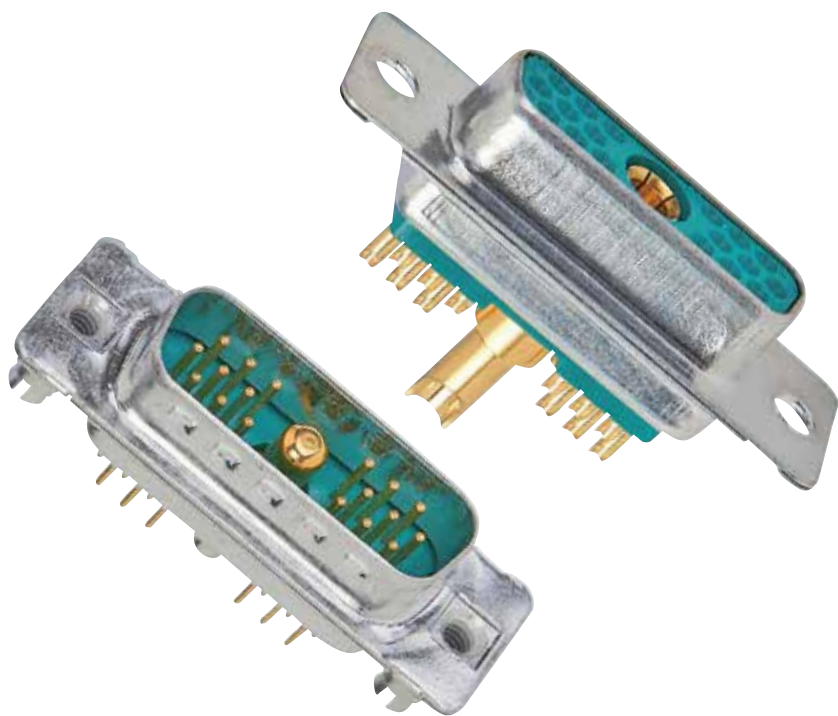


SECTION 2

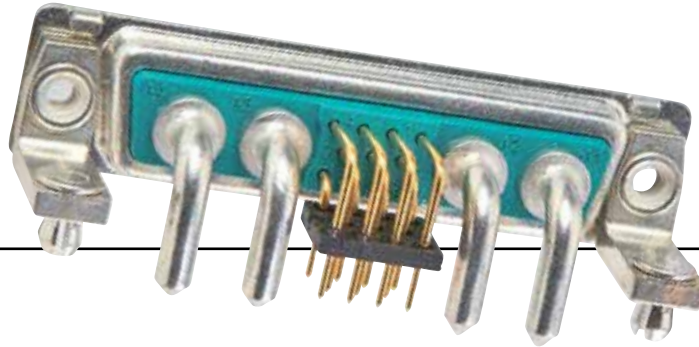
COMBINATION D-SUB CONNECTORS

Combination D-SUB Connectors provide the ideal solution for applications to require power, signal and coaxial connections within one connector. This series of connectors achieves space saving on PCB's and I/O designs.

Within this product family are various pin out configurations possible. Almost endless selections can be created mixing power, signal and coaxial contacts.



Examples are coaxial contacts handling frequencies up to 2 GHz. Power contacts from 10 amp to 40 amp current handling. Signal contacts in various styles complete the product offering.



Industry standard terminations types, solder cup, PCB contacts in straight and angled pin configurations. Crimp types and wire wrap contacts.

Here are just a few Product characteristics:

- Space savings on the PCB
- Different wire terminations are possible in a single connector
- Cost savings - mixed layout
- Insertable and removable coaxial, power, high voltage and signal contacts
- Precision machined contacts
- Various quality classes are available
- Wide product range

A wide range of standard pin configurations fully loaded with signal contacts are available. Specially configured contacts with power, coaxial and signal contacts can be constructed. Please use the Part Number Creator on page 2 | 2 and 2 | 3 or contact technical support at your closest CONEC office.



PART NUMBER CREATOR

for standard version

3 003W3 S X X 6 1 A 1 O X

Product Line

- 3 = Shell steel tin plated
 1 = Brass tin plated*
 5 = Shell yellow chromated* (not RoHS compliant)
 A = Stainless steel*

*on request

Shell size and design

- 1 = 5W1, 2W2C
 2 = 3W3, 7W2, 11W1, 3W3C
 3 = 5W5, 9W4, 13W3, 17W2, 21W1
 4 = 8W8, 13W6, 17W5, 21W4, 25W3, 27W2
 5 = 24W7, 36W4, 43W2, 47W1

Empty positions ADD „0“ = 003W3

Contact type

- P = Plug connector
 S = Socket connector

Surface/Quality class for SIGNAL contacts

- A = Quality class 3 = 50 mating cycles
 B = Quality class 2 = 200 mating cycles*
 C = Quality class 1 = 500 mating cycles
 J = Special application = > 500 mating cycles (on request)*
 X = Crimp and 3W3, 5W5, 8W8, 2W2C, 3W3C (no contacts are supplied with the connector)

*on request

Termination only for SIGNAL contacts

- K = Crimp without contacts
 M = Solder cup
 N = Wire wrap, .500" / 12.7 mm
 P = Press fit
 R = Solder pin, straight, .220" / 5.6 mm
 T = Solder pin, angled, .280" / 7.19 mm
- U = Solder pin, angled, .370" / 9.40 mm
 W* = Solder pin, angled, .450" / 11.43 mm
 X = 3W3, 5W5, 8W8, 2W2C, 3W3C
 Z* = Solder pin, angled, .540" / 13.84 mm
 * = please contact us

Termination for HIGH POWER- or COAXIAL contacts**Quality class 3/Quality class 1**

- C1 = Solder/Crimp angled 10 A
 C2 = Solder/Crimp angled 20 A
 C3 = Solder/Crimp angled 30 A
 C4 = Solder/Crimp angled 40 A
 F2,61/F1,41 = Solder cup 10 A
 F4,62/F3,42 = Solder cup 20 A
 F6,63/F5,43 = Solder cup 30 A
 F8,64/F7,44 = Solder cup 40 A
 68/48 = Solder pin, straight 20 A, D= .077" / 1.95 mm
 69/49 = Solder pin, straight 20 A, D= .102" / 2.60 mm
 70/50 = Solder pin, straight 20 A, D= .110" / 2.85 mm
 71/51 = Solder pin, straight 30 A, D= .130" / 3.18 mm
 72/52 = Solder pin, straight 40 A, D= .150" / 3.75 mm

Quality class 3/Quality class 1

- 59/55 = Solder pin, angled 15 A
 73/56 = Solder pin, angled 20 A
 74/57 = Solder pin, angled 30 A
 75/58 = Solder pin, angled 40 A
 77/60 = Solder pin, angled 40 A
 81/66 = Solder pin, angled 20 A
 82/67 = Solder pin, angled 30 A
 85/65 = Solder pin, angled 30 A
 G7/76 = 3 Solder pins Straight 50 Ω
 G9/78 = 3 Solder pins angled 50 Ω
 H1/79 = 3 Solder pins angled 50 Ω
 H4/80 = 5 Solder pins angled 50 Ω
 G8/86 = 3 Solder pins Straight 75 Ω

Quality class 3/Quality class 1

- H2/88 = 3 Solder pins angled 75 Ω
 H3/89 = 3 Solder pins angled 75 Ω
 H5/90 = 5 Solder pins angled 75 Ω
 91 = Screw termination 20 A
 /P1 = press fit 30A
 /P2 = press fit 30A
 /P4 = press fit 30A
 99 = no high power, coax or crimp contacts loaded
 Coaxial contacts with cable termination must be ordered separately.

Mounting style

- A1 = Riveted
 A2 = M3 threaded insert
 A3 = 4-40 UNC threaded insert
 A4 = M3 threaded rear spacer
 A5 = 4-40 UNC threaded rear spacer
 A6 = Float fastening
 A7 = Threaded rear spacer for M3 press fit
 A8 = Threaded rear spacer for 4-40 UNC press fit
 C1 = M3 threaded rear spacer with PCB clip, PCB .063" / 1.60 mm
 C2 = 4-40 UNC threaded rear spacer with PCB clip, PCB .063" / 1.60 mm
 C3 = M3 threaded rear spacer with PCB clip, PCB .091" / 2.30 mm
 C4 = 4-40 UNC threaded rear spacer with PCB clip, PCB .091" / 2.30 mm
 C5 = M3 threaded rear spacer with PCB clip, PCB .126" / 3.20 mm
 C6 = 4-40 UNC Threaded rear spacer with PCB clip, PCB .126" / 3.20 mm
 D1 = M3 clip and threaded rear spacer with PCB clip, PCB .063" / 1.60 mm
 D2 = 4-40 UNC clip and threaded rear spacer with PCB clip, PCB .063" / 1.60 mm
 D3 = M3 clip and threaded rear spacer with PCB clip, PCB .091" / 2.30 mm
 D4 = 4-40 UNC clip and threaded rear spacer with PCB clip, PCB .091" / 2.30 mm
 D5 = M3 clip and threaded rear spacer with PCB clip, PCB .126" / 3.20 mm
 D6 = 4-40 UNC clip and threaded rear spacer with PCB clip, PCB .126" / 3.20 mm
 E1 = M3 threaded rear spacer with PCB clip, PCB .063" / 1.60 mm
 E2 = 4-40 UNC threaded rear spacer with PCB clip, PCB .063" / 1.60 mm
 E3 = M3 threaded rear spacer with PCB clip, PCB .091" / 2.30 mm
 E4 = 4-40 UNC threaded rear spacer with PCB clip, PCB .091" / 2.30 mm
 E5 = M3 threaded rear spacer with PCB clip, PCB .126" / 3.20 mm
- E6 = 4-40 UNC threaded rear spacer with PCB clip, PCB .126" / 3.20 mm
 F1 = M3 clip and threaded rear spacer with PCB clip, PCB .063" / 1.60 mm
 F2 = 4-40 UNC clip and threaded rear spacer with PCB clip, PCB .063" / 1.60 mm
 F3 = M3 clip and threaded rear spacer with PCB clip, PCB .091" / 2.30 mm
 F4 = 4-40 UNC clip and threaded rear spacer with PCB clip, PCB .091" / 2.30 mm
 F5 = M3 clip and threaded rear spacer with PCB clip, PCB .126" / 3.20 mm
 F6 = 4-40 UNC clip and threaded rear spacer with PCB clip, PCB .126" / 3.20 mm
 G1 = Metal bracket, M3 threaded insert for .370" / 9.40 mm
 G2 = Metal bracket, 4-40 UNC threaded insert for .370" / 9.40 mm
 G3 = Metal bracket, M3 threaded insert and clip for .370" / 9.40 mm
 G4 = Metal bracket, 4-40 UNC threaded insert and clip for .370" / 9.40 mm
 H1 = Metal bracket, M3 threaded lock for .370" / 9.40 mm
 H2 = Metal bracket, 4-40 UNC threaded lock for .370" / 9.40 mm
 H3 = Metal bracket, M3 threaded lock and clip for .370" / 9.40 mm
 H4 = Metal bracket, 4-40 UNC threaded lock and clip for .370" / 9.40 mm
 N1 = Metal bracket, M3 threaded insert for .280" / 7.19 mm
 N2 = Metal bracket, 4-40 UNC threaded insert for .280" / 7.19 mm
 N3 = Metal bracket, M3 threaded insert and clip for .280" / 7.19 mm
 N4 = Metal bracket, 4-40 UNC threaded insert and clip for .280" / 7.19 mm
 P1 = Metal bracket, M3 threaded lock for .280" / 7.19 mm
 P2 = Metal bracket, 4-40 UNC threaded lock for .280" / 7.19 mm
 P3 = Metal bracket, M3 threaded lock and clip for .280" / 7.19 mm
 P4 = Metal bracket, 4-40 UNC threaded lock and clip for .280" / 7.19 mm
 W1 = Threaded rear spacer with M3 press in pin
 W2 = Threaded rear spacer with 4-40 UNC press in pin

OX = Standard

TECHNICAL DATA

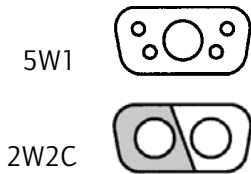
Standard version

Materials	Connector with signal contacts	Coaxial contacts	High power contacts	High voltage contacts
Insulator Green standard / black crimp	PBTP, GV (UL94 V-0)			
Shell	steel tin plated brass tin / stainless steel on request			
Contact plating	Gold plated over nickel			
Contact material	CU alloy			
Retaining clip		CU alloy		
Insulator		PTFE/PBTP/PI		PTFE
Mechanical and electrical characteristics				
Current rating	7,5A (UL) / 5A (CSA, VDE)			
Test voltage between 2 contacts contact and shell	1000 V, 50Hz 1 min.		1000 V, 50Hz 1 min.	
Resistance between mated contacts	max. 8 mΩ	max. 2.7 mΩ	max. 1 mΩ	max. 2.7 mΩ
Insulation resistance	≥5 GΩ	≥ 10 GΩ	≥ 5 GΩ	≥ 2x10 ⁷ MΩ
Volume resistivity	10 ¹⁶ Ωcm			
Dielectric impedance	50KV/mm			
Characteristic impedance		50/75 Ω		
VSWR-value at according MIL-C-39012	1.2GHz 1.5GHz 2.0GHz	≤1,2 ≤1,3 ≤1,5		
Dielectric voltage		750V 50Hz		3.8kV
Frequency range		0-2GHz		
Working voltage	250 V	250 V	250 V	max. 2.8kV
Temperature range	-55°C to +125°C			
Insertion force per contact	3.4N	7N	7N	5N
Extraction force per contact	0.2N	7N	approx. 5N	approx. 2.5N
Mating cycles	A = Quality class 3 = 50 mating cycles, B = Quality class 2 = 200 mating cycles, C = Quality class 1 = 500 mating cycles			

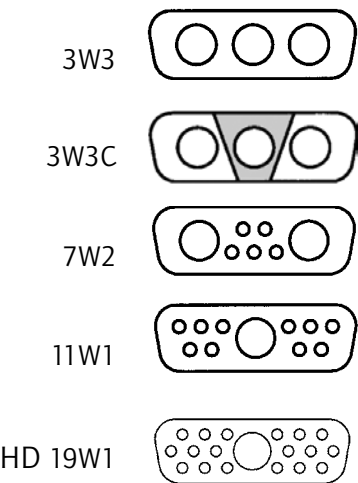
Technical specifications are subject to change without notice.

PIN CONFIGURATION – MATING SIDE OF SOCKET CONNECTOR

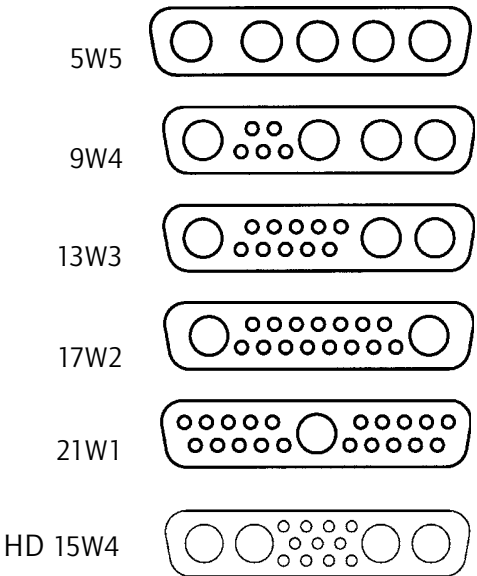
SHELL SIZE 1



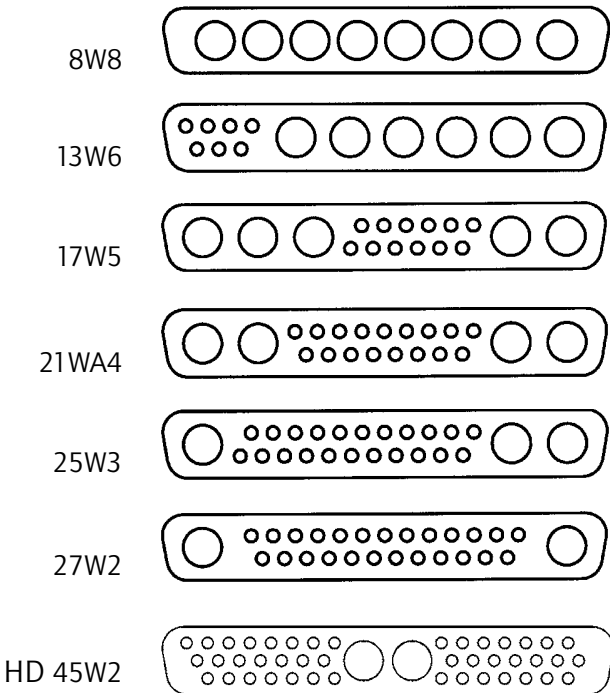
SHELL SIZE 2



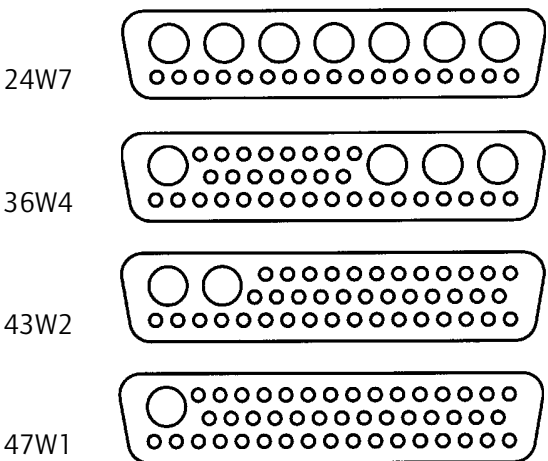
SHELL SIZE 3



SHELL SIZE 4



SHELL SIZE 5



Connectors 3W3, 5W5 and 8W8 with female insulators: Socket contacts are fingerprobe safe according to UL 1950 and CSA 22.2.950.

TECHNICAL INFORMATION

SKIN EFFECT

Alternating currents do not uniformly occupy the entire cross section of the conductor, rather inductance effect in the conductor deflects the current towards the surface of the conductor, whereby this deflection increases with the frequency.

The resistive attenuation of a transmission line increases with the frequency as a result of this skin effect.

The skin depth (equivalent thickness of the layer in which current flows) can be determined using

$$\delta = \frac{1}{\sqrt{f \pi \sigma \mu_0 \mu_r}}$$

f = frequency

σ = conductivity of the conductor material

$\sigma_{Ag} = 62 \times 10^6 \text{ S/m}$

$\sigma_{Cu} = 58 \times 10^6 \text{ S/m}$

$\mu_0 = 1,256 \cdot 10^{-6} \text{ Vs / Am}$

μ_r ... relative permeability constant for the employed material

VSWR-VALUE

The ratio between the value of the largest and the smallest voltages on a loss-free line is known as the ripple or voltage standing wave ratio s (where $1 \leq s < \infty$). The reciprocal value of the VSWR is known as the inverse voltage standing wave ratio m (where $0 < m \leq 1$).

(VSWR = Voltage standing wave ratio)

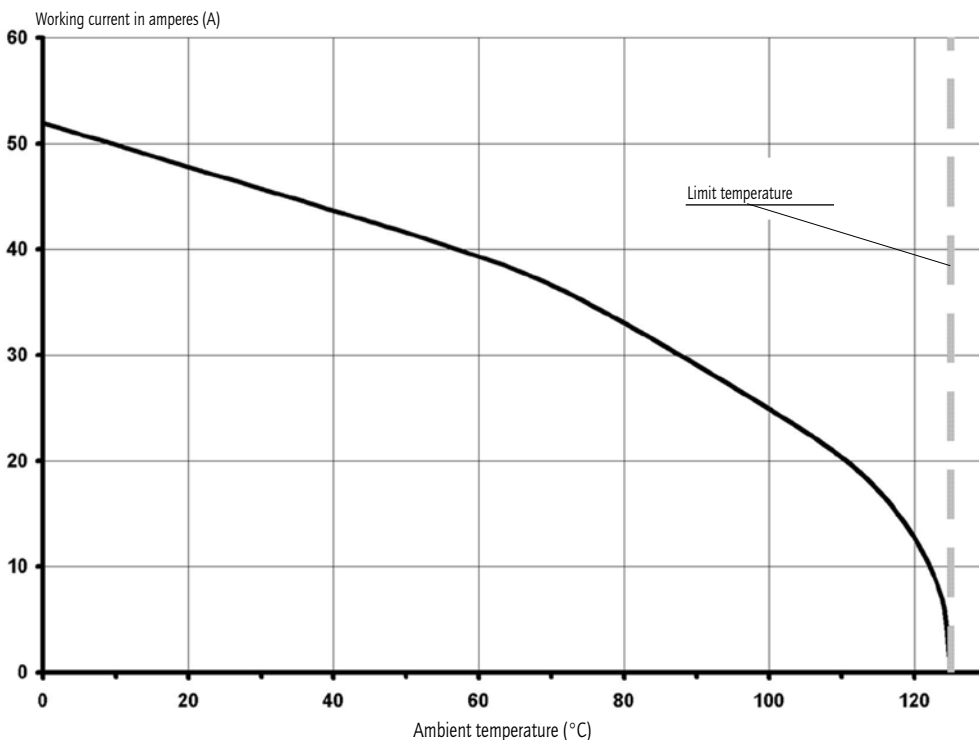
The value of s is linked with the → reflection coefficient r on s transmission line according to the equation

$$s = \frac{(1 + |r|)}{(1 - |r|)}$$

DERATING CURVE

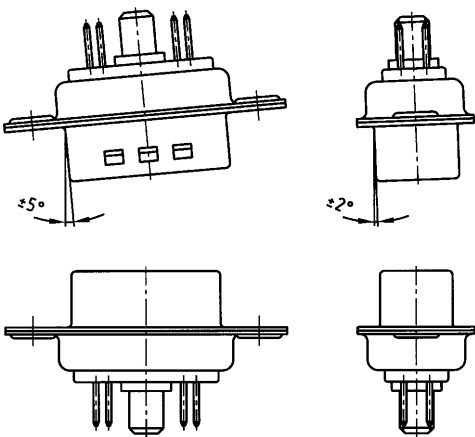
Measurement is according to DIN 41640 part 3 whereas all power contacts are connected in series.

For test procedure – product-no. 3008W8SXX99A has been equipped with 132C11049X and 3008W8PXX99AA10X with 131C11049X.

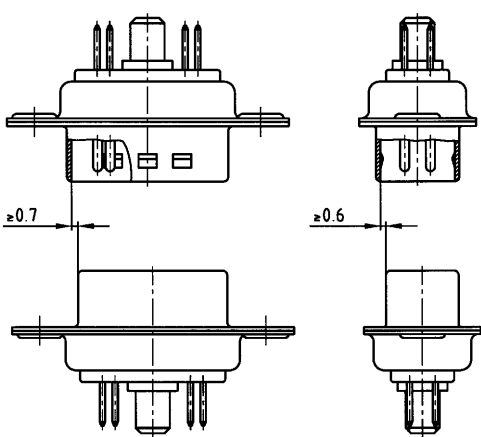


MATING CONDITIONS

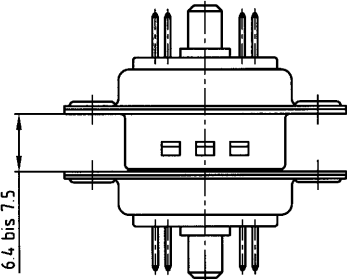
Float mount tolerance guide



Rigid mount tolerance guide



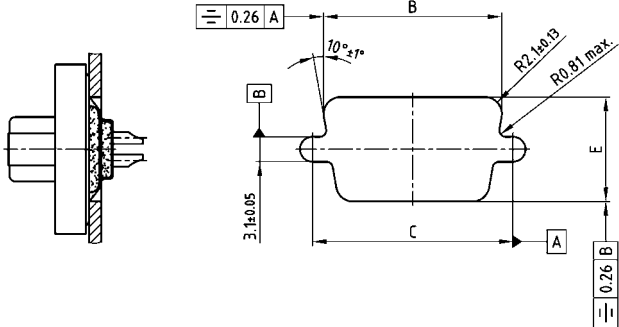
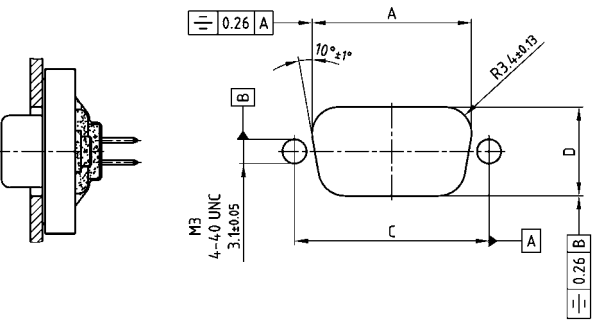
Rigid mount vertical to tolerance guide



PANEL CUT-OUT

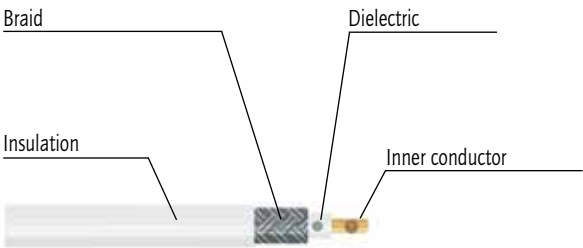
Rear panel mounting

Front panel mounting



Shell size	A ± 0,13	B ± 0,13	C ± 0,13	D ± 0,13	E ± 0,13
1	20.50	22.20	25.00	11.40	13.00
2	28.80	30.50	33.30	11.40	13.00
3	42.50	44.30	47.04	11.40	13.00
4	59.10	60.70	63.50	11.40	13.00
5	56.30	58.30	61.10	14.10	15.80

CRIMPING INSTRUCTIONS FOR COAX CONTACTS



Strip the wire
Using dimensions shown on the
individual product drawings



Slide sleeve over coax cable



Crimp the inner contact on the
inner conductor



Snap the inner contact into
the outer contact



Slide braid over outer contact



Crimp the sleeve on to outer
contact

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

CONEC:

3036W4SAR99E20X	3003W3PXX71E40X	3005W1PAT99N40X	3024W7SAR72E20X	3017W2PCT57N20X
3007W2SCR49E20X	3011W1PAM99A10X	3011W1SCM99A10X	5024W7SBR52E20X	3036W4SCU60L40X
3003W3SXX42A10X	302W2CSXX99A60X	3003W3SXX57N40X	3011W1PCM99A10X	3036W4PAR72E20X
3007W2PAR51C40X	3008W8SXX99G40X	3009W4PAM99A30X	3025W3SXXK99A30X	3017W5PAR99A30X
303W3CPXX51C20X	302W2CSXX56N20X	3024W7PCR99C20X	3017W2PAM62A30X	3005W1SCU78G40X
3003W3SXX99G40X	321WA4PAR72E20X	3008W8PXX99G40X	3017W2SAR99A30X	3003W3SXX49F40X
3007W2SAM99A10X	302W2CSXX58G20X	3008W8PXX56N20X	3025W3PAU78H20X	3013W3SAR99A30X
3008W8PXX56N40X	3009W4PCR99C20X	3005W5PXX72E20X	3007W2PAR71F20X	A005W5SXX99A10X
3024W7PCT99N30X	3017W2PCM42A30X	3005W1SCM99A10X	3003W3PXX42A10X	302W2CPXX58K30X
3024W7SAR99E20X	3036W4PCR51E20X	302W2CPXX51E40X	3008W8SXX75N40X	3009W4SCM41A10X
3013W6PXXK99A10X	3025W3PAU78G20X	3013W3PAN99A30X	3003W3SCX58P40X	3007W2PCM41A10X
3008W8SXX71E40X	3003W3PXX55G40X	3025W3PAT78N20X	3007W2PAR69F60X	3017W2SAT99N40X
3007W2SAR72E20X	302W2CSXX49E20X	3011W1SAR71E40X	302W2CPXX58L30X	3009W4SCU56K40X
3009W4SCU99G40X	3009W4PCU99G40X	303W3CPXX71E40X	3024W7PAU77G40X	5013W6PBM99A30X
3007W2SAT74N40X	3003W3SXX69F60X	3007W2SAR72A50X	3009W4SCR51E20X	3007W2PCR52C40X
302W2CSXX52C60X	5013W6PCM99A30X	3024W7SCR99E20X	3008W8PXX72E40X	3013W6SAN99A10X
3024W7SAR72E40X	302W2CSXX60N40X	3007W2SAR72A30X	3013W6PXXK99A30X	3013W3PAR99A30X
303W3CSXX64A10X	3024W7SAR52E20X	3005W1SAT99N40X	3027W2PCT78N40X	3017W2PAU99G20X
3005W5PXX49F40X	3009W4SAR71E40X	3008W8SXX51E20X	5024W7SCR52E20X	3024W7SCU99G40X
3005W1PXXK99A30X	3013W3PAT99P40X	3005W5SXX62A10X	3005W5PXX42A10X	5024W7SCM99A30X