

1.85mm Series Connector

Aptiv's 1.85mm connector is a high-performance precision coaxial connector designed for demanding millimeter-wave applications up to 67 GHz. As a member of the V-band connector family, it is distinguished by its robust air dielectric interface, which minimizes reflections and ensures superior signal integrity at extremely high frequencies. The 1.85mm connector is fully mode-free up to 67 GHz, making it an ideal choice for cutting-edge test and measurement equipment, advanced telecommunications systems (e.g., 5G/6G research), satellite communications, and other applications requiring ultra-broadband performance and exceptional electrical characteristics in the millimeter-wave spectrum. Its precise mechanical tolerances and durable construction ensure repeatable, low-loss connections.



KEY FEATURES & BENEFITS

- **Ultra-Broadband Performance:** Operates reliably up to 67 GHz, addressing the needs of current and future millimeter-wave applications.
- **Mode-Free Operation:** Guarantees signal integrity without unwanted mode propagation up to 67 GHz, critical for high-frequency measurements.
- **Air Dielectric Interface:** Minimizes dielectric losses and ensures consistent impedance, leading to excellent VSWR and insertion loss performance.
- **Precision Threaded Coupling:** Features a precise 0.75-20 UNF-2A thread for secure, repeatable, and stable connections, even under vibration.
- **Robust Construction:** Typically made from stainless steel, providing exceptional durability and mechanical stability.
- **Low Reflection and Insertion Loss:** Engineered for superior electrical performance, ensuring minimal signal degradation at high frequencies.
- **Compatibility:** Mechanically compatible with 2.4mm connectors, allowing for versatile connections with existing high-frequency infrastructure (though electrical performance is optimized at 1.85mm).

PRODUCT SPECIFICATIONS

Electrical Properties	
Impedance	50 Ohms
Frequency Range	DC to 67 GHz
Voltage Rating	170 VRMS (max.)
Dielectric Withstanding Voltage	500 VRMS (min.)
Contact Resistance (Center)	$\leq 3.0 \text{ m}\Omega$
Contact Resistance (Outer)	$\leq 2.0 \text{ m}\Omega$
Insulation Resistance	$\geq 5000 \text{ M}\Omega$
VSWR (Typical)	≤ 1.25 @ 67 GHz (connector pair dependent)
VSWR (Optimized Designs)	Optimized designs can achieve lower VSWR
Insertion Loss (Typical)	$\leq 0.05 \times f(\text{GHz}) + 0.005 \times f(\text{GHz}) \text{ dB}$ (connector pair dependent)
RF Leakage	$\geq -100 \text{ dB}$ @ 20 GHz (typical)

1.85MM SERIES

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Mechanical Properties	
Coupling Mechanism	Threaded (0.75-20 UNF-2A thread)
Mating Cycles	≥ 500 cycles (for precision test port connectors, often higher)
Recommended Mating Torque	8 - 12 in-lbs (0.9 - 1.35 Nm)
Cable Retention	Varies by cable type and termination method
Body Material	Stainless Steel (typically passivated)
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®)
Interface Dimensions	Conforms to international standards for 1.85mm connectors

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Environmental Properties	
Temperature Range	-55°C to +125°C (standard operating range; specialized versions may vary)
Thermal Shock	MIL-STD-202, Method 107, Test Condition B (from -55°C to +125°C)
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 meet the demanding reliability requirements of high-frequency precision applications.