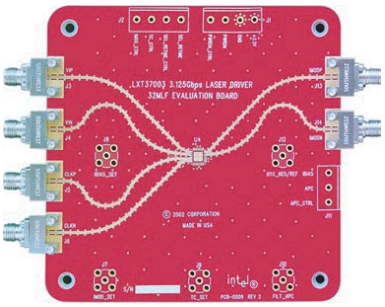
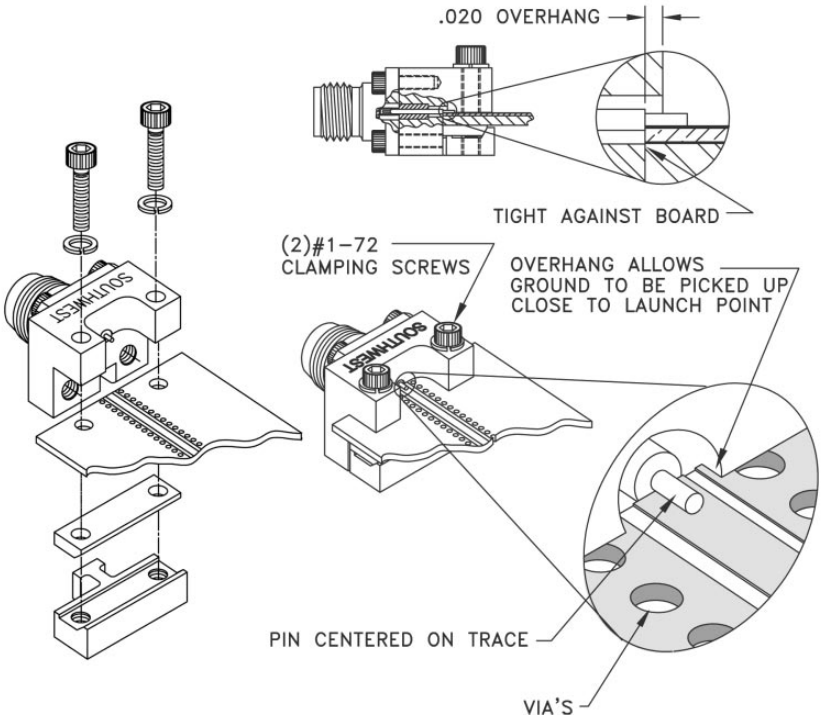
End Launch Connectors

Super SMA (27 GHz), 2.92mm (40 GHz), or 2.40mm (50 GHz)



Southwest Microwave's End Launch connectors allow a low VSWR, low return loss, launch to 50 GHz to a board with only 2 through holes added to the board. They are recommended for multi-layer boards with coplanar waveguide or single layer microstrip circuit boards. Available fully assembled with SMA, 2.92mm, or 2.40mm connectors.



FEATURES:

- Works on Multi-layer boards with coplanar waveguide.
- Works on single layer boards with microstrip.
- Shipped fully assembled.
- The internal transition is designed to > 50 GHz.
- Connector types available are SMA, 2.92mm, or 2.40mm (frequency will be limited by connector type).
- Only 2 holes needed on the circuit board for mounting.
- New bottom clamp design improves grounding.

SOUTHWEST MICROWAVE

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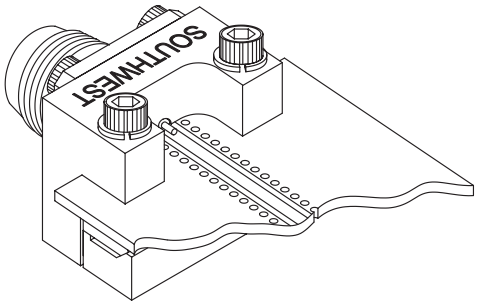
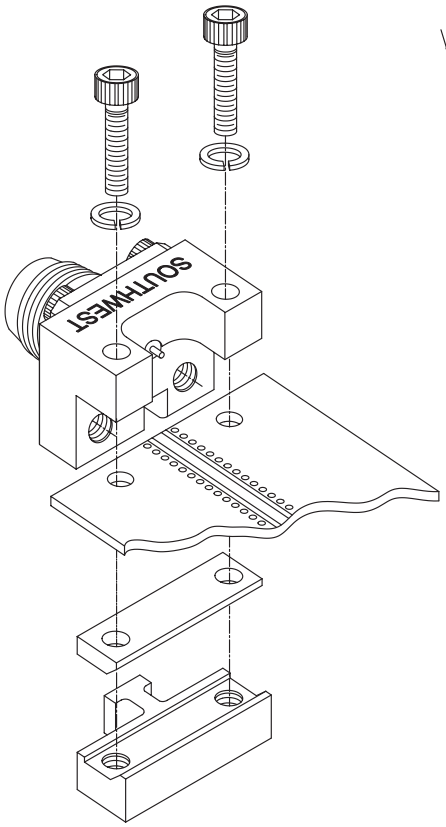
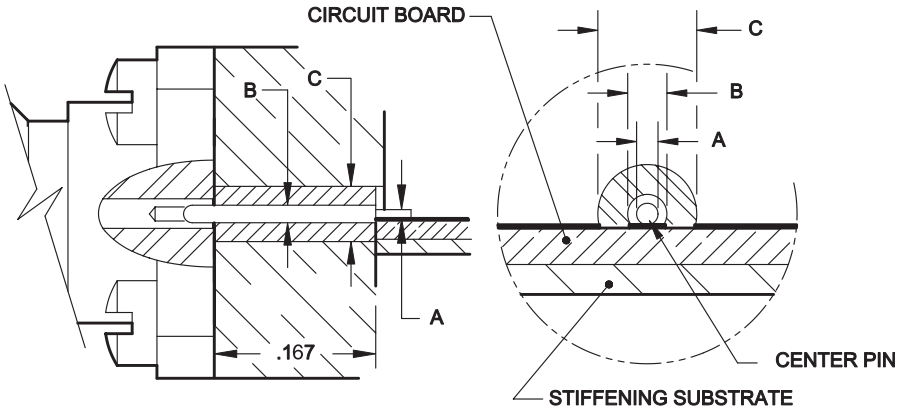
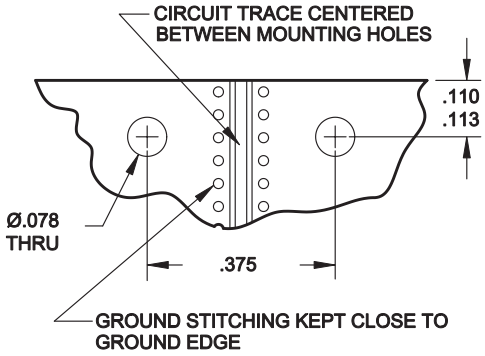




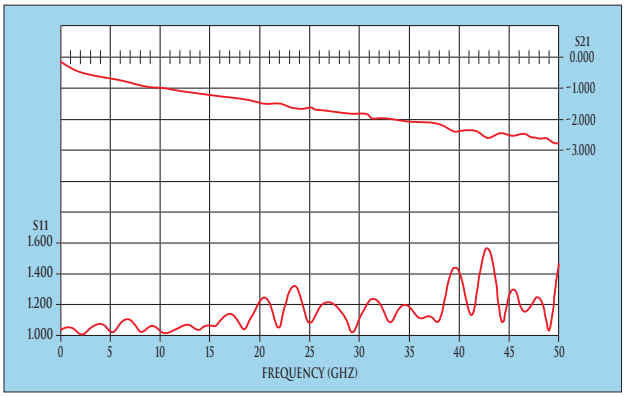


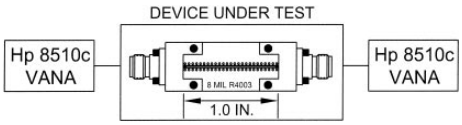


LAUNCH GEOMETRY		END LAUNCH CONNECTOR MODEL NUMBERS						TRANSITION DIAMETERS			REFERENCE		
		SMA CONNECTOR (27 GHz)		2.92mm CONNECTOR (40 GHz)		2.40mm CONNECTOR (50 GHz)					COPLANAR	MICROSTRIP CIRCUIT GEOMETRY	
PIN DIAMETER	DIELECTRIC DIAMETER	JACK (FEMALE)	PLUG (MALE)	JACK (FEMALE)	PLUG (MALE)	JACK (FEMALE)	PLUG (MALE)	A	B	C	RECOMMENDED GROUND TO GROUND SPACING	OPTIMAL SUBSTRATE THICKNESS	OPTIMAL TRACE WIDTH
.010	.0635	292-04A-5	293-01A-5	1092-03A-5	1093-01A-5	1492-02A-5	1493-01A-5	.010	.020	.0635	.045" TO .062"	.027"	.010"-.063"
.007	.0480	292-05A-5	293-02A-5	1092-02A-5	1093-02A-5	1492-01A-5	1493-02A-5	.007	.015	.0480	.037" TO .046"	.020"	.007"-.048"
.007	.0390	292-06A-5	293-03A-5	1092-04A-5	1093-03A-5	1492-03A-5	1493-03A-5	.007	.012	.0390	.026" TO .037"	.016"	.007"-.039"
.005	.0290	292-07A-5	293-04A-5	1092-01A-5	1093-04A-5	1492-04A-5	1493-04A-5	.005	.009	.0290	.020" TO .027"	.012"	.007"-.029"

Coplanar Data

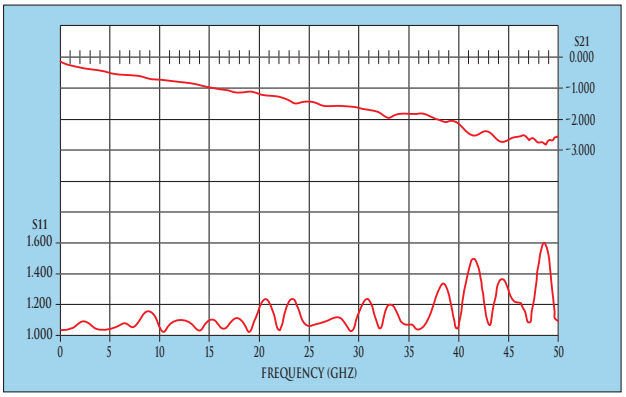
Below are test results to 50 GHz for two 1492-04A-5 end launch connectors on a .008" Rogers 4003 coplanar board. The plot shows both VSWR and insertion loss for the test board and the 2 connectors. Similar boards are used for the other launch geometries.

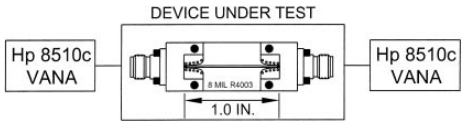




Microstrip Data

Below are test results to 50 GHz for two 1492-04A-5 end launch connectors on a .008" Rogers 4003 microstrip board with top ground launch. The plot shows both VSWR and insertion loss for the test board and the 2 connectors. This is not a standard test board.





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.

Optimal substrate thickness *(see below for detail):*
For microstrip this is the substrate thickness that will best match the end launch connector. For coplanar this is not as important an issue as the ground plane spacing.

Optimal trace width *(see below for detail):*
This is the trace width that will best match the end launch pin. For traces much larger than the pin they can be tapered down for a better match.

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 1/4 wavelength of the highest frequency.

Maximum board thickness:
The maximum board thickness is .110 inches.

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.

Choosing the correct launch transition:

(refer to drawings on opposite page)

For Coplanar:
Choose the launch transition where dimension C, the outer conductor of the launch (coax ground), is matched to the ground plane spacing.

The ***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.

For microstrip:
Choose the transition that will best match the substrate thickness. This is the transition that has a minimal discontinuity between the microstrip ground plane and the outer conductor of the launch.

The ***optimal substrate thickness*** = outer conductor radius – inner conductor radius = C/2-A/2 = (C-A)/2. This is the distance from the bottom of the launch pin to the outer diameter of the end launch.

The ***optimal trace width*** is <C and >A. This is the width of the pin, to the outer diameter of end launch. For traces much larger than the pin the trace can be tapered for a better match.

SOUTHWEST MICROWAVE

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Installation Procedure

Step 1: Mount the end launch connector on the board in the desired position.

Step 2: Ensure the launch pin is centered on the trace.

Step 3: Ensure the transition block is tight against the board.

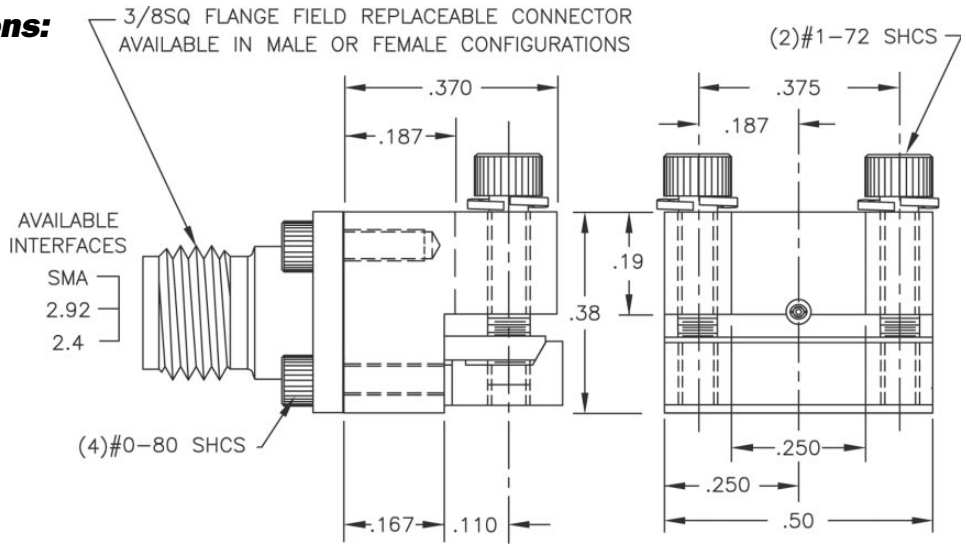
Step 4: Tighten the 1-72 mounting screws until the connector is secured.

Step 5: Solder the launch pin to the trace. (Note: Be sure the solder flows the entire length of the launch pin/trace contact area.)

Step 6: Remove any excess solder. (Note: Excess solder will affect performance.)

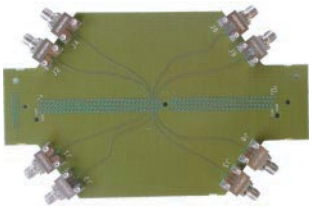
Step 7: Clean any flux or other residue from around the solder joint.

Dimensions:



Examples of Applications

- Chip set evaluation boards.
- Test boards.
- Not limited to launching off the edge of the board only.
- Use them to test boards before assembly.
- Custom flanges used to mount boards securely.



Special Version

SOUTHWEST MICROWAVE

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