

Solderless PCB Connectors

Features & Benefits

- Fast and easy installation using included screws
- Downloadable electronic simulation models available
- Optimized PCB footprint unique to your board
- Multiple configurations and RF series available through distribution

Applications

- Test & Instrumentation
- Prototyping
- Research & Development

Advantages of Solderless PCB Connectors

Traditional RF PCB Connectors require the use of solder to affix onto a PCB. SV Microwave offers a full line of solderless PCB Connectors that remove many of the challenges associated with solder work.

Solder Challenges:

- Complex installation requiring trained technicians and special equipment
- Hard to rework
- One-time use - connectors cannot be re-used from design to design

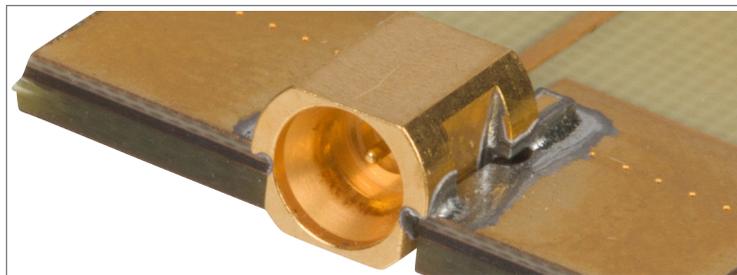


Fig. 1: Edge Launch PCB Connector affixed to the PCB with solder

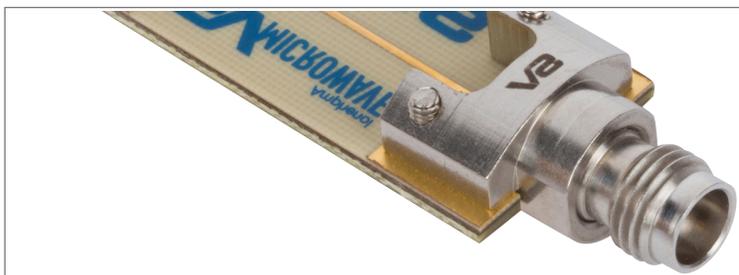


Fig. 2: Edge Launch PCB Connector affixed to the PCB with screws

Solderless Solutions:

- Simple installation with just screws and a driver
- Easy to adjust on the PCB
- Re-usable and easily replaceable

SV's Solderless PCB Connectors span several different styles, including **Surface Mount Connectors** in both **Standard Compression Mount** and **LiteTouch** product lines. SV's **Edge Launch Connectors** are offered in a variety of form factors such as Standard, Reduced Flange and Low Profile.

Surface Mount Connectors

Surface Mount Connectors derive their name because they are mated to the planar surface of the printed circuit board. Typically, they can be mounted anywhere on the top of the board and transition to either a CPW/Microstrip or Stripline signal path (*Appendix*).



SV Microwave offers solderless Surface Mount Connectors in two styles: **Standard Compression Mount Connectors** and our proprietary **LiteTouch PCB Connectors**. Our Compression Mount Connectors feature a robust, mechanical design and strong RF performance. As such, these connectors are a cost-effective solution for a variety of PCB applications, and are especially ideal for situations that use thicker, harder PCB material.

The LiteTouch Difference

The LiteTouch product line is the next evolution of a solderless Surface Mount PCB connector. Available in both non-magnetic and stainless steel finishes, it solves the issue created by compression mount connectors when fixturing to soft, high-frequency, dielectric material. Standard compression mount connectors have a fixed center pin that may cause trace deformation damage (*Figure 3*). Trace deformation can create unwanted impedance changes in the launch geometry, negatively affecting RF performance on more sensitive materials. This effect is more significant with thin substrate material at less than 10 mil thickness.

As seen in Figure 4, the LiteTouch connector employs a pogo pin design, which retracts the contact into the connector housing to prevent damage to the PCB. Figure 5 proves that the LiteTouch difference keeps VSWR stable at higher frequencies.

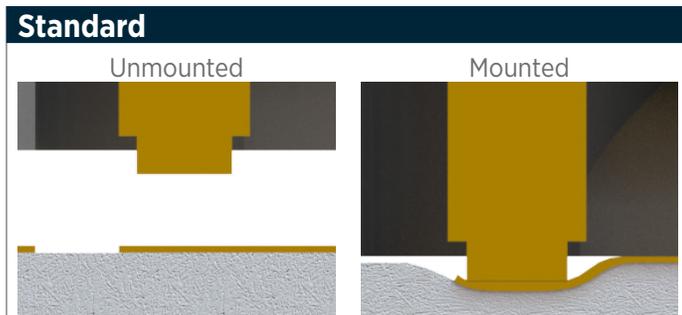


Fig. 3: Trace deformation caused by standard Compression Mount PCB Connectors

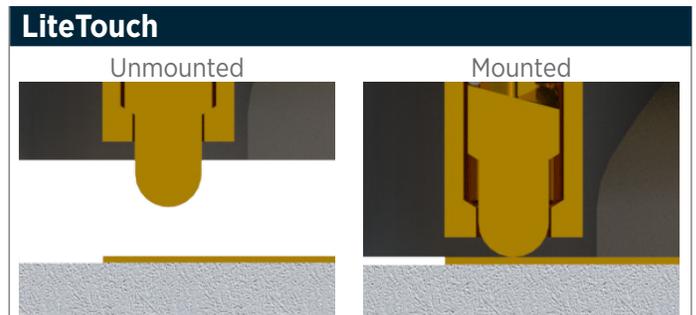


Fig. 4: LiteTouch Surface Mount PCB Connectors make an electrical connection without deforming the PCB trace.

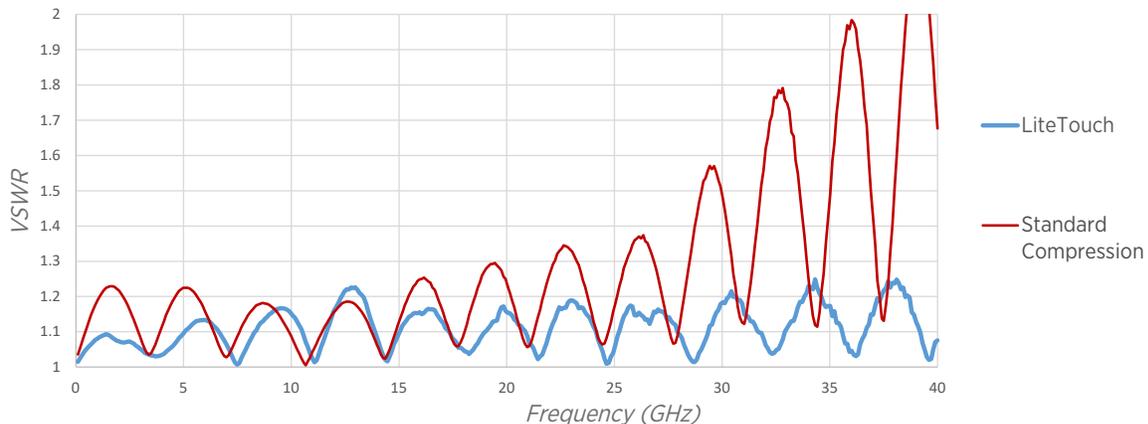


Fig. 5: VSWR Comparison between LiteTouch and Standard Compression Mount Connector on 10 mil thick PCB

Edge Launch Connectors

Edge Launch Connectors are named for their location on the board, as they are mounted to the edge of the PCB. As shown in Figure 6, the transmission line of an Edge Launch Connector is colinear to the axis of the PCB trace. Conversely, this transmission path is at a right angle to a Surface Mount Connector, as shown in Figure 7. The direct signal path in an Edge Launch Connector typically means that its able to operate at higher RF frequencies, without unwanted modes affecting RF performance.

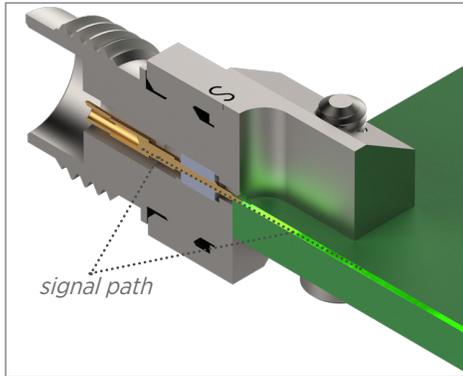


Figure 6: Straight signal path from the back of the connector to the PCB trace.

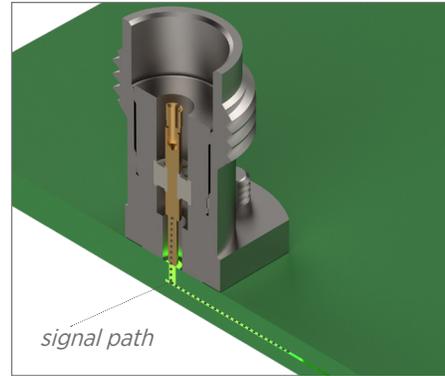


Figure 7: Signal path travels a right angle to the PCB trace.

Figure 8 shows the VSWR performance for Edge Launch Connectors. The plot represents a full path VSWR measurement (connector to connector) on a 1" trace, 10 mil thick Rogers 3003 microstrip stackup. SV offers a variety of Solderless Edge Launch connector styles (Fig 9, 10, and 11) Conventional, Reduced Flange and Low Profile. Typically, a conventional connector would be used for a more robust connection to the board. The Reduced Flange and Low Profile are ideal for applications with tight envelopes.

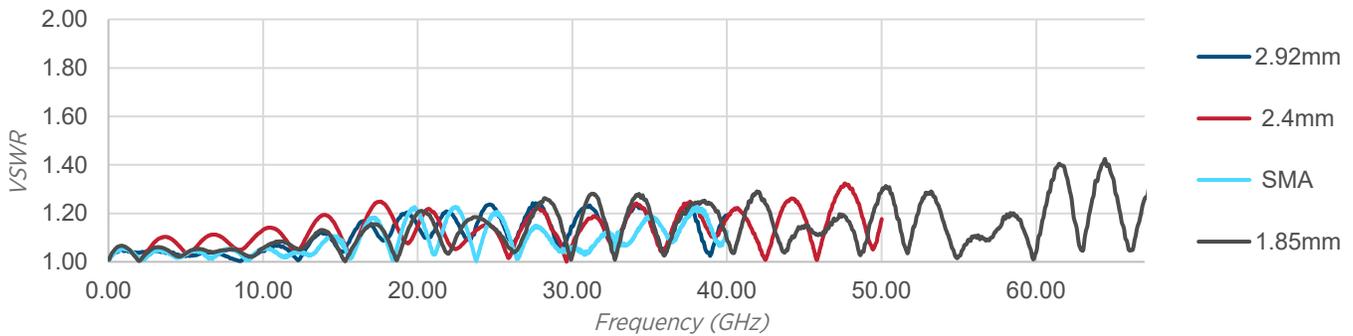


Figure 8 VSWR Comparison across Solderless Edge Launch Connectors by Series

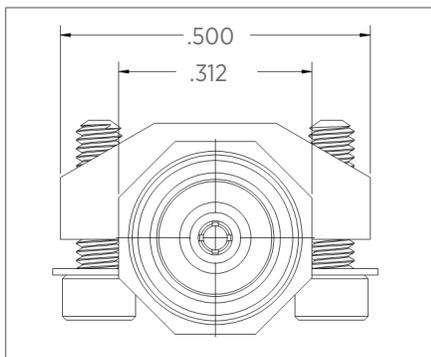


Figure 9: Conventional Connector

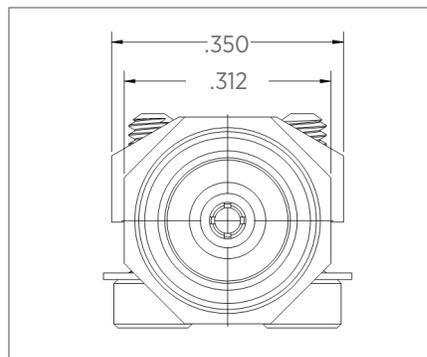


Figure 10: Reduced Flange Connector

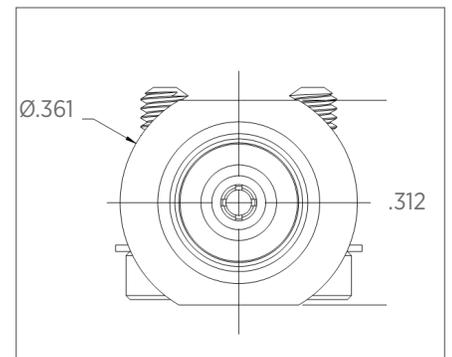


Figure 11: Low Profile Connector

Solderless PCB Connectors - Appendix

RF PCB Connectors can launch to a variety of different transmission line styles on the board. The most common for surface traces are coplanar waveguide (CPW) and microstrip, while stripline is used for routing through interior layers of the PCB.

Microstrip:

- Simplest, consists of a signal trace and a ground plane beneath it
- Plated Thru Holes (PTH) stitched around the launch area to electrically join the connector body to the layer 2 ground plane

Coplanar Waveguide:

- Signal trace coupled with the ground planes adjacent on the same layer
- One common variety also includes a layer 2 ground plane
- PTH stitched along the transmission line

Stripline:

- Signal trace is below the surface layer, with ground planes above and below
- PTH stitched along the transmission line

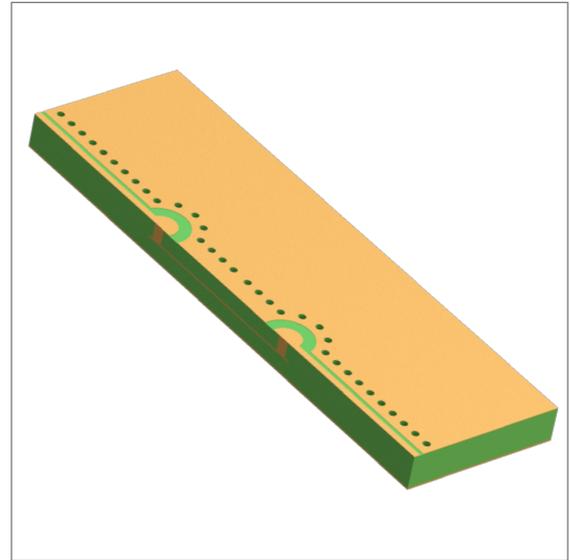


Figure 12: CPW and Stripline Transmission Line

Solderless PCB Connectors at a Glance

SV Microwave provides a wide breadth of Solderless PCB Connectors covering nearly all common RF series and many body and mounting styles. The two tables below provide a quick overview of our complete Solderless PCB Connector offering.

Surface Mount PCB Connectors

Style	Connection Type	SMA	2.92mm	2.4mm	1.85mm	SMP	SMP QB	SMPM
Standard	Stripline	X	X	X	X	X	X	X
	CPW/Microstrip	X	X	X	X	X	X	X
LiteTouch	Stripline	X	X	X	X			
	CPW/Microstrip	X	X	X	X			

Edge Launch PCB Connectors

Style	SMA	2.92mm	2.4mm	1.85mm	SMPM
Standard	X	X	X	X	X
Reduced Flange	X	X	X	X	
Low Profile	X	X	X	X	