

Thin Multi-Flex, Easily Routable, Pre-Connectorized Cable Sets, DC-18 GHz, MF05 Series

for rugged military, defense and T&M applications upto 18 GHz use



MF05 series cable sets are designed as flexible alternative to 0.085 inch semi-rigid types. MF05 have similar electrical and RF performance as 0.085 inch semi-rigid but WITHOUT the routing problems of semi-rigid types. MF05 cable sets are highly flexible and can be easily routed inside racks, rack-rack or inside LRU's. Designed for use upto 18 GHz with rugged cable-connector joints.

FLEXIBLE SUBSTITUTE TO SEMI-RIGID

MF05 cable sets are flexible alternatives to semi-rigid cables. RF and electrical parameters like loss, power handling of MF05 types are same as 0.085 inch semi-rigid types, but MF05 cable sets are flexible as compared to semi-rigid which are quite rigid. MF05 types overcome the routing problems of 0.085 inch semi-rigid due to their flexibility. Compared to semi-rigid types there is no need for hand or machine bending

CONFORMANT MIL STANDARDS

- Cable conforms to MIL-C-17
- Connectors conform to MIL-PRF-39012

APPLICATIONS

- Military and defense systems interconnect
 - General purpose test applications
 - R&D labs
- Environmental and test chambers

Attenuation & Power Handling Data

Frequency	Insertion Loss		Power Watts
	dB/ft	dB/m	
400 MHz	0.14	0.46	190
1 GHz	0.24	0.76	130
2 GHz	0.32	1.05	76
3 GHz	0.39	1.28	62
5 GHz	0.53	1.73	54
10 GHz	0.81	2.65	35
13.5 GHz	0.92	3.01	24
18 GHz	1.11	3.64	20

Physical & Mechanical Specifications

Dimensions	inches	mm
Center Conductor	0.02	0.51
Jacket	0.106	2.70
Bend Radius (static)	0.23	6
Bend Radius (repeated)	0.78	20
Weight	0.015 lb/ft (0.020 Kg/m)	
Temperature Range	-55°C ~ +125°C	

Electrical Specifications

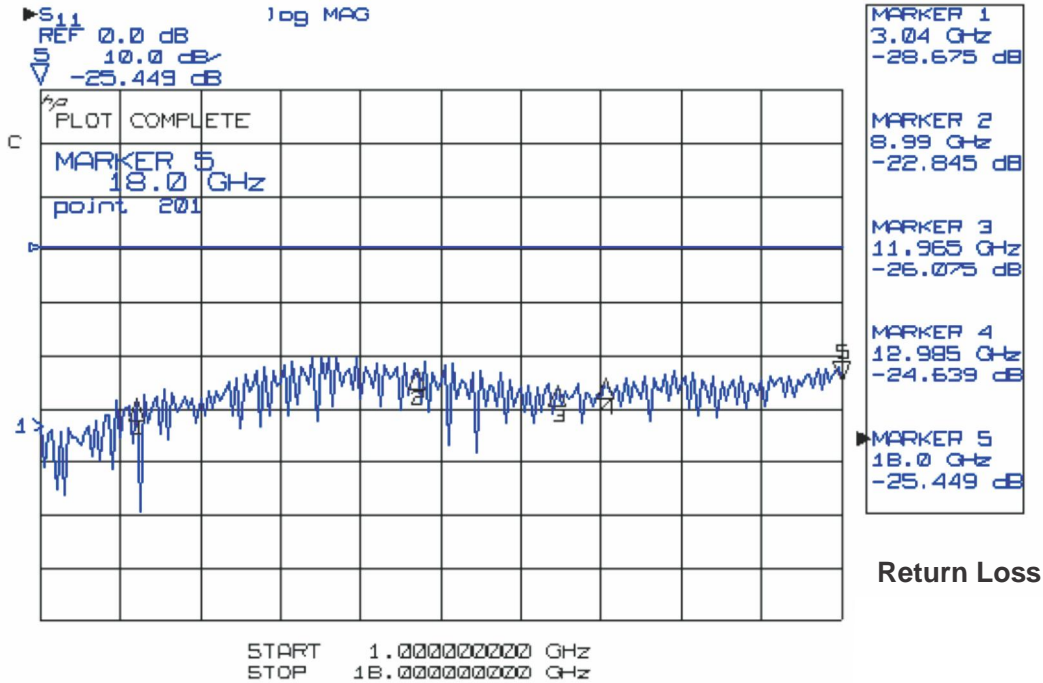
Impedance	50 ohms
Velocity of Propagation	70 %
Shielding Effectiveness	better than -90 dB
Capacitance	30 pF/ft
Operating Frequency	18 GHz

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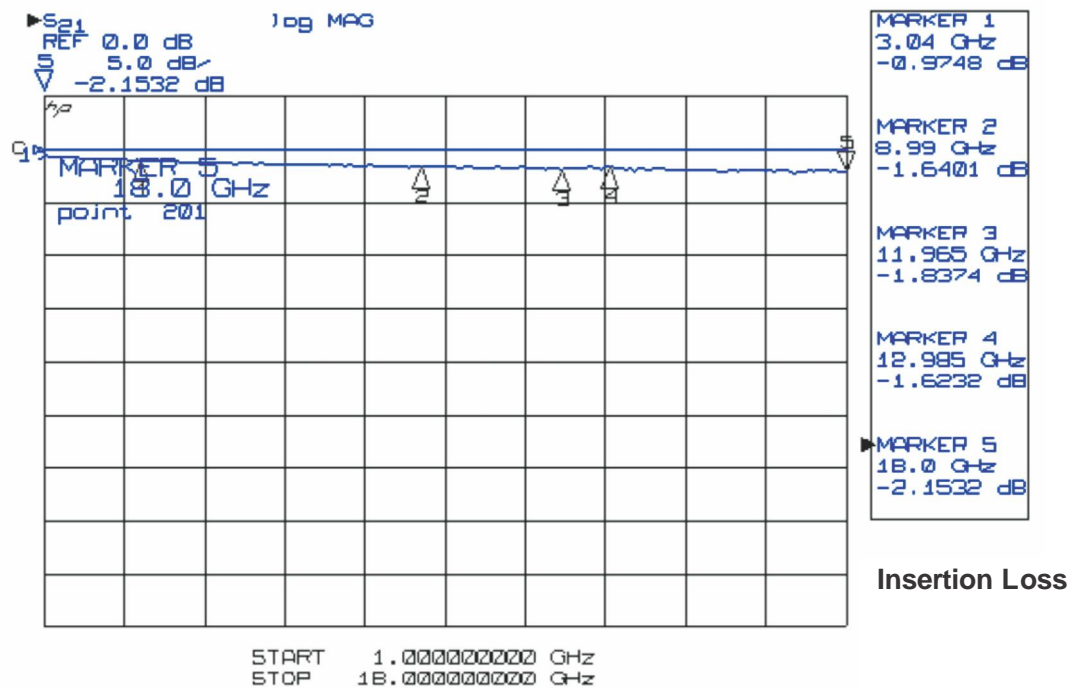
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S11 Plot of 0.5m MF05 cable set with SMA(M) on both sides



S12 Plot of 0.5m MF05 cable set with SMA(M) on both sides



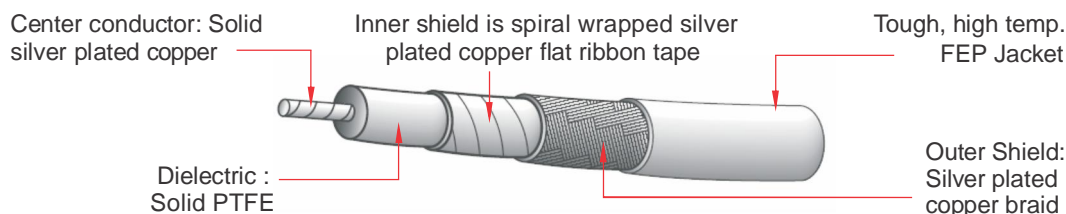
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MF05 Cable Construction



Connectors Specifications

Specifications	SMA Connectors	N Connectors	TNC Connectors
Outer Conductor	Brass/Stainless Steel, Gold plated	Copper alloy	Copper Alloy
Center Conductor	Brass, Gold Plated	Brass, Gold Plated	Brass, Gold Plated
Insulation	PTFE	PTFE	PTFE
Gasket	Silicone Rubber	Silicone Rubber	Silicone Rubber
Frequency range	DC~18 GHz	DC~11 GHz	DC~11 GHz
Nominal Impedance	50 Ω	50 Ω	50 Ω
Mating/Unmating	500 operations	500 operations	500 operations
Vibration	As per MIL-STD-202, method 204, test condition D		
Mechanical Shock	As per MIL-STD-202, method 213, test condition I		
Thermal Shock	As per MIL-STD-202, method 107, test condition B		
Humidity	As per MIL-STD-202, method 106		
Temperature Cycle	As per MIL-STD-202, method 102A, test condition C		

Ordering Codes Description

MF05 - (Length) (Connector 1) (Connector 2)
 □ □ - □ (□ / □) - □ (□ / □) - □
L L 1 2 3 1 2 3 U

L L	Length	0.5 = 0.5 ; 1 = 1.0 ; 2 = 2.0
1	Connector Series	SMA = SMA ; N = N ; BNC = BNC; TNC = TNC
2	Male/Female Designator	M = Male ; F = Female
3	Orientation of Connector	ST = Straight ; RA = Right Angle
U	Unit of Length	M = Meter ; F = Feet ; I = Inch

1 meter cable set with SMA (Male) on both sides = MF05-1.0-SMA(M/ST)-SMA(M/ST)-M

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Cable Set Ordering Codes

Ordering Code	Length	Insertion Loss (dB) Typical					
		1.5 GHz	3 GHz	6 GHz	9 GHz	11 GHz	18 GHz
SMA (Male) Straight - SMA (Male) Straight (DC to 18 GHz)							
MF05-0.5-SMA(M/ST)-SMA(M/ST)-M-18	0.5m	0.56	0.82	1.19	1.49	1.75	2.23
MF05-1.0-SMA(M/ST)-SMA(M/ST)-M-18	1m	0.98	1.44	2.11	2.68	3.12	3.94
MF05-2.0-SMA(M/ST)-SMA(M/ST)-M-18	2m	1.83	2.69	3.94	4.96	5.85	7.42
MF05-3.0-SMA(M/ST)-SMA(M/ST)-M-18	3m	2.68	3.94	5.78	7.28	8.59	10.86
MF05-5.0-SMA(M/ST)-SMA(M/ST)-M-18	5m	4.37	6.42	9.43	11.88	14.03	17.86
MF05-1.0-SMA(M/ST)-SMA(M/ST)-F-18	1 feet	0.38	0.55	0.80	1.01	1.18	1.34
MF05-2.0-SMA(M/ST)-SMA(M/ST)-F-18	2 feet	0.63	0.92	1.35	1.69	1.99	2.55
SMA (Male) Straight - SMA (Male) Straight (DC to 11 GHz)							
MF05-0.5-SMA(M/ST)-SMA(M/ST)-M-11	0.5m	0.56	0.82	1.19	1.49	1.75	-
MF05-1.0-SMA(M/ST)-SMA(M/ST)-M-11	1m	0.98	1.44	2.11	2.68	3.12	-
MF05-2.0-SMA(M/ST)-SMA(M/ST)-M-11	2m	1.83	2.69	3.94	4.96	5.85	-
MF05-3.0-SMA(M/ST)-SMA(M/ST)-M-11	3m	2.68	3.94	5.78	7.28	8.59	-
MF05-5.0-SMA(M/ST)-SMA(M/ST)-M-11	5m	4.37	6.42	9.43	11.88	14.03	-
MF05-1.0-SMA(M/ST)-SMA(M/ST)-F-11	1 feet	0.38	0.55	0.80	1.01	1.18	-
MF05-2.0-SMA(M/ST)-SMA(M/ST)-F-11	2 feet	0.63	0.92	1.35	1.69	1.99	-
N (Male) Straight - N (Male) Straight (DC to 11 GHz)							
MF05-0.5-N(M/ST)-N(M/ST)-M	0.5m	0.58	0.85	1.21	1.51	1.77	-
MF05-1.0-N(M/ST)-N(M/ST)-M	1m	1.01	1.46	2.13	2.70	3.14	-
MF05-2.0-N(M/ST)-N(M/ST)-M	2m	1.85	2.71	3.96	4.98	5.87	-
MF05-3.0-N(M/ST)-N(M/ST)-M	3m	2.70	3.96	5.80	7.30	8.61	-
MF05-5.0-N(M/ST)-N(M/ST)-M	5m	4.39	6.44	9.45	11.9	14.1	-
MF05-1.0-N(M/ST)-N(M/ST)-F	1 feet	0.40	0.57	0.82	1.03	1.20	-
MF05-2.0-N(M/ST)-N(M/ST)-F	2 feet	0.65	0.94	1.37	1.71	2.01	-
TNC (Male) Straight - TNC (Male) Straight (DC to 11 GHz)							
MF05-0.5-TNC(M/ST)-TNC(M/ST)-M	0.5m	0.60	0.86	1.23	1.54	1.79	-
MF05-1.0-TNC(M/ST)-TNC(M/ST)-M	1m	1.03	1.48	2.15	2.72	3.16	-
MF05-2.0-TNC(M/ST)-TNC(M/ST)-M	2m	1.87	2.73	3.98	5.01	5.89	-
MF05-3.0-TNC(M/ST)-TNC(M/ST)-M	3m	2.72	3.98	5.82	7.32	8.63	-
MF05-5.0-TNC(M/ST)-TNC(M/ST)-M	5m	4.41	6.46	9.47	11.92	14.07	-
MF05-1.0-TNC(M/ST)-TNC(M/ST)-F	1 feet	0.42	0.59	0.84	1.05	1.22	-
MF05-2.0-TNC(M/ST)-TNC(M/ST)-F	2 feet	0.67	0.96	1.39	1.73	2.03	-
SMA (Male) Straight - SMA (Male) Right Angle (DC to 11 GHz)							
MF05-0.5-SMA(M/ST)-SMA(M/RA)-M	0.5m	0.59	0.85	1.22	1.52	1.78	-
MF05-1.0-SMA(M/ST)-SMA(M/RA)-M	1m	1.01	1.47	2.14	2.71	3.15	-
MF05-2.0-SMA(M/ST)-SMA(M/RA)-M	2m	1.86	2.72	3.97	4.99	5.88	-
MF05-3.0-SMA(M/ST)-SMA(M/RA)-M	3m	2.71	3.97	5.81	7.31	8.62	-
MF05-5.0-SMA(M/ST)-SMA(M/RA)-M	5m	4.40	6.45	9.46	11.9	14.06	-
MF05-2.0-SMA(M/ST)-SMA(M/RA)-F	2 feet	0.66	0.95	1.38	1.72	2.02	-

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Specifications for MIL Use Thin Multi-Flex Pre-Connectorized RF Cable Sets

Length Connector 1 Connector 2

- Should be flexible, easily routable
- Cable should conform to MIL standards MIL-C-17 and connectors to MIL-PRF-39012

Cable Electrical Specifications

- Impedance: 50 ohms
- Frequency: DC~18 GHz
- Velocity of Propagation: 70 %
- Shielding Effectiveness: better than -90 dB
- Power Handling: > 55 Watts Average @3 GHz
> 25 Watts Average @10 GHz
> 15 Watts Average @18 GHz
- Insertion Loss: < 0.40 dB/feet @3 GHz
< 0.82 dB/feet @10 GHz
< 1.12 dB/feet @18 GHz
- VSWR: < 1.30 (DC~11 GHz, for SMA straight Connectors)
< 1.4 (11~18 GHz, for SMA straight Connectors)
< 1.35 (DC~7 GHz, for SMA right angle Connectors)

Cable Physical & Mechanical Specifications

- Construction should be double shielded
- Inner Conductor: Silver Covered Copper Wire
- Dielectric: PTFE
- Inner Shield: Silver Plated Copper Flat Ribbon Tape
- Outer Shield: Silver-Plated Copper Braid
- Jacket: Rugged Fluorinated Ethylene Propylene (FEP) suitable for harsh environment
- Overall diameter: < 2.8 mm
- Bending Radius: < 20 mm repeated, <6mm static
- Temperature Range: -55°C ~ +125°C

Connector Specifications (SMA)

- Outer Conductor: Brass/Stainless Steel, Gold plated
- Center Conductor: Brass, Gold Plated
- Insulation: PTFE
- Frequency range: DC~18 GHz for SMA straight, DC~11 GHz for SMA right angle
- Should meet test conditions of MIL-STD-202 for vibration, mechanical shock, thermal shock, corrosion, humidity, temperature cycling

Connector Specifications (N)

- Outer Conductor: Copper alloy, Ternary alloy
- Center Conductor: Brass, Gold Plated
- Insulation: PTFE
- Frequency range: DC~11 GHz for N straight
- Should meet test conditions of MIL-STD-202 for vibration, mechanical shock, thermal shock, corrosion, humidity,

Connector Specifications (TNC)

- Outer Conductor: Copper alloy, Ternary alloy
- Center Conductor: Brass, Gold Plated
- Insulation: PTFE
- Frequency range: DC~11 GHz for TNC straight
- Should meet test conditions of MIL-STD-202 for vibration, mechanical shock, thermal shock, corrosion, humidity,