

1mm Series Connectors

The 1mm Series RF connector is an ultra-precision coaxial connector designed for the most demanding millimeter-wave applications up to 110 GHz. As the highest frequency coaxial connector available, it is ideal for cutting-edge research, advanced test and measurement equipment, and next-generation high-frequency systems. Featuring an air dielectric interface and precise mechanical tolerances, it ensures exceptionally low VSWR and insertion loss, and remains mode-free to its maximum frequency.



KEY FEATURES & BENEFITS

- **Ultra-High Frequency Performance:** Operates from DC to 110 GHz, supporting applications in the highest millimeter-wave bands.
- **Mode-Free Operation:** Guarantees signal integrity up to 110 GHz, crucial for accurate measurements at extreme frequencies.
- **Precision Threaded Coupling:** Ensures secure, repeatable, and stable connections, minimizing measurement uncertainty.
- **Air Dielectric Interface:** Minimizes losses and ensures consistent impedance for superior electrical performance.
- **Exceptional Electrical Characteristics:** Delivers extremely low VSWR and insertion loss, preserving signal fidelity.
- **Robust Construction:** Hardened stainless steel with gold-plated contacts provides durability and stability for demanding environments.
- **Niche Application Focus:** Ideal for metrology, academic research, semiconductor

PRODUCT SPECIFICATIONS

Electrical Properties*	
Impedance	50 Ohms
Frequency Range	DC to 110 GHz
Voltage Rating	Typically 33 VDC (for test equipment)
Dielectric Withstanding Voltage	100 VRMS (min.)
Contact Resistance	Center Contact: $\leq 3.0 \text{ m}\Omega$ (typical) Outer Contact: $\leq 2.0 \text{ m}\Omega$ (typical)
Insulation Resistance	$\geq 1000 \text{ M}\Omega$
VSWR (Voltage Standing Wave Ratio)	Typical: ≤ 1.30 @ 50 GHz (connector pair dependent, can be lower for precision grades)
Insertion Loss	$\leq 0.1 \text{ dB}$ @ 50 GHz; $\leq 0.3 \text{ dB}$ @ 110 GHz (connector pair dependent)
RF Leakage	$\geq -100 \text{ dB}$ @ 67 GHz (typical)

*reference website for specific part number specifications

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Environmental Properties*	
Temperature Range	-55°C to +125°C (standard)
Thermal Shock	MIL-STD-202, Method 107, Test Condition B
Vibration	MIL-STD-202, Method 204, Test Condition B (15 G's)
Shock	MIL-STD-202, Method 213, Test Condition I (100 G's)
Moisture Resistance	MIL-STD-202, Method 106
Corrosion (Salt Fog)	MIL-STD-202, Method 101, Test Condition B (48 hours)
Durability	Engineered to maintain their ultra-high precision and performance under the demanding conditions of metrology and advanced research labs.

*reference website for specific part number specifications

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Mechanical Properties*	
Coupling Mechanism	Precision Threaded (e.g., 0.8mm-1.0mm fine pitch, sometimes compatible with other W-band interfaces with adapters).
Mating Cycles	≥ 500 cycles for test port connectors (precision grade)
Recommended Mating Torque	Very low, typically 0.8 - 1.0 in-lbs (0.09 - 0.11 Nm) (Use calibrated torque wrench for best performance)
Body Material	Stainless Steel (typically passivated for corrosion resistance)
Center Contact Material	Beryllium Copper with Gold Plating (over Nickel)
Outer Contact Material	Stainless Steel
Dielectric/Insulator Material	Air / Low-loss plastic beads (e.g., Ultem®, PTFE)
Interface Dimesions	Conforms to IEEE 287 standards for 1.0mm connectors

*reference website for specific part number specifications