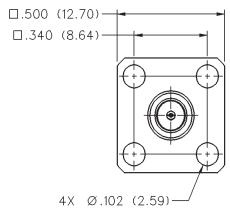
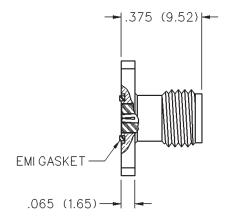
# 50 Ohm SMA Field Replaceable 4-Hole Flange Mount Jack Receptacle -With EMI Gasket



INCHES (MILLIMETERS)
CUSTOMER DRAWINGS AVAILABLE UPON REQUEST







ACCEPTS	FREQUENCY	GOLD	NICKEL	
PIN SIZE	RANGE	PLATED	PLATED	
.012 (0.30)	0-26.5 GHz	142-1701-501		

## **SMA - 50 Ohm Connectors**

Cinch CONNECTIVITY SOLUTIONS a bel group

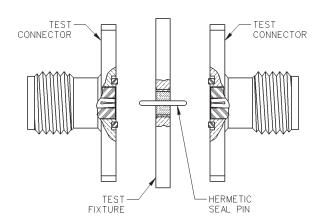
Field Replaceable - Application Notes

INCHES (MILLIMETERS)
CUSTOMER DRAWINGS AVAILABLE UPON REQUEST

The field replaceable style of connector is known by many names in the industry, such as MIC launcher, hermetic seal launcher, spark plug launcher, etc. Some types, such as those known as "spark plugs", have the hermetic seal incorporated into the connector. These types require special welding to install and can not be replaced without destroying the hermeticity of the circuit housing. True field replaceable connectors, such as those manufactured by Johnson Components™, are easy to install and replace. Because the hermetic seal is not incorporated into the connector design, the connector can be removed and replaced without destroying the hermetic seal or the hermeticity of the circuit housing.

All of the above mentioned connector types perform the same basic function - creating a transition from microstrip circuitry to a coaxial transmission line. Whenever possible, the hermetic seal pin diameter should be chosen as close as possible to the microstrip trace width. For optimum electrical performance, the transition from the hermetic seal to the microstrip trace must be properly compensated. Compensation involves adjusting the microstrip trace width to minimize any impedance discontinuities found in the transition area.

The plot shown below is representative of the typical return loss of an Johnson Components <sup>™</sup> field replaceable connector. To produce the data shown below, a test fixture is created using the appropriate Johnson Components <sup>™</sup> hermetic seal. The fixture consists of a suitably thick spacer plate with the hermetic seal mounted flush to both surfaces. Two connectors are mounted back to back around the fixture and the VSWR of this test assembly is measured. The return loss data shown is equivalent to the square root of the measured VSWR of the test assembly. Since the connectors tested are of identical design, it can be stated with fair accuracy that the data shown represents the response of a single field replaceable connector and its transition to the hermetic seal.



#### TYPICAL RETURN LOSS SMA Field Replaceable Connector nη 2.7 5.3 8.0 10.6 13.3 15.9 18.6 21.2 23.9 26.5 0 -10 Return Loss (dB) -20 -30 -40 -50 -60 -70 Frequency (GHz)

Although Johnson Components<sup>™</sup> does not publish a VSWR specification for field replaceable connectors, typical connector VSWR can be expected to be less than 1.1 + .01f (f in GHz). A VSWR specification is not stated because an industry standard method for testing field replaceable connectors does not exist. The actual performance of the connector is dependent upon the application for the following reasons:

- The choice of hermetic seal to be used by the customer is not specified by the connector manufacturer. Hermetic seals produced by different manufacturers will not have the same electrical characteristics. For optimum electrical performance, Johnson Components™ recommends the use of our standard 142-1000-001, 002, 003 and 004 hermetic seals for pin diameters of .012 (0.30), .015 (0.38), .018 (0.46) and .020 (0.51). Custom hermetic seal configurations can be quoted.
- 2. It is recommended that the hermetic seal be mounted flush with the circuit housing. Tolerance variations between the hermetic seal and machined housing do not always guarantee an optimum transition to the connector. Some manufacturers recommend an additional counterbore in the circuit housing to accommodate a solder washer during installation of the seal. Johnson Components™ does not recommend this type of installation because if the counterbore is not completely filled with solder, electrical discontinuities may be created.
- 3. The transition between the hermetic seal pin and the microstrip trace will affect electrical performance, as stated above. Several different methods of hermetic seal mounting and seal pin to microstrip trace attachment are used in the industry. Johnson Components™ can not recommend one method over the other as this is dependent upon the customer's application.

As always, quotes for non-standard field replaceable connectors and/or hermetic seals are welcome.

# SMA - 50 Ohm Connectors

Specifications



INCHES (MILLIMETERS)
CUSTOMER DRAWINGS AVAILABLE UPON REQUEST

### **ELECTRICAL RATINGS**

Impedance: 50 ohms			Insertion Loss: (dB maximum)	
Frequency Range:			Straight flexible cable connectors	
Dummy loads		0-2 GHz	and adapters	
Flexible cable connectors			Right angle flexible cable	
Uncabled receptacles, RA semi-rigio	d and adapters 0	)-18.0 GHz	connectors	
Straight semi-rigid cable connectors	and		Straight semi-rigid cable	
field replaceable connectors	(	)-26.5 GHz	connectors with contact 0.03	
<b>VSWR:</b> $(f = GHz)$ St	traight Rigl	ht Angle	Right angle semi-rigid cable	
	Connectors Cabled C		connectors 0.05 f (GHz), tested at 10 GHz	
RG-178 cable 1.20		) + .03f	Straight semi-rigid cable	
RG-316, LMR-100 cable 1.15		5 + .03f	connectors w/o contact 0.03 f (GHz), tested at 16 GHz	
RG-58, LMR-195 cable 1.15	5 + .01f 1.15	5 + .02f	Straight low loss flexible	
RG-142 cable 1.15		5 + .02f	cable connectors 0.06 f (GHz), tested at 1 GHz	
LMR-200, LMR-240 cable 1.10		) + .06f	Right Angle low loss flexible	
.086 semi-rigid 1.07	' + .008f 1.18	3 + .015f	cable connectors 0.15	
.141 semi-rigid (w/contact) 1.05		5 + .015f	Uncabled receptacles, field replaceable, dummy loadsN	I/A
.141 semi-rigid (w/o contact) 1.03			Insulation Resistance: 5000 megohms minimum	
Jack-bulkhead jack adapter and plug-p	olug adapter	1.05 + .01f	Contact Resistance: (milliohms maximum) Initial After Environment	<u>al</u>
Jack-jack adapter and plug-jack adapter	er1	1.05 + .005f	Center contact (straight cabled connectors	
Uncabled receptacles, dummy loads			and uncabled receptacles) 3.0* 4.0*	
Field replaceable (see page 59)		N/A	Center contact (right angle cabled	
Working Voltage: (Vrms maximum)			connectors and adapters)4.0 6.0	
Connectors for Cable Type RG-178	Sea Leve	70K Feet	Field replaceable connectors6.0 8.0	
		45	Outer contact (all connectors)	
RG-316; LMR-100, 195, 200		65	Braid to body (gold plated connectors)0.5 N/A	
RG-58, RG-142, LMR-240, .086 sen			Braid to body (nickel plated connectors)5.0 N/A	
uncabled receptacles, .141 semi-rig		85	*N/A where the cable center conductor is used as a contact	
.141 semi-rigid with contact and ada		125	RF Leakage: (dB minimum, tested at 2.5 GHz)	
Dummy loads		N/A	Flexible cable connectors, adapters and .141 semi-rigid	
Dielectric Withstanding Voltage: (VF			connectors w/o contact60 c	
Connectors for RG-178			Field replaceable w/o EMI gasket70 c	ЗB
Connectors for RG-316; LMR-100, 1	-	750	.086 semi-rigid connectors and .141 semi-rigid connectors	
Connectors for RG-58, RG-142, LMI			with contact, and field replaceable with EMI Gasket90 c	
field replaceable, uncabled recepta			Two-way adapters90 c	ЗB
Connectors for .141 semi-rigid with o			Uncabled receptacles, dummy loads	
Connectors for .141 semi-rigid w/o c		N/A	RF High Potential Withstanding Voltage: (Vrms minimum, tested at	t 4
Corona Level: (Volts minimum at 70,0		405	and 7 MHz)	٥-
Connectors for RG-178			Connectors for RG-178	
Connectors for RG-316; LMR-100, 1		190	Connectors for RG-316; LMR-100, 195, 200	JU
Connectors for RG-58, RG-142, LMI		050	Connectors for RG-58, RG-142, LMR-240, .086 semi-rigid,	<b>-</b> ^
uncabled receptacles, .141 semi-rigi			.141 semi-rigid cable w/o contact, uncabled receptacles	
Connectors for .141 semi-rigid with o			Connectors for .141 semi-rigid with contact and adapters	
Dummy loads		N/A	Power Rating (Dummy Load): 0.5 watt @ + 25°C, derated to 0.25 watt	@
			+125°C	

### **MECHANICAL RATINGS**

Engagement Design: MIL-C-39012, Series SMA	Cable Retention:	Axial Force*(lbs)	Torque (in-oz)
Engagement/Disengagement Force: 2 inch-pounds maximum	Connectors for RG-178	10	N/A
Mating Torque: 7 to 10 inch-pounds	Connectors for RG-316, LMR-10	0 20	N/A
Bulkhead Mounting Nut Torque: 15 inch-pounds	Connectors for LMR-195, 200	30	N/A
Coupling Proof Torque: 15 inch-pounds minimum	Connectors for RG-58, LMR-240	40	N/A
Coupling Nut Retention: 60 pounds minimum	Connectors for RG-142	45	N/A
Contact Retention:	Connectors for .086 semi-rigid	30	16
6 lbs. minimum axial force (captivated contacts)	Connectors for .141 semi-rigid	60	55
4 inch-ounce minimum torque (uncabled receptacles)	*Or cable breaking strength which	never is less.	

100 cycles minimum for .141 semi-rigid connectors w/o contact

Durability: 500 cycles minimum

ENVIRONMENTAL RATINGS (Meets or exceed the applicable paragraph of MIL-C-39012)

Temperature Range: - 65°C to + 165°C

Thermal Shock: MIL-STD-202, Method 107, Condition B Corrosion: MIL-STD-202, Method 101, Condition B

Shock: MIL-STD-202, Method 213, Condition I Vibration: MIL-STD-202, Method 204, Condition D Moisture Resistance: MIL-STD-202, Method 106

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## **SMA - 50 Ohm Connectors**

Specifications



INCHES (MILLIMETERS)
CUSTOMER DRAWINGS AVAILABLE UPON REQUEST

#### MATERIAL SPECIFICATIONS

Bodies: Brass per QQ-B-626, gold plated\* per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

Contacts: Male - brass per QQ-B-626, gold plated per MIL-G-45204 .00003" min.

Female - beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .00003" min.

Nut Retention Spring: Beryllium copper per QQ-C-533. Unplated

Insulators: PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457 or Tefzel per ASTM D 3159 or PFA 340 per ASTM Expansion Caps: Brass per QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

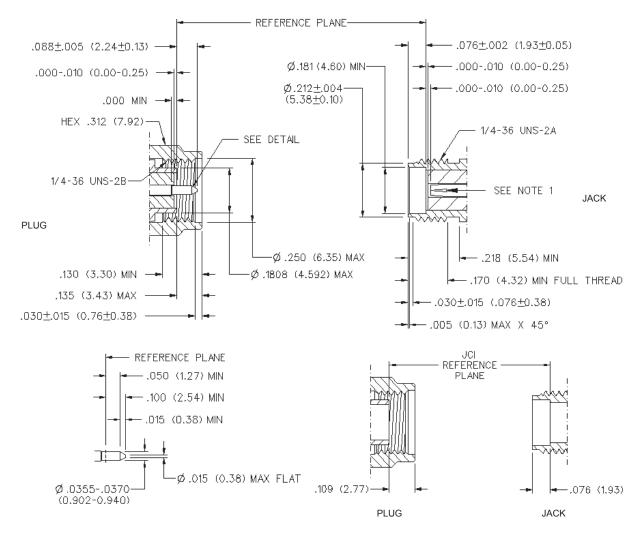
**Crimp Sleeves:** Copper per WW-T-799 or brass per QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290 **Mounting Hardware:** Brass per QQ-B-626 or QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

Seal Rings: Silicone rubber per ZZ-R-765

EMI Gaskets: Conductive silicone rubber per MIL-G-83528, Type M

\* All gold plated parts include a .00005" min. nickel underplate barrier layer.

#### Mating Engagement for SMA Series per MIL-C-39012



#### NOTES

1. ID OF CONTACT TO MEET VSWR, CONTACT RESISTANCE AND INSERTION WITHDRAWAL FORCES WHEN MATED WITH DIA .0355-.0370 MALE PIN.

### **Cinch Connectivity Solutions**