

THE
PERFORMANCE LEADER
IN MICROWAVE CONNECTORS



End Launch Connectors DC to 110 GHz



- Low VSWR**
- Low Insertion Loss**
- Low RF Leakage**
- High Temperature**
- Rugged & Durable**
- Excellent Repeatability**

Southwest Microwave, Inc.

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Southwest Microwave's high performance End Launch connectors are designed to provide low VSWR, mode free wideband response to 110 GHz for single-layer and multi-layer printed circuit boards where the high frequency signal is on the top layer.

FEATURES

- ▶ Available in **SMA** (27 GHz), **2.92 mm (K)** (40 GHz), **2.40 mm** (50 GHz), **1.85 mm (V)**, (67 GHz) and **1.0 mm (W)** (110 GHz)
- ▶ Male and female options along with narrow body and bulkhead feed-through
- ▶ Unique clamping mechanism accommodates board thickness up to .300" (7.62 mm)
- ▶ Robust, reusable and repairable
- ▶ Multiple launch configurations provides the best possible match to circuit layout
- ▶ Works on microstrip and grounded coplanar waveguide (GCPW) designs
- ▶ Signal-layer microstrip and GCPW test boards available
- ▶ Soldering the pin to the signal trace is optional

DESIGN ASSISTANCE

- ▶ Printed circuit board layout and connector part number recommendation
- ▶ 3D models for mechanical layout
- ▶ HFSS models (version 18.0 or newer) for EM simulations upon request and availability

DEFINITIONS

Coplanar ground plane spacing = trace width + gap + gap. This is the distance from the inside edge of one top ground plane to the inside edge of the other top ground plane.

Microstrip-to-coplanar transition = When using microstrip on a multilayer board or on a board where the microwave ground is not accessible, then a microstrip-to-coplanar transition should be used.

Transition Block = The portion of the End Launch connector assembly where the high frequency signal transition from the coax connector onto the printed circuit board.

Ground stitching = These are vias connecting the top ground planes with the substrate ground. The purpose of the vias is to ensure both coplanar ground planes stay at the same potential. The best placement of these is near the trace at a distance of $\frac{1}{4}$ wavelength of the highest frequency.

Standard End Launch Block = Refers to a .500" wide transition block.

Narrow End Launch Block = Refers to a .350" wide transition block.

ELECTRICAL

- ▶ Mode free through 110 GHz
- ▶ Low VSWR
- ▶ Low Insertion Loss

MATERIALS / CONSTRUCTION

- ▶ **Connector housing:** CRES Alloy UNS S30300 per ASTM A582, Passivated per ASTM A967
- ▶ **Contact:** BeCu, UNS C17300 per ASTM B196, Au plated per ASTM B488
- ▶ **Dielectric:** SMA only – PTFE per ASTM D1710
- ▶ **Contact Capture Bead:**
 - SMA - Ultem 1000 per ASTM D5205
 - 2.92 and 2.40 mm - Ultem 1000 per ASTM D5205 and Kel-F per ASTM D1430
 - 1.85 mm – Ultem 1000 per ASTM D5205 and PTFE per ASTM D1710
 - 1.0 mm – Ultem 1000 per ASTM D5205
- ▶ **Connector interfaces:**
 - SMA – per MIL-STD-348, figs. 310-1 and 310-2
 - 2.92 mm – per MIL-STD-348, figs 323-1 and 323-2
 - 2.40 mm – per MIL-STD-348, figs 324-1 and 324-2
 - 1.85 mm – per IEEE 287
 - 1.0 mm – per IEEE 287
- ▶ **Transition Block and clamping plates:** Brass Alloy UNS C36000 per ASTM B16, Ni plated per ASTM 2404B
- ▶ **Transition Pin:** BeCu per UNS C17300 per ASTM B196, Au plate per ASTM B488
- ▶ **Transition Dielectric:** PTFE per ASTM D1710
- ▶ **Connector fasteners:** (4 each): # 0-80 SHCS
- ▶ **Transition block/PCB fasteners:** (2 each): # 1-72 SHCS (2 in lbs max. torque)

ENVIRONMENTAL

- ▶ Temperature:
 - SMA -65 to +165 °C
 - 2.92 mm and 2.40 mm -55 to +135 °C
 - 1.85 mm and 1.0 mm -55 to +165 °C

Super SMA (27 GHz)



Pin Diameter		Dielectric Dia.	.500" Transition Block		.350" Transition Block		.350" TB Extended Block	
Dim A Board Pin	Dim B Internal	Dim C	Female	Male	Female	Male	Female	Male
.010	.020	.0635	292-04A-6	293-01A-6	*	*	*	*
.007	.015	.048	292-05A-6	293-02A-6	*	*	*	*
.007	.012	.039	292-06A-6	293-03A-6	*	*	*	*
.005	.009	.029	292-07A-6	293-04A-6	292-07A-9	*	*	*

2.92 mm (40 GHz)

Pin Diameter		Dielectric Dia.	.500" Transition Block		.350" Transition Block		.350" TB Extended Block	
Dim A Board Pin	Dim B Internal	Dim C	Female	Male	Female	Male	Female	Male
.010	.020	.0635	1092-03A-6	1093-01A-6	*	*	*	*
.007	.015	.048	1092-02A-6	1093-02A-6	*	*	*	*
.007	.012	.039	1092-04A-6	1093-03A-6	*	*	*	*
.005	.009	.029	1092-01A-6	1093-04A-6	1092-01A-9	*	1092-01A-11	*

2.40 mm (50 GHz)

Pin Diameter		Dielectric Dia.	.500" Transition Block		.350" Transition Block		.350" TB Extended Block	
Dim A Board Pin	Dim B Internal	Dim C	Female	Male	Female	Male	Female	Male
.010	.020	.0635	1492-02A-6	1493-01A-6	*	*	*	*
.007	.015	.048	1492-01A-6	1492-02A-6	*	*	*	*
.007	.012	.039	1492-03A-6	1493-03A-6	*	*	*	*
.005	.009	.029	1492-04A-6	1493-04A-6	1492-04A-9	*	*	*

1.85 mm (67 GHz)

Pin Diameter		Dielectric Dia.	.500" Transition Block		.350" Transition Block		.350" TB Extended Block	
Dim A Board Pin	Dim B Internal	Dim C	Female	Male	Female	Male	Female	Male
.007	.012	.039	1892-03A-6	1893-03A-6	*	*	*	*
.005	.009	.029	1892-04A-6	1893-04A-6	1892-04A-9	*	*	*

1.00 mm (110 GHz)

Pin Diameter		Dielectric Dia.	.500" Transition Block		.350" Transition Block		.350" TB Extended Block	
Dim A Board Pin	Dim B Internal	Dim C	Female	Male	Female	Male	Female	Male
.005	.009	.029	2492-04A-6	2493-04A-6	2492-04A-9	*	*	*

Thick Boards - Only available using the .500" Transition Block. Replace the (-6) in the above part numbers with (-7) for .090 to .210 thick board or (-8) for .190 to .300 thick board.

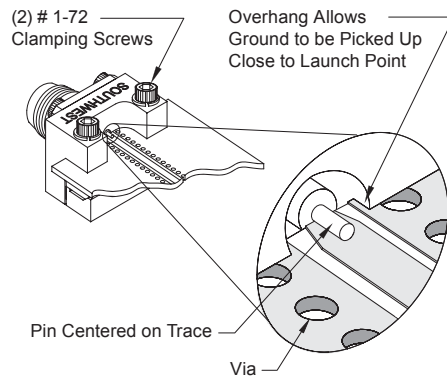
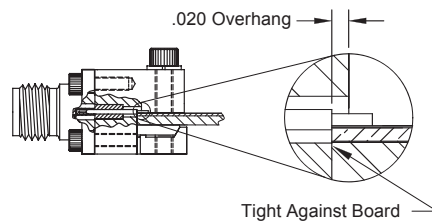
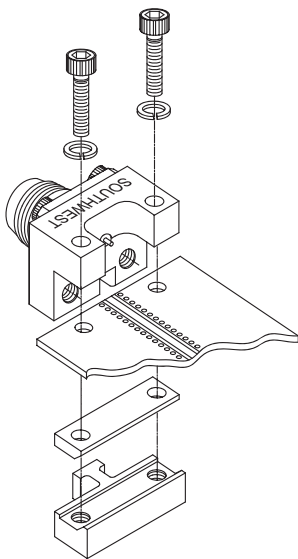
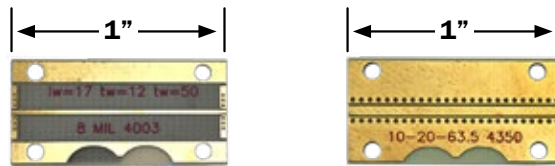
* Currently not available – consult factory

END LAUNCH TEST BOARDS

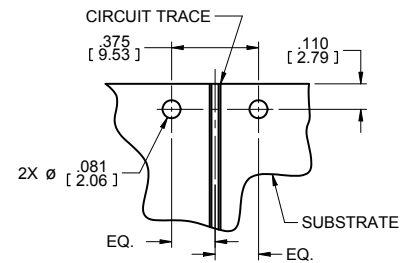
End Launch Connectors DC to 110 GHz

	27 GHz	40GHz	50 GHz	67 GHz	110 GHz
.008 R04003 microstrip	B4003-8M-27	B4003-8M-40	B4003-8M-50	B4003-8M-50	
.008 R04003 GCPW	B4003-8C-27	B4003-8C-40	B4003-8C-50	B4003-8C-50	
.030 R04350 GCPW	B4350-30C-27	B4350-30C-40	B4350-30C-50		

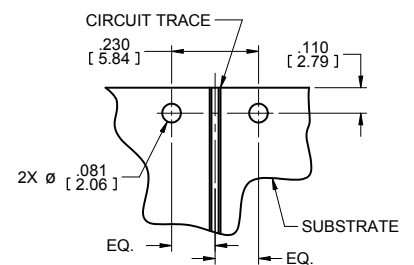
PCB connector layout assistance is available upon request. Test boards listed above are the only boards offered.



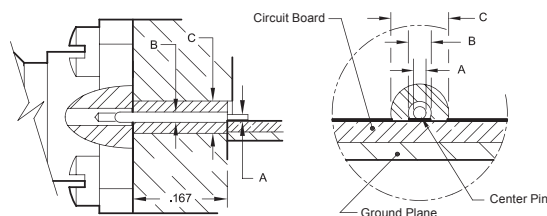
TYPICAL ASSEMBLY



.500 TRANSITION BLOCK PCB FOOTPRINT



.350 TRANSITION BLOCK PCB FOOTPRINT

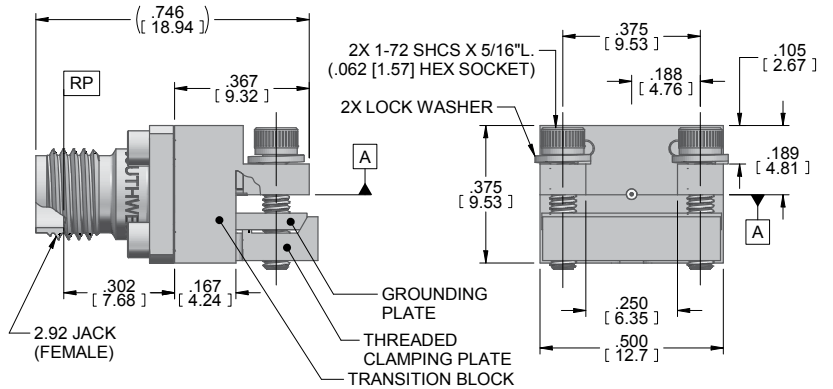


DEFINITIONS: DIM A, B, AND C

XXXX-XXA-6

Standard Block

.005 to .090 Thick Board

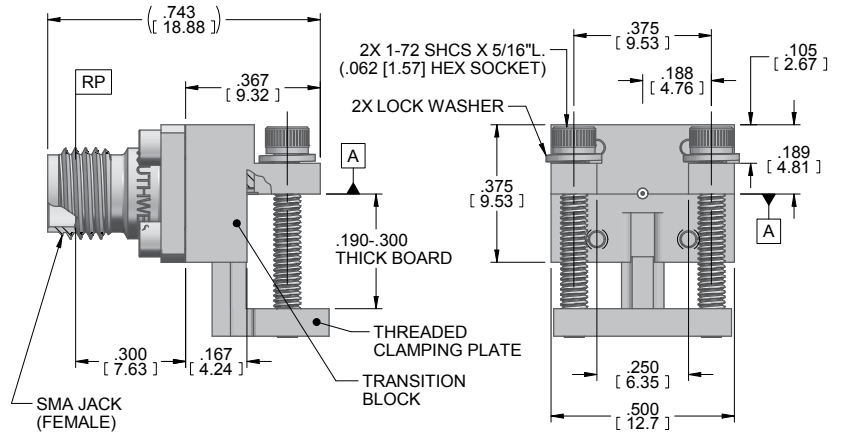


XXXX-XXA-7

.090 to .210 Thick Board

XXXX-XXA-8

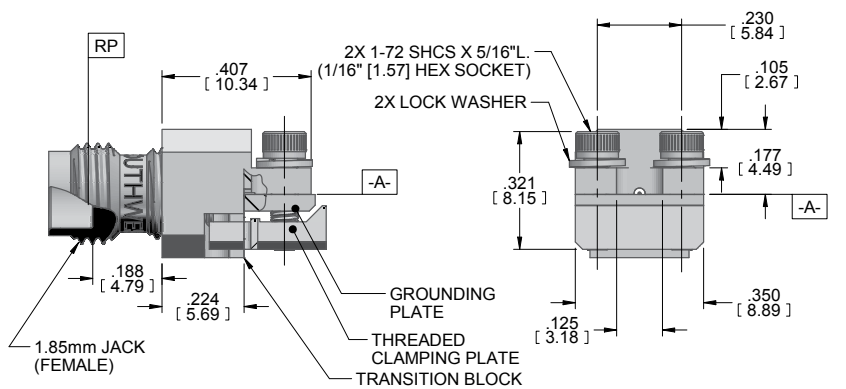
.190 to .300 Thick Board



XXXX-XXA-9

Narrow Block

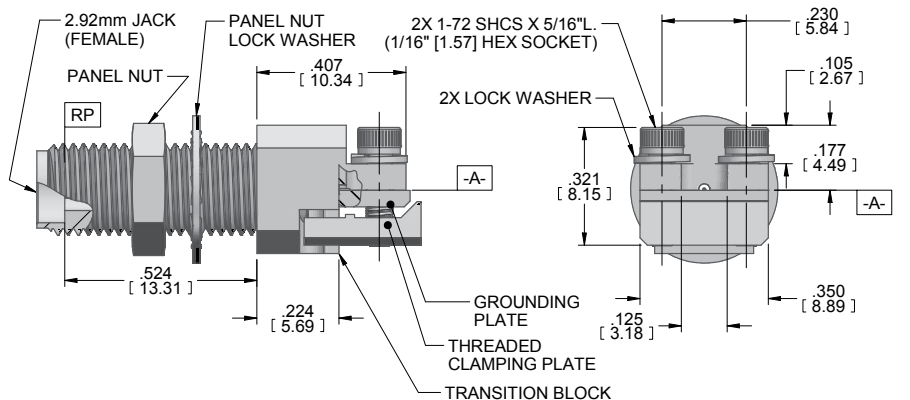
.005 to .040 Thick Board



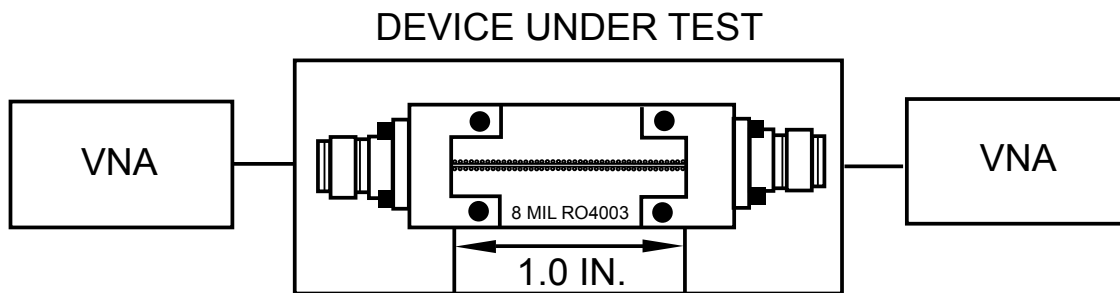
XXXX-XXA-11

Extended Length

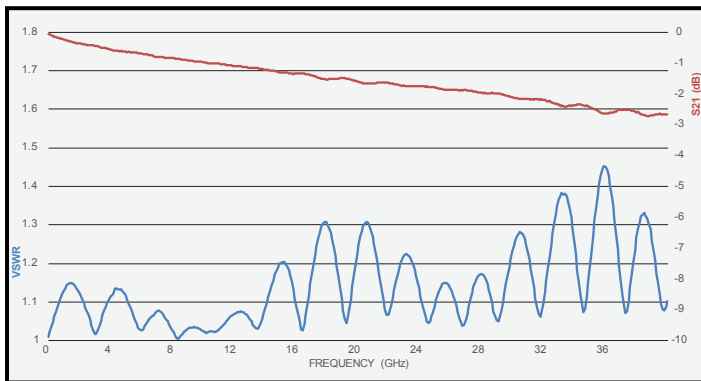
.005 to .040 Thick Board



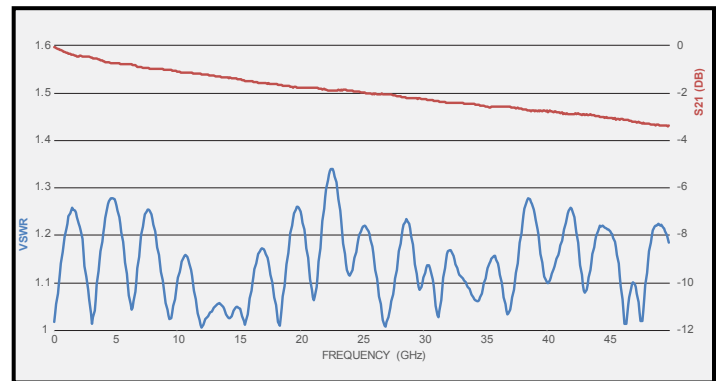
End Launch Connectors tested as shown in diagram below.



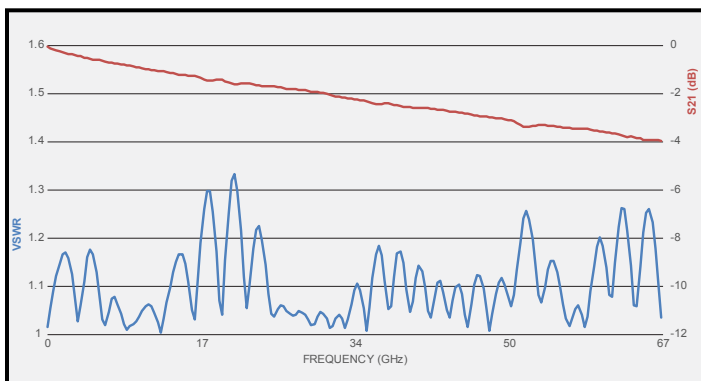
1092-01A-6 (2.92 mm)



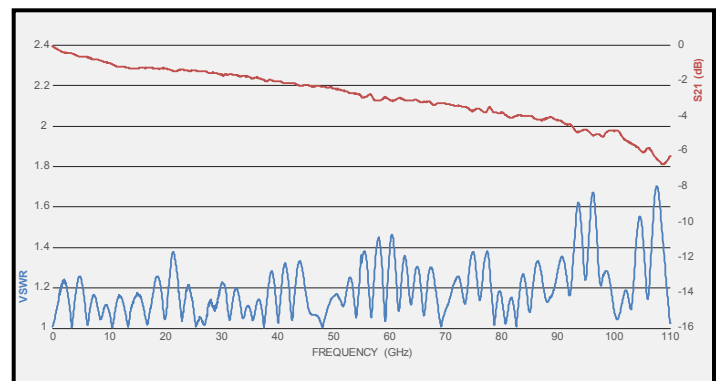
1492-04A-6 (2.40 mm)



1892-04A-6 (1.85 mm)



2492-04A-6 (1.0 mm)



Test data shown are the results from two End Launch connectors and the one inch long test board.



PRODUCTS

CONNECTORS & ADAPTERS

- ▶ Super SMA (27 GHz)
- ▶ 2.92 mm (40 GHz)
- ▶ 2.40 mm (50 GHz)
- ▶ 1.85 mm (67 GHz)
- ▶ 1.0 mm (110 GHz)
- ▶ 0.9 mm (67 GHz)

- ▶ SuperMini Board-to-Board

- ▶ 3D files for mechanical layouts and HFSS files upon request and availability.

CABLE ASSEMBLIES

- ▶ Direct Solder Connectors DC to 110 GHz
- ▶ .047, .086 and .141 flex cables
- ▶ Multi-Pin Coax contacts size 20 to 8 for cable and harness assemblies
- ▶ Standard and custom configurations

APPLICATIONS

- ▶ Microwave modules
- ▶ Instrumentation
- ▶ High Speed Digital
- ▶ Test Equipment
- ▶ Communications
- ▶ Aerospace
- ▶ Military
- ▶ Space

Hi/Rel Tests available upon request.



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