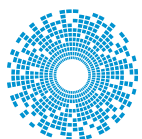


SMA Self-Fixture End Launch Connectors



cinch
CONNECTIVITY SOLUTIONS
a bel group

JOHNSON[®]
a cinch connectivity solutions brand

INTRODUCTION / APPLICATIONS

An ideal solution for design engineers who are obligated to cut manufacturing costs and complexity out of their circuit board systems.

These enhanced end launch connectors properly align and hold the center contact of a coaxial connector to the circuit board plane without the need for special fixtures. This is done with specially-designed connector legs that tightly grip a range of substrate thicknesses until the soldering operation to couple the two is complete. Additionally, these connectors feature redesigned contacts and insulator material that work in tangent to form an optimized connection point. While the contact maintains proper impedance under aggressive torque and axial stresses, the insulator acts as a seal by compressing itself into the board edge during soldering. This creates a barrier between the inner and outer conductors and protects against solder bridging.

No mounting screws. No adapters. No more aftermarket tools or ad hoc devices on your assembly lines. These unique connectors will overcome the problematic gaps and discontinuities associated with inconsistent soldering process. These connectors can save your products from the poor connections that degrade signal quality and provide optimal Return Loss values between 0-18 GHz.

For those microwave engineers who are required to transition microwave energy from coaxial to planar transmission line structures on even higher frequency board substrates, Emerson Connectivity Solutions recommends the Johnson line of High Frequency End Launch, Self-Affixing connectors which can operate up to 26.5GHz with good Return Loss values. For more information on these connectors, contact customer service.

The High Frequency End Launch connectors, works in a similar fashion to the self-fixturing connectors by attaching directly to coplanar waveguide circuit board and operates with respectable Return Loss values up to 26.5 GHz. The in-line connector design minimizes reflections as compared to a right-angle (perpendicular) PC mount transition.

Applications for these connectors include:

- Automated Test Equipment
- Broadband MMIC Power Amplifiers
- Cellular Linear Power Amplifiers
- DBS Low-Noise Block Down Convertors
- Global Positioning Satellite Antennas
- GPS and Phased Array Antennas
- High Speed Routers and Switches
- Microwave Filters, Mixers and Combiners
- Phased Array Antennas
- Radar Systems
- Remote Sensing and Metering
- RFID (Radio Frequency Identification) Tags
- Wireless Antennas

INSTALLATION

The End Launch connector is attached to the circuit board by inserting the board edge between the legs and soldering the legs and center conductor to the pads on the board. For optimum high frequency performance, the connector to circuit board transition must be adjusted for low VSWR. To compensate for the transition from coax to microstrip, trace widths "A" and "B" must be adjusted based on circuit board thickness. When properly adjusted, this technique yields a low VSWR over a wide bandwidth.

The tabulated dimensions "A", "B", "C", "D", and "E" were determined experimentally to achieve low VSWR (typically less than 1.5 up to 18 GHz). The circuit board uses connectors for these tests that are double-sided FR4 with 1 oz. copper on both sides. The copper was left on the bottom of the board to create a ground plane for the 50 Ohm microstrip structure. While not all inclusive, these dimensions are given as reference information for selected SMA End Launch connectors. Further adjustments may be necessary depending upon the application. All dimensions are in inches (millimeters).



Part No.	Base Width	Board Thickness	"A"	"B"	"C"	"D"	"E"
142-0791-801	.375	.062 (1.57)	.073	.073	.250	.440	.200
142-0791-811	.375	.042 (1.07)	.103	.103	.250	.440	.200
142-0791-821	.375	.062 (1.57)	.083	.083	.250	.440	.200
142-1701-821	.375	.062 (1.57)	See Figure 2 below for attachment dimensions				
142-1701-831	.375	.059 (1.50)	See Figure 2 below for attachment dimensions				

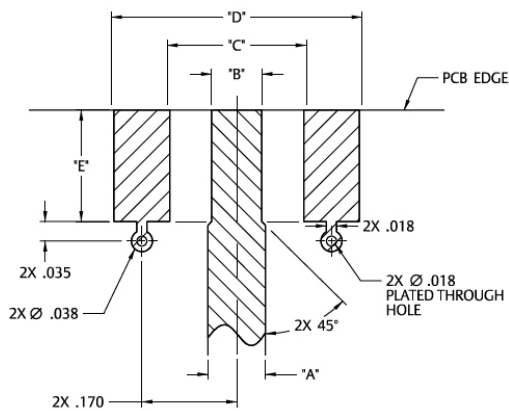


Figure 1

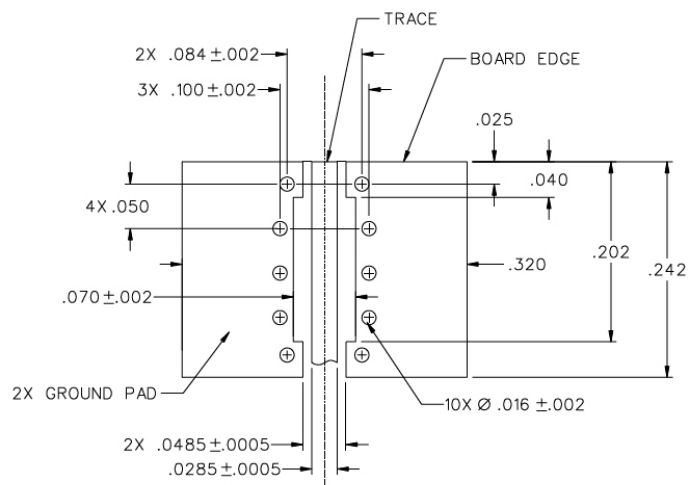


Figure 2

SPECIFICATIONS

Electrical Ratings

Impedance:	50 Ohms
Frequency Range:	0-18 GHz (26.5 GHz for High Frequency Model)
VSWR:	Dependent upon application
Working Voltage: (VRMS max):	335 @ Sea Level, 85 @ 70K Feet
Dielectric Withstanding Voltage:(VRMS min at sea level):	1000
Insulation Resistance:	5000megohms min
Contact Resistance: (milliohms max):	3.0 Initial, 4.0 after environmental
Corona Level: (Volts min at 70,000 feet):	250
RF High Potential Withstanding Voltage:	(VRMS min tested at 4 and 7 MHz): 670

Mechanical Ratings

Engagement Design:	MIL-PRF-39012, Series SMA Engagement/Disengagement Force: 2 lb-in max
Mating Torque:	7 to 10 lb-in
Coupling Proof Torque:	15 lb-in min
Coupling Nut Retention:	60 lbs min
Contact Retention Force:	6 lbs min axial force, 4 oz-in min torque
Durability:	500 cycles min

Environmental Specifications

(Meets or Exceeds the Applicable Paragraph of MIL-PRF-39012)

Temperature Range:	-65° to + 165° C
Thermal Shock:	MIL-STD-202, Method 107, Condition B
Corrosion:	MIL-STD-202, Method 101, Condition B
Shock:	MIL-STD-303, Method 213, Condition I
Vibration:	MIL-STD-202, Method 204, Condition D
Moisture Resistance :	MIL-STD-202, Method 106

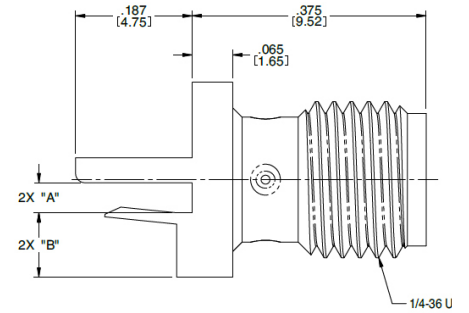
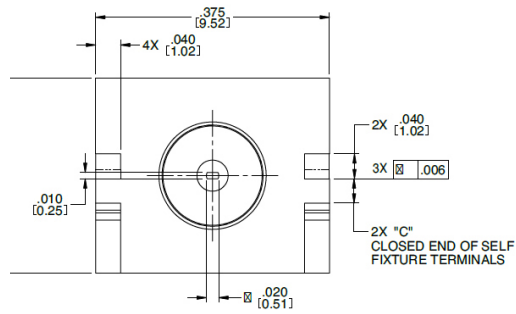
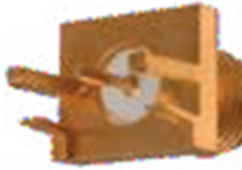
Material Specifications

Bodies:	Brass per ASTM B16, gold plated* per MIL-DTL-45204 .00001" min. or nickel plated per SAE-AMS-QQ-N-290
Contacts:	Male - brass per ASTM B16, gold plated per MIL-DTL-45204 .00003" min. Female - beryllium copper per ASTM B196, gold plated per MIL-DTL-45204 .00003" min.
Nut Retention Spring:	Beryllium copper per ASTM B196. Unplated
Insulators:	PTFE fluorocarbon per ASTM 4894 and ASTM 4895
Mounting Hardware:	Brass per ASTM B16 or SAE-AMS-QQ-N-290, gold plated per MIL-DTL-45204 .00001 min. or nickel plated per SAE-AMS-QQ-N-290

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

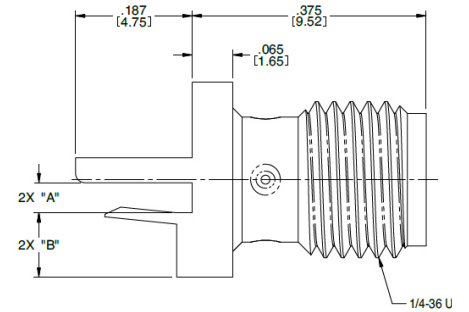
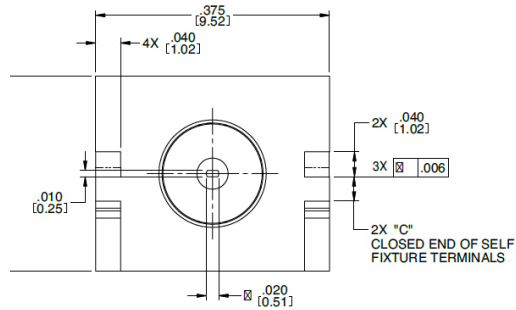
JACK ASSEMBLY DESIGN

Gold Plated, Round Contact



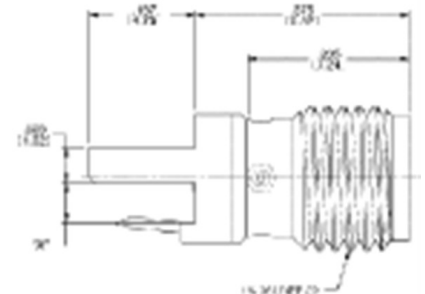
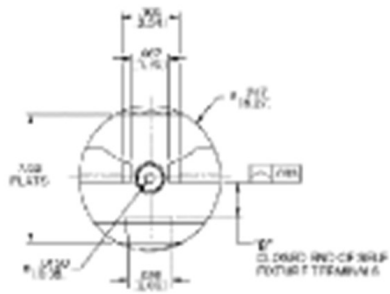
Part No.	Frequency	Tool No.
142-0791-801	0-18 GHz	.062(1.57)

Gold Plated, Tab Contact



Part No.	Freq. Range	Board Thickness	"A"	"B"	"C"
142-0791-811	0-18 GHz	.042(1.07)	.048(1.22)	.103 (2.62)	.039 (0.99)
142-0791-821	0-18 GHz	.062(1.57)	.068(1.73)	.083 (2.11)	.059 (1.50)

Gold Plated, Tab Contact



Part No.	Freq. Range	Board Thickness	"A"	"B"
142-1701-821	0-26.5 GHz	.062 (1.57)	.068	.059
142-1701-831	0-26.5 GHz	.059 (1.49)	.063	.054

For more information, please call customer service... (507) 833-8822 or (800) 247-8256

Board thickness is demonstrated in inches (millimeters).