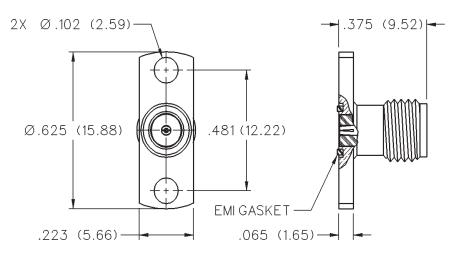
50 Ohm SMA Field Replaceable 2-Hole Flange Mount Jack Receptacle -

INCHES (MILLIMETERS)
CUSTOMER DRAWINGS AVAILABLE UPON REQUEST

With EMI Gasket





ACCEPTS PIN SIZE	FREQUENCY RANGE	GOLD PLATED	NICKEL PLATED
.012 (0.30)	0-26.5 GHz	142-1701-601	142-1701-606

SMA - 50 Ohm Connectors

CONNECTIVITY SOLUTIONS
a bel group

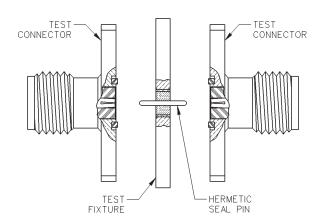
Field Replaceable - Application Notes

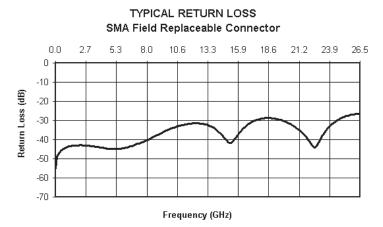
INCHES (MILLIMETERS)
CUSTOMER DRAWINGS AVAILABLE UPON REQUEST

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 [™] field replaceable connector. To produce the data shown below, a test fixture is created using the appropriate Johnson Components [™] 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.





Although Johnson Components[™] 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 Frequency Range: Dummy loads		0-2 GHz	Insertion Loss: (dB maximum) Straight flexible cable connectors and adapters
Flexible cable connectors 0-12.4 GHz			Right angle flexible cable
Uncabled receptacles, RA semi-rigid and adapters0-18.0 GHz			connectors
Straight semi-rigid cable connectors and			Straight semi-rigid cable
field replaceable connectors		26.5 GHz	connectors with contact 0.03 f (GHz), tested at 10 GHz
VSWR: (f = GHz) Straight	Right	t Angle	Right angle semi-rigid cable
Cabled Connectors	s Cabled Co	onnectors	connectors
RG-178 cable 1.20 + .025f	1.20 -	+ .03f	Straight semi-rigid cable
RG-316, LMR-100 cable 1.15 + .02f	1.15 -	+ .03f	connectors w/o contact 0.03 f (GHz), tested at 16 GHz
RG-58, LMR-195 cable 1.15 + .01f	1.15 -	+ .02f	Straight low loss flexible
RG-142 cable 1.15 + .01f	1.15 -	+ .02f	cable connectors 0.06 f (GHz), tested at 1 GHz
LMR-200, LMR-240 cable 1.10 + .03f	1.10 -	+ .06f	Right Angle low loss flexible
.086 semi-rigid 1.07 + .008f	1.18 -	+ .015f	cable connectors 0.15 f (GHz), tested at 1 GHz
.141 semi-rigid (w/contact) 1.05 + .008f	1.15 -	+ .015f	Uncabled receptacles, field replaceable, dummy loadsN/A
.141 semi-rigid (w/o contact) 1.035 + .005f			Insulation Resistance: 5000 megohms minimum
Jack-bulkhead jack adapter and plug-plug adapte			Contact Resistance: (milliohms maximum) Initial After Environmental
Jack-jack adapter and plug-jack adapter			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	Sea Level	70K Feet	Field replaceable connectors6.0 8.0
RG-178	170	45	Outer contact (all connectors)
RG-178 RG-316; LMR-100, 195, 200	170	45 65	Outer contact (all connectors)
RG-178	170	45	
RG-178	170 250 tact 335	45	Braid to body (gold plated connectors)0.5 N/A Braid to body (nickel plated connectors)5.0 N/A *N/A where the cable center conductor is used as a contact
RG-178	170 250 tact 335	45 65	Braid to body (gold plated connectors)
RG-178 RG-316; LMR-100, 195, 200 RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o cont.141 semi-rigid with contact and adapters Dummy loads	170 250 tact 335 500	45 65 85 125 N/A	Braid to body (gold plated connectors)
RG-178 RG-316; LMR-100, 195, 200 RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o cont.141 semi-rigid with contact and adapters Dummy loads Dielectric Withstanding Voltage: (VRMS minim	170 250 tact 335 500 um at sea leve	45 65 85 125 N/A el)	Braid to body (gold plated connectors)
RG-178 RG-316; LMR-100, 195, 200 RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o cont.141 semi-rigid with contact and adapters Dummy loads Dielectric Withstanding Voltage: (VRMS minim Connectors for RG-178	170 250 tact 335 500 um at sea leve	45 65 85 125 N/A el)	Braid to body (gold plated connectors)
RG-178 RG-316; LMR-100, 195, 200 RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o cont.141 semi-rigid with contact and adapters Dummy loads Dielectric Withstanding Voltage: (VRMS minim Connectors for RG-178 Connectors for RG-316; LMR-100, 195, 200	170 250 tact 335 500 um at sea leve	45 65 85 125 N/A el)	Braid to body (gold plated connectors)
RG-178 RG-316; LMR-100, 195, 200 RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o cont141 semi-rigid with contact and adapters Dummy loads	170 250 tact 335 500 500 	45 65 85 125 N/A el) 500 750	Braid to body (gold plated connectors)
RG-178 RG-316; LMR-100, 195, 200 RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o cont.141 semi-rigid with contact and adapters Dummy loads Dielectric Withstanding Voltage: (VRMS minim Connectors for RG-178 Connectors for RG-316; LMR-100, 195, 200 Connectors for RG-58, RG-142, LMR-240, .086 field replaceable, uncabled receptacles	170 250 tact 335 500 500 25 semi-rigid,	45 65 85 125 N/A el) 500 750	Braid to body (gold plated connectors)
RG-178 RG-316; LMR-100, 195, 200 RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o cont.141 semi-rigid with contact and adapters Dummy loads Dielectric Withstanding Voltage: (VRMS minim Connectors for RG-178 Connectors for RG-316; LMR-100, 195, 200 Connectors for RG-58, RG-142, LMR-240, .086 field replaceable, uncabled receptacles Connectors for .141 semi-rigid with contact and	170 250 tact 335 500 500 5 semi-rigid,	45 65 85 125 N/A el) 500 750 1000 1500	Braid to body (gold plated connectors)
RG-178 RG-316; LMR-100, 195, 200 RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o cont141 semi-rigid with contact and adapters Dummy loads	170 250 tact 335 500 500 5 semi-rigid,	45 65 85 125 N/A el) 500 750 1000 1500	Braid to body (gold plated connectors)
RG-178 RG-316; LMR-100, 195, 200 RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o cont141 semi-rigid with contact and adapters Dummy loads Dielectric Withstanding Voltage: (VRMS minim Connectors for RG-178	170 250 tact335 500 50 semi-rigid, 	45 65 85 125 N/A el) 500 750 1000 1500 N/A	Braid to body (gold plated connectors)
RG-178 RG-316; LMR-100, 195, 200 RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o cont141 semi-rigid with contact and adapters Dummy loads Dielectric Withstanding Voltage: (VRMS minim Connectors for RG-178 Connectors for RG-316; LMR-100, 195, 200 Connectors for RG-58, RG-142, LMR-240, .086 field replaceable, uncabled receptacles Connectors for .141 semi-rigid with contact and Connectors for .141 semi-rigid w/o contact, dur Corona Level: (Volts minimum at 70,000 feet)	170 250 tact 335 500 	45 65 85 125 N/A el) 500 750 1000 1500 N/A	Braid to body (gold plated connectors)
RG-178 RG-316; LMR-100, 195, 200 RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o cont141 semi-rigid with contact and adapters	170 250 tact 335 500 	45 65 85 125 N/A el) 500 750 1000 1500 N/A	Braid to body (gold plated connectors)
RG-178 RG-316; LMR-100, 195, 200 RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o cont141 semi-rigid with contact and adapters Dummy loads	tact 335 tact 335 500 um at sea leve 5 semi-rigid, d adapters mmy loads	45 65 85 125 N/A el) 500 750 1000 1500 1500 N/A	Braid to body (gold plated connectors)
RG-178 RG-316; LMR-100, 195, 200 RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o cont141 semi-rigid with contact and adapters Dummy loads	tact 335 tact 335 500 at sea leve 35 semi-rigid, d adapters mmy loads semi-rigid, act	45 65 85 125 N/A el) 500 750 1000 1500 1500 N/A 125 190	Braid to body (gold plated connectors)
RG-178 RG-316; LMR-100, 195, 200 RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o cont141 semi-rigid with contact and adapters Dummy loads	tact 335 500	45 65 85 125 N/A el) 500 750 1500 1500 125 190 125	Braid to body (gold plated connectors)
RG-178 RG-316; LMR-100, 195, 200 RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o cont141 semi-rigid with contact and adapters Dummy loads	tact 335 500	45 65 85 125 N/A el) 500 750 1500 1500 125 190 125	Braid to body (gold plated connectors)

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	00 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 whice	chever is less.	
,	Durability: 500 cycles minimun	1	

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

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

Moisti

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.