



Positronic Industries  
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# SND SERIES

## MILITARY / SPACE FLIGHT QUALITY

### STANDARD DENSITY FIXED OR REMOVABLE CONTACTS

High  
Performance  
D-sub

SND SERIES



- ✓ High performance for use in harsh environments, including space flight.
- ✓ Size 20 **fixed or removable** contacts.
- ✓ Female closed entry contacts utilize the “PosiBand®” system. *See page 1 for details.* GSFC S-311-P-4/10 offers two contact engagement test options. Size 20 PosiBand contacts meet the higher 40 gram requirements per 4.2.2.b.
- ✓ Five connector variants include 9, 15, 25, 37, and 50 contacts.
- ✓ Terminations include cable or wire crimp and solder, straight and right angle PCB mount.
- ✓ Current ratings: signal level to 18 amperes. *See temperature rise curves on page 2 for details.*
- ✓ A wide variety of options and accessories.
- ✓ Applicable variants are qualified to GSFC and military specifications. *See page 98 for details.*

#### Conforming To Applicable Material, Dimensional and Performance Requirements:

- GSFC S-311-P4 & GSFC S-311-P10
- MIL-DTL-24308 Class M

#### Conforming To Outgassing Requirements:

- ASTM E-595 & NASA-RP-1124

## TECHNICAL CHARACTERISTICS

### MATERIALS AND FINISHES:

<b>Connector Insert:</b>	Glass-filled DAP per ASTM-D-5948, Type SDG-F, UL 94V-0, ASTM E-595, NASA-RP-1124, green color.
<b>Contacts:</b>	Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
<b>Connector Housing (Shells):</b>	Brass with 0.000050 inch [1.27 microns] gold over copper plate.
<b>Mounting Spacers and Brackets:</b>	Brass with 0.000050 inch [1.27 microns] gold over copper plate.
<b>Push-On Fasteners:</b>	Phosphor bronze or beryllium copper with 0.000050 inch [1.27 microns] gold over copper plate.
<b>Jackscrew Systems:</b>	Brass with 0.000050 inch [1.27 microns] gold over copper plate.

### Cable Adapter (Hood):

Brass with 0.000050 inch [1.27 microns] gold over copper plate; aluminum with electroless nickel plate. Other finishes available, contact Technical Sales.

### MECHANICAL CHARACTERISTICS:

#### Contacts:

##### Size 20 Fixed:

Male contact 0.040 inch [1.02 mm] mating diameter. Female contact - PosiBand closed entry design; *see page 1 for details.*

##### Size 20 Removable:

Install contact to rear face of connector insert and remove from rear face of connector insert. Size 20 contact, male contact 0.040 inch [1.02 mm] mating diameter. Female contact - PosiBand closed entry design; *see page 1 for details. For removable size 20 contacts, see pages 79 & 80.*



## TECHNICAL CHARACTERISTICS, continued

continued from previous page. . . .

### MECHANICAL CHARACTERISTICS, continued:

<b>Contact Retention in Connector Insert:</b>	9 lbs. [40 N].
<b>Resistance to Solder Iron Heat:</b>	650°F [350°C] for 10 seconds duration per IEC 60512-6, solder cup contacts.
<b>Contact Terminations:</b>	Removable, closed barrel crimp - wire sizes 18 AWG [1.0 mm <sup>2</sup> ] through 30 AWG [0.05 mm <sup>2</sup> ]. Removable, closed barrel solder - wire size 20 AWG [0.5 mm <sup>2</sup> ] maximum; see page 80 for details. Fixed, solder cup - wire size 20 AWG [0.5 mm <sup>2</sup> ] maximum; see page 8 for details. Straight solder printed board mount - 0.028 inch [0.71 mm] termination diameter and 0.024 inch [0.61 mm] termination diameter. Right angle (90°) printed board mount - 0.028 inch [0.71 mm] termination diameter for Inch System footprint, and 0.024 inch [0.64 mm] termination diameter for European Metric footprint.
<b>Connector Housing (Shells):</b>	Male connector housings may be dimpled for EMI/ESD ground paths.
<b>Polarization:</b>	Trapezoidally-shaped connector housings and polarized jackscrews.
<b>Mounting to Angle Brackets:</b>	Jackscrews and riveted fasteners with 0.120 inch [3.05 mm] clearance hole, and threaded riveted fasteners with 4-40 thread and polyester lock inserts.

<b>Mounting to Printed Board:</b>	Rapid installation push-on fasteners and mounting posts.
<b>Locking Systems:</b>	Jackscrews.
<b>Mechanical Operations:</b>	1,000 operations minimum per IEC 60512-5.

### ELECTRICAL CHARACTERISTICS:

<b>Contact Current Rating, Tested per UL 1977:</b>	18 amperes, 2 contacts energized. 14 amperes, 6 contacts energized. 11 amperes, 15 contacts energized. 10 amperes, 25 contacts energized. 9 amperes, 50 contacts energized.
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See temperature rise curves on page 2 for details.

<b>Initial Contact Resistance:</b>	0.004 ohms, maximum.
<b>Proof Voltage:</b>	1,000 V r.m.s.
<b>Insulation Resistance:</b>	5 G ohms.
<b>Clearance and Creepage Distance:</b>	0.039 inch [1.0 mm], minimum.
<b>Working Voltage:</b>	300 V r.m.s.

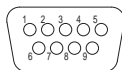
### CLIMATIC CHARACTERISTICS:

<b>Temperature Range:</b>	-55°C to +125°C.
<b>Damp Heat, Steady State:</b>	21 days.

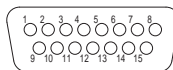
Visit our website for the latest catalog updates and supplements at  
<http://www.connectpositronic.com/products/62/HighPerformanceD-subminiature/catalogs/>

### CONTACT VARIANTS

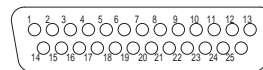
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



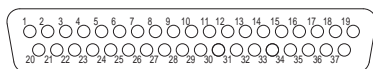
SND 9



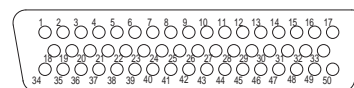
SND 15



SND 25



SND 37



SND 50

For information regarding **REMOVABLE CONTACTS**, see contact illustration drawings and charts on pages 77-85.



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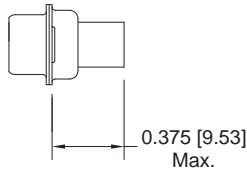
## MILITARY / SPACE FLIGHT QUALITY

### STANDARD DENSITY FIXED OR REMOVABLE CONTACTS

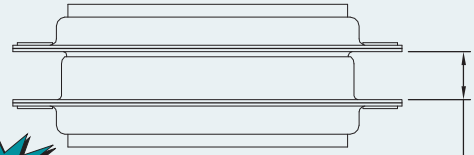
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## STANDARD CONNECTOR HOUSING (SHELLS) ASSEMBLY

### CRIMP REMOVABLE



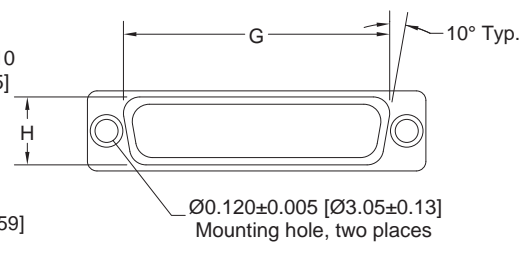
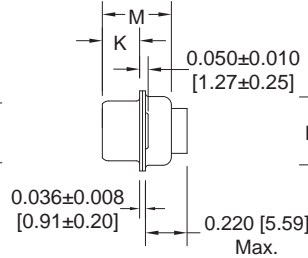
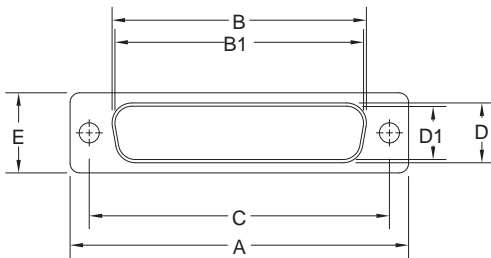
### RECOMMENDED MATING DIMENSIONS



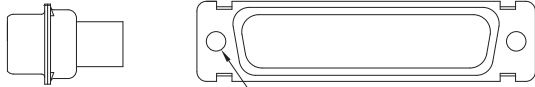
Shell Sizes 1 & 2 =  
0.265±0.015 [6.73±0.38]  
Shell Sizes 3, 4, 5 & 6 =  
0.256±0.015 [6.50±0.38]



### BOARD MOUNT

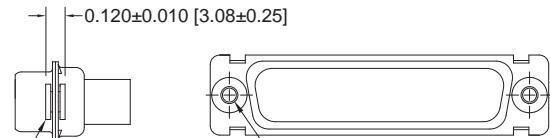


### OPTIONAL CONNECTOR HOUSING ASSEMBLY (0, 02)



Ø0.120±0.005 [Ø3.05±0.13]  
Mounting hole, two places  
for stainless steel shell (0 option)  
Ø0.154 [3.91] Mounting hole,  
two places (02 option)

### OPTIONAL CONNECTOR HOUSING ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



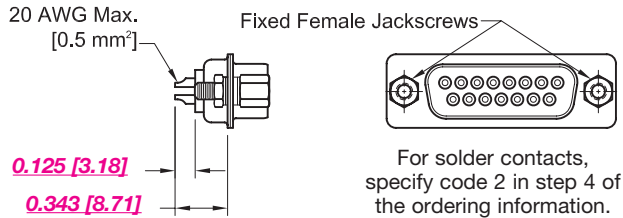
0.120±0.010 [3.08±0.25]  
0.032 [0.81]  
Total diametral float  
Ø0.086<sup>+0.005</sup><sub>-0.000</sub> [Ø2.18<sup>+0.13</sup><sub>-0.00</sub>]  
Mounting hole, two places

CONNECTOR VARIANT SIZES	GENDER	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
SND 9 (SHELL SIZE 1)	MALE	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	FEMALE	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SND 15 (SHELL SIZE 2)	MALE	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	FEMALE	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SND 25 (SHELL SIZE 3)	MALE	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SND 37 (SHELL SIZE 4)	MALE	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SND 50 (SHELL SIZE 5)	MALE	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]

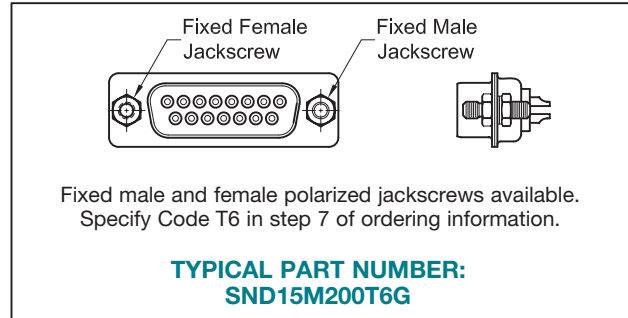
7 DIMENSIONS ARE IN INCHES [MILLIMETERS].  
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



**SOLDER CUP TERMINATION  
CODE 2**



**TYPICAL PART NUMBER:  
SND15M200T2G**



**SND15S5R70T2G**  
(shown left)

**SND25M10H0G**  
(shown middle)

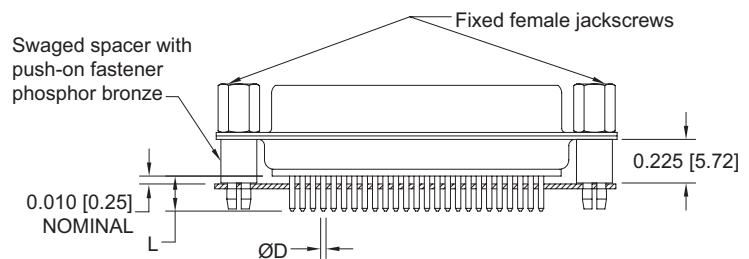
**SND9M000G with  
MC6020M contacts**  
(shown right)

**STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION  
CODE 3, 32 AND 36**

*1 CODE NUMBER	L	ØD
3	0.170 [4.32]	0.028 [0.71]
32	0.375 [9.53]	0.028 [0.71]
36	0.236 [6.00]	0.024 [0.61]

**NOTE:**

\*1 Contact termination code as specified in Step 4 of ordering information.



**TYPICAL PART NUMBER:  
SND25S3S60TG**



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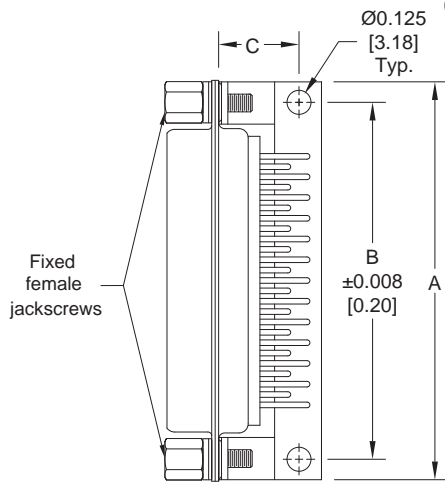
### STANDARD DENSITY FIXED OR REMOVABLE CONTACTS

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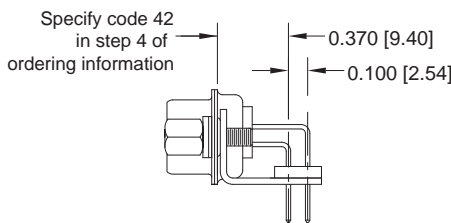
SND SERIES

### RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION

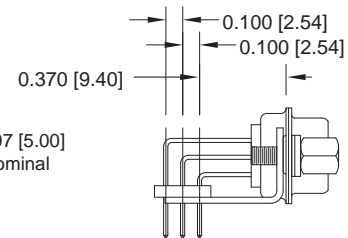
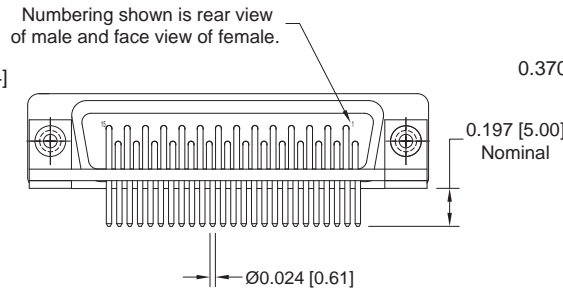
#### CODE 42, 0.370 [9.40] CONTACT EXTENSION



SND**42**** 0.370 [9.40] CONTACT EXTENSION			
PART NUMBER	A	B	C
SND9*42****	1.204 [30.58]	0.984 [24.99]	0.420 [10.67]
SND15*42****	1.532 [38.91]	1.312 [33.32]	0.420 [10.67]
SND25*42****	2.072 [52.63]	1.852 [47.04]	0.420 [10.67]
SND37*42****	2.720 [69.09]	2.500 [63.50]	0.420 [10.67]
SND50*42****	2.626 [66.70]	2.406 [61.11]	0.470 [11.94]



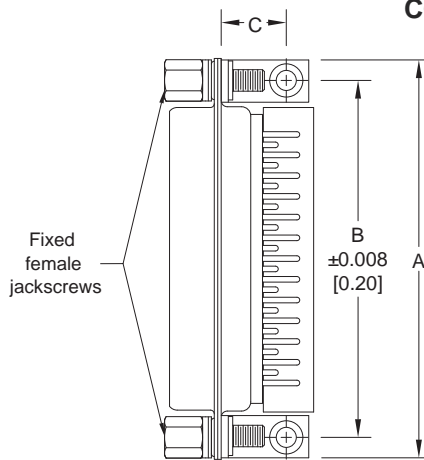
TYPICAL PART NUMBER:  
SND25M42B30T2G



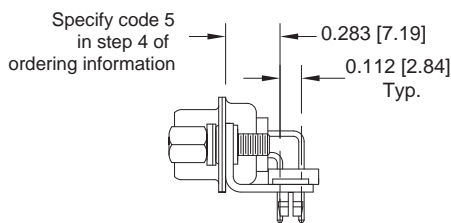
TYPICAL PART NUMBER:  
SND50M42B30TG

### RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION

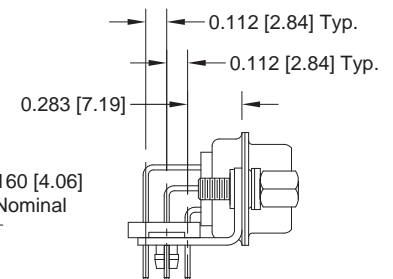
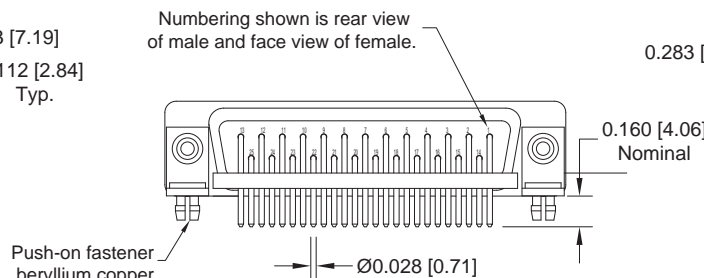
#### CODE 5, 0.283 [7.19] CONTACT EXTENSION



SND**5**** 0.283 [7.19] CONTACT EXTENSION			
PART NUMBER	A	B	C
SND9*5****	1.204 [30.58]	0.984 [24.99]	0.339 [8.61]
SND15*5****	1.532 [38.91]	1.312 [33.32]	0.339 [8.61]
SND25*5****	2.072 [52.63]	1.852 [47.04]	0.339 [8.61]
SND37*5****	2.720 [69.09]	2.500 [63.50]	0.339 [8.61]
SND50*5****	2.626 [66.70]	2.406 [61.11]	0.395 [10.03]



TYPICAL PART NUMBER:  
SND25M5R7NT2G



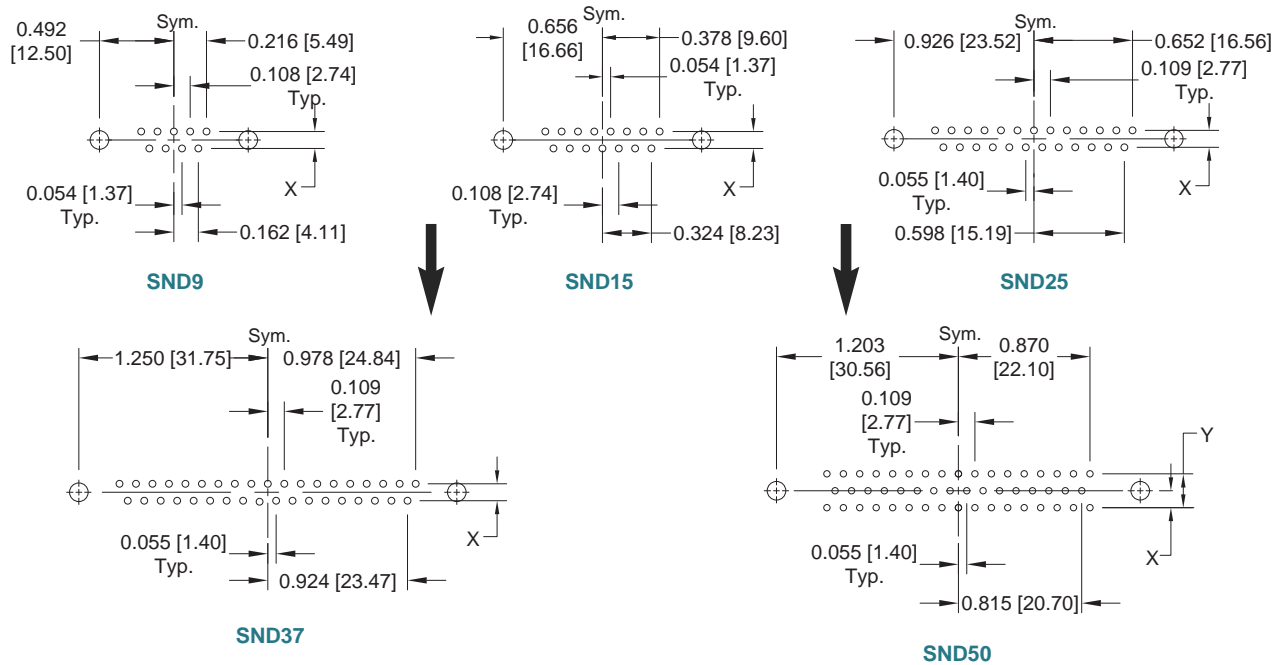
TYPICAL PART NUMBER:  
SND50S5R7NTG





**RIGHT ANGLE (90°) AND STRAIGHT SOLDER PRINTED BOARD CONTACT HOLE PATTERN**

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.  
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



*1 CODE NUMBER	X	Y
3		
5	0.112 [2.84]	0.224 [5.69]
32		
36		
*2 42	0.100 [2.54]	0.200 [5.08]

**NOTE:**

- \*1 Contact termination code as specified in Step 4 of ordering information.
- \*2 Metric system, European contact hole pattern.

**SUGGESTED PRINTED BOARD HOLE SIZES:**

- Suggest 0.039 [0.99] Ø hole for 0.024 [0.61] Ø contact termination positions.
- Suggest 0.045 [1.14] Ø hole for 0.028 [0.71] Ø contact termination positions.
- Suggest 0.123 ±0.003 [3.12 ±0.08] Ø hole for mounting connector with push-on fasteners.



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## REMOVABLE CONTACT ORDERING ASSISTANCE CHART



### SND SERIES CRIMP AND SOLDER CONTACT TERMINATIONS

TYPE	PAGE NUMBER REFERENCE IN CATALOG	CONTACT SIZE	FEMALE PART NUMBER	MALE PART NUMBER	WIRE SIZE AWG [mm <sup>2</sup> ]
CRIMP	see page 79 for additional information	20	FC6020M2	MC6020M	20 / 22 / 24 [0.5 / 0.3 / 0.25]
			FC6026M2	MC6026M	26 / 28 / 30 [0.12 / 0.08 / 0.05]
	see page 80 for additional information		FC6018M2	MC6018M	18 [1.0] max.
SOLDER	see page 80 for additional information	20	FS6020M2	MS6020M	20 [0.5] max.

**NOTE:** For ordering crimp contacts on reels, add "R" to part number, see page 77 for details.  
Examples: FC6020M2R or MC6020MR

## The PosiBand® contact system has many advantages over the legacy split tine design.



- X** **PosiBand** is more robust than split tine, which can be pried open in harsh environments, resulting in reduced normal force and degradation of electrical performance.
- X** **PosiBand** has greater surface area at the male and female contact interface, resulting in more consistent electrical performance.
- X** **PosiBand** has lower average insertion forces, resulting in greater ease in mating, especially in larger high density connectors. The average lower insertion force is accomplished while meeting or exceeding performance requirements.
- X** The **PosiBand's** main contact body does not require annealing of the crimp barrels, as does the split tine design. This eliminates concern of unintentionally heat-treating the mating end of the contact, which can cause electrical failure.
- X** **PosiBand** is qualified under **SAE AS39029** specification. **PosiBand** is also qualified under **GSFC S-311-P4** to the higher 40 gram contact engagement test requirement.



FC8022M2. Deconstructed contact shown for reference only.

For more information on PosiBand closed entry contacts, see page 1 & 2.

For information regarding **REMOVABLE CONTACTS**, see contact illustration drawings and charts on pages 77-85.

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 96.



## ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	SND	37	S	5	B3	0	T2	G	—

### STEP 1 - BASIC SERIES

SND series

### STEP 2 - CONNECTOR VARIANTS

9, 15, 25, 37, 50

### STEP 3 - CONNECTOR GENDER

- M - Male
- S - Female - PosiBand closed entry contacts, see page 1 for more information.

### STEP 4 - CONTACT TERMINATION TYPE

- 0 - Contacts ordered separately, see contact chart on page 11 for details.
- 1 - Crimp, 20 AWG - 24 AWG [0.5 mm<sup>2</sup> - 0.25 mm<sup>2</sup>].
- 12 - Crimp, 26 AWG - 30 AWG [0.12 mm<sup>2</sup> - 0.05 mm<sup>2</sup>].
- 2 - Fixed, solder cup.
- 3 - Solder, straight printed board mount with 0.170 [4.32] tail length.
- 32 - Solder, straight printed board mount with 0.375 [9.52] tail length.
- 36 - Solder, straight printed board mount with 0.236 [5.99] tail length.
- 42 - Solder, metric system right angle (90°) printed board mount with 0.370 [9.40] contact extension.
- 5 - Solder, right angle (90°) printed board mount with 0.283 [7.19] contact extension.

### \*1 STEP 5 - MOUNTING STYLE

- 0 - Mounting hole, 0.120[3.05] Ø.
- 02 - Mounting hole, 0.154[3.91] Ø.
- C5 - Swaged spacer, cul-de-sac style, 4-40 threads, 0.350 [8.89] length. For use with cable connectors only.
- C7 - Bracket, mounting, right angle (90°) metal, swaged to connector with cul-de-sac spacer and 4-40 threads with cross bar.
- F - Float mounts, universal.
- P - Threaded post, brass, length varies according to contact termination code. See page 89.
- R2 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 thread fixed female jackscrews with cross bar.
- R6 - Bracket, mounting, right angle (90°) metal, swaged to connector with 0.120 [3.05] Ø mounting hole with cross bar.
- R7 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 threads with cross bar.
- R8 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 locknut with cross bar.
- S - Swaged spacer, 4-40 threads, length varies according to contact termination code. See page 88.
- S2 - Swaged spacer, 4-40 threads, 0.125[3.18] length.
- S5 - Swaged locknut, 4-40 threads.
- S6 - Swaged spacer with push-on fastener, 4-40 threads, length varies according to contact termination code. See page 88.

### STEP 9 - SPECIAL OPTIONS

SEE APPENDIX ON PAGE 95.

### STEP 8 - CONNECTOR HOUSING (SHELLS) OPTIONS

- G - Gold over copper plate.
- D - Gold over copper plate and dimpled (male connectors only).

### \*1 STEP 7 - LOCKING AND POLARIZING SYSTEMS

- 0 - None.
- T - Fixed female jackscrews.
- T2 - Fixed female jackscrews.
- T6 - Fixed male and female polarized jackscrews.
- E - Rotating male jackscrews.
- E2 - Rotating male screw locks.
- E3 - Rotating male with internal hex for 3/32 hex drives.
- E6 - Rotating male and female polarized jackscrews.

### \*1 STEP 6 - CABLE ADAPTER (HOOD) AND PUSH-ON FASTENER

- 0 - None.
- H - Cable adapter, top opening, brass.
- AN - Cable adapter, lightweight aluminum, electroless nickel plate, see page 91 for details.
- N - Push-on fastener for right angle (90°) mounting brackets.

### NOTE:

\*1 For additional information on accessories listed in Step 5, 6, and 7, see the Accessories section, pages 86-94.

*Do you need 2-D drawings  
or 3-D models?*

See page 18 for more information!

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 96.