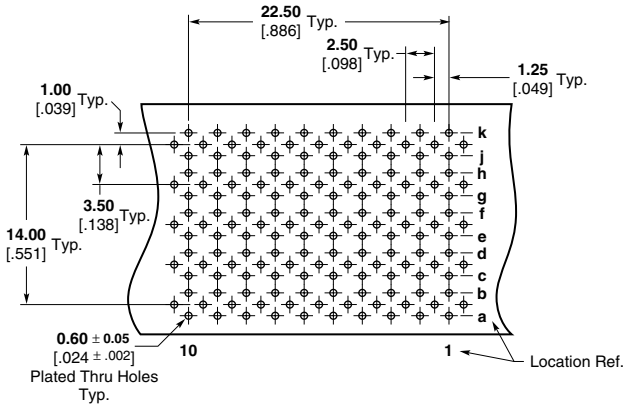
Note: For finishes other than tin-lead, reference Application Specification 114-13020.

Receptacle Assemblies

Number of Positions	Dimensions			Part Number	Application Tooling			
	A	B	C		Seating	IS Sheet	Ground Blade Repair Kit	Ground Blade IS Sheet
100	24.90 .980	22.50 .886	24.90 .980	120663-1	91312-2	408-4546	1320534-2	408-4573
50	12.41 .488	10.00 .394	12.40 .488	120750-1	91312-1	408-4546	1320534-2	408-4573



Non-Coplanar Daughtercards
(Pin 1a Header = Pin 1k Shroud Side)
Recommended PC Board Layout — Reference Page 74
(Shroud Side Shown)



Coplanar Daughtercards
(Pin 1a Header = Pin 10a Shroud Side)
Recommended PC Board Layout — Reference Page 74
(Shroud Side Shown)

Catalog 1773095
Issued 4-05

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Dimensions are in millimeters and inches unless otherwise specified. Values in brackets are U.S. equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
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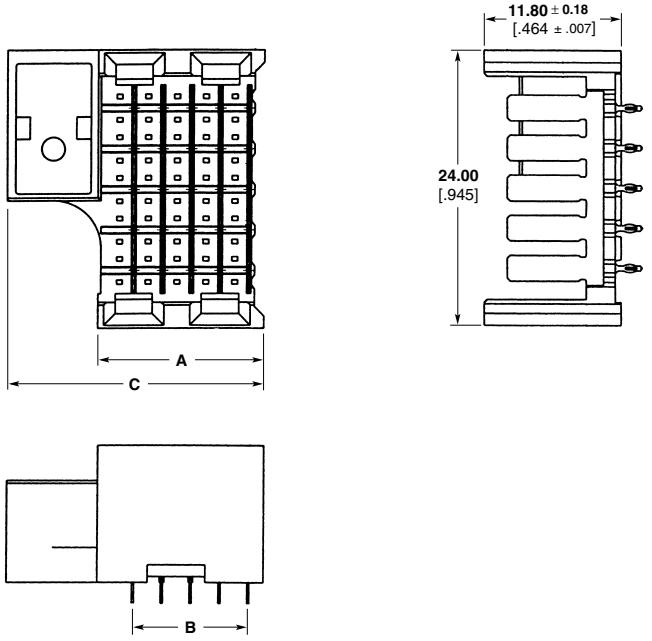
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Z-PACK HS3 Connector (Continued)

Vertical Pin Header Shrouds (Continued)

10 Row, Right Module

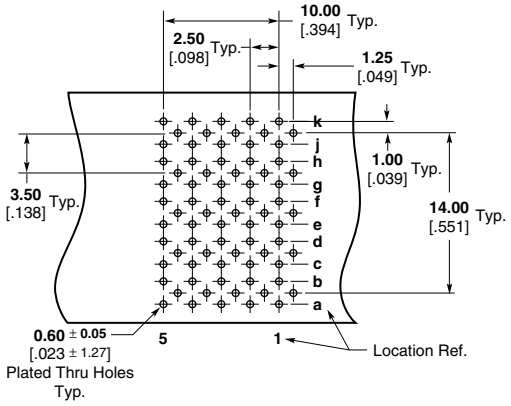


P.C.B. Hole Dimensions
Drilled Hole — 0.7±0.025mm
Fin. Hole — 0.55 to 0.65mm
Cu-thickness — 0.025 to 0.050mm
SnPb-thickness — 0.004 to 0.010mm

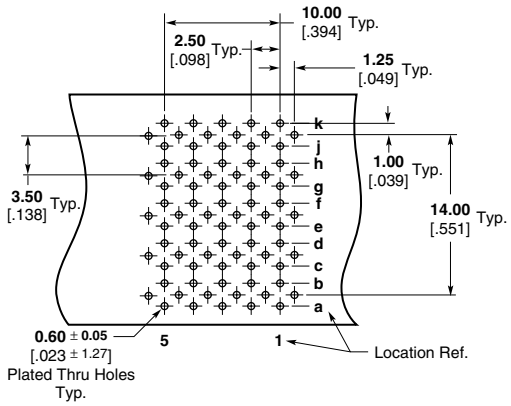
Note: For finishes other than tin-lead, reference Application Specification 114-13020.

Receptacle Assemblies

Number of Positions	Dimensions			Part Number	Application Tooling			
	A	B	C		Seating	IS Sheet	Ground Blade Repair Kit	Ground Blade IS Sheet
50	14.46 .569	10.00 .394	22.28 .877	120667-1	91312-1	408-4546	1320534-2	408-4573



Non-Coplanar Daughtercards
(Pin 1a Header = Pin 1k Shroud Side)
Recommended PC Board Layout — Reference Page 74
(Shroud Side Shown)



Coplanar Daughtercards
(Pin 1a Header = Pin 5a Shroud Side)
Recommended PC Board Layout — Reference Page 74
(Shroud Side Shown)

Catalog 1773095
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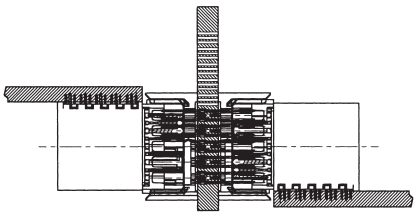
UK: 44-141-810-8967

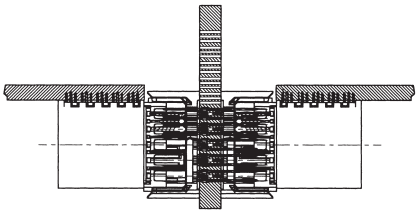
Z-PACK HS3 Connector (Continued)

Layout Guide for Midplane Applications
10 Row Connectors

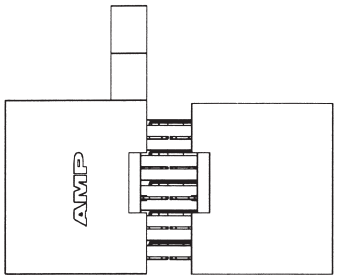
Non-Coplanar Applications

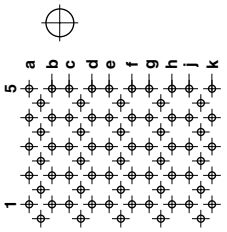


Coplanar Applications



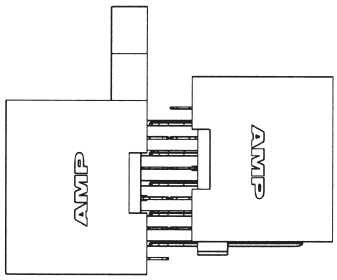
Right Module

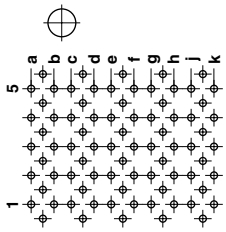




Vertical Pin Header, Feed-Through Part No.	Shroud Part No.
120665	120667-1

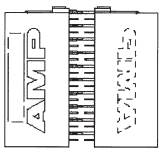
Right Module

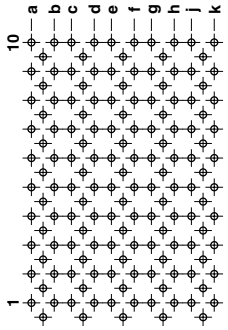




Vertical Pin Header, Feed-Through Part No.	Shroud Part No.
120665	120668-1

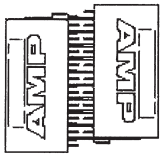
Center Module

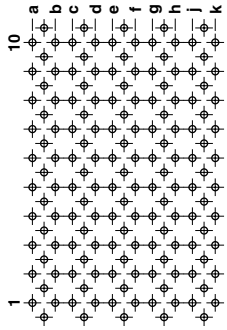




No. of Pos.	Vertical Pin Header, Feed-Through Part No.	Shroud Part No.
100	120664	120663-1
50	—	120750-1

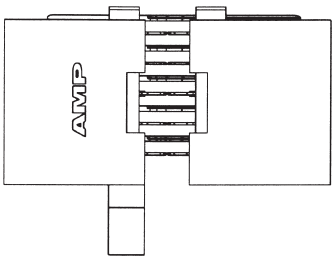
Center Module

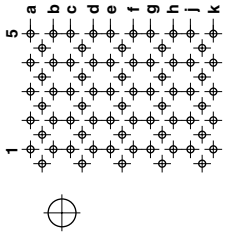




No. of Pos.	Vertical Pin Header, Feed-Through Part No.	Shroud Part No.
100	120664	120663-1
50	—	120750-1

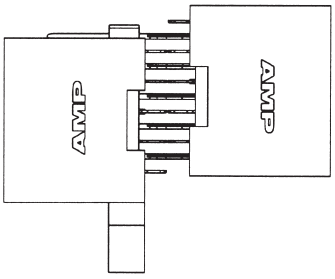
Left Module

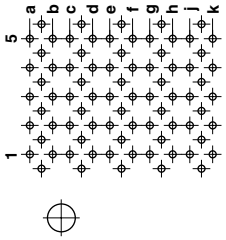




Vertical Pin Header, Feed-Through Part No.	Shroud Part No.
120666	120667-1

Left Module





Vertical Pin Header, Feed-Through Part No.	Shroud Part No.
120666	120668-1

Catalog 1773095
Issued 4-05

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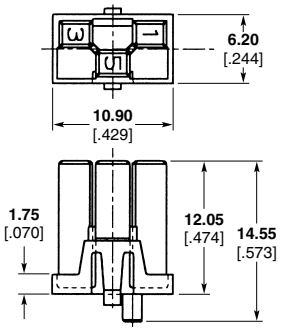
UK: 44-141-810-8967

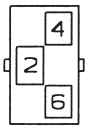
Z-PACK HS3 Connector (Continued)

Coding Keys (10 Row Only)

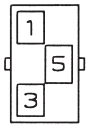
Compatibility — Z-PACK HS3, Z-PACK 12 row connectors
Part Number 120639-3 (white)
Part Number 120639-6 (red)

Material & Finish — Valox





Part Number 120639-6



Part Number 120639-3

Power and Guide Hardware

Universal Power Module Vertical Receptacle (3 Pos.)

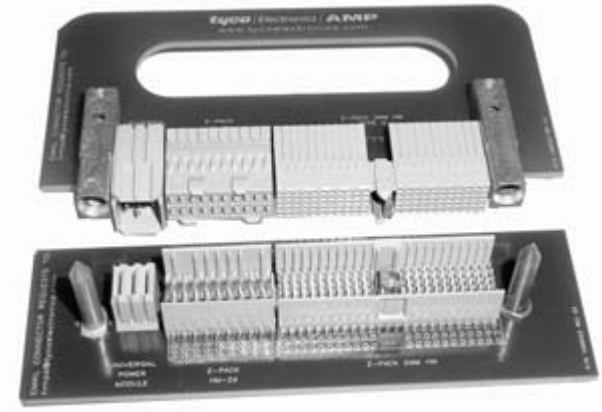
The Tyco Electronics Universal Power Module is a multi-position, modular, Hard Metric board-to-board power connector designed to be compatible with Z-PACK 2mm HM Connectors. The design is in an "inverse-sex" orientation and the vertical receptacle module meets the IEC 950 safety requirements for finger probe protection.

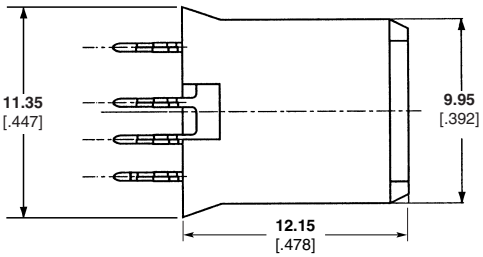
Both the headers and receptacle utilize Tyco Electronics ACTION PIN press-fit leads for ease of assembly onto printed circuit boards. Additionally, the vertical receptacle leads are polarized to allow only one orientation onto the printed circuit board, eliminating the possibility of reverse placement.

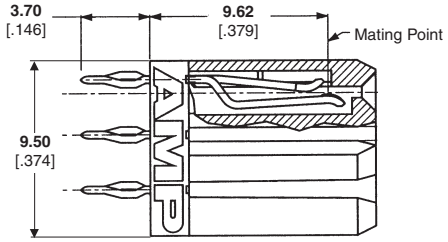
The Universal Power Module is compatible with a wide variety of other Tyco Electronics board-to-board connectors including Z-PACK HS3, Z-PACK HM-Zd, Z-PACK Strip-line 100, AMP-HDI, TBC, TBC Plus and Eurocard connectors.

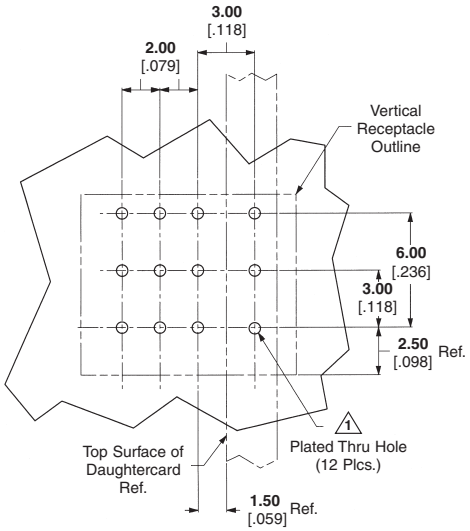
The right angle header contacts are available with sequenced lengths for "make-first/break-last" applications.

Generous alignment features designed into the housings and optional guide pins and receptacles make the Tyco Electronics Universal Power Module ideal for "blind mating" applications.









Recommended PC Board Hole Layout

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

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]

Note: For finishes other than tin-lead, reference Application Specification 114-1103.

Catalog 1773095
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UK: 44-141-810-8967

Z-PACK HS3 Connector (Continued)

Power and Guide Hardware
(Continued)

Expanded Universal Power Module Vertical Receptacles

Material and Finish
Housing — Polyester, gray

Contact — Copper alloy, plated 0.00127 [.000050] min. gold in mating area, 0.00050 [.000020] min. tin-lead on ACTION PIN area, with entire contact underplated 0.00127 [.000050] min. nickel

Related Product Data
Guiding Hardware (Optional) — pages 80 and 81

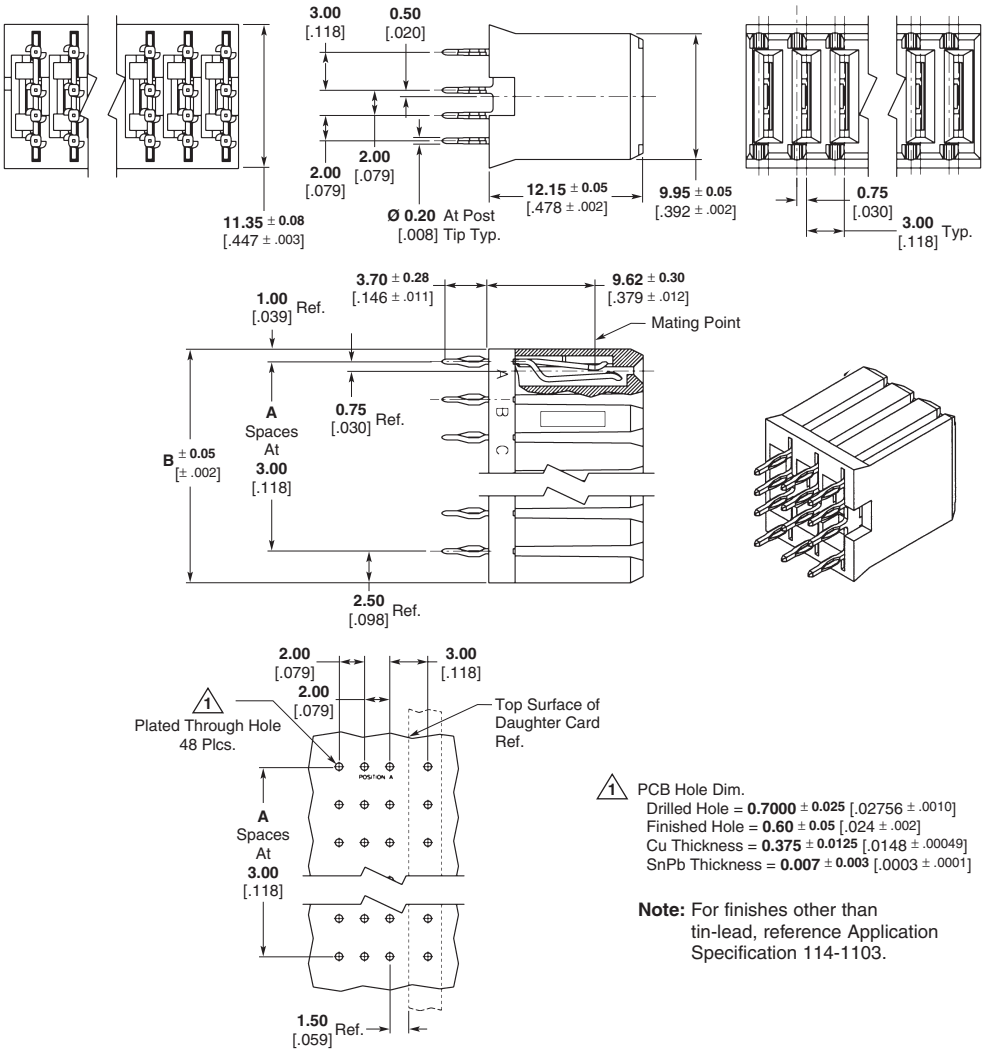
Application Tooling
Header
Seating Tool, 224441-1
Board Support Fixture, 224442-1

Receptacle
Seating Tool, 224421-1
Board Support Fixture, 217602-1

Technical Documents
Product Specification
108-1651

Application Specification
114-1103

Tyco Electronics Instruction Sheet
408-4169 (Receptacle Seating Tool 224421-1)



Recommended PCB Hole Layout

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]

Note: For finishes other than tin-lead, reference Application Specification 114-1103.

Position	A	B Ref.	Standard *10A Part Number	High Current *15A Part Number
4	3	**12.50** .492	223995-1	120953-1
5	4	**15.50** .610	223995-2	120953-2
6	5	**18.50** .728	223995-3	120953-3
7	6	**21.50** .846	223995-4	120953-4
8	7	**24.50** .965	223995-5	120953-5

*Reference Product Specification 108-1651.

Note: For additional Power Module options reference Catalog 1773096, "Power Connectors and Interconnection Systems," or contact your Tyco Electronics Sales Representative.

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UK: 44-141-810-8967

Z-PACK HS3 Connector (Continued)

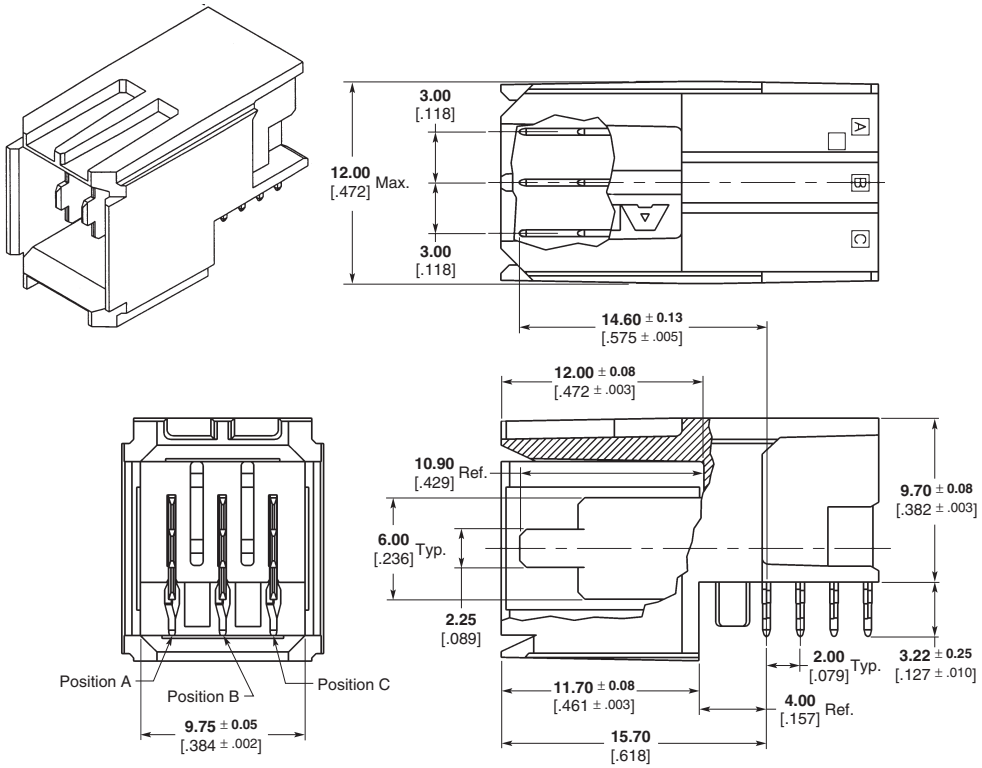
Power and Guide Hardware
(Continued)

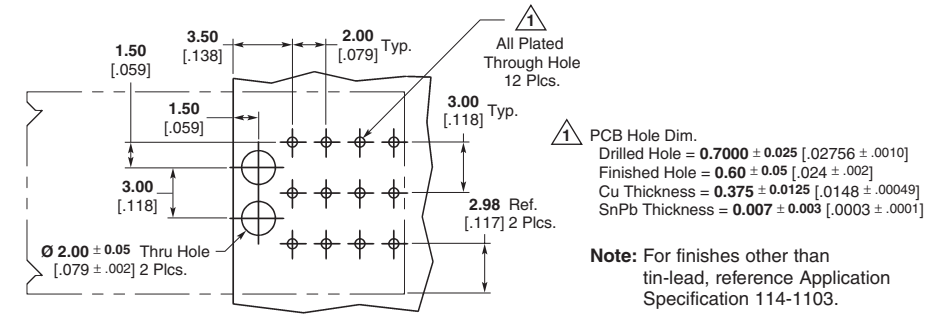
Universal Power Module Right Angle Headers (3 Pos.)

Material and Finish

Housing — polyester, natural color

Contacts — Copper alloy, plated 0.00127 [.000050] min. gold in mating area, 0.00050 [.000020] min. tin-lead on ACTION PIN post area, with entire contact underplated 0.00127 [.000050] min. nickel





Note: For finishes other than tin-lead, reference Application Specification 114-1103.

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]	223961-1	5-223961-1
10.90 [.429]	**9.30** [.366]	**10.90** [.429]	223962-1	—
10.90 [.429]	**9.30** [.366]	**9.30** [.366]	223968-1	—
10.90 [.429]	**7.68** [.302]	**10.90** [.429]	223972-1	—
10.90 [.429]	**7.68** [.302]	**9.30** [.366]	223971-1	—
10.90 [.429]	**7.68** [.302]	**7.68** [.302]	223970-1	—
9.30 [.429]	**10.90** [.429]	**9.30** [.366]	223963-1	—
9.30 [.366]	**10.90** [.429]	**7.68** [.302]	223964-1	—
9.30 [.366]	**9.30** [.366]	**9.30** [.366]	223967-1	—
9.30 [.366]	—	**9.30** [.366]	223975-1	—
9.30 [.366]	**9.30** [.366]	**7.68** [.302]	223981-1	—
9.30 [.366]	**7.68** [.302]	**9.30** [.366]	223965-1	—
7.68 [.302]	**9.30** [.366]	**7.68** [.302]	223983-1	—
7.68 [.302]	**7.68** [.302]	**9.30** [.366]	223980-1	—
7.68 [.302]	**7.68** [.302]	**7.68** [.302]	223974-1	5-223974-1

*Reference Product Specification 108-1651.

Note: For additional Power Module options reference Catalog 1773096, "Power Connectors and Interconnection Systems," or contact your Tyco Electronics Sales Representative.

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Japan: 81-44-844-8013
UK: 44-141-810-8967

Z-PACK HS3 Connector (Continued)

Power and Guide Hardware
(Continued)

Expanded Universal Power Module Right Angle Headers

Material and Finish
Housing — Polyester, gray

Contacts — Phosphor bronze, plated 0.00127 [.000050] min. gold in mating area, 0.00054 [.000021] min. tin-lead on ACTION PIN area, with entire contact underplated 0.00127 [.000050] min. nickel

Related Product Data
Guiding Hardware (Optional) — pages 80 and 81

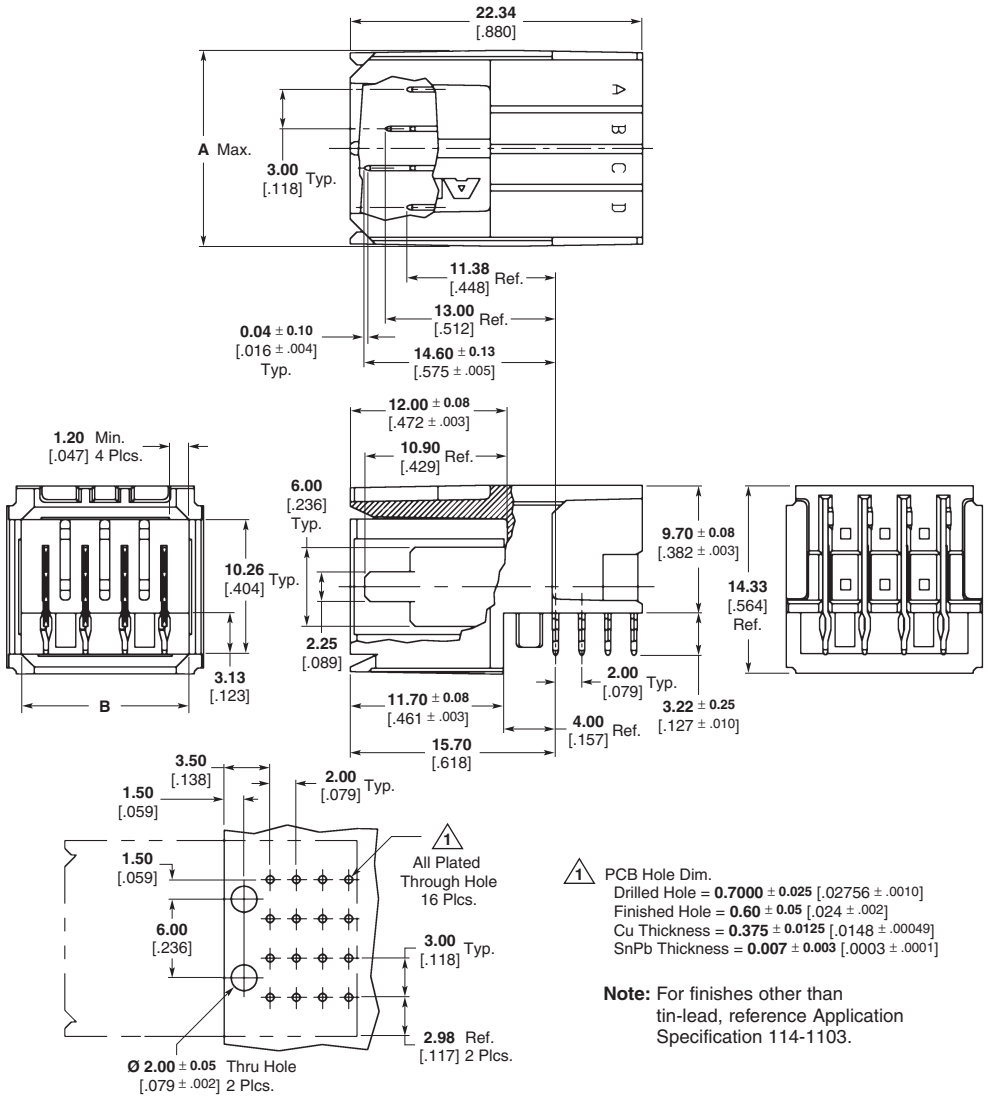
Application Tooling
Header
Seating Tool, 224441-1
Board Support Fixture, 224442-1

Receptacle
Seating Tool, 224421-1
Board Support Fixture, 217602-1

Technical Documents
Product Specification
108-1651

Application Specification
114-1103

Tyco Electronics Instruction Sheet
408-4169 (Receptacle Seating Tool 224421-1)



Recommended PC Board Hole Layout

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]

Note: For finishes other than tin-lead, reference Application Specification 114-1103.

Positions	Dimensions		Standard *10A Base Part Number[1]	High Current *15A Base Part Number[1]
	A	B		
4	**15.00** .591	**12.75** .502	646954	120954
5	**18.00** .709	**15.75** .620	646955	120955
6	**21.00** .827	**18.75** .738	646956	120956
7	**24.00** .945	**21.75** .856	646957	120957
8	**27.00** 1.063	**24.75** .974	646958	120958

[1] Dash number indicates sequence pattern. See customer drawing for specific dash numbers.

*Reference Product Specification 108-1651.

Note: For additional Power Module options reference Catalog 1773096, "Power Connectors and Interconnection Systems," or contact your Tyco Electronics Sales Representative.

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USA: 1-800-522-6752
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Japan: 81-44-844-8013
UK: 44-141-810-8967

Z-PACK HS3 Connector (Continued)

Power and Guide Hardware
(Continued)

AMP-HDI-Static Discharge Guide/Power Pins

Compatibility — Z-PACK HS3, Z-PACK 2mm HM connectors

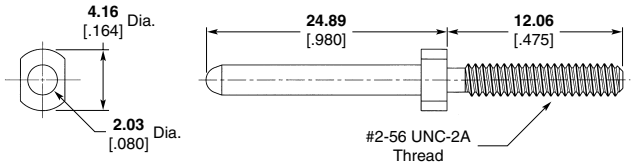
Part Number — 532828-5*

Nut — 21124-4

Washer — 986794-1

Max. Current Rating — 10 Amperes

*Additional sequence lengths are available, contact Tyco Electronics



Material and Finish

Brass, plated 0.00076 [.000030] gold over 0.00127-0.00254 [.000050-.000100] nickel

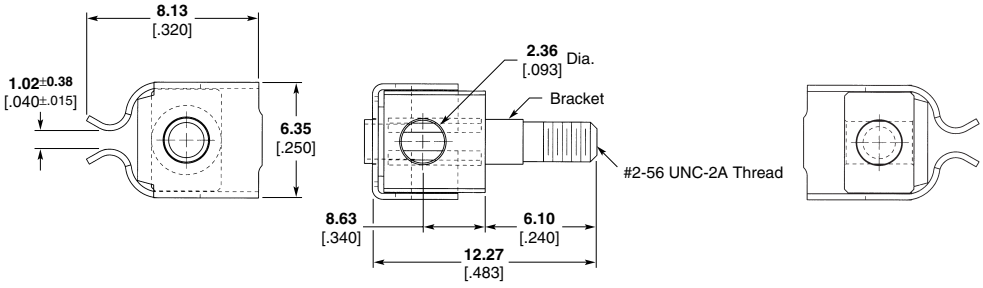
AMP-HDI-Guide Pin/Power Receptacles

Compatibility — Z-PACK HS3 Connector

Part Number — 535875-1*

Max. Current Rating — 10 Amperes

*Additional lengths are available, see customer drawing.



Material and Finish

Contact Finish — 0.00076 [.000030] gold in contact area, over 0.00127 [.000050] min. nickel underplate. Gold flash on remainder of the contact.

ESD-Guide Pin/Feed-through

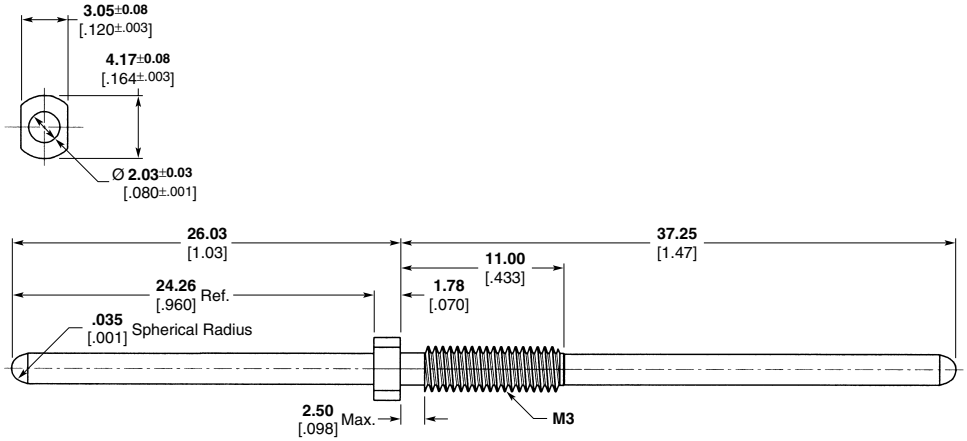
Compatibility — Z-PACK HS3 Connector

Part Number — 120759-2* †

Max. Current Rating — 10 Amperes

*Additional sequence lengths are available, contact Tyco Electronics

† RoHS Compliant



Material and Finish

Brass, plated 0.00076 [.000030] gold all over 0.001427-0.00254 [.000050-.000100] nickel underplate

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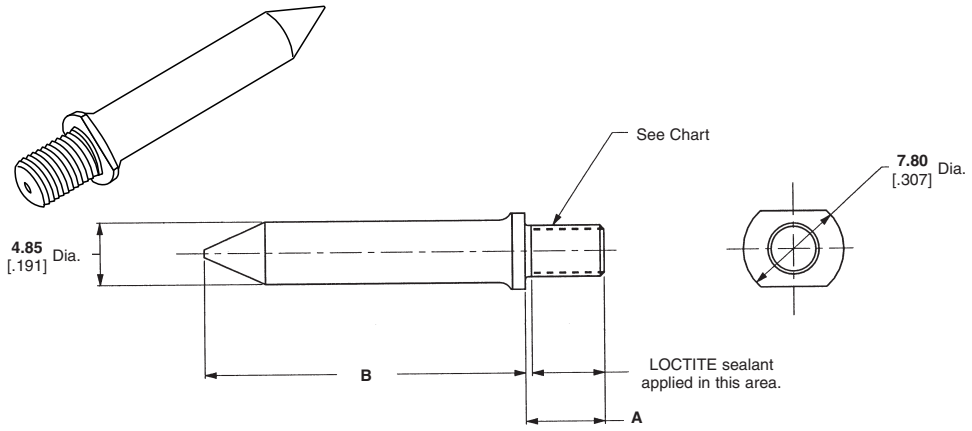
Z-PACK HS3 Connector (Continued)

Power and Guide Hardware
(Continued)

Guide Pin (Unkeyed)

Material and Finish
Guide Pin — Passivated stainless steel
Part Number 223956-1



Dimension		Thread	Part Numbers
A	B		
7.50 [.295]	**24.73** [.974]	M4 x 7-6g	223982-1*
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** [.150]	**27.16** [1.069]	M4 x 7-6h	120646-1
2.00** [.079]	**27.16** [1.069]	M3 x 0.5	223988-1

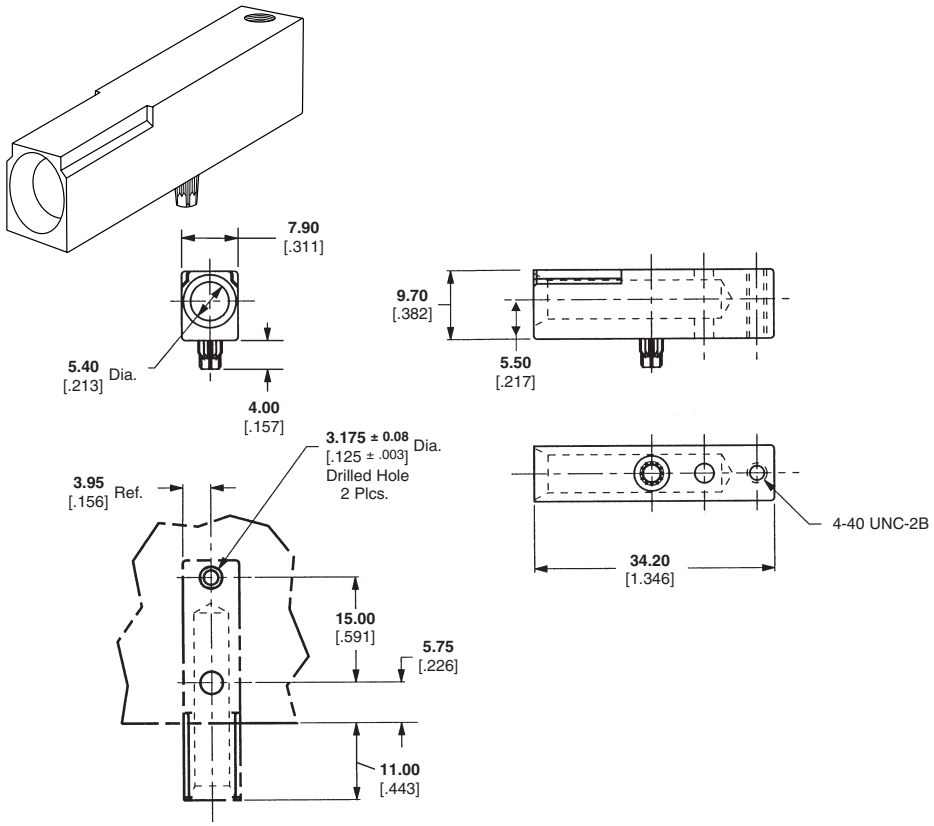
*6.35 Hex Base
**Internal Thread

Female Guide Module (Unkeyed)

Material and Finish
Guide Module — Zinc alloy, chromate conversion coated

Related Product Data
Application Tooling —
Seating Tool, 224440-1.
Board Support Fixture, 217603-1.

Technical Documents
Product Specification
108-1651
Application Specification
114-1103
Part Number 223957-1
(as shown)
Part Number 223979-1
(dual alignment posts)



Recommended PC Board Hole Layout

LOCTITE is a trademark of Henkel Corp.

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Z-PACK HS3 Connector (Continued)

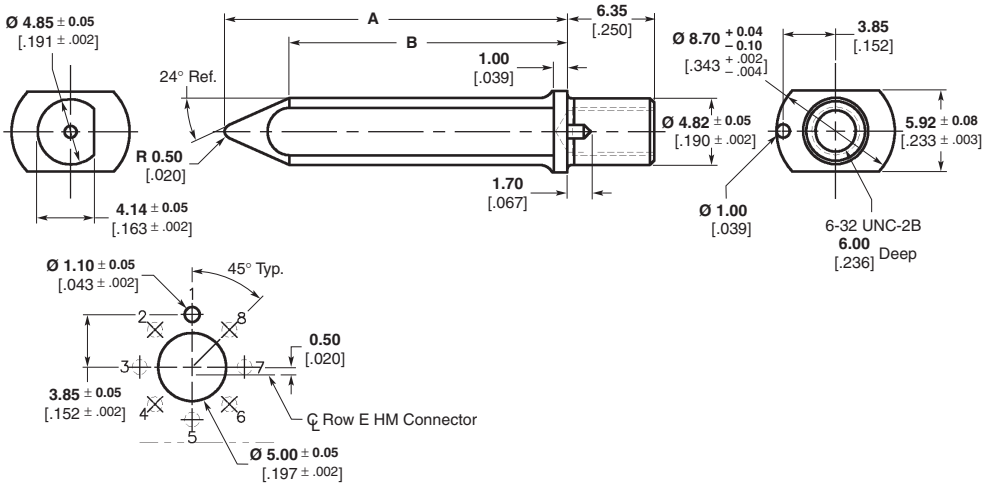
Power and Guide Hardware
(Continued)

Guide Pin (Unkeyed)

Material and Finish
Guide Pin — Zinc alloy, chromate conversion coated

Part Number 223985

Dimension		Part Number
A	B	
25.16 .991	**20.39** .803	223985-1
29.00 1.142	**24.23** .954	223985-3



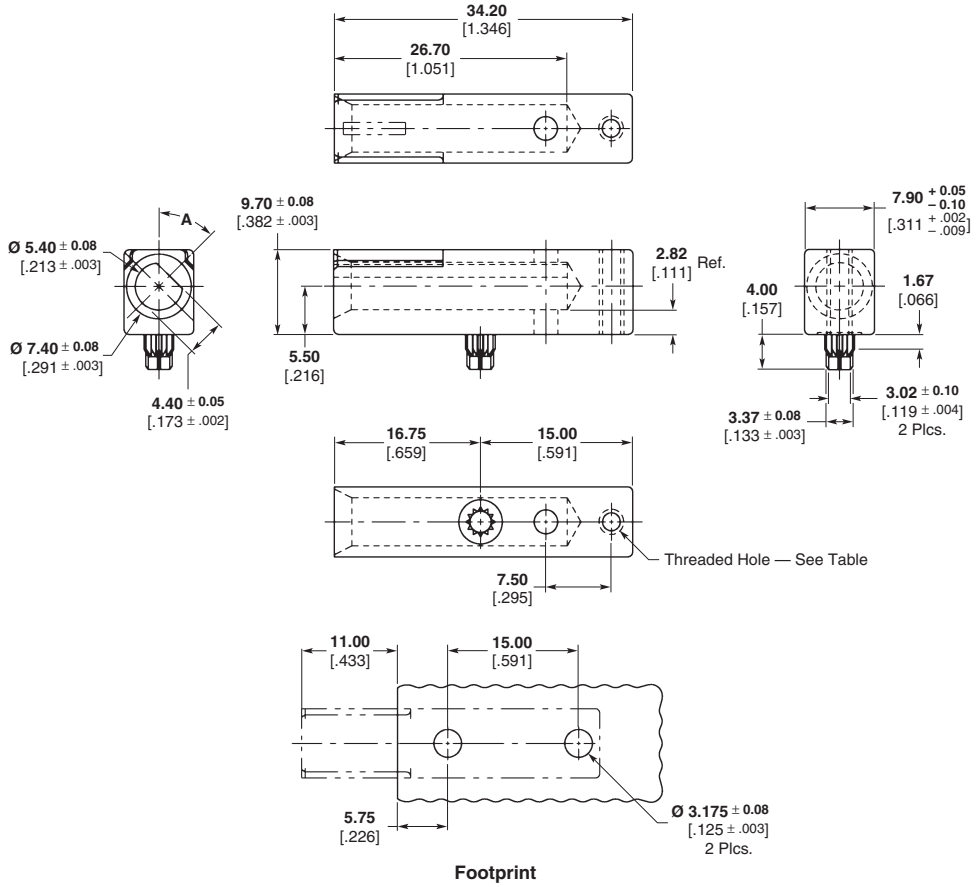
Recommended PC Board Layout (Position Shown Used with Part Number 223986-1)

Female Guide Module (Unkeyed)

Material and Finish
Guide Module — Zinc alloy, chromate conversion coated

Part Number 223986

Dim. A	Thread	Part Number
0°	4-40	223986-1
45°	4-40	223986-2
90°	4-40	223986-3
135°	4-40	223986-4
180°	4-40	223986-5
225°	4-40	223986-6
270°	4-40	223986-7
315°	4-40	223986-8
0°	M2.6	120913-1
45°	M2.6	120913-2
90°	M2.6	120913-3
135°	M2.6	120913-4
180°	M2.6	120913-5
225°	M2.6	120913-6
270°	M2.6	120913-7
315°	M2.6	120913-8



Footprint

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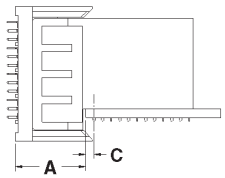
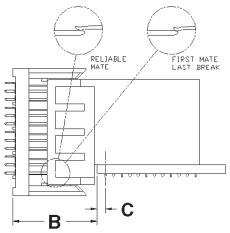
Z-PACK HS3 Connector (Continued)

Z-PACK HS-3 Connector Mating Sequence Chart



Fully Mated



Reliable Mate

Product Family	Dim. C	Dim. A Fully Mated	Contact	Dim B. Reliable Mate	Dim B. First Mate Last Break	Fully Mated Wipe Length
HM-Zd	**1.50** .059	**12.50** .492	Ground Shield	**16.78** [.661]	**17.55** [.691]	**4.28** [.169]
			Signal Level 2	**15.41** [.607]	**15.85** [.624]	**2.91** [.115]
			Signal Level 1	**13.91** [.548]	**14.35** [.565]	**1.41** [.056]
HM-Zd Guide Hardware	**3.00** .118	**12.50** .492	24.0 mm Pin	**27.50** [1.083]	**33.40** [1.315]	N/A
			22.2 mm Pin	**25.70** [1.012]	**31.60** [1.244]	N/A
			Key Blocking Point	N/A	**22.03** [.867]	N/A
HM-2mm	**1.50** .059	**12.50** .492	Signal Level 3	**18.27** [.719]	**18.84** [.742]	**5.77** [.227]
			Signal Level 2	**16.77** [.660]	**17.34** [.683]	**4.27** [.168]
			Signal Level 1	**15.27** [.601]	**15.84** [.624]	**2.77** [.109]
MULTIGIG RT T1	**2.50** .098	**12.50** .492	Ground	**18.00** [.709]	—	**5.50** [.217]
			Signal Level 3	**18.00** [.709]	—	**5.50** [.217]
			Signal Level 2	**16.50** [.650]	—	**4.00** [.157]
			Signal Level 1	**15.00** [.591]	—	**2.50** [.098]
MULTIGIG RT T2	**2.25** .089	**12.50** .492	Ground	**18.00** [.709]	—	**5.50** [.217]
			Signal Level 3	**18.00** [.709]	—	**5.50** [.217]
			Signal Level 2	**16.50** [.650]	—	**4.00** [.157]
			Signal Level 1	**15.00** [.591]	—	**2.50** [.098]
MULTIGIG RT T3	**2.25** .089	**12.50** .492	Ground	**16.50** [.650]	—	**4.00** [.157]
			Signal Level 1	**15.00** [.591]	—	**2.50** [.098]
MULTIGIG RT Power Module	**5.50** .217	**12.50** .492	Power Level 3	**23.75** [.935]	—	**11.25** [.443]
			Power Level 2	**22.25** [.876]	—	**9.75** [.384]
			Power Level 1	**20.75** [.817]	—	**8.25** [.325]
MULTIGIG RT Guide Hardware	N/A	**12.50** .492	Guide Pin Key	**33.25** [1.309]	N/A	**20.75** [.817]
			Guide ESD Contact	**30.75** [1.211]	—	**18.25** [.719]
HS-3	**1.50** .059	**12.50** .492	Ground	**17.08** [.672]	**17.60** [.693]	**4.78** [.188]
			Signal Level 2	**16.05** [.632]	**16.47** [.648]	**3.75** [.148]
			Signal Level 1	**14.55** [.573]	**14.97** [.589]	**2.25** [.089]
UPM	**3.50** .138	**12.50** .492	Power Level 3	**20.25** [.797]	**20.95** [.825]	**8.10** [.319]
			Power Level 2	**18.65** [.734]	**19.35** [.762]	**6.50** [.256]
			Power Level 1	**17.03** [.670]	**17.73** [.698]	**4.88** [.192]
UPM Guide Hardware	**5.75** .226	**12.50** .492	Guide Pin Key	**31.39** [1.236]	**36.16** [1.424]	N/A
			Keyed Guide Pin	**31.39** [1.236]	**36.16** [1.424]	N/A
			Keyed Guide Pin	**35.23** [1.387]	**40.00** [1.575]	N/A
MULTI-BEAM XL Right Angle Header to Vertical Receptacle	**5.08** .200	**14.73** .580	PreMate Power — Level 1	—	**16.84** [.663]	**5.61** [.221] Min.
			PostMate Power — Level 2	—	**17.81** [.701]	**4.34** [.171] Min.
			PreMate Signal — Level 2	—	**18.26** [.719]	**3.81** [.150] Min.
			PostMate Signal — Level 3	—	**19.53** [.769]	**2.54** [.100] Min.
MULTI-BEAM XL Right Angle Receptacle to Vertical Header	**3.81** .150	**13.21** .520	PreMate Power — Level 1	—	**15.32** [.603]	**5.61** [.221] Min.
			PostMate Power — Level 2	—	**16.28** [.641]	**4.34** [.171] Min.
			PreMate Signal — Level 2	—	**16.74** [.659]	**3.81** [.150] Min.
			PostMate Signal — Level 3	—	**18.01** [.709]	**2.54** [.100] Min.

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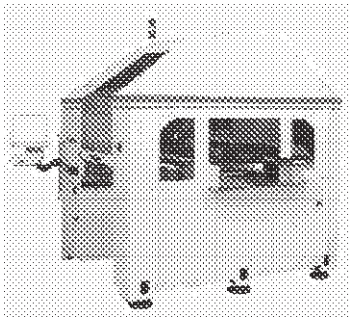
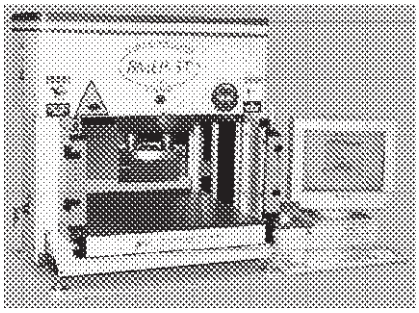
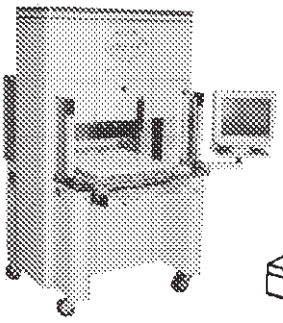
Application Tooling and Equipment



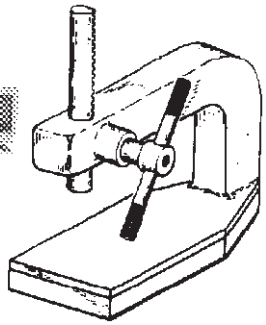
1585280-1 Model AP3



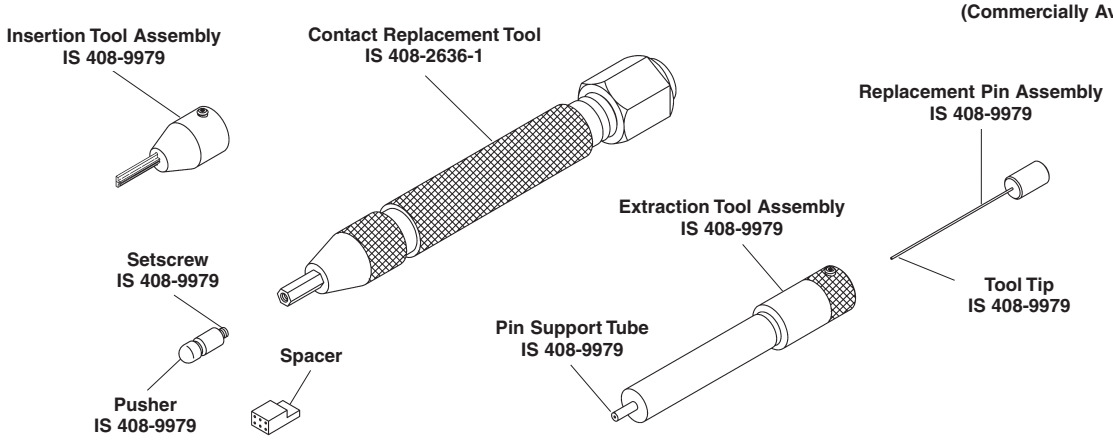
1585696-1 Model BMEP 5T



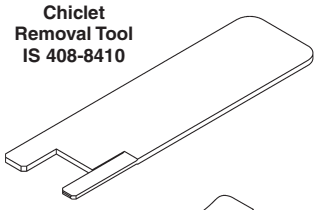
1585699-1 Model MEP 6T



Typical Manual Arbor Frame Assembly (Commercially Available)

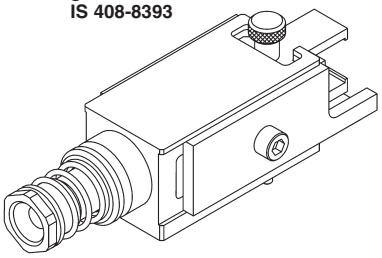


Pin Repair Kit IS 408-9979

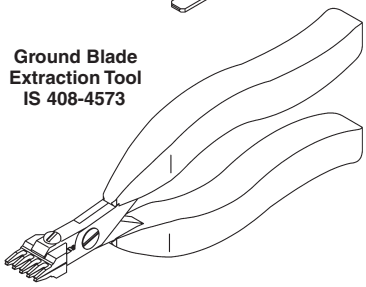


Chiclet Removal Tool IS 408-8410

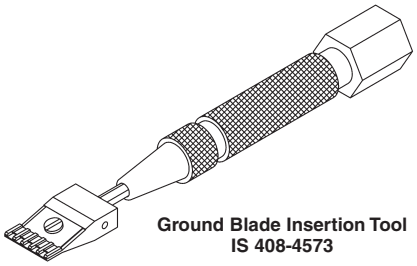
Ground Blade Repair Kit IS 408-4573



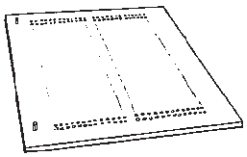
Housing Removal Tool Kit IS 408-8393



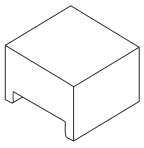
Ground Blade Extraction Tool IS 408-4573



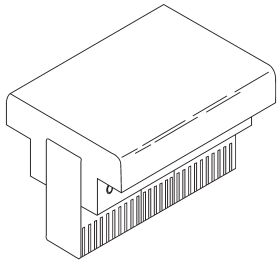
Ground Blade Insertion Tool IS 408-4573



Typical PC Board Support (Customer Supplied)



Typical Receptacle Seating Tool IS 408-8500



Typical Pin Header Seating Tool IS 408-8501

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