



Founded in 1981, Southwest Microwave's initial products were applications oriented electronic perimeter intrusion detection systems and 23 GHz wireless CCTV transmission equipment.

The Microwave Products Division (MPD) was established in 1987 to provide highest performance interconnect products for millimeter wave and high-power RF applications. Today, in its own 50,000 square foot custom, modern facility, with in-house RF/microwave and electrical test capabilities, Southwest Microwave MPD continues to focus on high-end products that increase customer performance.

Let the microwave transmission line experts at Southwest Microwave improve your component and system performance with connectors and adapters that feature exceptionally low insertion loss, low VSWR, and low RF leakage. All MPD products have lot control and materials traceability. These connectors are very rugged and withstand severe environmental conditions.

In addition to standard testing, Southwest Microwave offers Special Hi-Rel testing to meet SCD and DPA requirements. Stringent quality controls assure that all parameters are met. Test Department equipment includes multiple VNA Network Analyzers.

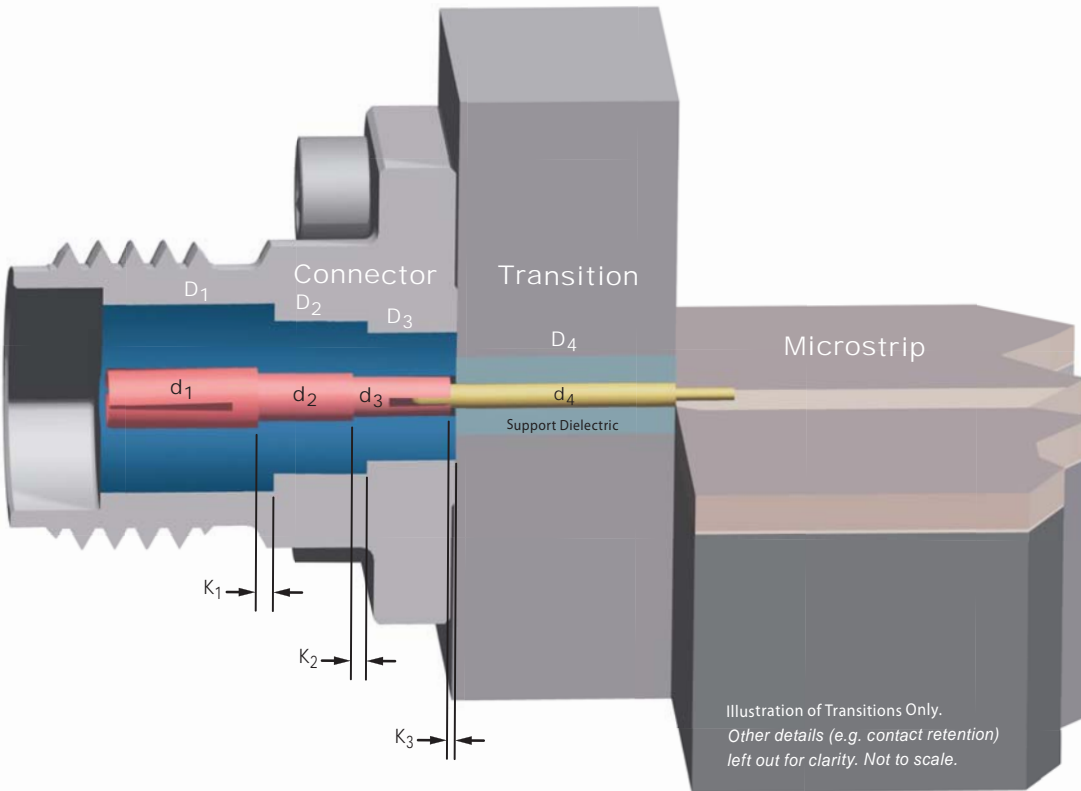


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BEST Performance Microwave Connectors



27 GHz



Super SMA Connectors

18 GHz



N Series Connectors

18 GHz



TNC Connectors

36 GHz



SSMA Connectors

40 GHz



2.92 mm Connectors

50 GHz



2.40 mm Connectors



End Launch Connectors



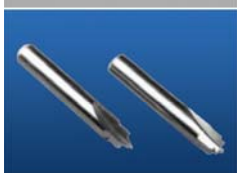
Adapters



Cable Connectors



Launch Accessories



Installation and Tools

CERTIFICATE OF REGISTRATION

This Certificate bears witness that Great Western Registrar LLC (an ANAB-accredited CB) has assessed the quality system of:

SOUTHWEST MICROWAVE, INC.
MICROWAVE PRODUCTS DIVISION
9055 S. MCKEMY ST. TEMPE, AZ. 85284

And declares that the quality system of the above named organization is in conformance with

ISO 9001:2008

This registration covers the scope of supply listed below:

DEVELOPMENT, PRODUCTION, SALES, AND
TECHNICAL SERVICING OF MICROWAVE CONNECTORS
AND RELATED MICROWAVE PRODUCTS.

The products, services and/or processes named above shall only be offered from the above address. The above named organization is subject to procedures that govern the registration for which they are certified.

For Great Western Registrar LLC



Henry S. Cwickowski

21835 N. 23rd Ave.
Phoenix, AZ 85027



Original date: 06/28/11; 11/21/2015 Effectivity of this Cert: 08/10/2009 Expiry Date: 10/11/2014 Cert. # 1029-1355-1

Compliance with European Union (EU) Directives



Reduction of Hazardous Substances (RoHS), per EU Directive 2011/65/EU.

This directive covers the use of hazardous materials, heavy metals and flame-retardants. An Annex lists applicable metals and exceptions. It is effective July 1, 2006. The materials used by Southwest Microwave, Microwave Products Division, to produce its interconnect products are in compliance with this RoHS Directive. No part number changes are applicable. (Note: Connectors produced by Southwest Microwave meet lead-free material content requirements. Lead is not used in any plating or finishes).

Due to the narrow nature of the connectors produced by Southwest Microwave, the following EU Directives do not apply, except as applicable to other firms making higher-level assemblies incorporating Southwest Microwave's connectors:

- Restrictions on Fire Retardant Chemicals, per EU Directive 2011/65/EU: Applicable to molded plastic connectors.
- Waste Electrical and Electronic Equipment (WEEE), per EU Directive 2011/65/EU: Applies to recycling and disposal of consumer and industrial equipment.



Introduction

High Performance Microwave Connectors are Microwave Components

Microwave designers take extreme care in the design and development of their circuit and attempt to be very precise in maintaining impedance control throughout. In many cases this precise control “ends” at the launch point of their circuit. The product is then handed off to a packaging engineer who is usually concerned with the mechanical design and not informed regarding what contributes to microwave performance.

Little verification is made to determine whether an impedance controlled transmission line connector and launch are incorporated. The launch design must be compatible with the circuit geometry (50 ohm line) and optimized for low reflection losses and low RF leakage over temperature.

The Southwest Microwave connectors are designed and fabricated to guarantee consistent performance of the end product.

Meeting the mechanical requirements of MIL-PRF-39012 does not confirm that the product will perform to the electrical specifications. Manufacturers are still required to verify that specified electrical performances are met. Design latitude is permitted by Military Specifications to allow electrical performance to govern.

There are many manufacturers who claim conformance to MIL-PRF-39012 and MIL-STD-348 standards without understanding that electrical performance specification governs. Adhering to only mechanical standards gives no guarantee that the product will meet the electrical performance requirements. Therefore, the user becomes responsible to confirm the performance of the product. Unfortunately, because the configurations of many of the connectors are difficult to test, the user tends to use the products as received, without confirmed performance.

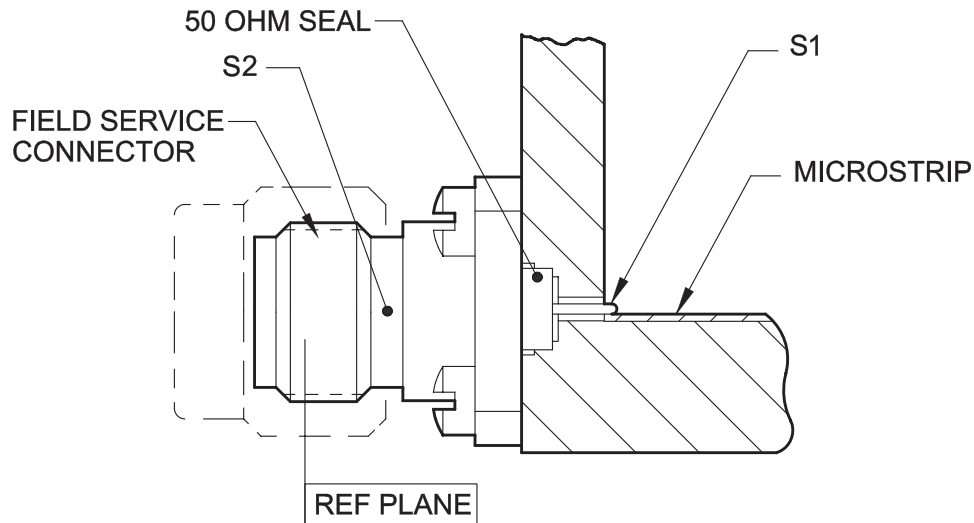
The supposed economics (price) have a propensity to camouflage true cost effectiveness. When performance is inconsistent, the user tends to look within the component circuitry to find the problem. Many times, after extensive hours of probing, a simple change in connector resolves the problem. Unfortunately for the user, the hours lost were not only costly, but also unnecessary.

Sometimes attempts are made to tune out poor connector performance, but this method has been found to be a moving target due to the extreme performance variations among lower priced units.

Southwest Microwave designs have been purposely engineered with a small protruding boss on flange mount connectors, which assures 360 degrees of metal-to-metal contact at the required surfaces. Consistent metal-to-metal contact is mandatory to achieve good electrical performance. This design is incorporated into all standard Southwest Microwave connectors.

A microwave system’s performance is as good as its weakest link. The weak link in any system should not be a low-cost, low performance, coaxial connector. This low cost connector will likely cause excessive tuning, delivery delays, rejects, and reliability problems.

Low Insertion Loss



CONNECTOR VSWR

1.10:1	(SOUTHWEST CONNECTOR)
1.30:1	(GENERIC CONNECTOR)

REFLECTION LOSS

	.0099dB
	.0745dB
Δ LOSS =	.0646dB

<u>LAUNCH VSWR = S1</u>	<u>CONNECTOR VSWR = S2</u>	<u>VSWR MAX = S1 x S2</u>	<u>REFLECTION LOSS</u>
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EXAMPLE # 1

1.60:1	1.30:1 (GENERIC CONNECTOR)	2.08:1	.570dB
1.60:1	1.10:1 (SOUTHWEST CONNECTOR)	1.76:1	.343dB
		Δ INSERTION LOSS =	.227dB

EXAMPLE # 2

1.80:1	1.30:1 (GENERIC CONNECTOR)	2.34:1	.762dB
1.80:1	1.10:1 (SOUTHWEST CONNECTOR)	1.98:1	.497dB
		Δ INSERTION LOSS =	.265dB

Note: Thus a difference of connector VSWR from 1.10:1 to 1.30:1 can result in an approximate .250dB increase in loss.

Package Standardization

Standardize on a Single Mounting Accessory Envelope

Southwest Microwave offers a wide variety of flange mount and thread-in connectors to permit designers to standardize packaging.

The package type is defined by the flange type and size, and the pin diameter. With the wide variety of flanges and pin sizes Southwest Microwave offers, one package design can accommodate many types of connectors.

For example, designing the package for a 4 hole .500" flange with a .020" launch pin can accommodate either a 2.40 mm, 2.92 mm, SMA, N, or a TNC connector.

Features

- ▶ Similar package requirements for all connector types
- ▶ Reduce housing variations
- ▶ Common footprints between: 1.85 mm, 2.40 mm, 2.92 mm, SSMA, Super SMA, N, and TNC
- ▶ Common Launch Accessories between: 1.85 mm, 2.40 mm, 2.92 mm, SSMA, Super SMA, N, and TNC
- ▶ Full line of hermetic seals and launch pins available
- ▶ Thread-in with English or Metric threads





Package Standardization Mounting Envelopes

Flange Size	Pin size	SMA Female	SMA Male	2.92 Female	2.92 Male	2.40 Female	2.40 Male	SSMA Female [△]	SSMA Male	N Female [△]	TNC Female [△]
4 Hole .500" Square	.009"	X	X	X	X	X	X				
	.012"	X	X	X	X	X	X				
	.015"	X	X							X	X
	.018"	X	X							X	X
	.020"	X	X	X	X	X	X			X	X
	.036"	X	X							X	X
4 Hole .375" Square	.009"	X	X	X	X	X	X	X			
	.012"	X	X	X	X	X	X	X			
	.015"	X	X					X			
	.018"	X	X					X			
	.020"	X	X	X	X	X	X	X			
	.036"	X	X								
4 Hole .500 x .375"	.009"	X	X								
	.012"	X	X								
	.015"	X	X								
	.018"	X	X								
	.020"	X	X								
	.036"	X	X								
2 Hole .625" Long	.009"	X	X	X	X	X	X				
	.012"	X	X	X	X	X	X				
	.015"	X	X								
	.018"	X	X								
	.020"	X	X	X	X	X	X				
	.036"	X	X								
2 Hole .550" Long	.009"	X	X	X	X	X	X				
	.012"	X	X	X	X	X	X				
	.015"	X	X								
	.018"	X	X								
	.020"	X	X	X	X	X	X				
	.036"										
2 Hole .500" Long	.009"	X	X	X	X	X	X				
	.012"	X	X	X	X	X	X				
	.015"	X	X								
	.018"	X	X								
	.020"	X	X	X	X	X	X				
	.036"										
Thread-in .250-36	.009"	X	X	X	X	X	X	△	△		
	.012"	X	X	X	X	X	X				
	.015"	X	X								
	.018"	X	X								
	.020"	X	X	X	X	X	X	△	△		
	.036"	X	X								
Thread-in M6x.75-6g	.009"			X	X	X	X				
	.012"			△							
	.015"										
	.018"										
	.020"										
	.036"										

△ Contact Southwest Microwave for availability.

△ See N and TNC catalog sections for 4H 1.0" & .688" Sq. connectors.

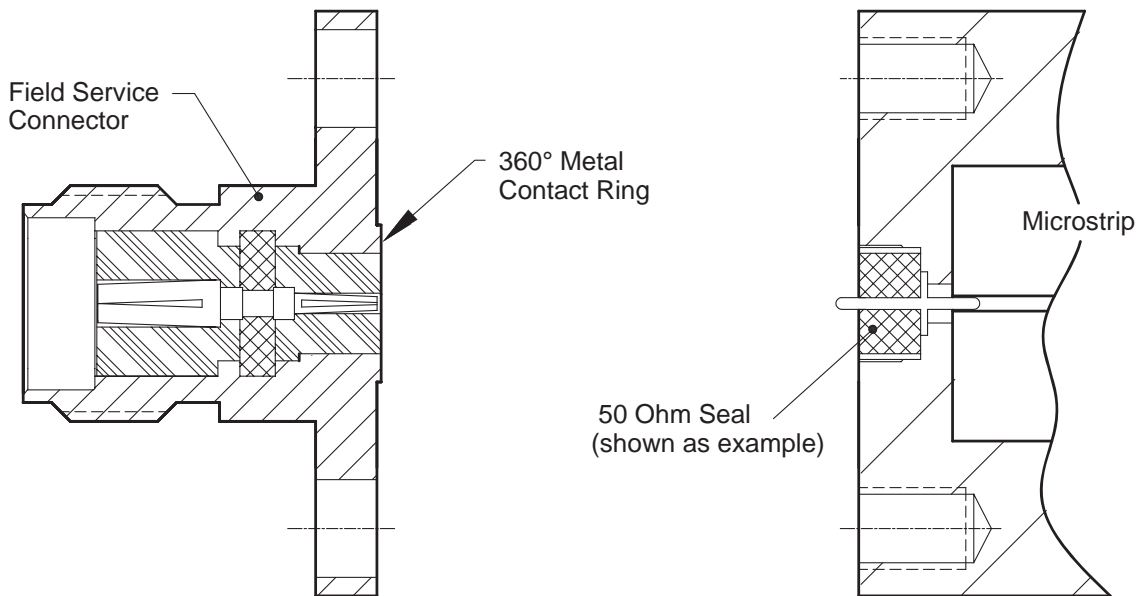
△ See SSMA section for 2H .480" Long and Thread-in connectors.

Super SMA Connectors
N Series Connectors
TNC Connectors
SSMA Connectors
2.92 mm Connectors
2.40 mm Connectors
End Launch Connectors
Adapters
Cable Connectors
Launch Accessories
Installation and Tools

360° Metal-to-Metal Contact

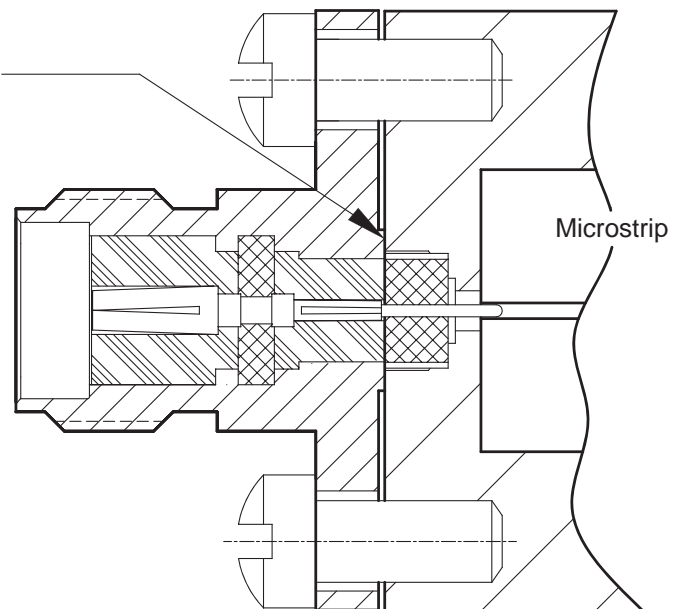
For Low VSWR and Low RF Leakage

Typical High Performance Launch Application



Proper Connector Installation *

Built-in metal contact ring provides 360° of metal-to-metal contact surface required for low VSWR and Low RF Leakage.



* See article on Proper Installation in the appendix.