

# Custom Feedthroughs

## Epoxy Staked Feedthrough



INCHES (MILLIMETERS)  
CUSTOMER DRAWINGS AVAILABLE UPON REQUEST

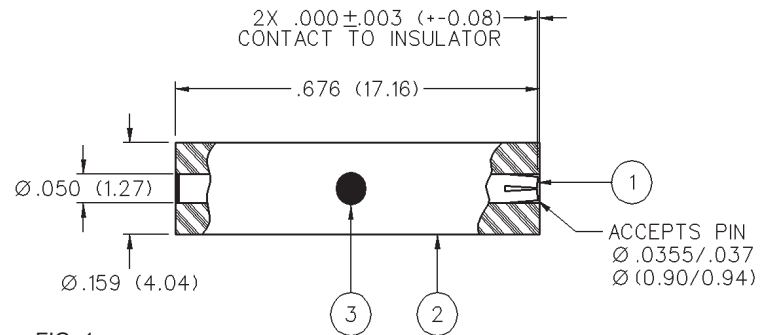


FIG. 1

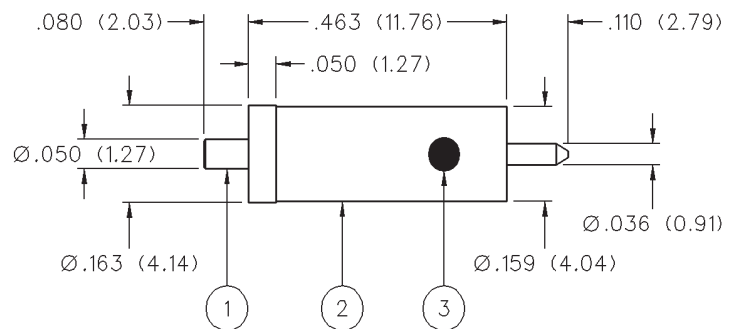


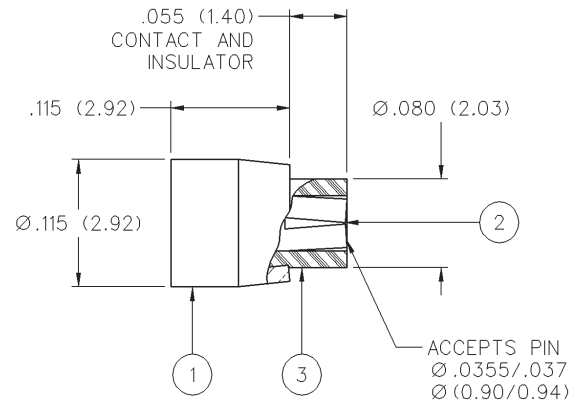
FIG. 2

PART NUMBER	ITEM 1 CONTACT	ITEM 2 INSULATOR	ITEM 3 STAKE	FIGURE
142-1000-012	Beryllium Copper Gold pl .00005 min over Nickel pl .000005 min over Copper pl .00005 min	Teflon	Epoxy	1
142-1000-018	Brass Gold pl .00005 min over Nickel pl .000005 min over Copper pl .00005 min	Teflon	Epoxy	2

**Specifications:**

Impedance: 50 Ohms Nominal  
Frequency Range: DC to 26.5 GHz  
VSWR: Dependent upon application  
Working Voltage: 335 Vrms max at sea level  
Dielectric Withstanding Voltage: 1000 Vrms min at sea level  
Insulation Resistance: 5000 Megohm min  
Contact to Insulator Retention: 6 lb. min  
Operating Temperature: -55° C to + 165° C

## PC Board Feedthrough



PART NUMBER	ITEM 1 CONTACT (END CAP)	ITEM 2 CONTACT (CENTER)	ITEM 3 INSULATOR
142-1000-022	Brass Gold pl .00001 min over Nickel pl .000005 min over Copper pl .00005 min	Beryllium Copper Gold pl .00005 min over Nickel pl .000005 min over Copper pl .00005 min	Teflon

**Application:**

Lower frequency feedthrough.  
Solder end cap to one side of PC board.  
Contact passes through board and is isolated from board by Teflon™ insulator.

# SMA - 50 Ohm Connectors

Specifications



INCHES (MILLIMETERS)  
CUSTOMER DRAWINGS AVAILABLE UPON REQUEST

## ELECTRICAL RATINGS

**Impedance:** 50 ohms

**Frequency Range:**

Dummy loads .....	0-2 GHz
Flexible cable connectors .....	0-12.4 GHz
Uncabled receptacles, RA semi-rigid and adapters .....	0-18.0 GHz
Straight semi-rigid cable connectors and field replaceable connectors .....	0-26.5 GHz

**VSWR:** (f = GHz)

	Straight Cabled Connectors	Right Angle Cabled Connectors
RG-178 cable .....	1.20 + .025f	1.20 + .03f
RG-316, LMR-100 cable .....	1.15 + .02f	1.15 + .03f
RG-58, LMR-195 cable .....	1.15 + .01f	1.15 + .02f
RG-142 cable .....	1.15 + .01f	1.15 + .02f
LMR-200, LMR-240 cable .....	1.10 + .03f	1.10 + .06f
.086 semi-rigid .....	1.07 + .008f	1.18 + .015f
.141 semi-rigid (w/contact) .....	1.05 + .008f	1.15 + .015f
.141 semi-rigid (w/o contact) .....	1.035 + .005f	
Jack-bulkhead jack adapter and plug-plug adapter .....	1.05 + .01f	
Jack-jack adapter and plug-jack adapter .....	1.05 + .005f	
Uncabled receptacles, dummy loads .....	N/A	
Field replaceable (see page 59) .....	N/A	

**Working Voltage:** (Vrms maximum)

Connectors for Cable Type	Sea Level	70K Feet
RG-178 .....	170	45
RG-316; LMR-100, 195, 200 .....	250	65
RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o contact ...	335	85
.141 semi-rigid with contact and adapters .....	500	125
Dummy loads .....	N/A	

**Dielectric Withstanding Voltage:** (VRMS minimum at sea level)

Connectors for RG-178 .....	500
Connectors for RG-316; LMR-100, 195, 200 .....	750
Connectors for RG-58, RG-142, LMR-240, .086 semi-rigid, field replaceable, uncabled receptacles .....	1000
Connectors for .141 semi-rigid with contact and adapters .....	1500
Connectors for .141 semi-rigid w/o contact, dummy loads .....	N/A

**Corona Level:** (Volts minimum at 70,000 feet)

Connectors for RG-178 .....	125
Connectors for RG-316; LMR-100, 195, 200 .....	190
Connectors for RG-58, RG-142, LMR-240, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o contact .....	250
Connectors for .141 semi-rigid with contact and adapters .....	375
Dummy loads .....	N/A

**Insertion Loss:** (dB maximum)

Straight flexible cable connectors and adapters .....	0.06	$\sqrt{f}$ (GHz), tested at 6 GHz
Right angle flexible cable connectors .....	0.15	$\sqrt{f}$ (GHz), tested at 6 GHz
Straight semi-rigid cable connectors with contact .....	0.03	$\sqrt{f}$ (GHz), tested at 10 GHz
Right angle semi-rigid cable connectors .....	0.05	$\sqrt{f}$ (GHz), tested at 10 GHz
Straight semi-rigid cable connectors w/o contact .....	0.03	$\sqrt{f}$ (GHz), tested at 16 GHz
Straight low loss flexible cable connectors .....	0.06	$\sqrt{f}$ (GHz), tested at 1 GHz
Right Angle low loss flexible cable connectors .....	0.15	$\sqrt{f}$ (GHz), tested at 1 GHz
Uncabled receptacles, field replaceable, dummy loads .....		N/A

**Insulation Resistance:** 5000 megohms minimum

**Contact Resistance:** (milliohms maximum) **Initial** **After Environmental**

	Initial	After Environmental
Center contact (straight cabled connectors and uncabled receptacles) .....	3.0*	4.0*
Center contact (right angle cabled connectors and adapters) .....	4.0	6.0
Field replaceable connectors .....	6.0	8.0
Outer contact (all connectors) .....	2.0	N/A
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

**RF Leakage:** (dB minimum, tested at 2.5 GHz)

Flexible cable connectors, adapters and .141 semi-rigid connectors w/o contact .....	-60 dB
Field replaceable w/o EMI gasket .....	-70 dB
.086 semi-rigid connectors and .141 semi-rigid connectors with contact, and field replaceable with EMI Gasket .....	-90 dB
Two-way adapters .....	-90 dB
Uncabled receptacles, dummy loads .....	N/A

**RF High Potential Withstanding Voltage:** (Vrms minimum, tested at 4 and 7 MHz)

Connectors for RG-178 .....	335
Connectors for RG-316; LMR-100, 195, 200 .....	500
Connectors for RG-58, RG-142, LMR-240, .086 semi-rigid, .141 semi-rigid cable w/o contact, uncabled receptacles .....	670
Connectors for .141 semi-rigid with contact and adapters .....	1000

**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

**Engagement/Disengagement Force:** 2 inch-pounds maximum

**Mating Torque:** 7 to 10 inch-pounds

**Bulkhead Mounting Nut Torque:** 15 inch-pounds

**Coupling Proof Torque:** 15 inch-pounds minimum

**Coupling Nut Retention:** 60 pounds minimum

**Contact Retention:**

- 6 lbs. minimum axial force (captivated contacts)
- 4 inch-ounce minimum torque (uncabled receptacles)

**Cable Retention:** **Axial Force\*(lbs)** **Torque (in-oz)**

Connectors for RG-178 .....	10	N/A
Connectors for RG-316, LMR-100 .....	20	N/A
Connectors for LMR-195, 200 .....	30	N/A
Connectors for RG-58, LMR-240 .....	40	N/A
Connectors for RG-142 .....	45	N/A
Connectors for .086 semi-rigid .....	30	16
Connectors for .141 semi-rigid .....	60	55

\*Or cable breaking strength whichever is less.

**Durability:** 500 cycles minimum

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

**ENVIRONMENTAL RATINGS** (Meets or exceeds 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.

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