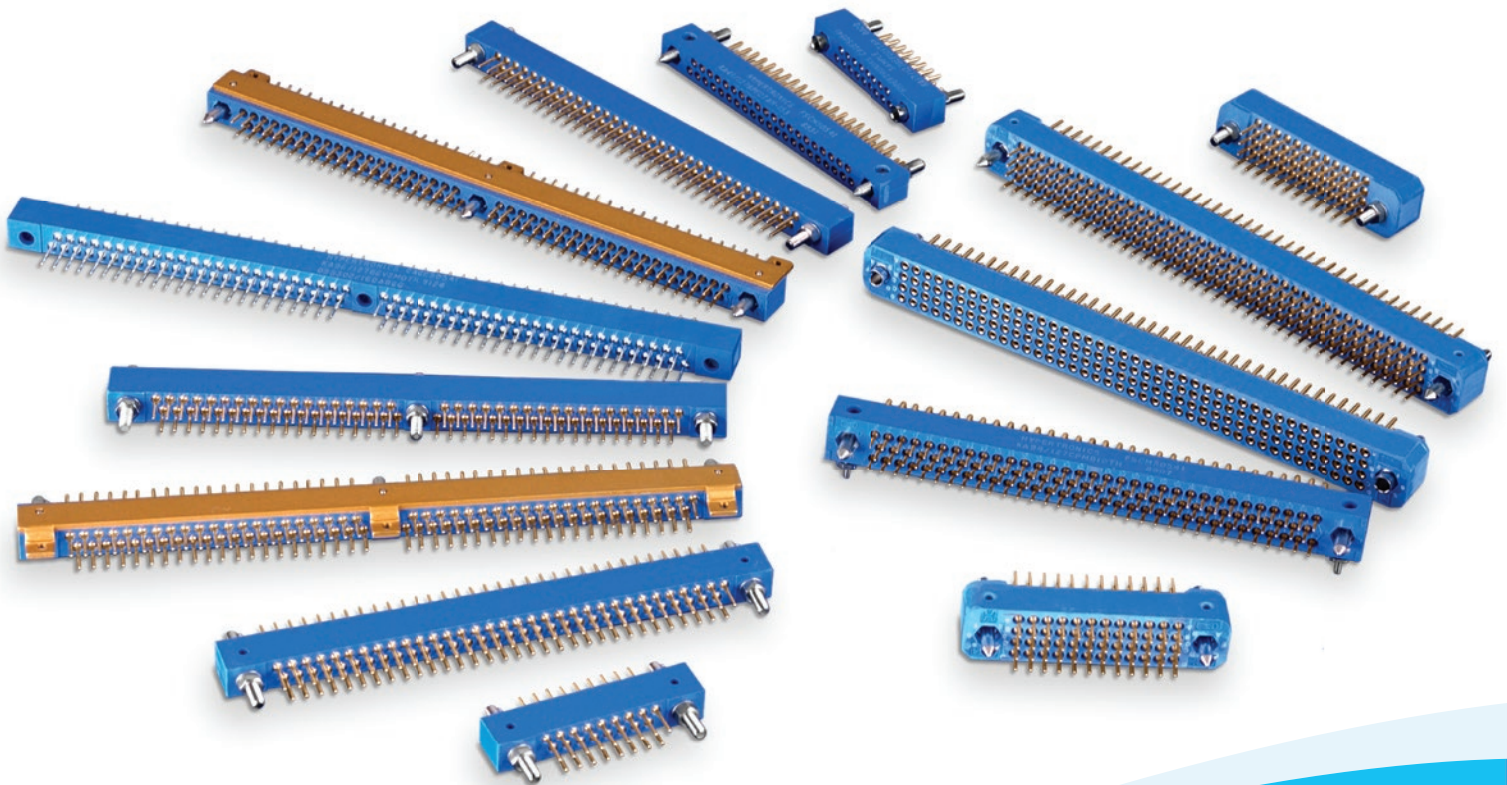


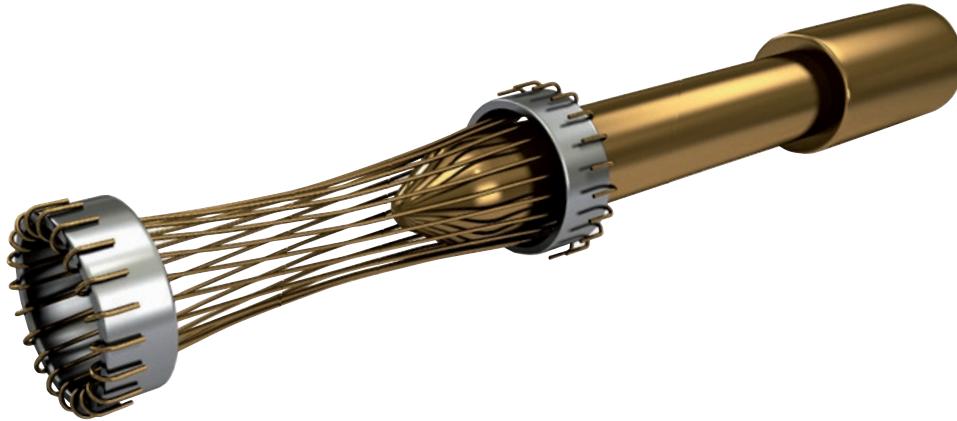
KA SERIES

MIL-DTL-55302 Compliant PCB Connectors



HYPERBOLOID TECHNOLOGY

Smiths Connectors offers an extensive range of superior contact technologies suitable for standard and custom solutions. Hypertac® (HYPERboloid conTACT) is the original superior performing hyperboloid contact technology designed for use in all applications and in harsh and demanding environments where high reliability and safety are critical. The inherent electrical and mechanical characteristics of the Hypertac hyperboloid contact ensures unrivalled performance in terms of reliability, number of mating cycles, low contact force and minimal contact resistance. The shape of the contact sleeve is formed by hyperbolically arranged contact wires, which align themselves elastically as contact lines around the pin, providing a number of linear contact paths.



FEATURES

LOW INSERTION/EXTRACTION FORCES

The angle of the socket wires allows tight control of the pin insertion and extraction forces. The spring wires are smoothly deflected to make line contact with the pin.

LONG CONTACT LIFE

The smooth and light wiping action minimizes wear on the contact surfaces. Contacts perform up to 100,000 insertion/extraction cycles with minimal degradation in performance.

LOWER CONTACT RESISTANCE

The design provides a far greater contact area and the wiping action of the wires insures a clean and polished contact surface. Our contact technology has half the resistance of conventional contact designs.

HIGHER CURRENT RATINGS

The design parameters of the contact (e.g., the number, diameter and angle of the wires) may be modified for any requirement. The number of wires can be increased so the contact area is distributed over a larger surface. Thus, the high current carried by each wire because of its intimate line contact, can be multiplied many times.

IMMUNITY TO SHOCK & VIBRATION

The low mass and resultant low inertia of the wires enable them to follow the most abrupt or extreme excursions of the pin without loss of contact. The contact area extends 360 degrees around the pin and is uniform over its entire length. The 3 dimensional symmetry of the Hypertac contact design guarantees electrical continuity in all circumstances.

BENEFITS

HIGH DENSITY INTERCONNECT SYSTEMS

Significant reductions in size and weight of sub-system designs. No additional hardware is required to overcome mating and un-mating forces.

LOW COST OF OWNERSHIP

The Hypertac contact technology will surpass most product requirements, thus eliminating the burden and cost of having to replace the connector or the entire subsystem.

LOW POWER CONSUMPTION

The lower contact resistance of our technology results in a lower voltage drop across the connector reducing the power consumption and heat generation within the system.

MAXIMUM CONTACT PERFORMANCE

The lower contact resistance of the Hypertac contact reduces heat build-up; therefore Hypertac contacts are able to handle far greater current in smaller contact assemblies without the detrimental effects of high temperature.

RELIABILITY UNDER HARSH ENVIRONMENTS

Harsh environmental conditions require connectors that will sustain their electrical integrity even under the most demanding conditions such as shock and vibration. The Hypertac contact provides unmatched stability in demanding environments when failure is not an option.

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HYPERTAC® TECHNOLOGY

- ▶ **Low insertion/extraction forces**
 - ▶ Significant reductions in size and weight of sub-system designs
 - ▶ High density interconnect systems
- ▶ **Long contact life**
 - ▶ Smooth and light wiping action minimizes wear on contact surfaces
 - ▶ Low cost of ownership
- ▶ **Lower contact resistance**
 - ▶ Lower voltage drop across the connector
 - ▶ Reduced power consumption and heat generation
 - ▶ Higher current ratings
 - ▶ Maximum contact performance
- ▶ **Reliability in harsh environments**
 - ▶ Immunity to shock and vibration
 - ▶ 360° of contact
 - ▶ Self-clean wipe action

FEATURES & BENEFITS

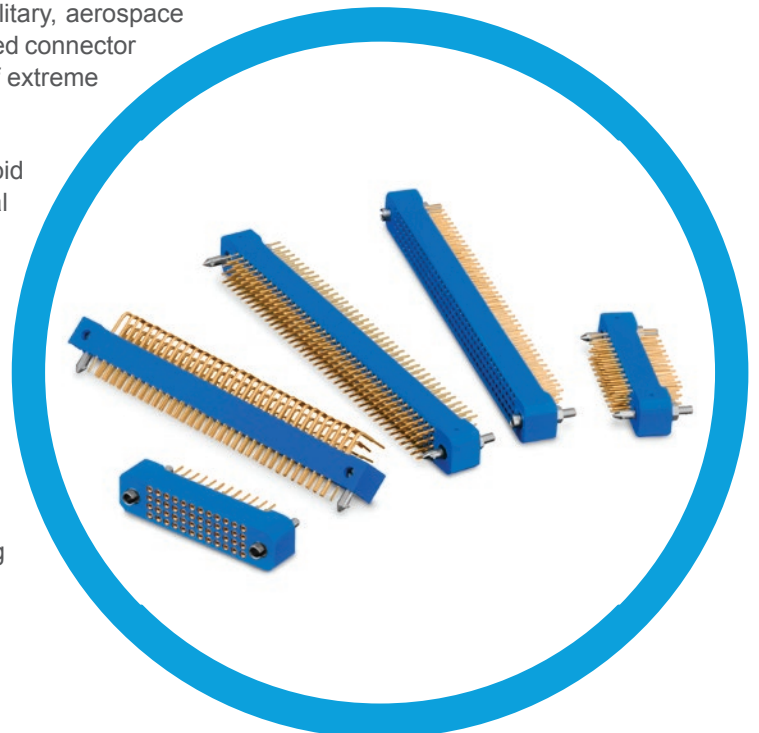
- ▶ **Meets performance requirements of MIL-DTL 55302**
- ▶ **Design flexibility**
 - ▶ Ruggedized connector with straight dip, right angle solder, crimp, solder cup and Wire Wrap® termination options
 - ▶ Offered in 2 to 5 row configurations with pin counts from 17 to 490 contacts
 - ▶ End guides provide alignment and 36 user-changeable keying combinations
 - ▶ Male and female contacts and guides available in either plug or receptacle
- ▶ **0.024 [0.60] diameter pins/sockets rated at 4 Amps**
- ▶ **Pitch of 0.100 [2.54] on center**
 - ▶ Adjacent rows offset by 0.05 [1.27] to allow straight printed circuit traces in 2 & 3 row connectors only
- ▶ **Average insertion/extraction force of 1 oz. per contact**
- ▶ **Contacts removable from wiring side**
 - ▶ Front release, rear removable
 - ▶ Front release, front removable option available on select contact configuration

KA SERIES CONNECTORS

The KA Series connector family is part of Smiths Connectors' portfolio of interconnect solutions designed and developed for rugged applications in the military, aerospace and commercial aviation markets. The KA Series is a highly engineered connector family that has gained a reputation for reliability under all varieties of extreme environmental conditions.

Utilizing the field-proven capabilities of the Hypertac® hyperboloid contact technology, the KA Series provides immunity to detrimental fretting due to shock and vibration, industry leading mating cycles and durability in a connector that meets the performance requirements of MIL-DTL-55302. With more than 2,500 configurations, the KA Series provides design flexibility not available with other MIL-DTL-55302 connectors. Additionally, the KA Series supports a current rating of 4 Amp per contact, low contact resistance and minimal insertion and extraction forces.

The technological innovation that Smiths Connectors has designed into the KA Series enables it to provide a significant edge in demanding military, aerospace and commercial aviation operating environments where performance and reliability is essential.



TECHNICAL CHARACTERISTICS

	2 & 3 ROW	4 & 5 ROW
Number of Contacts	17, 29, 33, 41, 53, 62, 65, 72, 80, 84, 96, 98, 120, 126, 160	48, 68, 80, 96, 100, 108, 120, 125, 128, 136, 140, 160, 184, 196, 200, 208, 228, 230, 240, 264, 300, 320, 330, 352, 390, 392, 490
Pitch	0.100 [2.54]	
Contact Termination	Straight dip, right angle solder, crimp, solder cup and Wire Wrap® available	
Contact Diameter	0.024 [0.60]	

MECHANICAL & ENVIRONMENTAL

Temperature Rating	-55° to 125°C
Shock	Shock testing to MIL-DTL-55302 para. 4.5.14
Contact Life Cycles	100,000
Contact Resistance	< 5 mΩ
Extraction Force	0.30 to 2.00 oz. per contact

MATERIALS & FINISHES

Insulator	Diallyl-phthalate
Contact	Beryllium copper wires and brass body
Contact Plating	Gold over nickel (<i>tin-lead on PCB termination available</i>)
Guide Hardware	Brass/stainless steel
Guide Hardware Plating	Nickel/passivated stainless steel

ELECTRICAL

Current Rating	4 A at 30°C rise	
DWV	1200 V RMS	1050 V RMS
Insulation Resistance	> 10 ⁶ MΩ at 500 VDC	
Breakdown Voltage Between Contacts	1600 V RMS	1400 V RMS

Notes:

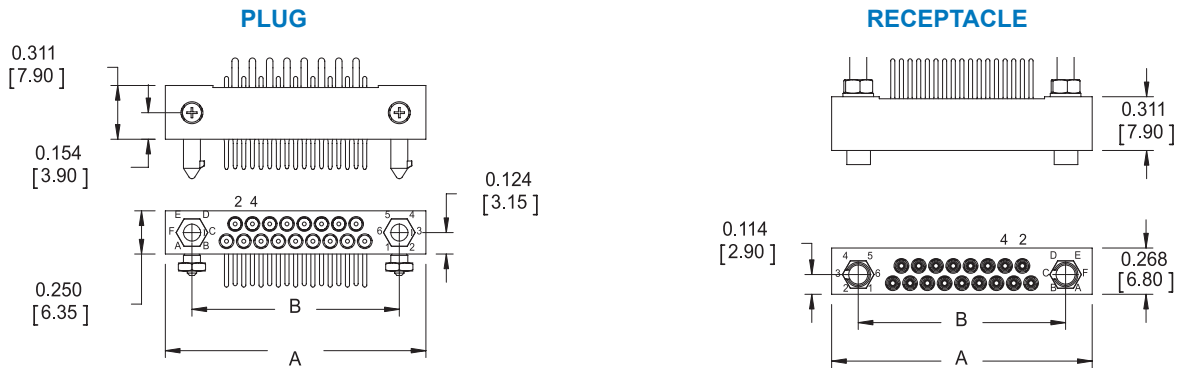
1) Wire Wrap is a trademark of Gardner Denver.
Dimensions are in inches [mm]

DIMENSIONS

2 to 5 Row Connectors, 17 to 490 Contacts

▶ 2 & 3 ROW CONNECTORS

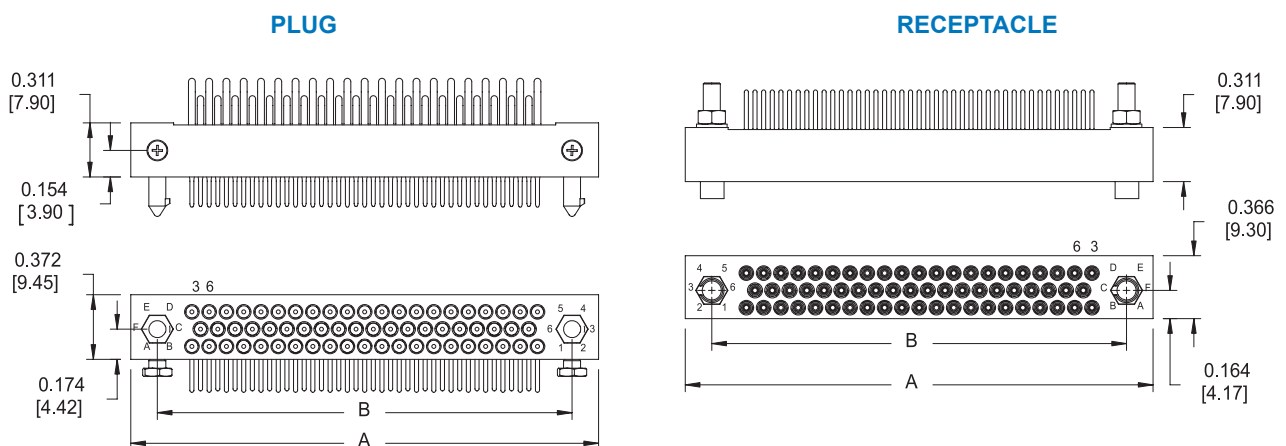
17 to 65 Contacts



CONTACTS	A ± 0.020 [0.50]	B	MATED PAIR
17	1.508 [38.30]	1.200 [30.48]	0.622 [15.80]
29	2.106 [53.54]	1.800 [45.72]	
33	2.308 [58.62]	2.000 [50.80]	
41	2.708 [68.78]	2.400 [60.96]	
53	3.308 [84.02]	3.000 [76.20]	
65	3.908 [99.26]	3.600 [91.44]	

▶ 2 & 3 ROW CONNECTORS

62, 80.1 & 98 Contacts

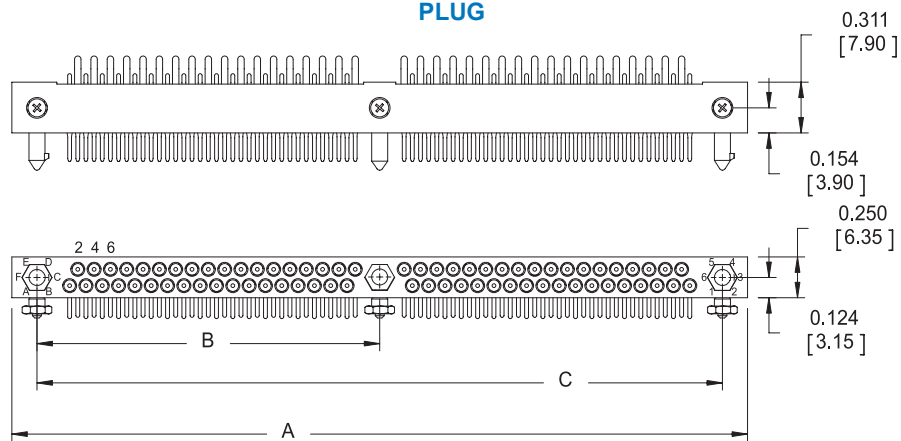


CONTACTS	A ± 0.020 [0.50]	B	MATED PAIR
62	2.707 [68.75]	2.400 [60.96]	0.622 [15.80]
80.1	3.307 [84.00]	3.000 [76.20]	
98	3.907 [99.24]	3.600 [91.44]	

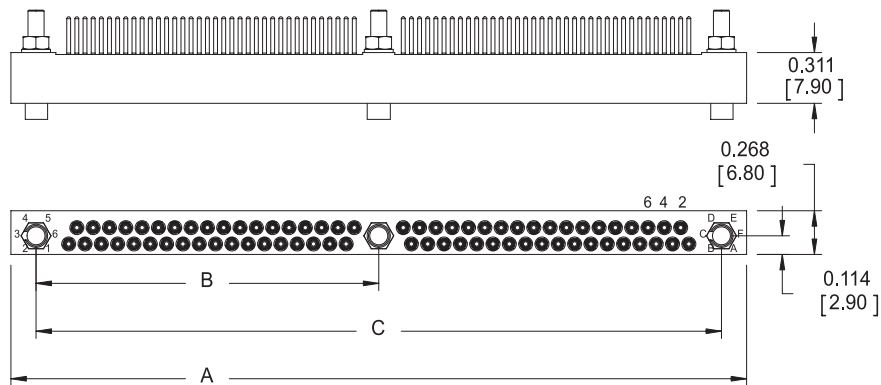
▶ **2 & 3 ROW CONNECTORS**

72, 84, 96 & 120 Contacts

PLUG



RECEPTACLE



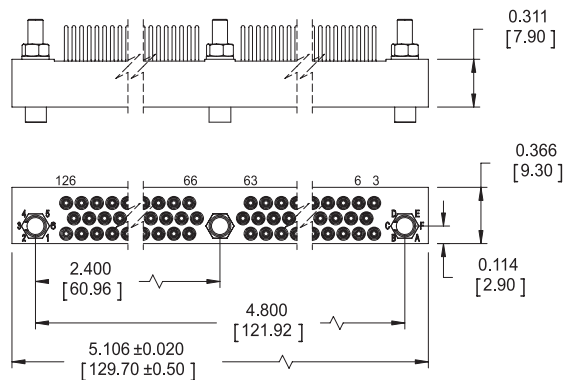
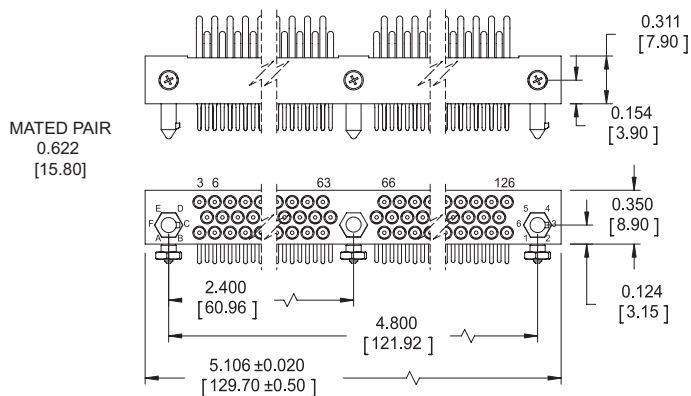
CONTACTS	A	B	C	MATED PAIR
72	4.508 [114.50]	2.100 [53.34]	4.200 [106.68]	0.622 [15.80]
84	5.108 [129.74]	2.400 [60.96]	4.800 [121.92]	
96	5.708 [144.98]	2.700 [68.58]	5.400 [137.16]	
120	3.908 [99.26]	3.600 [91.44]	6.600 [167.64]	

► **2 & 3 ROW CONNECTORS**

126 Contacts

PLUG

RECEPTACLE

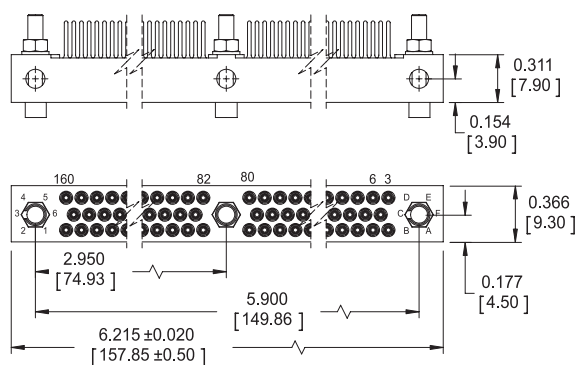
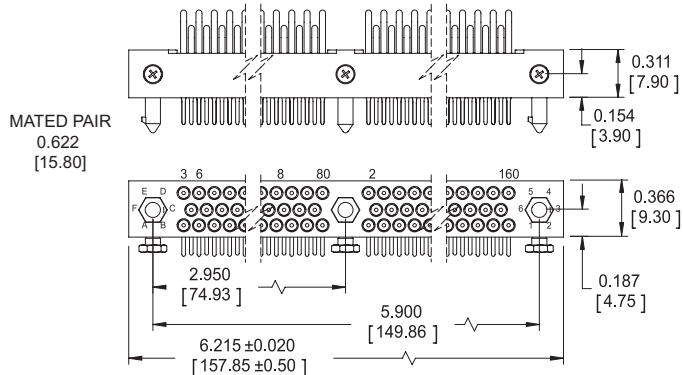


► **2 & 3 ROW CONNECTORS**

160 Contacts

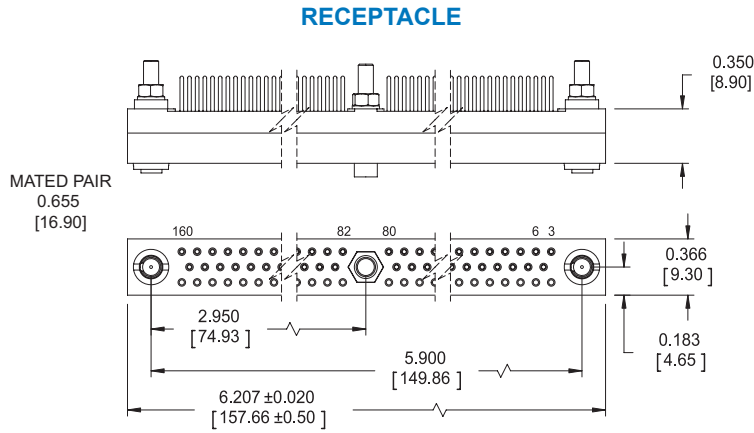
PLUG

RECEPTACLE



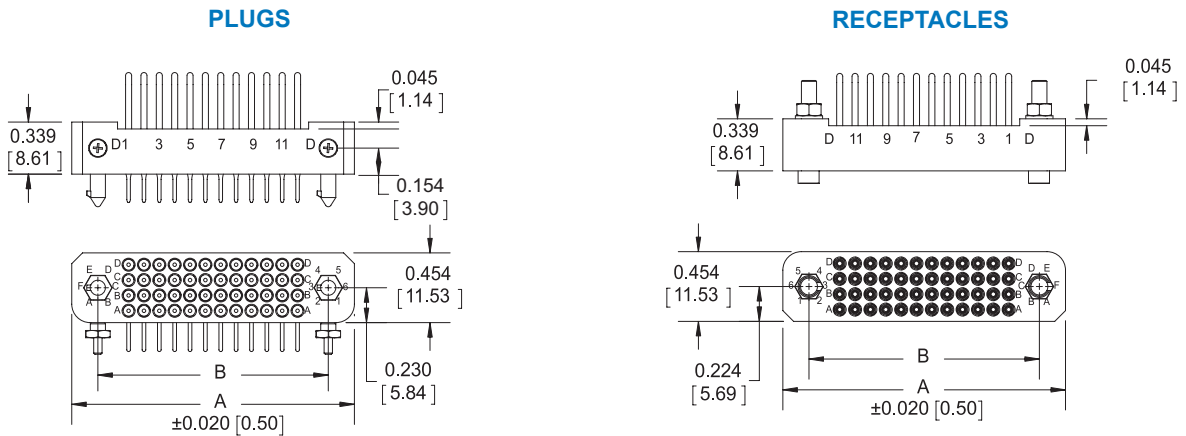
► **2 & 3 ROW CONNECTORS**

160.4 Front Removable Contacts⁽¹⁾⁽²⁾



► **4 ROW CONNECTORS**

48 to 228 Contacts



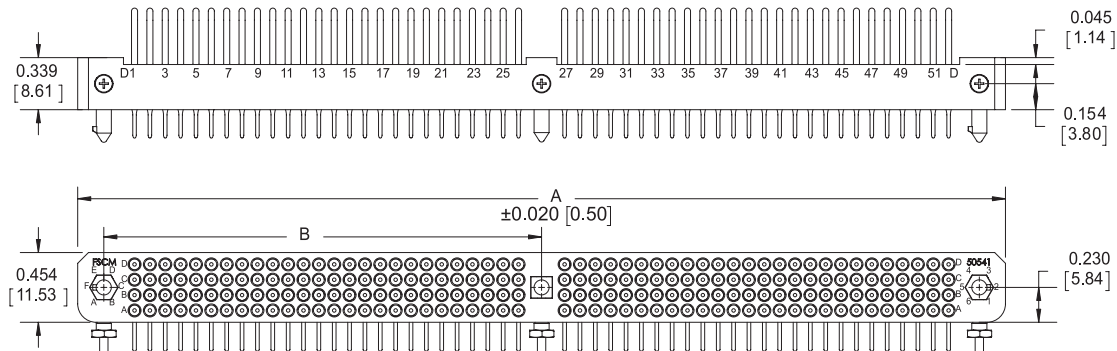
CONTACTS	A ± 0.020 [0.50]	B	MATED PAIR
48	1.840 [46.74]	1.500 [38.10]	0.678 [17.22]
68	2.340 [59.44]	2.000 [50.80]	
80	2.640 [67.06]	2.300 [58.42]	
96	3.040 [77.22]	2.700 [68.58]	
100	3.140 [79.76]	2.800 [71.12]	
108	3.340 [84.84]	3.000 [76.20]	
120	3.640 [92.46]	3.300 [83.82]	
128	3.840 [97.54]	3.500 [88.90]	
136	4.040 [102.62]	3.700 [93.98]	
160	4.640 [117.86]	4.300 [109.22]	
184	5.240 [133.10]	4.900 [124.46]	
196	5.540 [140.72]	5.200 [132.08]	
228	6.340 [161.04]	6.000 [152.40]	

Notes:
 1) Only available with straight dip solder (style "D") and Wire Wrap (style "Y") tails.
 2) Mates with standard plug.
 Dimensions are in inches [mm].

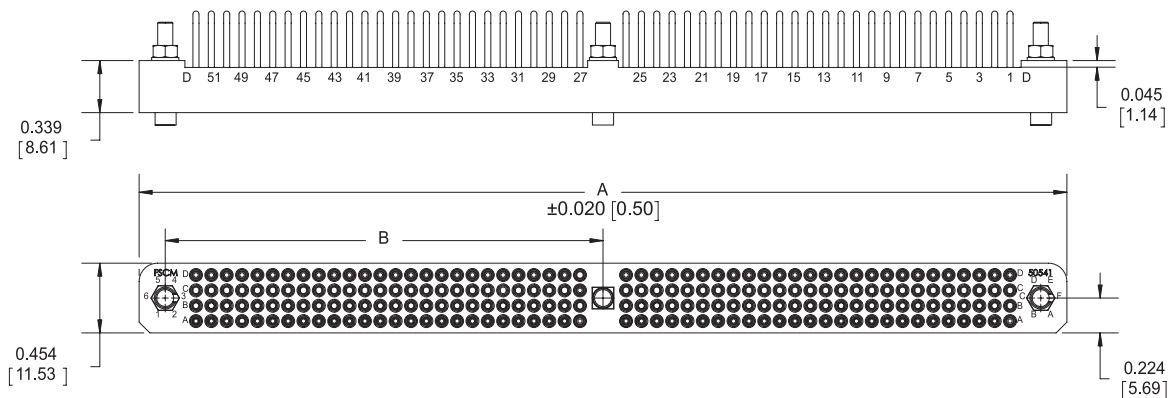
► **4 ROW CONNECTORS**

208, 240, 264, 352 & 392 Contacts

PLUGS



RECEPTACLES



CONTACTS	A ± 0.020 [0.50]	B	MATED PAIR
208	6.040 [153.42]	2.850 [72.39]	0.678 [17.22]
240	6.840 [173.74]	3.250 [82.55]	
264	7.438 [188.92]	3.550 [90.17]	
352	9.640 [244.86]	4.650 [118.11]	
392	10.640 [270.26]	5.150 [130.81]	

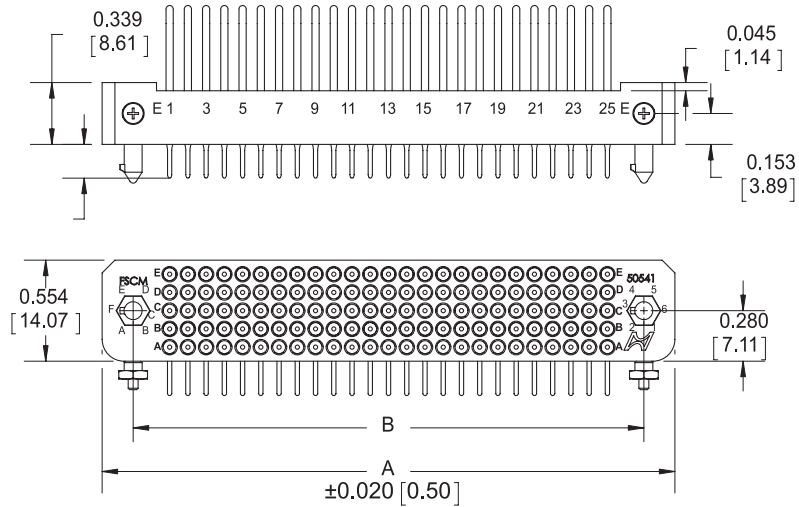
Notes:

1) For insulators longer than 7.00 [178.00], a mother board-daughter board configuration is highly recommended. Dimensions are in inches [mm].

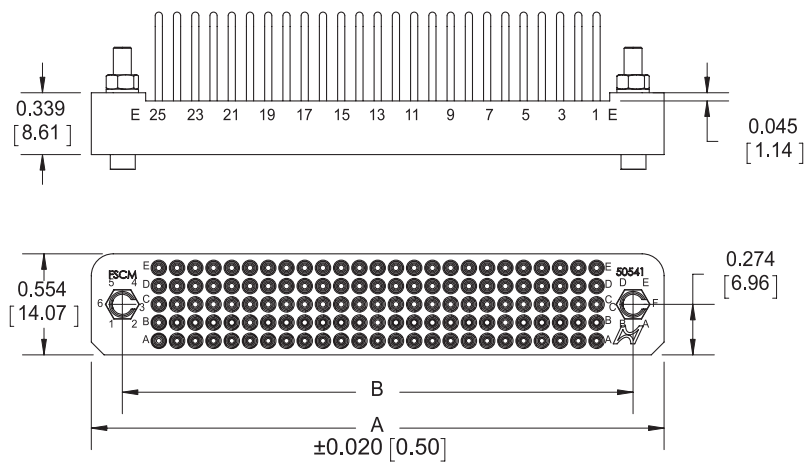
► **5 ROW CONNECTORS**

125, 140, 160, 200, 230 & 240 Contacts

PLUGS



RECEPTACLES

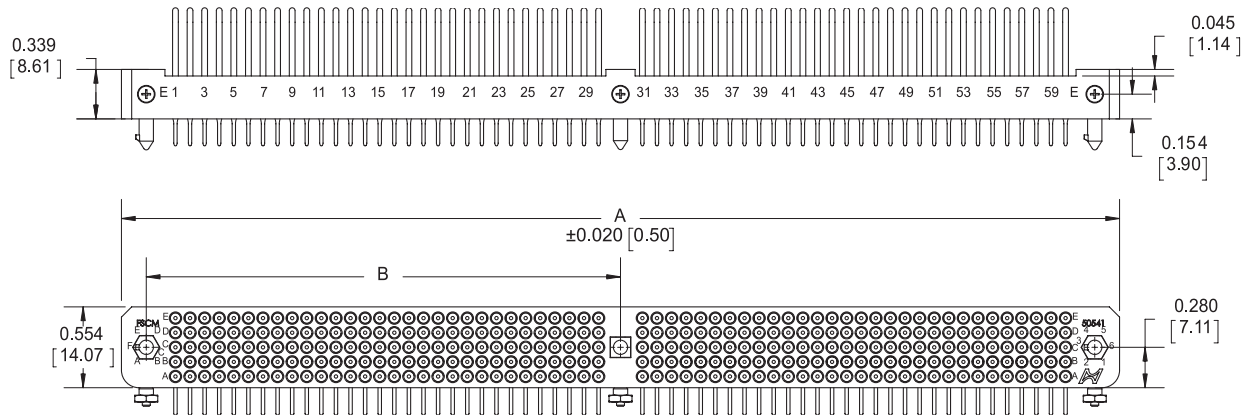


CONTACTS	A ± 0.020 [0.50]	B	MATED PAIR
125	3.140 [79.76]	2.850 [72.39]	0.678 [17.22]
140	3.440 [87.38]	3.100 [78.74]	
160	3.840 [97.54]	3.500 [88.92]	
200	4.640 [117.86]	4.300 [109.22]	
230	5.240 [133.10]	4.900 [124.46]	
240	5.440 [138.10]	5.100 [129.54]	

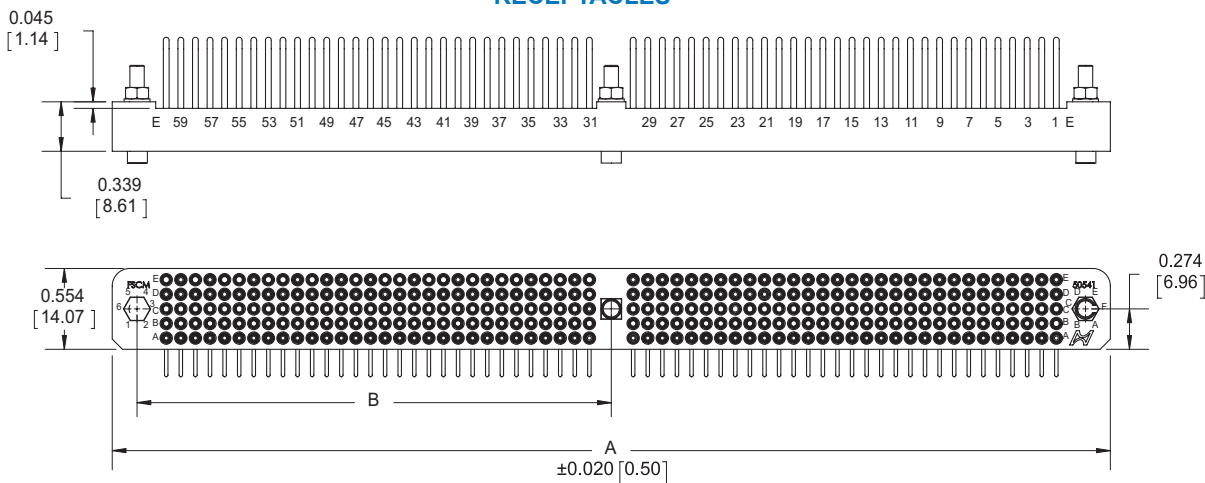
► **5 ROW CONNECTORS**

300, 320, 330, 390 & 490 Contacts

PLUGS



RECEPTACLES



CONTACTS	A ± 0.020 [0.50]	B	MATED PAIR
300	6.840 [173.74]	3.250 [82.55]	0.678 [17.22]
320	7.240 [183.90]	3.450 [87.63]	
330	7.440 [188.98]	3.550 [90.17]	
390	8.640 [219.46]	4.150 [105.41]	
490	10.640 [270.26]	5.150 [130.81]	

Notes:

1) For insulators longer than 7.00 [178.00], a mother board-daughter board configuration is highly recommended. Dimensions are in inches [mm].

TERMINATION STYLES

Dimensions & Specifications⁽¹⁾

► STYLE B

Right Angle Dip Solder

For 0.125 [3.18] PC board

TERMINATIONS (female or male)		ROWS	CONFIGURATIONS	A	B	C	D
<p>PLUG</p>	<p>RECEPTACLE</p>	2 Row	All (17 to 160)	—	—	—	—
		3 Row	126	—	—	—	—
<p>PLUG</p>	<p>RECEPTACLE</p>	3 Row	62, 80.1, 98 & 126	0.191 [4.86]	0.200 [5.08]	0.201 [5.11]	0.354 [8.98]
			160	0.178 [4.53]	0.188 [4.78]	0.188 [4.78]	0.342 [8.68]
<p>PLUG</p>	<p>RECEPTACLE</p>	4 Row	All (48 to 490)	—	—	—	—
		5 Row	All (48 to 490)	—	—	—	—

Notes:
1) All tail lengths are ± 0.015 [0.40] long.
Dimensions are in inches [mm]

► **STYLE C**

Right Angle Dip Solder

For 0.063 [1.59] PC board

TERMINATIONS (female or male)		ROWS	CONFIGURATIONS	A	B	C	D
<p>PLUG</p>	<p>RECEPTACLE</p>	2 Row	All (17 to 160)	—	—	—	—
		3 Row	126	—	—	—	—
<p>PLUG</p>	<p>RECEPTACLE</p>	3 Row	62, 80.1, 98 & 126	0.128 [3.25]	0.200 [5.08]	0.138 [3.50]	0.354 [8.98]
			160	0.115 [2.92]	0.188 [4.78]	0.125 [3.17]	0.342 [8.68]
<p>PLUG</p>	<p>RECEPTACLE</p>	4 Row	All (48 to 490)	—	—	—	—
		5 Row	All (48 to 490)	—	—	—	—

► STYLE D/DD/FD

Straight Dip Solder

Front removable version available

TERMINATIONS (female or male)		STYLE	ROWS	CONFIGURATIONS
<p>PLUG</p>	<p>RECEPTACLE</p>	D	2 Row	All (17 to 160)
			3 Row	All (17 to 160)
—	<p>RECEPTACLE</p>	D <i>0.4 front removable version</i>	2 Row	160
			3 Row	160
<p>PLUG</p>	<p>RECEPTACLE</p>	D	4 Row	All (48 to 490)
			5 Row	All (48 to 490)
<p>PLUG</p>	<p>RECEPTACLE</p>	DD ⁽¹⁾	4 Row	All (48 to 490)
			5 Row	All (48 to 490)
<p>PLUG</p>	<p>RECEPTACLE</p>	FD ⁽¹⁾ <i>Front removable version</i>	4 Row	160
			5 Row	160

Notes:

1) Consult factory for availability
Dimensions are in inches [mm]

► **STYLE H2**

Double Crimp⁽¹⁾ (for insulation)

Accepts 22 to 26 AWG wire stripped back 0.146 [3.70]

TERMINATIONS (female or male)		WIRE GAUGE	ROWS	CONFIGURATIONS
<p>PLUG</p>	<p>RECEPTACLE</p>	22, 24 & 26 AWG	2 Row	All (17 to 160)
			3 Row	All (17 to 160)
<p>PLUG</p>	<p>RECEPTACLE</p>	22 & 26 AWG	4 Row	All (48 to 490)
			5 Row	All (48 to 490)

► **STYLE R**

Crimp⁽¹⁾

Accepts 22, 24 and 26 AWG wire stripped back 0.173 [4.40]

TERMINATIONS (female or male)		WIRE GAUGE	ROWS	CONFIGURATIONS
<p>PLUG</p>	<p>RECEPTACLE</p>	22, 24 & 26 AWG	2 Row	All (17 to 160)
			3 Row	All (17 to 160)
<p>PLUG</p>	<p>RECEPTACLE</p>	22, 24 & 26 AWG	4 Row	All (48 to 490)
			5 Row	All (48 to 490)

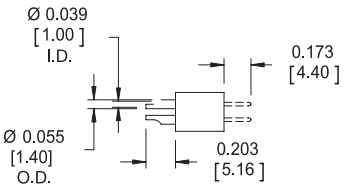
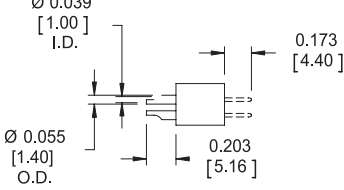
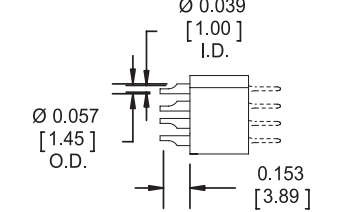
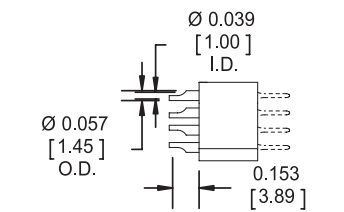
Notes:

1) Crimp contacts will be shipped unmounted. When inserting into the blocks/insulators be sure that the rear is aligned with the flats in the insulator. Dimensions are in inches [mm]

► **STYLE S**

Solder Cup⁽¹⁾

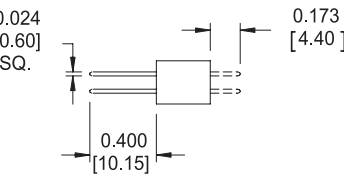
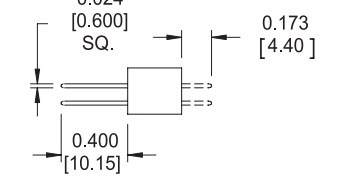
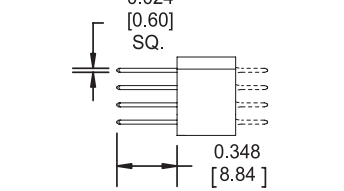
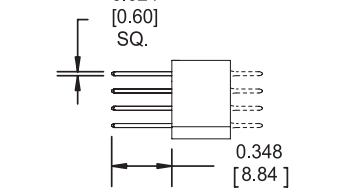
Accepts up to 22 AWG wire stripped back 0.126 [3.20]

TERMINATIONS (female or male)		WIRE GAUGE	ROWS	CONFIGURATIONS
 <p>PLUG</p>	 <p>RECEPTACLE</p>	22 AWG	2 Row	All (17 to 160)
			3 Row	All (17 to 160)
 <p>PLUG</p>	 <p>RECEPTACLE</p>	Up to 22 AWG	4 Row	All (48 to 490)
			5 Row	All (48 to 490)

► **STYLE W⁽²⁾**

Wire Wrap[®] (2 wraps)

Accepts 28 and 30 AWG wire

TERMINATIONS (female or male)		WIRE GAUGE	ROWS	CONFIGURATIONS
 <p>PLUG</p>	 <p>RECEPTACLE</p>	28 & 30 AWG	2 Row	All (17 to 160)
			3 Row	All (17 to 160)
 <p>PLUG</p>	 <p>RECEPTACLE</p>	28 & 30 AWG	4 Row	All (48 to 490)
			5 Row	All (48 to 490)

Notes:

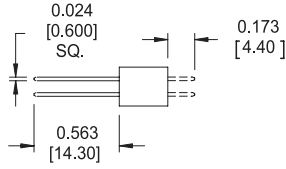
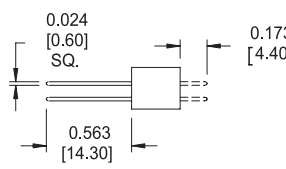
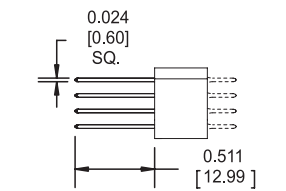
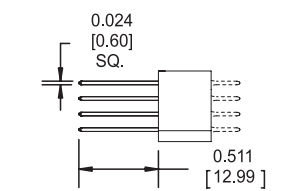
1) Solder cup access cut-aways will be oriented staggered as shown for commercial parts. Connectors ordered to "D55302" style part numbers have all cut-aways oriented in the same direction.

2) Consult factory for availability
Dimensions are in inches [mm]

► **STYLE Y⁽¹⁾**

Wire Wrap[®] (2 or 3 wraps)

Accepts 24 to 30 AWG wire

TERMINATIONS (female or male)		ROWS	CONFIGURATIONS	WRAPS	WIRE GAUGE
 <p>PLUG</p>	 <p>RECEPTACLE</p>	2 Row	All (17 to 160)	2 Wraps	24 & 26 AWG
		3 Row	All (17 to 160)	2 Wraps	24 & 26 AWG
 <p>PLUG</p>	 <p>RECEPTACLE</p>	4 Row	All (48 to 490)	2 Wraps	24 & 26 AWG
		5 Row	All (48 to 490)	2 Wraps	24 & 26 AWG
				3 Wraps	28 & 30 AWG
				3 Wraps	28 & 30 AWG

► **REPLACEMENT CONTACTS**

Part Number Reference

STYLE	ROWS	STANDARD SOCKETS	STANDARD PINS	BERYLLIUM COPPER PINS
B	Row 1	YSK006-028AH	YPN006-034G or H	YPN006-072H
	Row 2	YSK006-029AH	YPN006-035G or H	YPN006-075H
	Row 3	YSK006-030AH	YPN006-036G or H	YPN006-073H
	Row 4	YSK006-074AH	YPN006-148G or H	—
	Row 5	YSK006-094AH	YPN006-172G or H	—
C	Row 1	YSK006-013AH	YPN006-023G or H	YPN006-048H
	Row 2	YSK006-006AH	YPN006-016G or H	YPN006-050H
	Row 3	YSK006-014AH	YPN006-024G or H	YPN006-077H
	Row 4	YSK006-090AH	YPN006-159G or H	—
	Row 5	YSK006-092AH	YPN006-171G or H	—
D	All	YSK006-005ANH ⁽²⁾	YPN006-015G or H	YPN006-049H
DD	All	YSK006-096ANH	YPN006-106G or H	—
FD⁽³⁾	All	YSK006-274AH	YPN006-470G or H	YPN006-487H
H2	All	YSK006-009AH	YPN006-019G or H	—
R	All	YSK006-011ANH	YPN006-021G or H	—
S	All	YSK006-010ANH	YPN006-020G or H	—
W	All	YSK006-020AH	YPN006-039G or H	—
Y	All	YSK006-012AH	YPN006-022G or H	—

Notes:

1) Consult factory for availability

2) Front removable version: YSK006-027AH

3) Front removable contact for standard housing

Dimensions are in inches [mm]

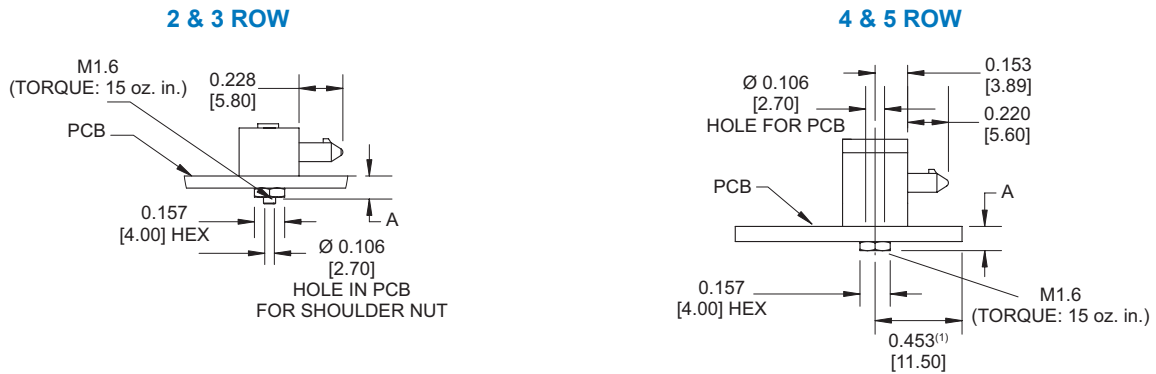
STANDARD MOUNTING

Styles & Dimensions

► STYLE 10

Plug Only

Recommended for B and C contact terminations (*H2, R and S optional*)

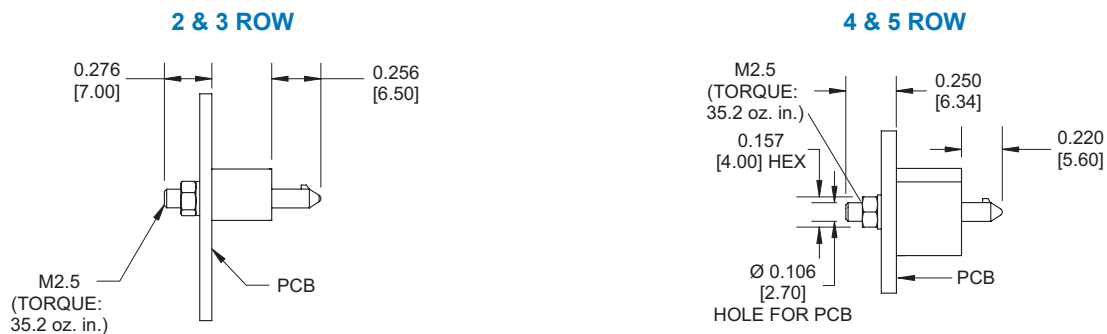


CONNECTOR	A	
	Termination B	Termination C
2 ROW	0.191 [4.85]	0.124 [3.15]
3 ROW	0.220 [5.59] <i>(KA160: 0.207 [5.25])</i>	0.141 [3.58] <i>(KA160: 0.128 [3.25])</i>
4 ROW	0.203 [5.16]	0.164 [4.16]
5 ROW	0.232 [5.89]	0.153 [3.89]

► STYLE 11

Plug/Receptacle

Recommended for D, H2, R and S contact terminations (*W and Y optional*)



Notes:

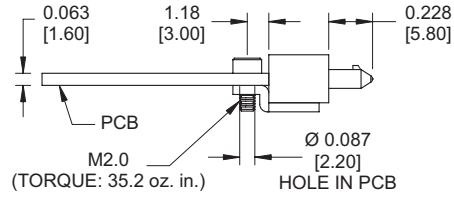
1) PCB may be extended to 0.453 [11.50] max. for use as a pin protector.
Dimensions are in inches [mm].

► **STYLE 12**

Plug Only

Recommended for D contact terminations only

2 ROW ONLY



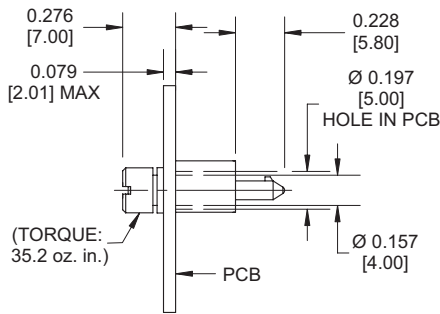
► **STYLE 13 | FLOAT MOUNTING**

Plug/Receptacle

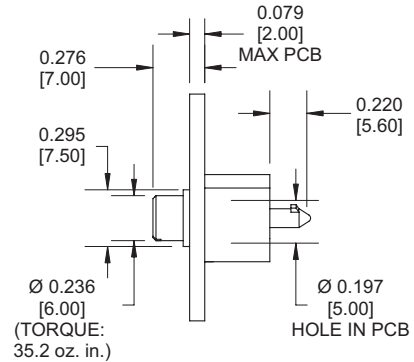
Recommended for H2, R and S contact terminations

Radial float is 0.020 [0.50] from center

2 & 3 ROW



4 & 5 ROW

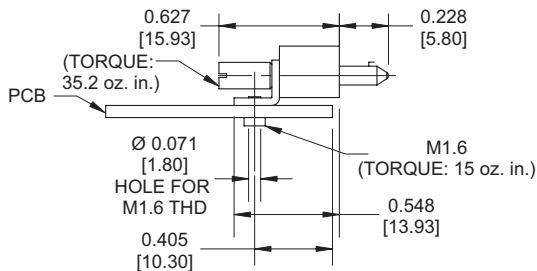


► **STYLE 14**

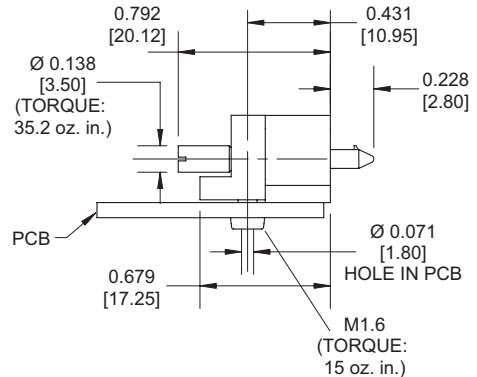
Receptacle Only

Recommended for B and C contact terminations (H2, R and S optional)

2 & 3 ROW



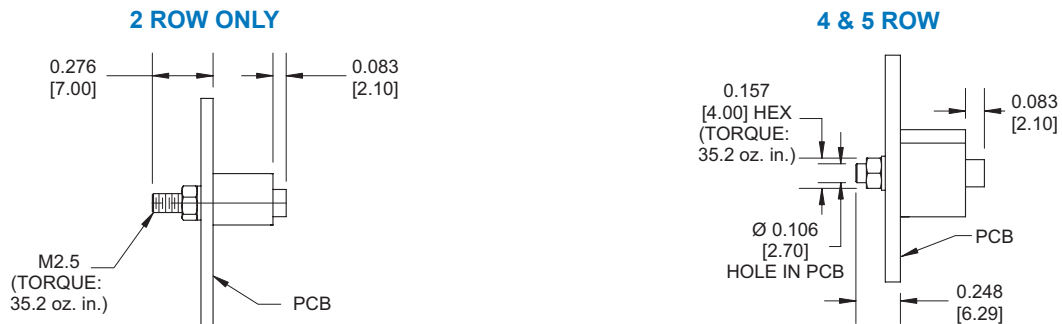
4 & 5 ROW



► **STYLE 21**

Plug/Receptacle

Recommended for D, H2, R and S contact terminations (*W and Y optional*)

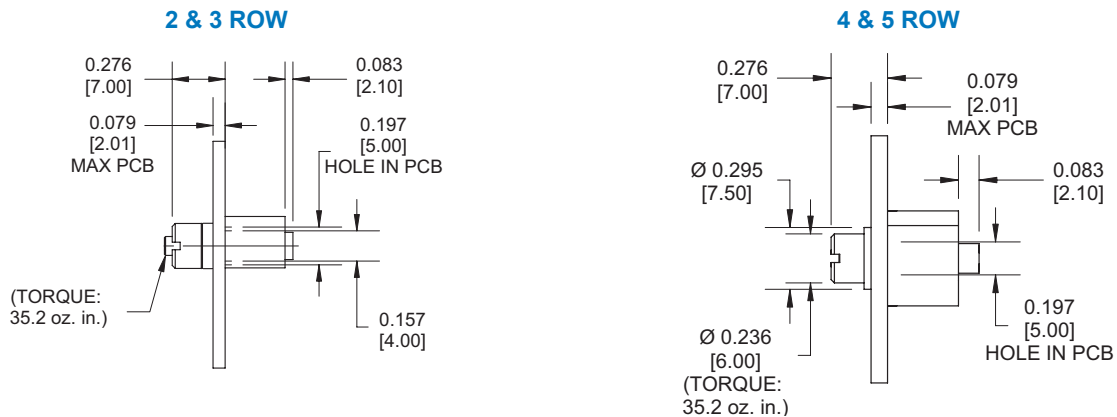


► **STYLE 23 | FLOAT MOUNTING**

Plug/Receptacle

Recommended for H2, R and S contact terminations

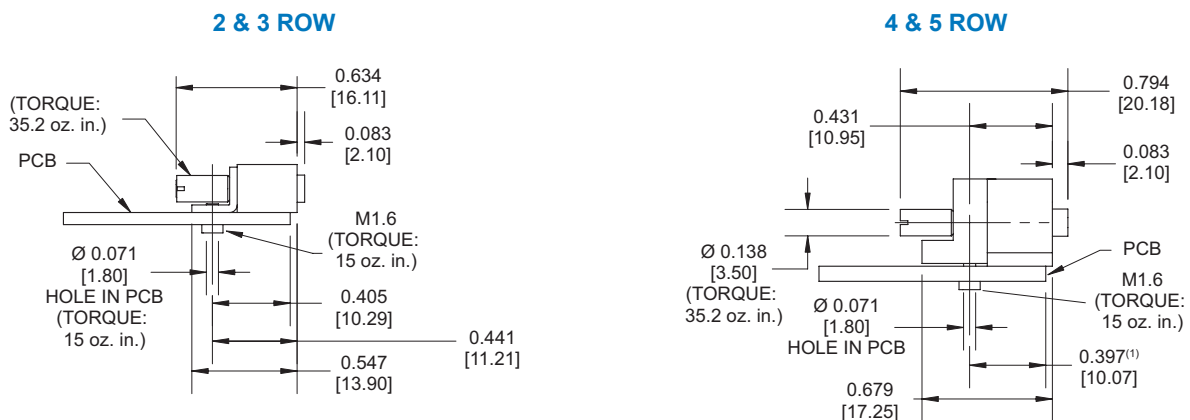
Radial float is 0.020 [0.50] from center



► **STYLE 24**

Plug/Receptacle

Recommended for B and C contact terminations (*H2, R and S optional*)



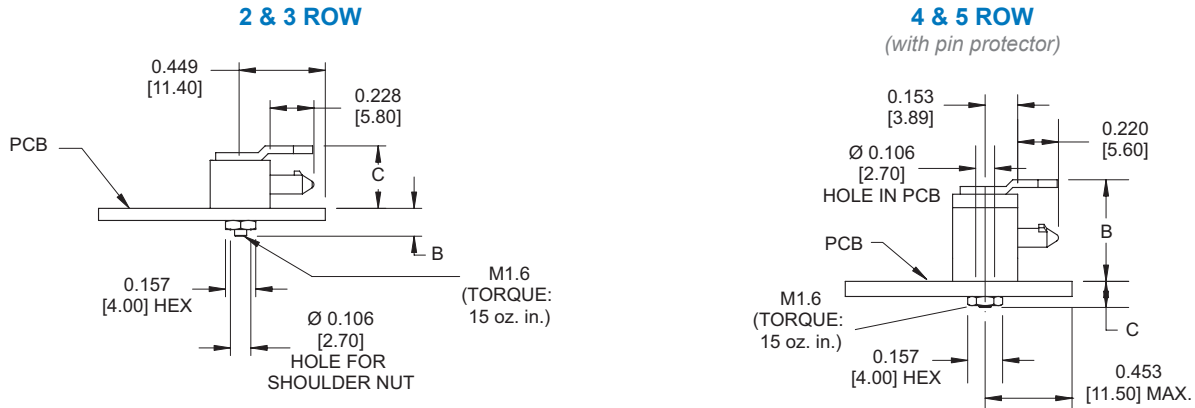
Notes:

1) PCB may be extended to 0.453 [11.50] max. for use as a pin protector.
Dimensions are in inches [mm].

► **STYLE 101**

Plug Only

Recommended for B and C contact terminations (*H2, R and S optional*)

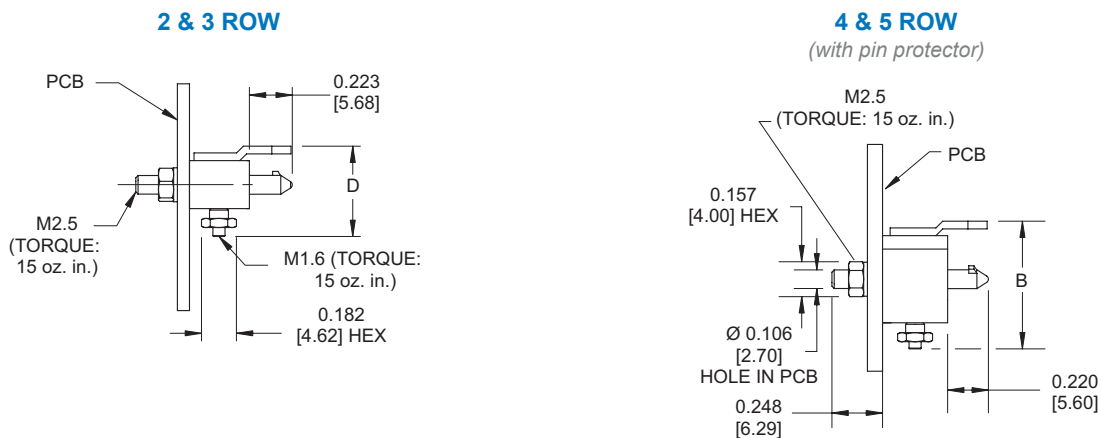


CONNECTOR	B		C
	Termination B	Termination C	
2 ROW	0.204 [5.18]	0.165 [4.18]	0.343 [8.71]
3 ROW	0.218 [5.53] <i>(KA160: 0.205 [5.20])</i>	0.139 [3.53] <i>(KA160: 0.126 [3.20])</i>	0.447 [11.36]
4 ROW	0.541 [13.74]		0.168 [4.26]
5 ROW	0.661 [16.78]		0.236 [5.91]

► **STYLE 111**

Plug Only

Recommended for D, H2, R and S contact terminations (*W and Y optional*)



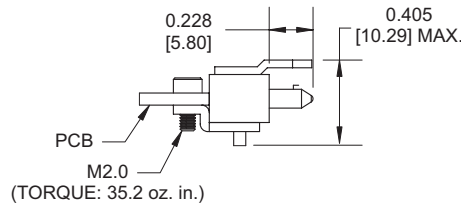
CONNECTOR	B	D
2 ROW	—	0.486 [11.89]
3 ROW	—	0.586 [14.89]
4 ROW	0.781 [19.84]	—
5 ROW	0.900 [22.86]	—

► **STYLE 121**

Plug Only

Recommended for D contact terminations only

2 ROW ONLY

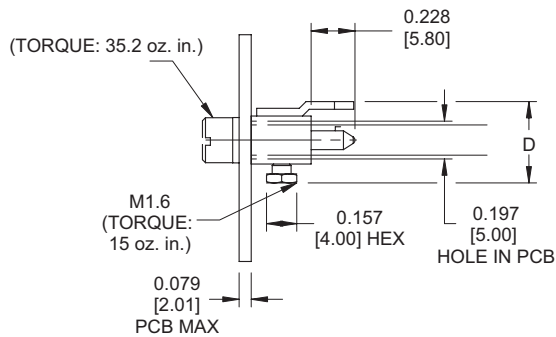


► **STYLE 131 | FLOAT MOUNTING**

Plug Only

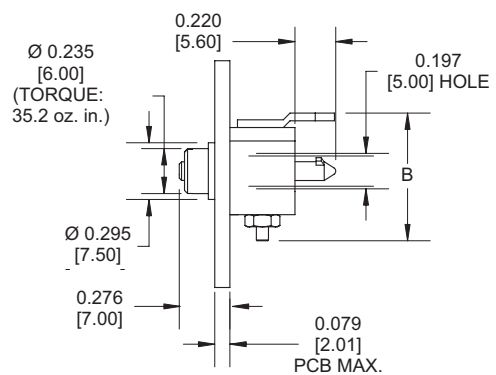
Recommended for H2, R and S contact terminations

2 & 3 ROW



4 & 5 ROW

(with pin protector)



CONNECTOR B D

2 ROW	—	0.486 [11.89]
3 ROW	—	0.586 [14.89]
4 ROW	0.781 [19.84]	—
5 ROW	0.900 [22.86]	—

Note:

1) PC board may be extended to 0.453 [11.50] max. for use as a pin protector.
Dimensions are in inches [mm].

LOCKING MOUNTING

Styles & Dimensions

► STYLE V1

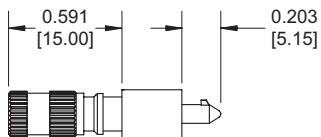
Plug/Receptacle

Push, quarter turn locking method

Recommended for H2, R and S contact terminations

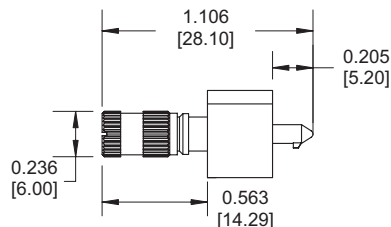
2 & 3 ROW

Mates with V2 & V4



4 & 5 ROW

Mates with V2 & V4



► STYLE V2

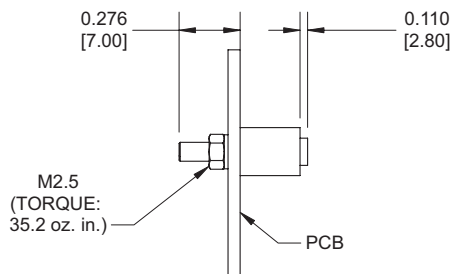
Plug/Receptacle

Push, quarter turn locking method

Recommended for D, H2, R and S contact terminations (*W and Y optional*)

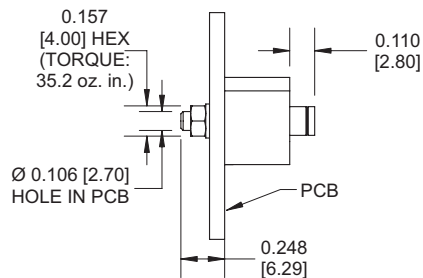
2 & 3 ROW

Mates with V1, V3 & V6



4 & 5 ROW

Mates with V1 & V6



► **STYLE V3**

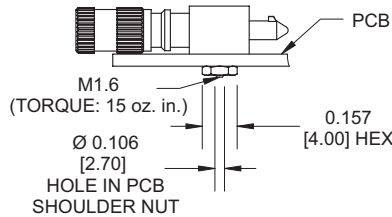
Plug Only

Push, quarter turn locking method

Recommended for B and C contact terminations (*H2, R and S optional*)

2 & 3 ROW ONLY

Mates with V2 & V6⁽¹⁾



► **STYLE V4**

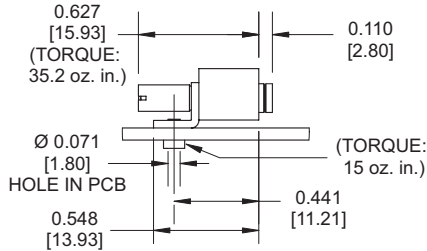
Plug/Receptacle

Push, quarter turn locking method

Recommended for B and C contact terminations (*H2, R and S optional*)

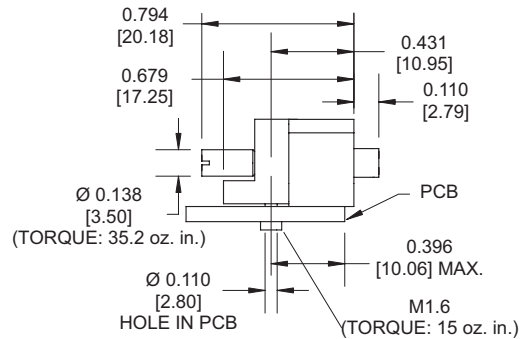
2 & 3 ROW

Mates with V1, V3 & V6



4 & 5 ROW

Mates with V1 & V6



► **STYLE V6**

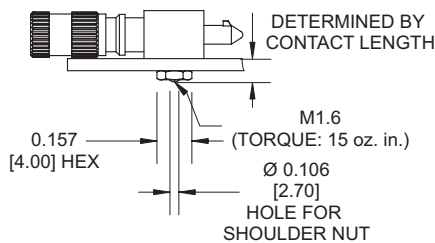
Plug Only

Push, quarter turn locking method

Recommended for B and C contact terminations (*H2, R and S optional*)

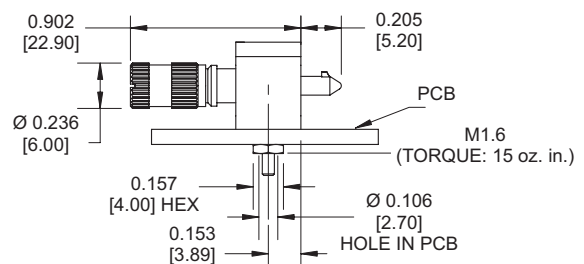
2 & 3 ROW

Mates with V2 & V4



4 & 5 ROW

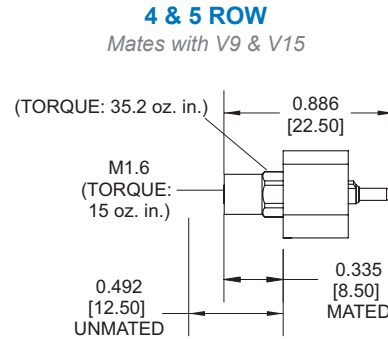
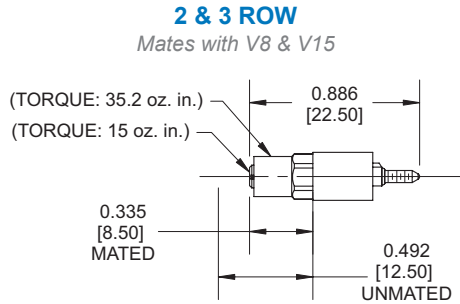
Mates with V2 & V4



► **STYLE V7**

Plug/Receptacle

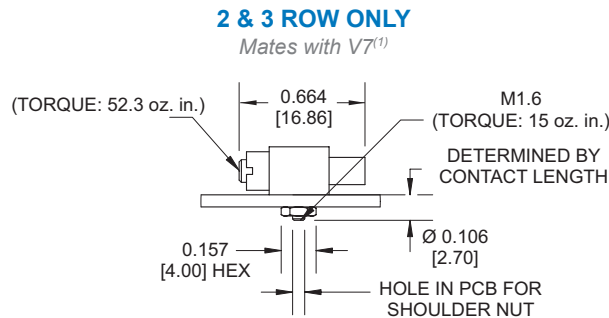
Screw locking method
Recommended for H2, R and S contact terminations



► **STYLE V8**

Plug Only

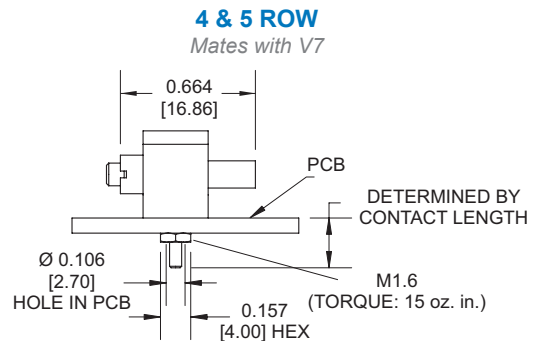
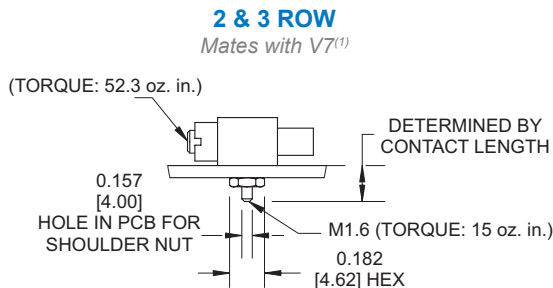
Screw locking method
Recommended for B and C contact terminations (H2, R and S optional)



► **STYLE V9**

Plug Only

Screw locking method
Recommended for B and C contact terminations (H2, R and S optional)



Note:

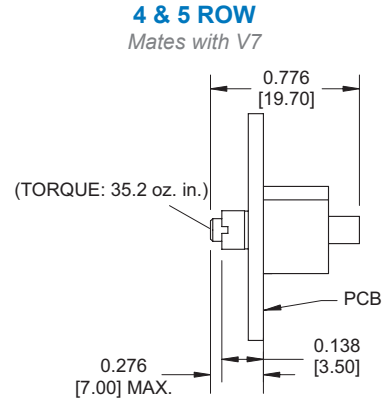
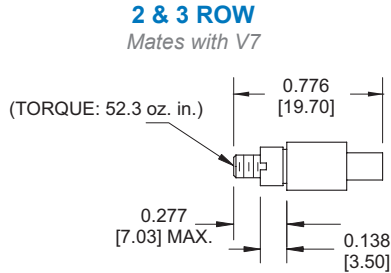
- 1) For contact configurations: 62, 80.1, 98 and 160
 - 2) Right angle mounting screw length is determined by contact terminal length
- Dimensions are in inches [mm].

► **STYLE V15**

Plug/Receptacle

Screw locking method

Recommended for D, H2, R and S contact terminations (*W and Y optional*)

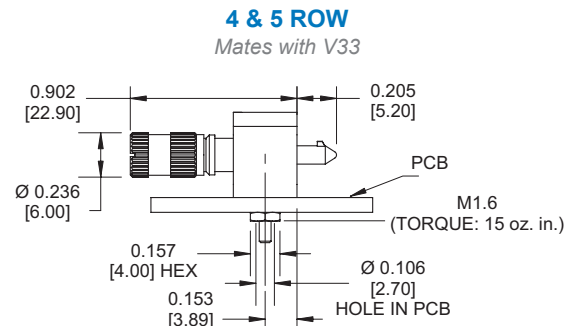
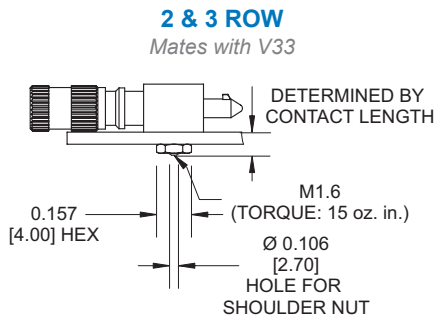


► **STYLE 30 | STATIONARY JACKSCREW**

Plug Only

Screw locking method

Recommended for B and C contact terminations (*H2, R and S optional*)

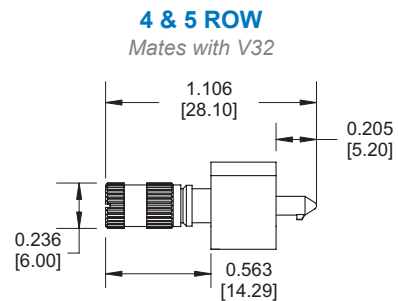
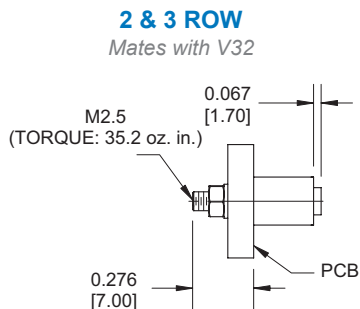


► **STYLE V31 | STATIONARY JACK SOCKET**

Plug/Receptacle

Screw locking method

Recommended for D, H2, R and S contact terminations (*W and Y optional*)

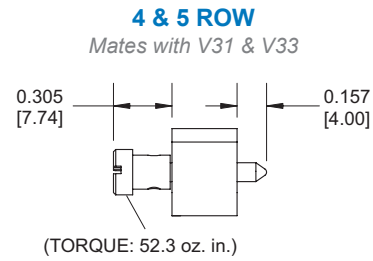
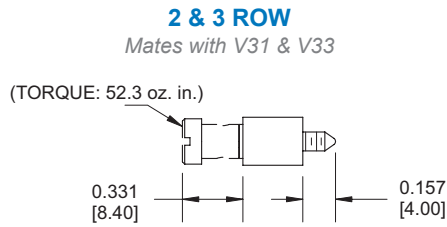


► **STYLE V32 | ROTATING JACKSCREW**

Plug/Receptacle

Screw locking method

Recommended for D, H2, R and S contact terminations (*W and Y optional*)

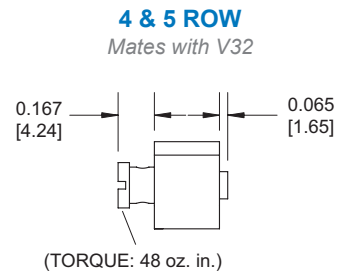
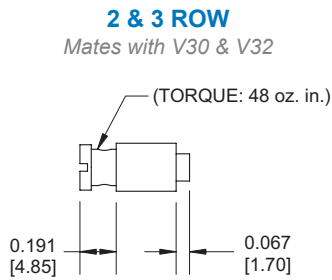


► **STYLE V33 | ROTATING JACK SOCKET**

Plug/Receptacle

Screw locking method

Recommended for D, H2, R and S contact terminations (*W and Y optional*)



BOARD MOUNTING

Applications & Dimensions

▶ 2 & 3 ROW CONNECTORS

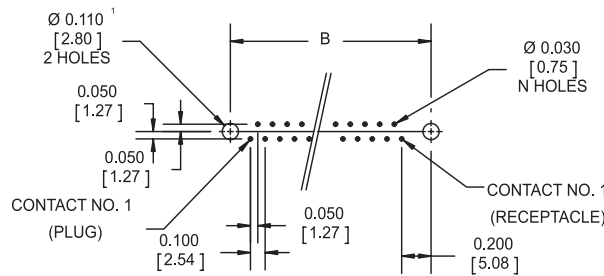
17, 29, 33, 41, 53 & 65 Contacts

PC Board Shown From Component Side of Board

CONTACTS	B
17	1.200 [30.48]
29	1.800 [45.72]
33	2.000 [50.8]
41	2.400 [60.96]
53	3.000 [76.20]
65	3.600 [91.44]

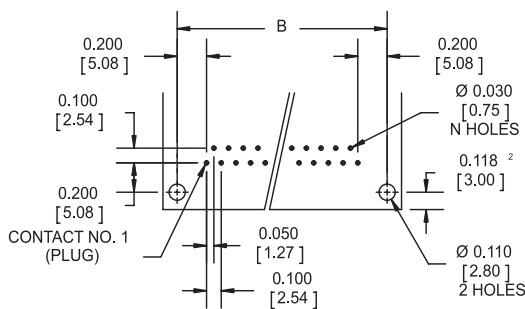
MOTHER BOARD APPLICATION

Style 11, 21, V2, V15 & V31



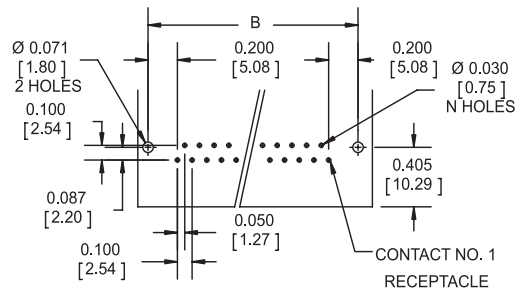
DAUGHTER BOARD APPLICATION

Style 10, 30, V3, V8 & V30



DAUGHTER BOARD APPLICATION

Style 24 & V4



Notes:

1) For V15 locking mounting style, dimension is 0.130 ± 0.004 [3.20 ± 0.10] diameter.

2) PC board may be extended to 0.453 [11.50] max for use as a pin protector.

Dimensions are in inches [mm]

► **2 & 3 ROW CONNECTORS**

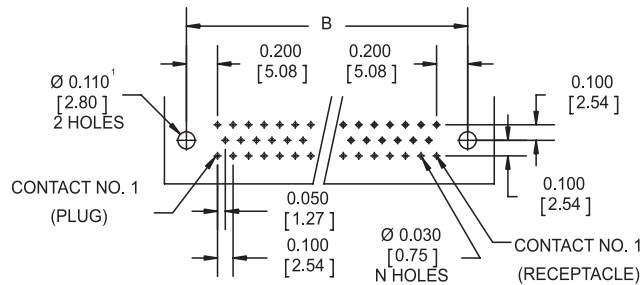
62, 80.1 & 98 Contacts

PC Board Shown From Component Side of Board

CONTACTS	B
62	2.400 [60.96]
80.1	3.000 [76.20]
98	3.600 [91.44]

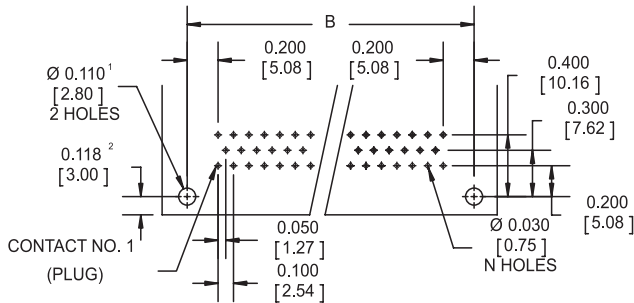
MOTHER BOARD APPLICATION

Style 11, 21, V2, V15 & V31



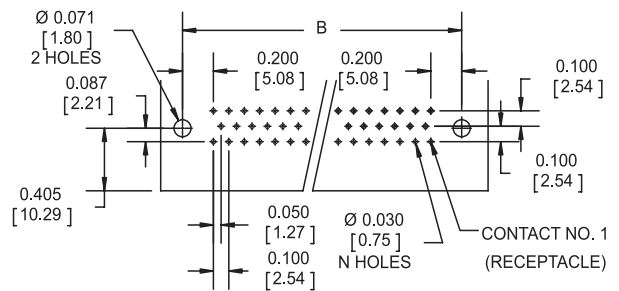
DAUGHTER BOARD APPLICATION

Style 10, 30, V3, V8 & V30



DAUGHTER BOARD APPLICATION

Style 24 & V4



Notes:

- 1) For V15 locking mounting style, dimension is 0.130 ± 0.004 [3.20 ± 0.10] diameter.
 - 2) PC board may be extended to 0.453 [11.50] max for use as a pin protector.
- Dimensions are in inches [mm]

► 2 & 3 ROW CONNECTORS

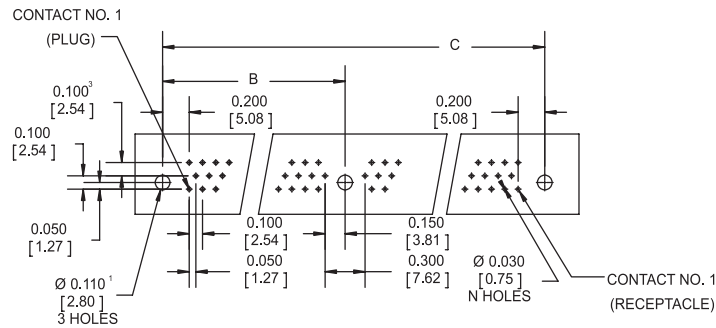
72, 84, 96, 120 & 126 Contacts

PC Board Shown From Component Side of Board

CONTACTS	B	C
72	2.100 [53.34]	4.200 [106.68]
84	2.400 [60.96]	4.800 [121.92]
96	2.700 [68.58]	5.400 [137.16]
120	3.300 [83.82]	6.600 [167.64]
126	2.400 [60.96]	4.800 [121.92]

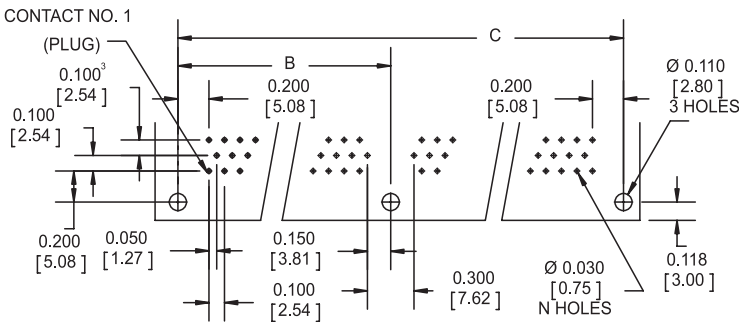
MOTHER BOARD APPLICATION

Style 11, 21, V2, V15 & V31



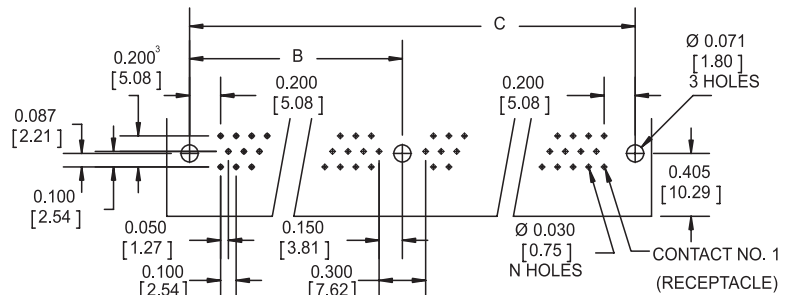
DAUGHTER BOARD APPLICATION

Style 10, 30, V3, V8 & V30



DAUGHTER BOARD APPLICATION

Style 24 & V4



Notes:

1) For V15 locking mounting style, dimension is 0.130 ± 0.004 [3.20 ± 0.10] diameter.

2) PC board may be extended to 0.453 [11.50] max for use as a pin protector.

3) Third row is for 126 pin version only.

Dimensions are in inches [mm].

► **2 & 3 ROW CONNECTORS**

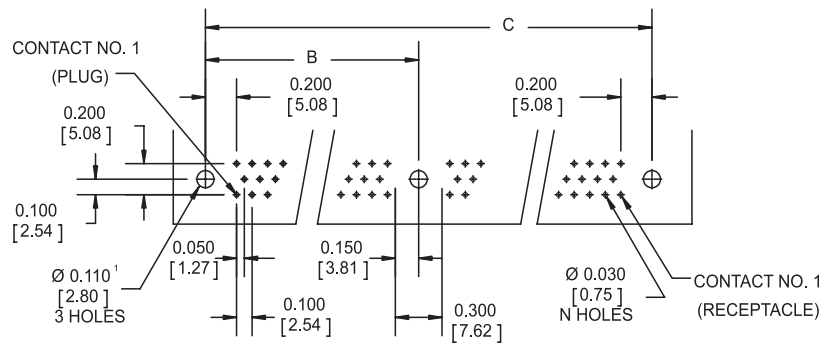
160 & 160.4 Contacts

PC Board Shown From Component Side of Board

CONTACTS	B	C
160	2.950 [74.93]	5.900 [149.86]
160.4	2.950 [74.93]	5.900 [149.86]

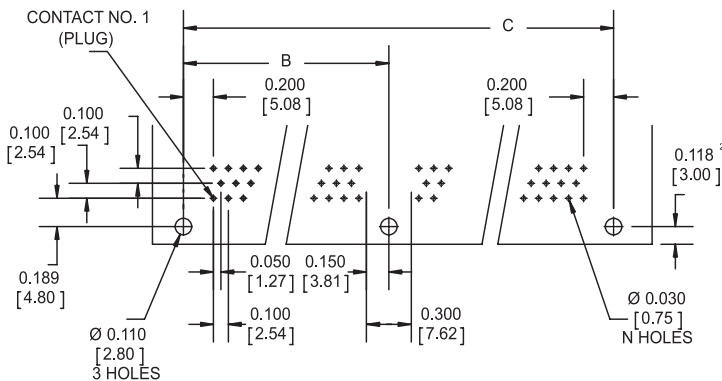
MOTHER BOARD APPLICATION

Style 11, 21, V2, V15 & V31



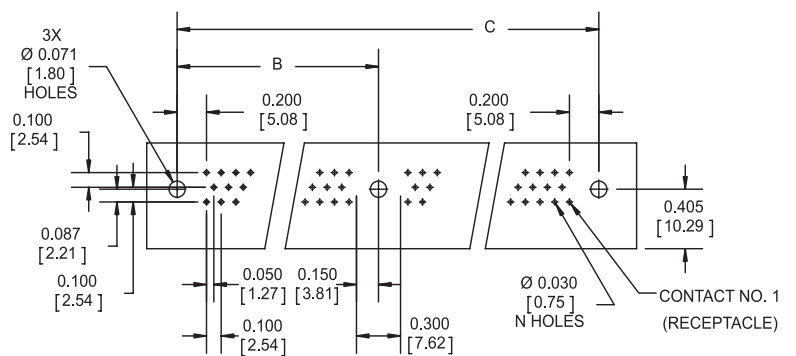
DAUGHTER BOARD APPLICATION

Style 10, 30, V3, V9 & V30



DAUGHTER BOARD APPLICATION

Style 24 & V4



Notes:

- 1) For V15 locking mounting style, dimension is 0.130 ± 0.004 [3.20 \pm 0.10] diameter.
 - 2) PC board may be extended to 0.453 [11.50] max for use as a pin protector.
- Dimensions are in inches [mm].

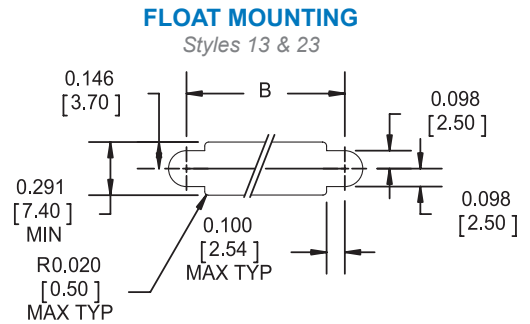
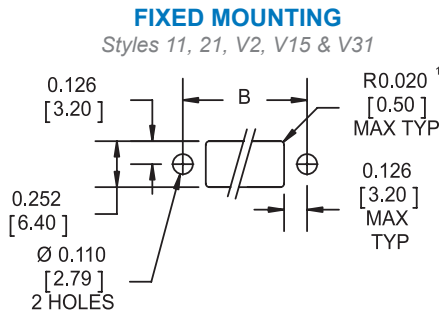
PANEL CUTOUTS

Fixed & Float Mounting Styles & Dimensions

▶ 2 & 3 ROW CONNECTORS

17, 29, 33, 41, 53 & 65 Contacts

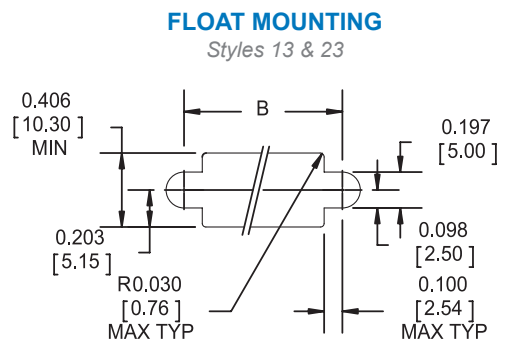
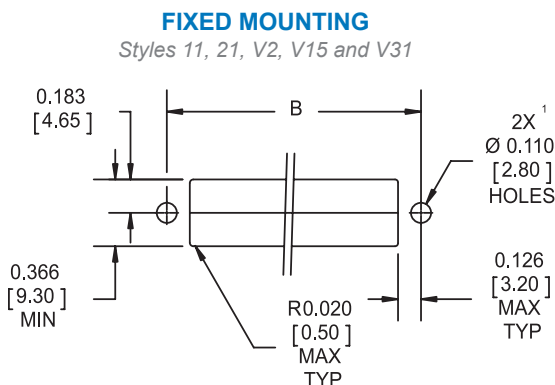
CONTACTS	B
17	1.200 [30.48]
29	1.800 [45.72]
33	2.000 [50.8]
41	2.400 [60.96]
53	3.000 [76.20]
65	3.600 [91.44]



▶ 2 & 3 ROW CONNECTORS

62, 80.1 & 98 Contacts

CONTACTS	B
62	2.400 [60.96]
80.1	3.000 [76.20]
98	3.600 [91.44]



Note:

1) For V15 locking mounting style, dimension is 0.130 ± 0.004 [3.20 ± 0.10] dia. Dimensions are in inches [mm].

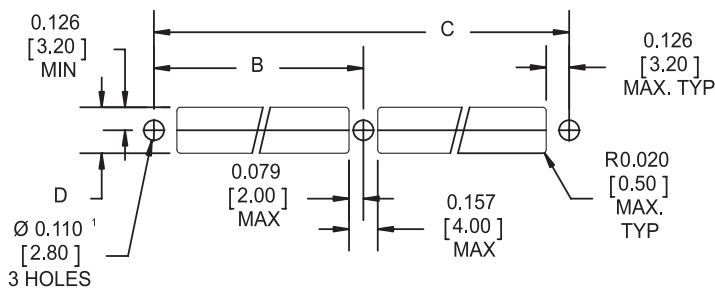
► **2 & 3 ROW CONNECTORS**

72, 84, 120 & 126 Contacts

CONTACTS	B	C	D _{MIN}	E _{MIN}
72	2.100 [53.34]	4.200 [106.68]	0.252 [6.40]	0.291 [7.50]
84	2.400 [60.96]	4.800 [121.92]	0.252 [6.40]	0.291 [7.50]
96	2.700 [68.58]	5.400 [137.16]	0.252 [6.40]	0.291 [7.50]
120	3.300 [83.82]	6.600 [167.64]	0.252 [6.40]	0.291 [7.50]
126	2.400 [60.96]	4.800 [121.92]	0.366 [9.30]	0.406 [10.30]

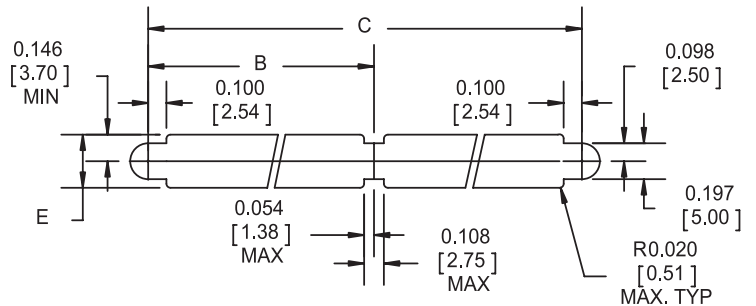
FIXED MOUNTING

Styles 11, 21, V2, V15 & V31



FLOAT MOUNTING

Styles 13 & 23



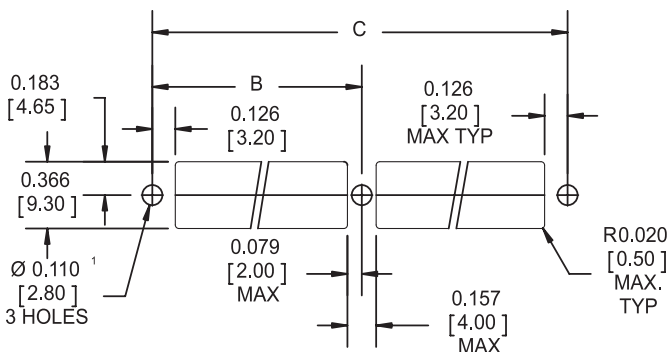
► **2 & 3 CONNECTORS**

160 & 160.4 Contacts

CONTACTS	B	C
160	2.950 [74.93]	5.900 [149.86]
160.4	2.950 [74.93]	5.900 [149.86]

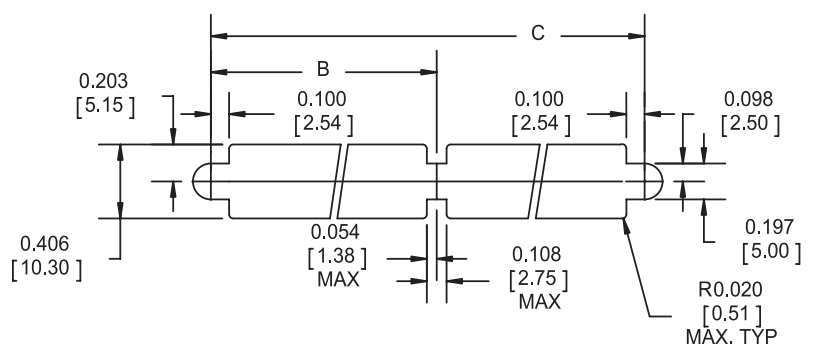
FIXED MOUNTING

Styles 11, 21, V2, V15 & V31



FLOAT MOUNTING

Styles 13 & 23



► 4 & 5 ROW CONNECTORS

48 to 490 Contacts

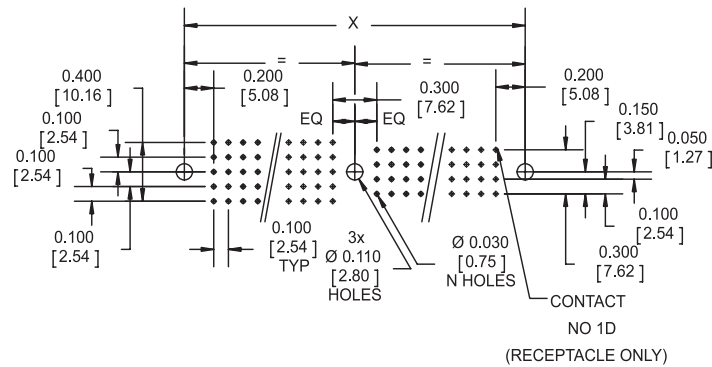
Center hole not required for 48 to 184 contacts

CONTACTS	X
48	1.500 [38.10]
68	2.000 [50.80]
80	2.300 [58.42]
96	2.700 [68.58]
100	2.800 [71.12]
108	3.000 [76.20]
120	3.300 [83.82]
125	2.800 [71.12]
128	3.500 [88.90]
136	3.700 [93.98]
140	3.100 [78.74]
160	4.300 [109.22] (4 row) 3.500 [88.92] (5 row)
184	4.900 [124.46]
196	5.200 [132.08]

CONTACTS	X
200	4.300 [109.22]
208	5.700 [144.78]
228	6.000 [152.40]
230	4.900 [124.46]
240	6.500 [165.10] (4 row) 5.100 [129.54] (5 row)
264	7.100 [180.34]
300	6.500 [165.10]
320	6.900 [175.26]
330	7.100 [180.34]
352	9.300 [236.22]
390	8.300 [210.82]
392	10.300 [261.62]
490	10.300 [261.62]

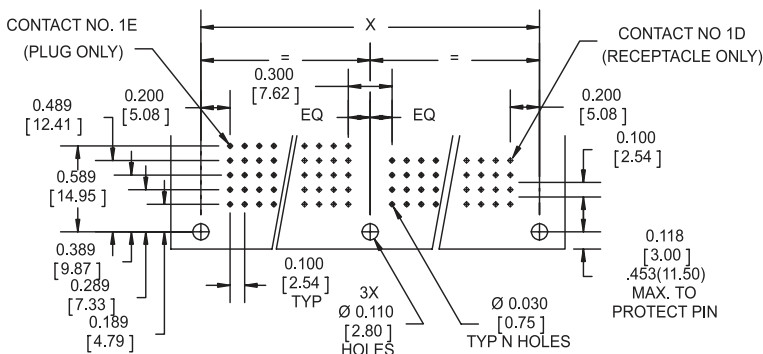
MOTHER BOARD APPLICATION

Style 11, 21, V2 & V31



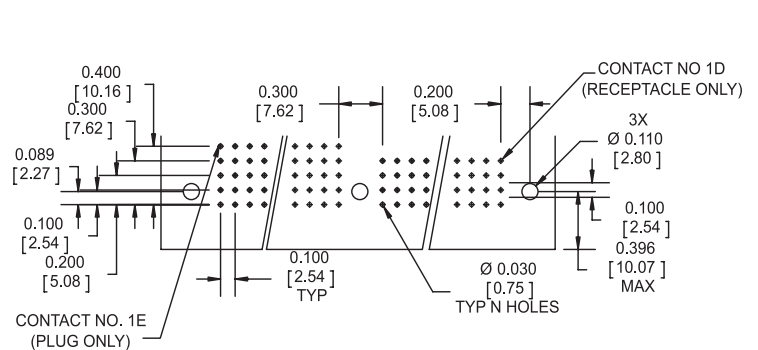
DAUGHTER BOARD APPLICATION

Style 10, 30, V3, V9 & V30



DAUGHTER BOARD APPLICATION

Style 14, 24 & V4



Note:

1) For connectors with center guide float mounts, rows adjacent to center guide will not be loaded.

Example: a KA490 will actually have 480 contacts; a KA392 will actually have 384 contacts.

Dimensions are in inches [mm].

► **4 & 5 ROW CONNECTORS**

48 to 490 Contacts

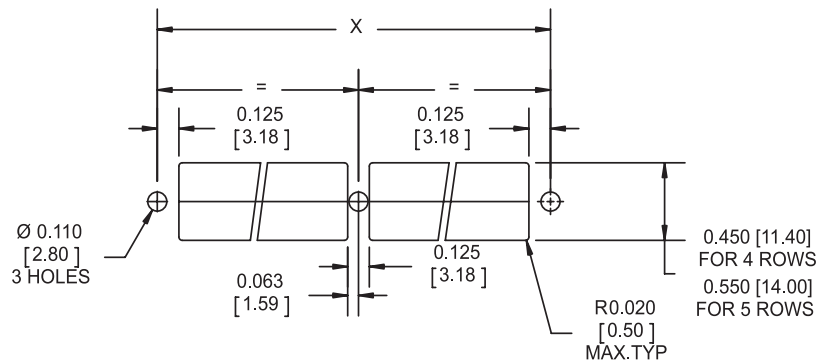
Center hole not required for 48 to 184 contacts

CONTACTS	X
48	1.500 [38.10]
68	2.000 [50.80]
80	2.300 [58.42]
96	2.700 [68.58]
100	2.800 [71.12]
108	3.000 [76.20]
120	3.300 [83.82]
125	2.800 [71.12]
128	3.500 [88.90]
136	3.700 [93.98]
140	3.100 [78.74]
160	4.300 [109.22] (4 row) 3.500 [88.92] (5 row)
184	4.900 [124.46]
196	5.200 [132.08]

CONTACTS	X
200	4.300 [109.22]
208	5.700 [144.78]
228	6.000 [152.40]
230	4.900 [124.46]
240	6.500 [165.10] (4 row) 5.100 [129.54] (5 row)
264	7.100 [180.34]
300	6.500 [165.10]
320	6.900 [175.26]
330	7.100 [180.34]
352	9.300 [236.22]
390	8.300 [210.82]
392	10.300 [261.62]
490	10.300 [261.62]

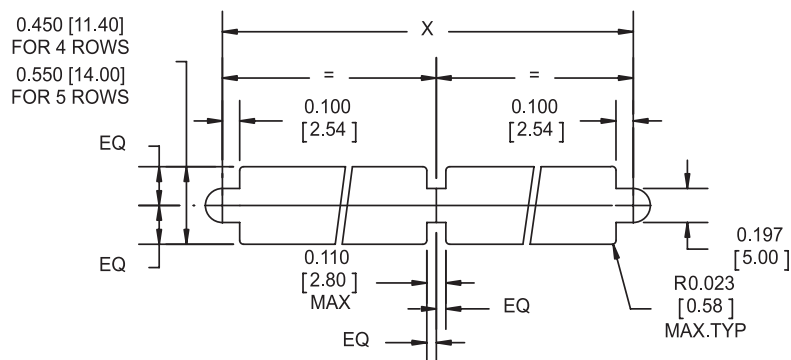
FIXED MOUNTING STYLE

Style 11, 21, V2 & V31



FLOAT MOUNTING STYLE

Style 13 & 23



Notes:

- 1) For connectors with center guide float mounts, rows adjacent to center guide will not be loaded.
Example: a KA490 will actually have 480 contacts; a KA392 will actually have 384 contacts.
Dimensions are in inches [mm].

ACCESSORIES

Crimping & Tooling

OPTIONAL TOOLS

Insertion Tool	S/MONT 1.00600
Spanner Wrench	T136 <i>(for receptacle with front removable contacts)</i>
Extraction Tool	S/DEM 1.0060

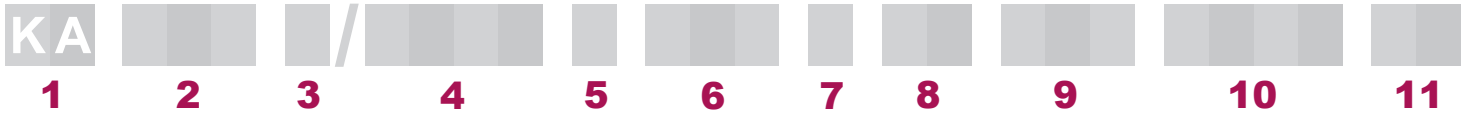
CRIMP TOOLS

Style R & H2 1 Crimp	
Manual Crimp Tool	MS3198.1 or M22520/2-01 or AFM8
Positioner For Contacts	K547
Style H2 2 Crimps in 2 Operations	
Manual Crimp Tool	MS3198.1 or M22520/2-01 or AFM8
Positioner for Contacts <i>(wire)</i>	K547
Positioner for Contacts <i>(insulation)</i>	K640
Style H2 2 Crimps in Operation⁽¹⁾	
Crimping Instructions Document	S50063

Notes:

1) This requires a special tool. Please submit wire samples and consult factory for further information.

HOW TO ORDER



1 ▶ **KA SERIES** *[Fixed]*

2 ▶ **NUMBER OF CONTACTS**

2 & 3 ROW CONNECTORS

17, 29, 33, 41, 53, 62, 65, 72, 80, 84, 96, 98, 120, 126, 160 CONTACTS

4 & 5 ROW CONNECTORS

48, 68, 96, 120, 125, 128, 136, 140, 160, 184, 196, 200, 208, 228, 230, 240, 264, 300, 320, 330, 352, 390, 392, 490 CONTACTS⁽¹⁾

3 ▶ **CONTACT VARIANTS** *(omit for standard versions)*

.1 FOR 80.1 CONTACT VERSION ONLY

.4 FOR 160.4 FRONT REMOVABLE RECEPTACLE ONLY *(available for termination styles D & Y)*

4 ▶ **NUMBER OF ROWS**

/ 1 2 7 B 2 ROWS

/ 1 2 7 C 3 ROWS

/ 2 5 4 D 4 ROWS

/ 2 5 4 E 5 ROWS

5 ▶ **INSULATOR**

P PLUG

E RECEPTACLE

6 ▶ **LOCKING MOUNTING HARDWARE** *(omit for non-locking hardware)(reference pgs. 24-28 for intermatability)*

V1, V2, V3, V4, V6, V7, V9, V15, V30, V31, V32, V33 LOCKING MOUNTING STYLES

7 ▶ **CONTACT GENDER**

M MALE

F FEMALE

N NO CONTACTS

8 ▶ **TERMINAL STYLES**

B 90° 0.125 [3.18] PCB

C 90° 0.063 [1.59] PCB

D STRAIGHT PCB

FD FRONT REMOVABLE D CONTACTS

H2 DOUBLE CRIMP

R CRIMP⁽²⁾

S SOLDER CUP

W WIRE WRAP *(2 wraps)*

Y WIRE WRAP *(3 wraps)*

9 ▶ **MOUNTING HARDWARE** *(omit for locking hardware)*

00 NO HARDWARE

10, 11, 12, 13, 14, 21, 23, 24, 101, 111, 131 MOUNTING STYLES

10 ▶ **TERMINATION PLATING**

T 10µin. [0.254 µm.] GOLD (MIN) OVER NICKEL *(male only)*

TH 50µin. [1.27 µm.] GOLD (MIN) OVER NICKEL *(male only)*

TAH 50µin. [1.27 µm.] GOLD (MIN) OVER NICKEL ON MATING SURFACES *(female only)*

TB OR **TBH** TIN LEAD OPTION FOR PC STYLE CONTACTS *(male only)*

TABH TIN LEAD OPTION FOR PC STYLE CONTACTS *(female only)*

11 ▶ **KEYING ORIENTATION**

A1 *(omit for default keying positions C & 3)*

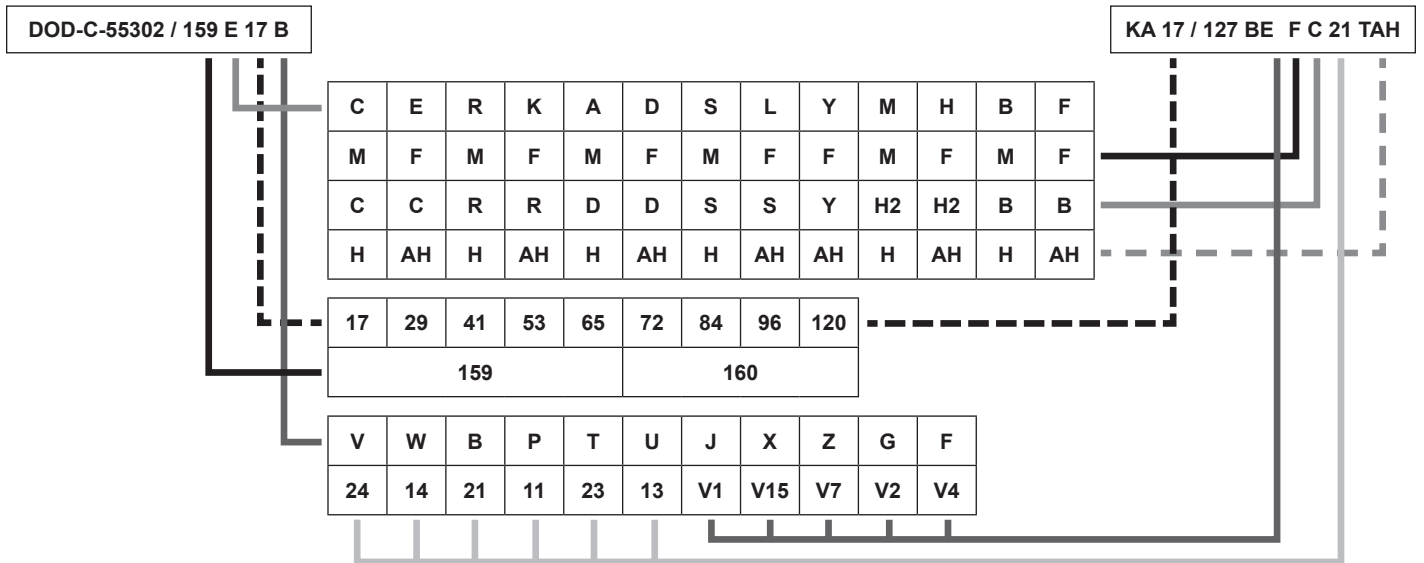
► **MILITARY PART NUMBER**

Smiths Connectors' Part Number Cross Reference

Numbers Are DOD Instead of MIL Due to Metric Design

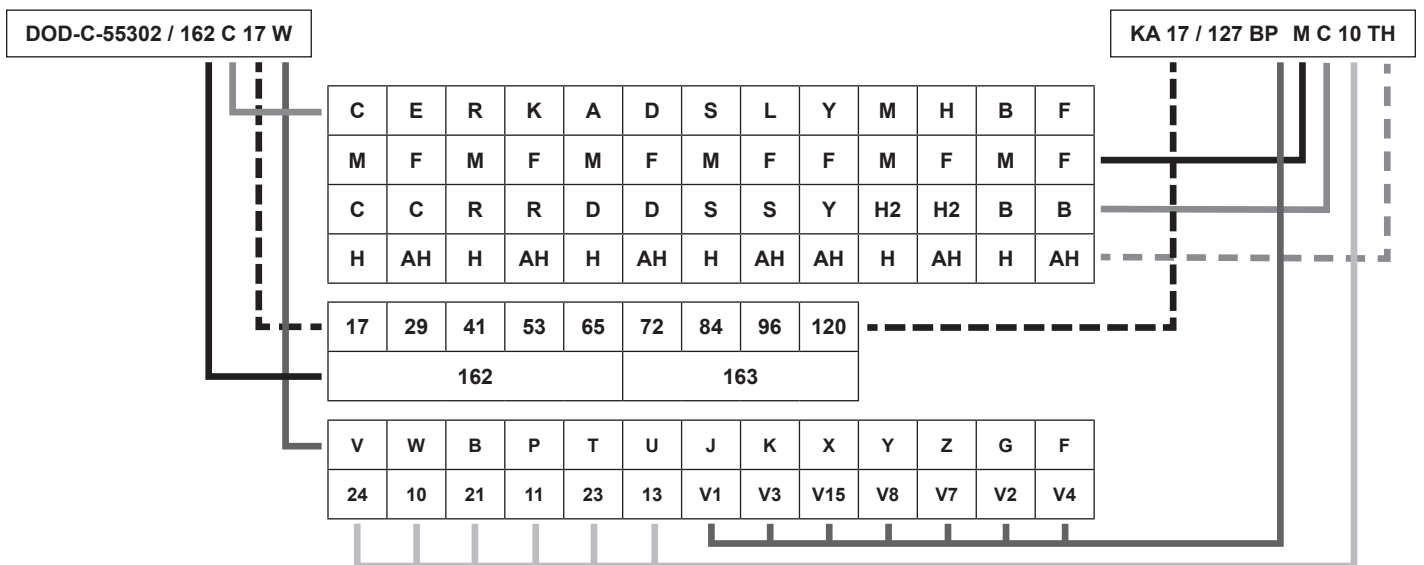
SLASH SHEETS 159 AND 160

*Receptacle 2 Row Insulator Styles
For 17 to 120 Contact Positions*



SLASH SHEETS 162 AND 163

*Receptacle 2 Row Insulator Styles
For 17 to 120 Contact Positions*



► **MILITARY PART NUMBER**

Smiths Connectors' Part Number Cross Reference

Numbers Are DOD Instead of MIL Due to Metric Design

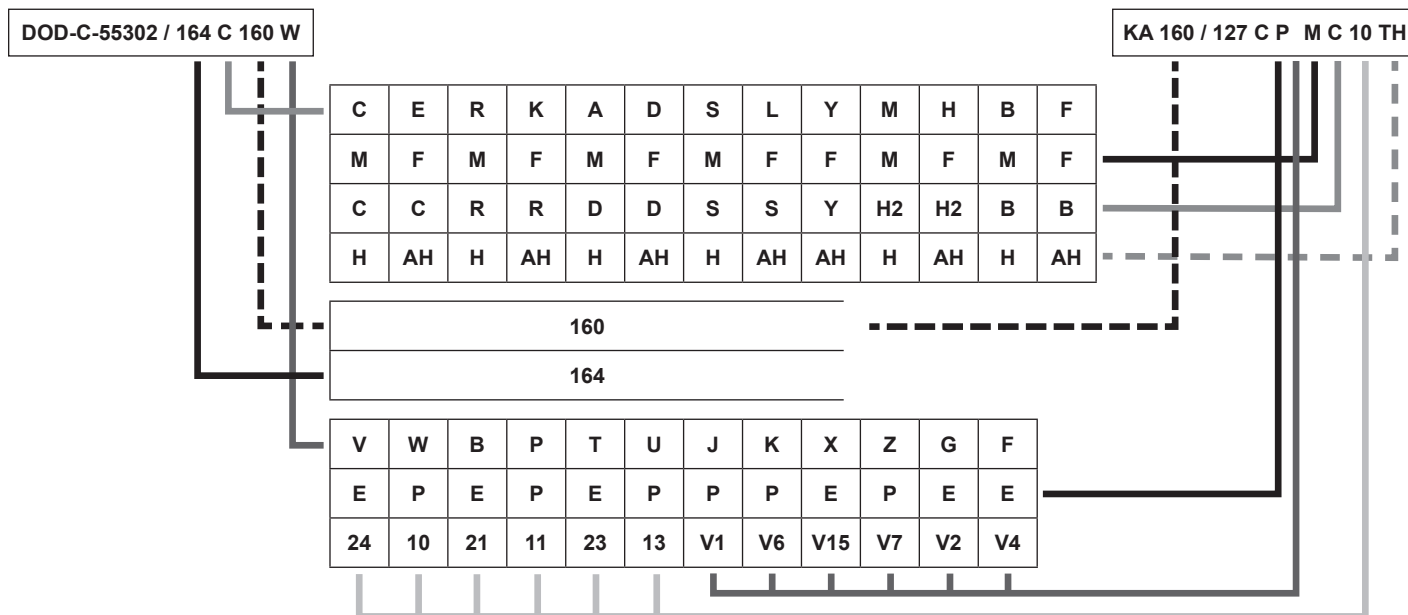
SLASH SHEET 161

160 Position Split Shell Receptacles
The Following Models Are Approved

D55302/161 J 160 G	KA 160.4/127CEFD21TAH
D55302/161 G 160 G	KA 160.4/127CEFY21TAH
D55302/161 P 160 G	KA 160.4/127CEMD21TAH
D55302/161 Q 160 G	KA 160.4/127CEMY21TAH

SLASH SHEET 164

160 Contact Position Plugs and Receptacles



MARKETS & APPLICATIONS



Commercial Aviation



- ▶ Cockpit controls
- ▶ Engine controls
- ▶ Flight controls
- ▶ In-Flight Entertainment (IFE)

Defense



- ▶ Avionics engine controls and fire control systems
- ▶ F-16 Anti-Skid Program
- ▶ Missiles, missile detection and guidance
- ▶ Military ground support
- ▶ Shipboard torpedoes and communications equipment

Space



- ▶ International space station
- ▶ Spacecraft / satellites
- ▶ Hubble space telescope
- ▶ Orion and Dragon crew exploration vehicles
- ▶ Spirit and Opportunity Mars Rovers

Medical



- ▶ Catheter interconnect
- ▶ MRI coil interface
- ▶ Portable applications
- ▶ Patient monitors

Oil & Gas



- ▶ Well-head logging recorders
- ▶ Smart PIGs
- ▶ Down hole monitoring systems
- ▶ Offshore exploration
- ▶ Seismic instrumentation

Test & Measurement



- ▶ Hand-held terminals and scanners
- ▶ Disk drives
- ▶ Instrumentation
- ▶ Automatic test equipment
- ▶ Component burn-in boards

Disclaimer 2016

All of the information included in this catalog is believed to be accurate at the time of printing. It is recommended, however, that users should independently evaluate the suitability of each product for their intended application and be sure that each product is properly installed, used and maintained to achieve desired results.

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SMITHS CONNECTORS PRODUCT LINES

Circular



- ▶ Metal and plastic
- ▶ Industrial M12, M23, M40, M58
- ▶ Crimp and solder terminations
- ▶ Push/pull latch mechanism
- ▶ Color coding

EMI / EMP Filter



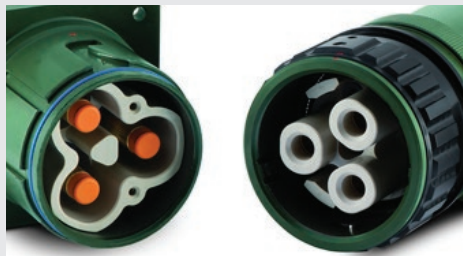
- ▶ EMI/RFI filtering and transient protection
- ▶ RoHS compliant solderless filter connectors available
- ▶ Filtered adapter for "bolt on" EMI/EMP solutions
- ▶ Filter hybrid capability
- ▶ Circular, ARINC, D-Subminiature, Micro-D

Heavy Duty



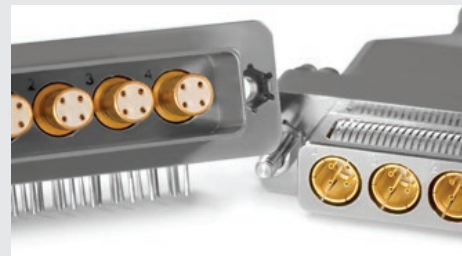
- ▶ Modular solution: signal, power, data contacts and fiber optics
- ▶ EMC shielding
- ▶ High pressure up to 35K PSI, 250°C
- ▶ High temperature up to 440°C

High Power



- ▶ Single and multi-way
- ▶ Circular and configurable rectangular
- ▶ Power contact up to 1,200 Amps
- ▶ Excellent performance in harsh environments

High Speed Copper / Fiber



- ▶ Quadrax and Twinax connectors
- ▶ Fiber Optic Butt Joint, Expanded Beam and Floating Fiber Termini available
- ▶ ARINC and MIL-STD contacts

Mil / Aero Standards



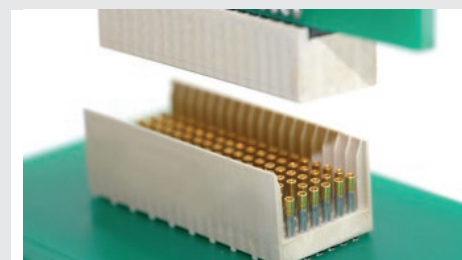
- ▶ Standard military interface
- ▶ ARINC 801
- ▶ ARINC interface
- ▶ Custom inserts

Modular / Rectangular



- ▶ Configurable modules for signal, power, coax, fiber optic and/or pneumatics
- ▶ Guided hardware for blind mating
- ▶ Easy configuration in a single frame
- ▶ For rack & panel and cable applications

PCB



- ▶ Low, medium and high density board-to-board, cable to board and stacking
- ▶ Signal, power, coax and high speed configurations
- ▶ Numerous termination styles

Spring Probe



- ▶ Z-axis compliant
- ▶ Blind mate engagement
- ▶ High density
- ▶ Extreme miniaturization
- ▶ High reliability, multi-cycle performance



SMITHS CONNECTORS GLOBAL SUPPORT

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