

Technical Data Sheet

# Integrated V Connectors

DC – 65 GHz



*Easy to Install Hermetic Connectors*

# DC - 65 GHz Integrated V Connectors

The Integrated V Connector family is a group of female connectors which have the launcher and the glass bead integrated into one piece. By providing the connectors as one piece, installation is easier and their mounting holes are simpler. Because Anritsu controls the critical internal dimensions that affect microwave performance, consistent performance is assured.

The integrated V connectors come in two hermetic styles, a solder-in version and a screw-in version. The solder-in connectors incorporate a ground lip<sup>1</sup> that allows the substrate ground to be directly soldered or epoxied to the connector, creating an exceptionally good ground connection.

These connectors are designed to meet the needs of the 40 Gbps optical modulator market as an RF input connector. They are especially needed in systems where greater bandwidth is required to minimize signal degradation. This signal degradation leads to an increase in the bit error rate of the overall system.

For the broadband or millimeter wave module designer, these connectors deliver high performance connections while saving money in housing fabrication because of the simpler, lower tolerance mounting holes. Additionally, the ground lip allows the substrate ground to be attached directly to the connector, eliminating the long ground path common with other connector families. This short ground path improves return loss performance, especially at the high end of the frequency range.

The backside interfaces of the solder-in connectors are designed to deliver optimal performance with specific substrate types. All compensation steps for matching to Microstrip or Coplanar Waveguide (CPW) are included in the solder-in connectors, ensuring that they deliver excellent performance. The screw-in connector does not incorporate a ground lip, so it can be used with any type of substrate and allows for great versatility of microcircuit launch design.

These connectors, except for the CPW version, are designed to be used with the Anritsu V110-1 Stress Relief Contact. The CPW backside interface is a pin overlap design, which allows the center pin to be directly connected to the circuit and the ground to be directly soldered to the ground lip.

The Integrated V connectors are compatible with other V Connectors and with the 2.4-mm connector.

Specifications	
Frequency Range	DC to 65 GHz
Return Loss	>15dB typical
Coupling nut tightening torque	13.8 kg-cm (12 in-lb) maximum, 9.2 kg-cm (8 in-lb) recommended
Pin Depth	0.000 to -0.076 mm (0.000 to -0.004 in)
Hermeticity	1 x10 <sup>-8</sup> std cc He/sec at 1 atmosphere differential for all connector types.
Material	Gold plated onto a nickel flash over beryllium-copper.
Compensation	V115FMS10 – 0.25 mm (10 mil) Microstrip V115FMS75 – 0.19 mm (7.5 mil) Microstrip V115FCPW – Coplanar Waveguide V116F – None

## Models

### V115FMS10

*Solder-in  
10 mil  
Microstrip  
Hermetic*



### V115FCPW

*Solder-in  
Co-planar  
Waveguide  
Hermetic*



### V115FMS75

*Solder-in  
7.5 mil  
Microstrip  
Hermetic*



### V116F

*Screw-in  
Hermetic*

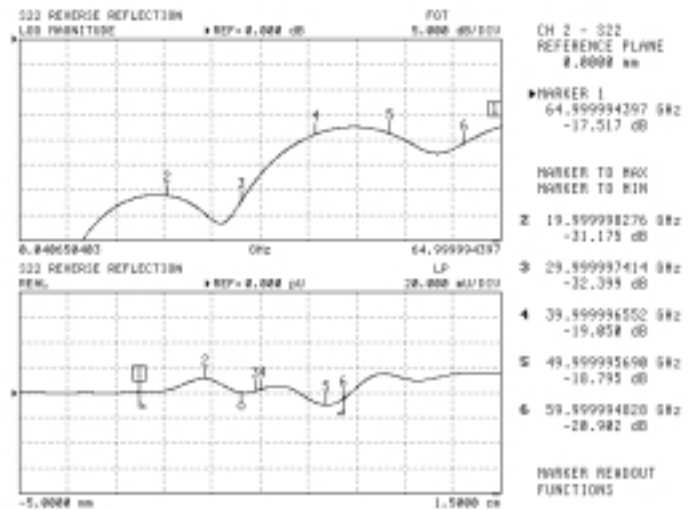


Environmental Information: Tests are performed per MIL-STD-202F	
Operating Temperature Range	-54° to +150° C
Temperature Shock	25° C to -55° C and 25° C to +125° C, method 107G, Condition B.
Humidity	95% at 40°C, 96 hours, Test 103B, Condition B
Shock	100 Gpeak sawtooth, method 213, test condition 1.
Vibration	Sinewave: 10 Hz to 2000 Hz, 0.06" DA, method 204, test condition D. Random: 50 Hz to 2000 Hz, 11.6 Grms, Power Spectral Density 0.1 Grms <sup>2</sup> /Hz, Method 214, Test Condition I, Letter D
Salt Spray	5% concentration for 48 hours, Method 101D, Condition B
Voltage withstanding	500 Vac RMS, 60 seconds, method 301.

<sup>1</sup> Patent Pending

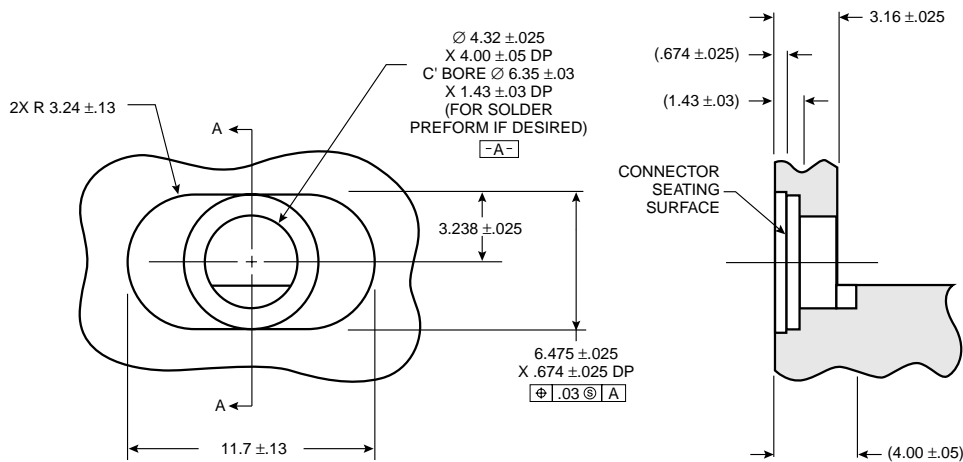
The integrated V Connectors deliver consistently excellent return loss performance. Anritsu carefully controls all critical dimensions, giving you confidence that the connection into your housing will work properly.

This vector network analyzer plot shows typical return loss performance of these connectors. The internal design of all the connectors is the same, so they will all have the same level of performance. The bottom plot is the time domain response of the connector and subsequent transmission line, while the top plot is the time-gated S11 frequency response of the connector itself. The frequency domain data is derived by the Anritsu 39397C Vector Network Analyzer, which takes a Fourier transform of the time domain data between the start and stop flags on the time-domain plot.



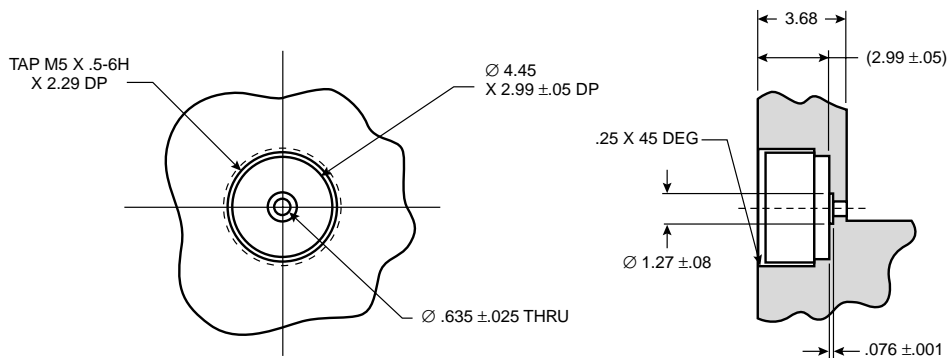
## Mounting Holes

Because the bead is incorporated inside the connector, mounting holes are simplified and they have looser tolerances since the mounting hole doesn't effect millimeter wave performance.



V115FMS10, V115FMS75, V115FCPW mounting hole

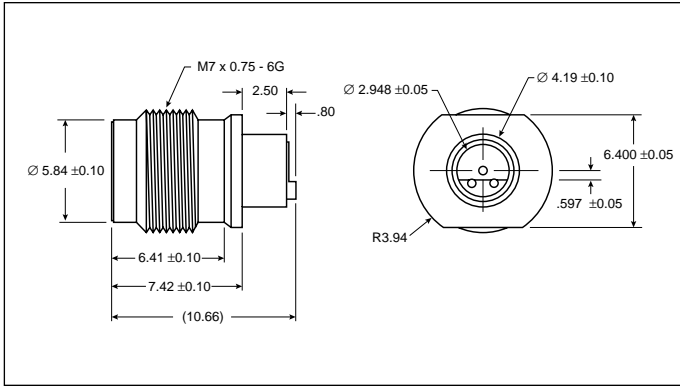
This is the threaded mounting hole for the V116F connector. Installation of this connector can be made hermetic by soldering after the connector has been torqued down. The installation note shipped with the connector provides the details how to do this.



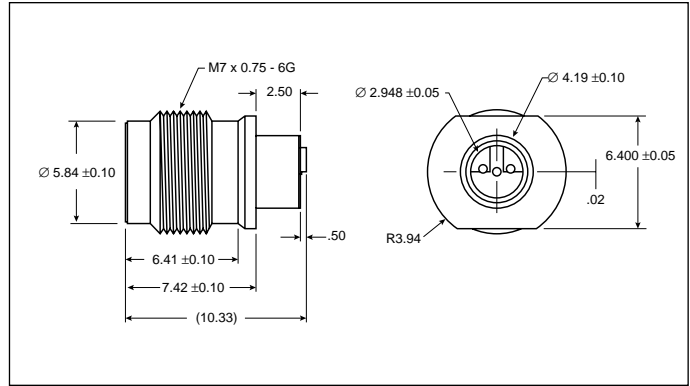
V116F Installation Hole

# Dimensions

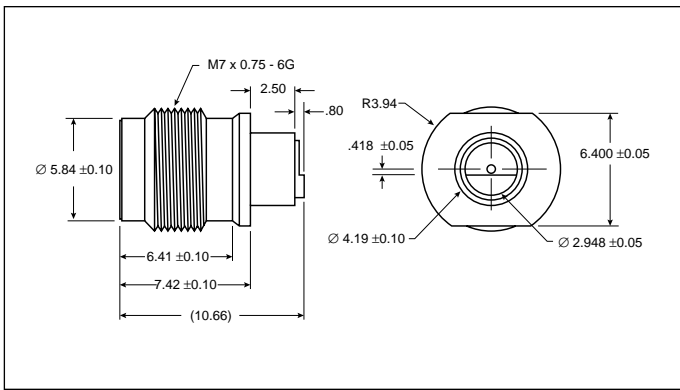
The following drawings show the dimensions of the various versions of the Integrated V Connectors.



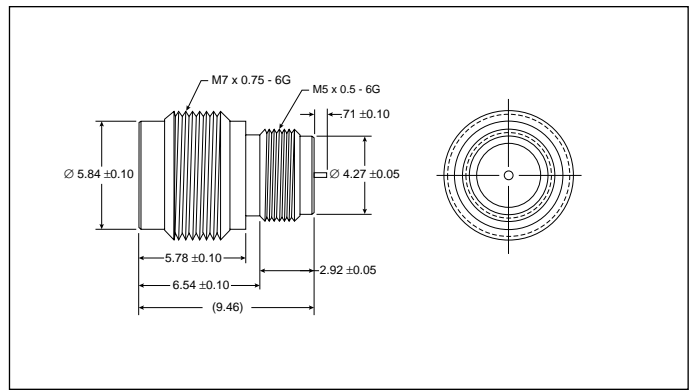
V115FMS10 Dimensions



V115FCPW Dimensions



V115FMS75 Dimensions



V116F Dimensions

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