

1.00 mm Precision RF Interconnect Solutions DC – 110 GHz



INTRODUCTION

Our 1.00 mm precision RF interconnect solution, which supports frequencies from DC – 110 GHz, is a complete solution that includes:

1.00 mm Board-Side Connector

Available in the following configurations:

- » Field-Replaceable/Solderless Vertical
 - Supports co-planar waveguide and stripline-type board layouts
- » Edge Launch
 - Supports co-planar waveguide-type PCB layout

50 Ω 0.047" Flexible Coaxial Cable

Offers excellent signal integrity and repeatability without compromising flexibility and RF shielding:

- » 70% velocity of propagation
- » 1.4 max VSWR at 110 GHz
- » Insertion loss of 17.82 dB/m

FEATURES	BENEFITS
Supports frequencies from DC - 110 GHz	• Suitable for new, faster applications
Low VSWR, insertion, and return loss	• Results in excellent signal integrity
Absolute phase matching or phase matching in pairs up to +/- 2ps typical and up to +/- 1ps selection type	• Suitable for designs with tight timing margins
High bend/ flex cycles with minimum variation in insertion loss	• Suitable for designs with space constraints
Complete interconnect solution including PCB connectors and cable assemblies fully characterized for S-parameters	• Provides design flexibility and reliability
Solderless mounting	• Elimination of soldering allows the high-performance connectors to be installed quickly and easily and to be removed/reused without causing damage to the board
Vertical and edge launch (narrow and wide body) board side connectors	• Provides design flexibility for density limitations and allows placement anywhere on the PCB
Supports both CPW and stripline-type board layouts	• Saves cost and space in complex PCB designs

APPLICATIONS

- Satellite Communication
- Test & Measurement Instruments
- 5G Networks
- Driverless Connected Cars
- Medical Imaging & Diagnostics
- Radars
- IC Test & Validation
- Avionics & Aerospace
- Defense & Military Systems

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KEY SPECIFICATIONS

1.00 mm Coax Cable Assembly		
Parameter	Specification	
Capacitance (pF/m)	95	
Outer Diameter (nominal)	0.047"	
Velocity (%)	70	
Impedance (Ω)	50 \pm 1	
Dielectric Withstand Voltage (V)	500	
Phase Vs Temperature (PPM)	2500 @ -40 °C to 60 °C	
Coil Test (OD: 40 mm); 3 wraps around 3.0" diameter mandrel	40 GHz	0.25 dB (I.L.)
	67 GHz	0.35 dB (I.L.)

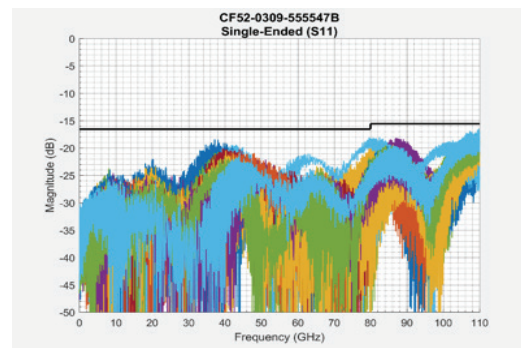
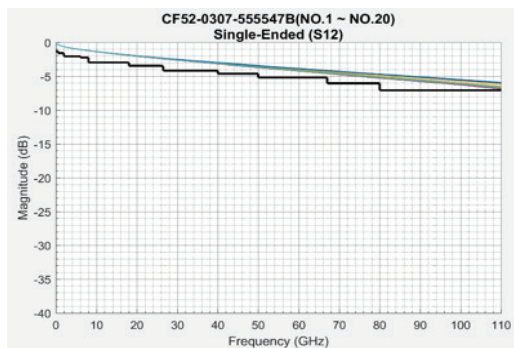
1.00 mm Board-Side Connectors	
Parameter	Specification
Impedance (Ω)	50
VSWR	1.5:1 Max at 110 GHz
Insertion Loss*	0.6 dB Max at 110 GHz
Return Loss *	15 dB Max at 110 GHz
Dielectric Withstand Voltage (V)	500
Materials	Body: Stainless Steel Insulator: PCTFE Center Conductor: BeCu
Connector Durability	500 Cycles Minimum
Temperature Range	-55 °C to 85 °C

* De-embedded connector loss only. Full SI test report available.

PERFORMANCE SPECIFICATIONS

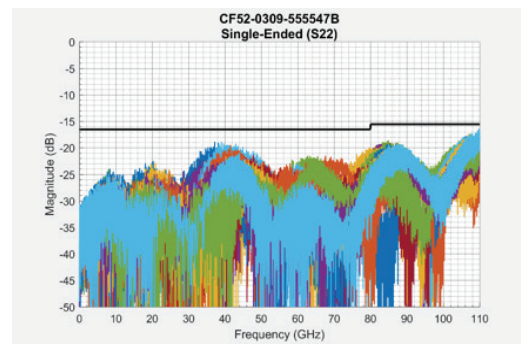
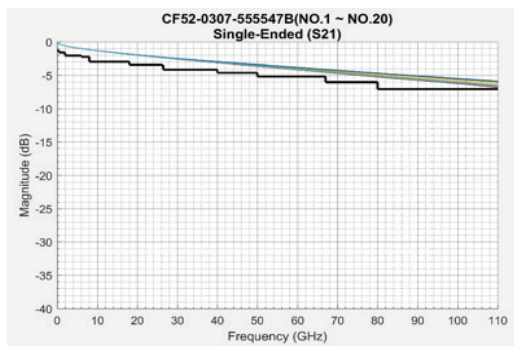
Insertion Loss & Return Loss vs. Frequency

Measured S parameters for 35-cm-long 0.047" coax assembly with 1.00 mm RF connectors



Insertion Loss & Return Loss vs. Frequency

Measured S parameters for 35-cm-long 0.047" coax assembly with 1.00 mm RF connectors

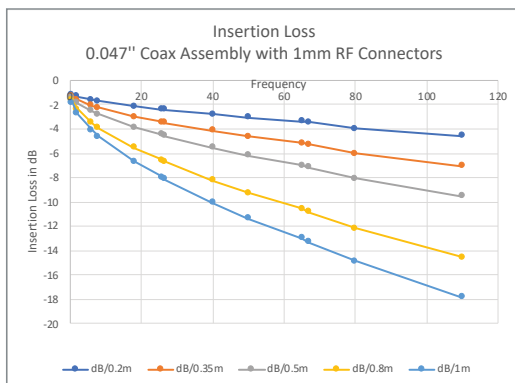


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PERFORMANCE SPECIFICATIONS CONT'D.

Insertion Loss Variation with Length Across Frequency Range

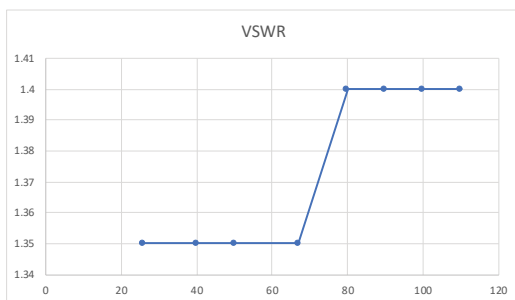
Insertion Loss variation of 0.047" coax assembly with 1.00 mm RF connector across the frequency range of DC to 110 GHz



Insertion Loss Variation					
Frequency [GHz]	dB/0.2m	dB/0.35m	dB/0.5m	dB/0.8m	dB/1m
0.5	-1.15	-1.28	-1.41	-1.66	-1.83
2	-1.33	-1.59	-1.85	-2.37	-2.72
6	-1.6	-2.07	-2.54	-3.47	-4.09
8	-1.71	-2.25	-2.8	-3.89	-4.62
18	-2.12	-2.98	-3.84	-5.55	-6.69
26	-2.38	-3.43	-4.48	-6.58	-7.98
26.5	-2.41	-3.48	-4.55	-6.68	-8.11
40	-2.79	-4.15	-5.52	-8.24	-10.05
50	-3.05	-4.61	-6.16	-9.27	-11.34
65	-3.38	-5.17	-6.97	-10.56	-12.96
67	-3.44	-5.29	-7.13	-10.82	-13.28
80	-3.98	-6.02	-8.06	-12.14	-14.86
110	-4.57	-7.06	-9.54	-14.51	-17.82

VSWR vs. Frequency

VSWR data for the solution



VSWR	
Frequency [GHz]	VSWR
26	1.35
40	1.35
50	1.35
67	1.35
80	1.4
90	1.4
100	1.4
110	1.4

ORDERABLE PART NUMBERS

Part Number	Description
Cable Assembly	
TM4SM1MS1MS0031	0.047" coax assembly with 1.00 mm male RF connector on each side; 31 cm and phase matched to +/- 2ps
TM4SM1MS1MS0031	0.047" coax assembly with 1.00 mm male RF connector on each side; 31 cm and phase matched to +/- 2ps
Board-Side Connector	
TMB-V1F2-3LC-0X	1.00 mm 2-hole vertical mount female CPW (field-replaceable/solderless)
TMB-V1F2-2L1	1.00 mm 2-hole vertical mount female stripline (field-replaceable/solderless)
TMB-E1F2-1L1	1.00 mm straight jack edge-mount (solderless)
TMB-E1F4-1L1	1.00 mm jack 4-hole flange edge-mount (solderless)
TMB-E1F2-1L1-01	1.00 edge-launch narrow-body (solderless)
TMB-E1F4-1L1-01	1.00 edge-launch jack 4-hole flange (solderless)

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HEADQUARTERS

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FACILITIES CERTIFICATIONS

- » AS9100
- » ISO 9001
- » ISO 13485
- » ISO 14001
- » FDA
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