



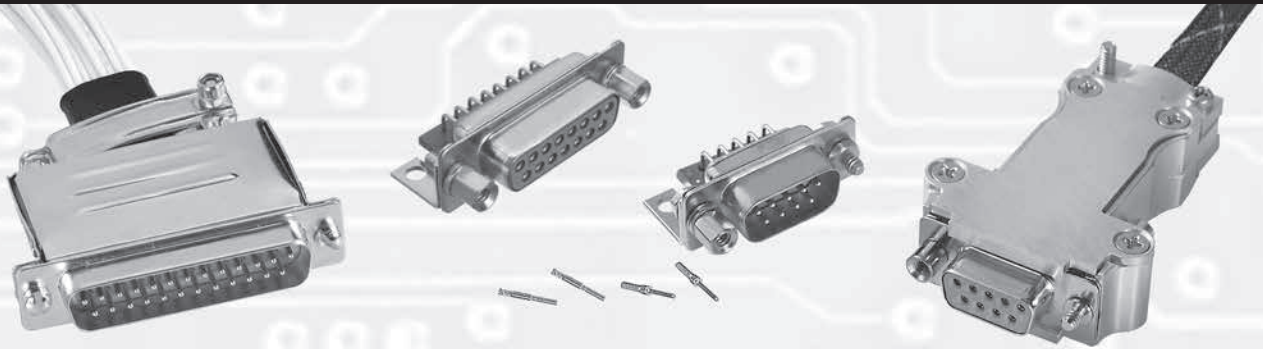
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SND SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY FIXED OR REMOVABLE CONTACTS

High
Performance
D-sub



- 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:

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

- Contact Retention in Connector Insert:** 9 lbs. [40 N].
- Resistance to Solder Iron Heat:** 650°F [350°C] for 10 seconds duration per IEC 60512-6, solder cup contacts.
- Contact Terminations:**
Removable, closed barrel crimp - wire sizes 18 AWG [1.0 mm²] through 30 AWG [0.05 mm²].
Removable, closed barrel solder - wire size 20 AWG [0.5 mm²] maximum; see *page 80 for details*.
Fixed, solder cup - wire size 20 AWG [0.5 mm²] 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.
- Connector Housing (Shells):** Male connector housings may be dimpled for EMI/ESD ground paths.
- Polarization:** Trapezoidally-shaped connector housings and polarized jackscrews.
- Mounting to Angle Brackets:** 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.

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

ELECTRICAL CHARACTERISTICS:

- Contact Current Rating, Tested per UL 1977:**
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.

See temperature rise curves on page 2 for details.

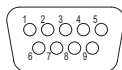
- Initial Contact Resistance:** 0.004 ohms, maximum.
- Proof Voltage:** 1,000 V r.m.s.
- Insulation Resistance:** 5 G ohms.
- Clearance and Creepage Distance:** 0.039 inch [1.0 mm], minimum.
- Working Voltage:** 300 V r.m.s.

CLIMATIC CHARACTERISTICS:

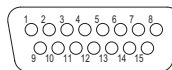
- Temperature Range:** -55°C to +125°C.
- Damp Heat, Steady State:** 21 days.

CONTACT VARIANTS

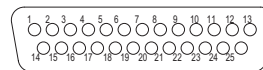
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



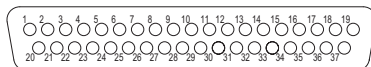
SND 9



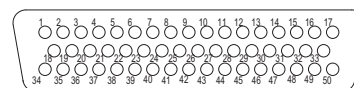
SND 15



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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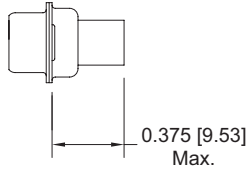
MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY FIXED OR REMOVABLE CONTACTS

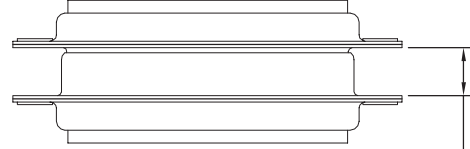
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STANDARD CONNECTOR HOUSING (SHELLS) ASSEMBLY

.....CRIMP REMOVABLE.....

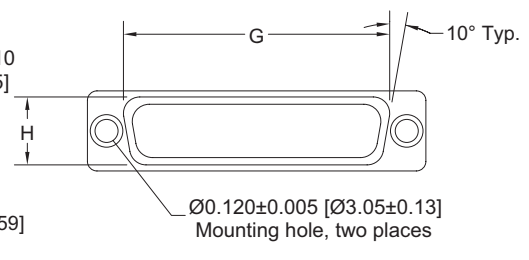
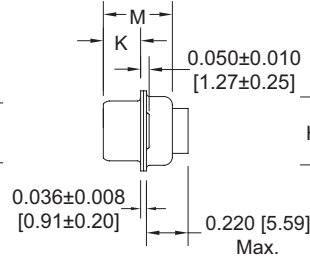
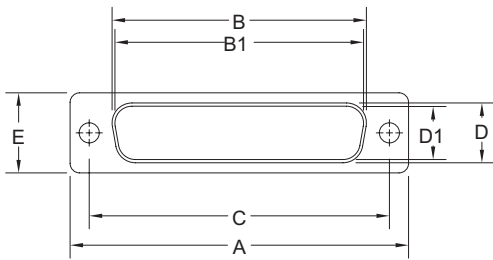


RECOMMENDED MATING DIMENSIONS

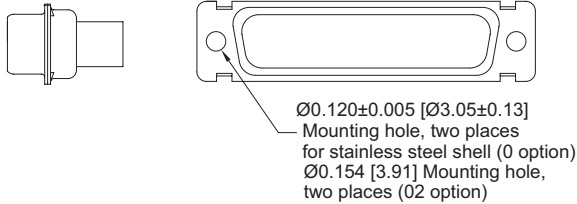


Shell Sizes 1 & 2 = 0.265±0.015 [6.73±0.38]
Shell Sizes 3, 4, 5 & 6 = 0.256±0.015 [6.50±0.38]

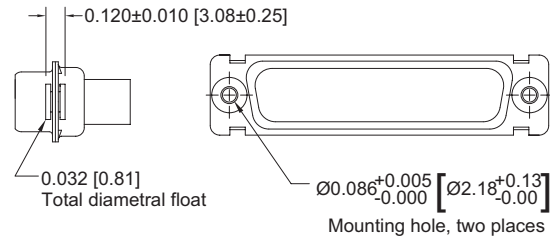
.....BOARD MOUNT.....



OPTIONAL CONNECTOR HOUSING ASSEMBLY (0, 02)



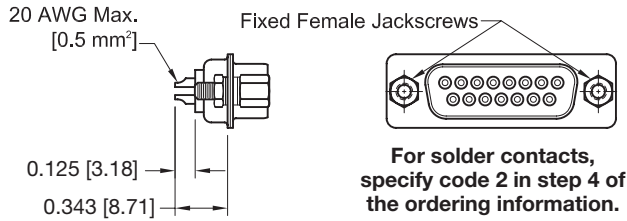
OPTIONAL CONNECTOR HOUSING ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



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]

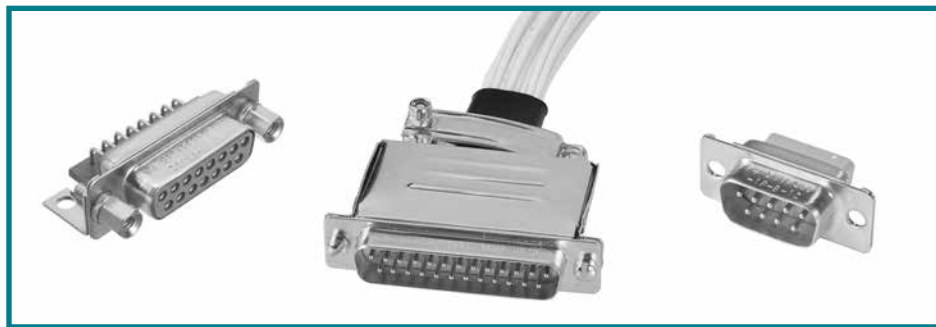
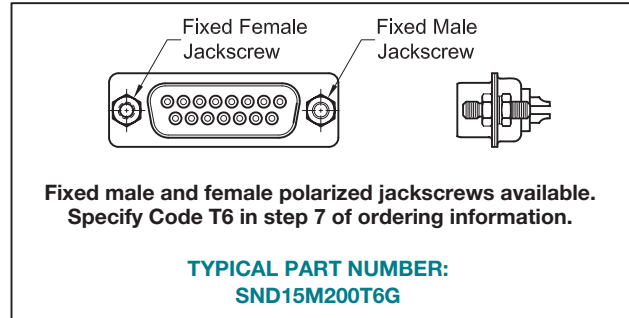
7 DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

SOLDER CUP TERMINATION
CODE 2



For solder contacts,
specify code 2 in step 4 of
the ordering information.

TYPICAL PART NUMBER:
SND15M200T2G



SND15S5R70T2G
(shown left)

SND25M10H0G
(shown middle)

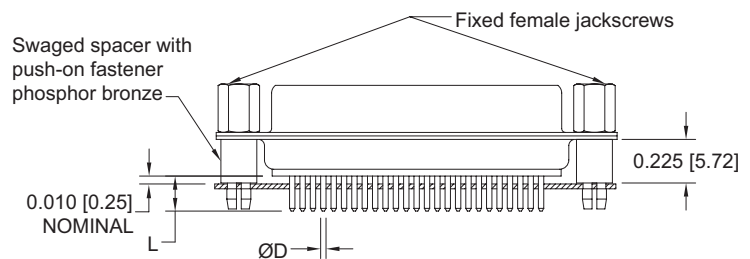
**SND9M000G with
MC6020M contacts**
(shown right)

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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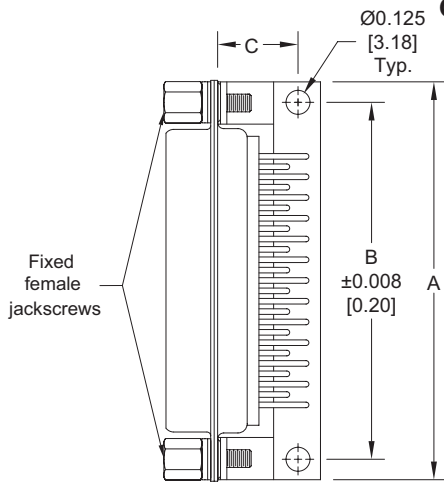
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STANDARD DENSITY FIXED OR REMOVABLE CONTACTS

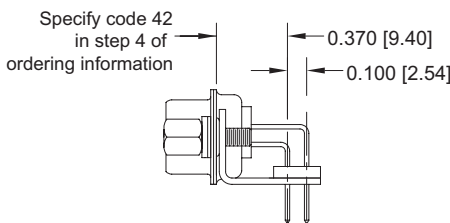
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RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION

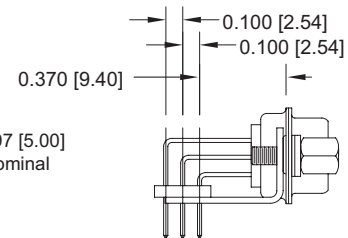
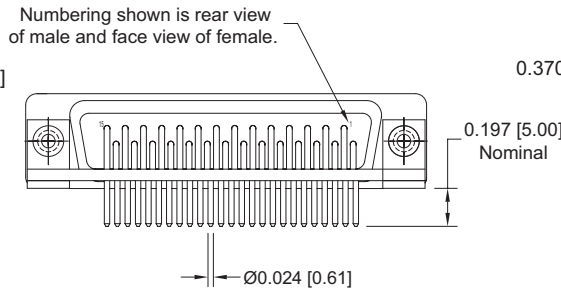
CODE 42, 0.370 [9.40] CONTACT EXTENSION



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]



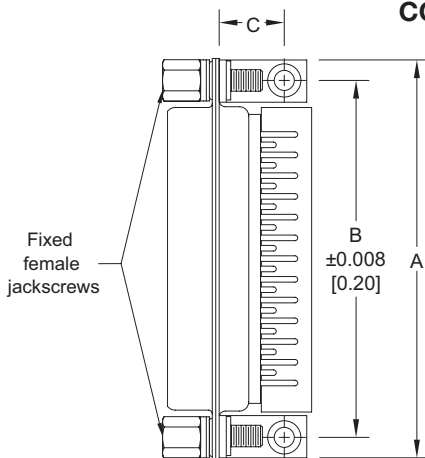
TYPICAL PART NUMBER:
SND25M42B30T2G



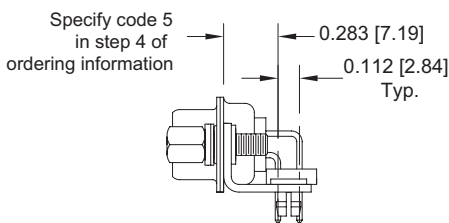
TYPICAL PART NUMBER:
SND50M42B30TG

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION

CODE 5, 0.283 [7.19] CONTACT EXTENSION

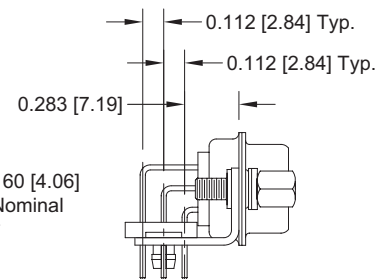
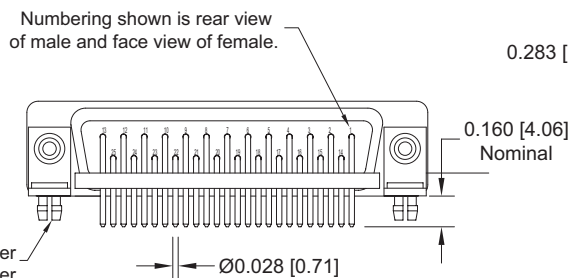


SND**5**** 0.283 [7.19] CONTACT EXTENSION			
PART NUMBER	A	B	C
SND9*5****	1.204 [30.58]	0.984 [24.99]	0.339 [8.61]
SND15*5****	1.532 [38.91]	1.312 [33.32]	0.339 [8.61]
SND25*5****	2.072 [52.63]	1.852 [47.04]	0.339 [8.61]
SND37*5****	2.720 [69.09]	2.500 [63.50]	0.339 [8.61]
SND50*5****	2.626 [66.70]	2.406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



TYPICAL PART NUMBER:
SND25M5R7NT2G

Push-on fastener
beryllium copper

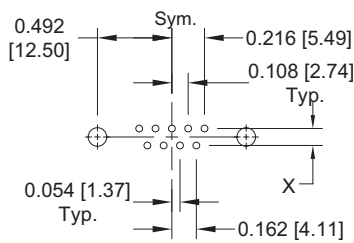


TYPICAL PART NUMBER:
SND50S5R7NTG

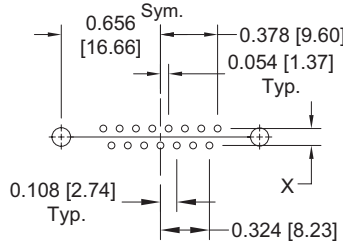


RIGHT ANGLE (90°) AND STRAIGHT SOLDER PRINTED BOARD CONTACT HOLE PATTERN

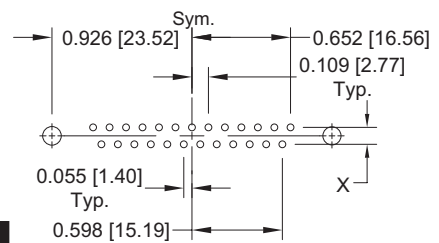
HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



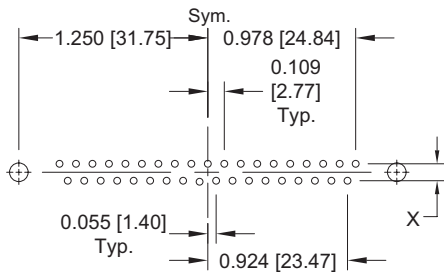
SND9



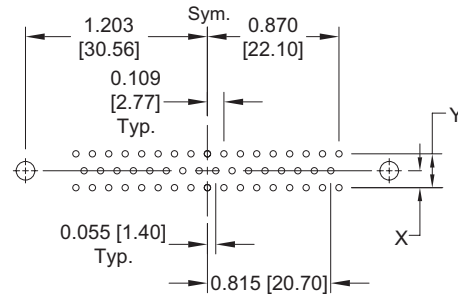
SND15



SND25



SND37



SND50

*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.



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 ²]
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 9 - SPECIAL OPTIONS SEE APPENDIX ON PAGE 95.
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 ² - 0.25 mm ²]. 12 - Crimp, 26 AWG - 30 AWG [0.12 mm ² - 0.05 mm ²]. 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 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.

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