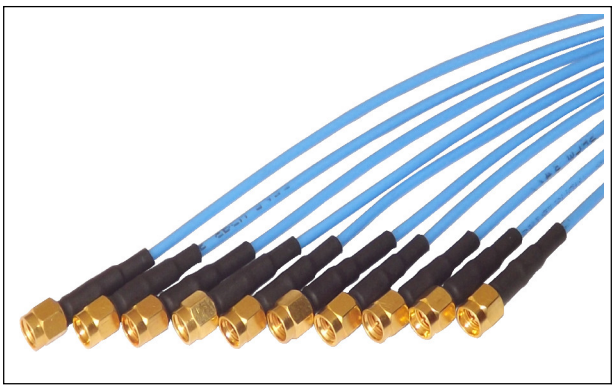
Handformable Low Loss, Pre-Connectorized Cable Sets, DC~18 GHz, SF02 Series

for hi-rel military & defense use, substitute for 0.141 semi-rigid

SONA Technologies
reliable performance, dependable service



- Similar to Sucoform_141 of Huber Suhner
- HANDFORMABLE alternative to 0.141" semi-rigid
- Similar electrical parameters as 0.141" semi-rigid

SF02-Series cable sets are *HANDFORMABLE* types which can be easily routed between 2 connection points by hand bending. SF02 have similar electrical and RF performance as 0.141" semi-rigid but WITHOUT the routing problems of semi-rigid types. Designed for use upto 18 GHz with rugged cable-connector joints.

HANDFORMABLE ADVANTAGES

SF02 cable sets are handformable.
They can be bent easily with hand and retain shape. This provides a major advantage over semi-rigid types which are very difficult to route. SF02 have similar RF and electrical properties (loss, velocity) as 0.141" semi-rigid. Mechanically also SF02 series are similar to 0.141" semi-rigid

CONFORMANT MIL STANDARDS

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

APPLICATIONS

- Military and defense systems interconnect
- Any application where an easily routable cable with stable electrical characteristics is needed

Physical & Mechanical Specifications

Dimensions	inches	mm
Center Conductor	0.037	0.94
Jacket (FEP)	0.18	4.50
Bend Radius (static)	0.39	10
Bend Radius (repeated)	1.57	40
Weight	0.031 lb/ft (0.047 Kg/m)	
Temperature Range	-40°C ~ +80°C	
Signal Delay	4.7ns/meter	
Working Voltage	> 1500 Vrms	

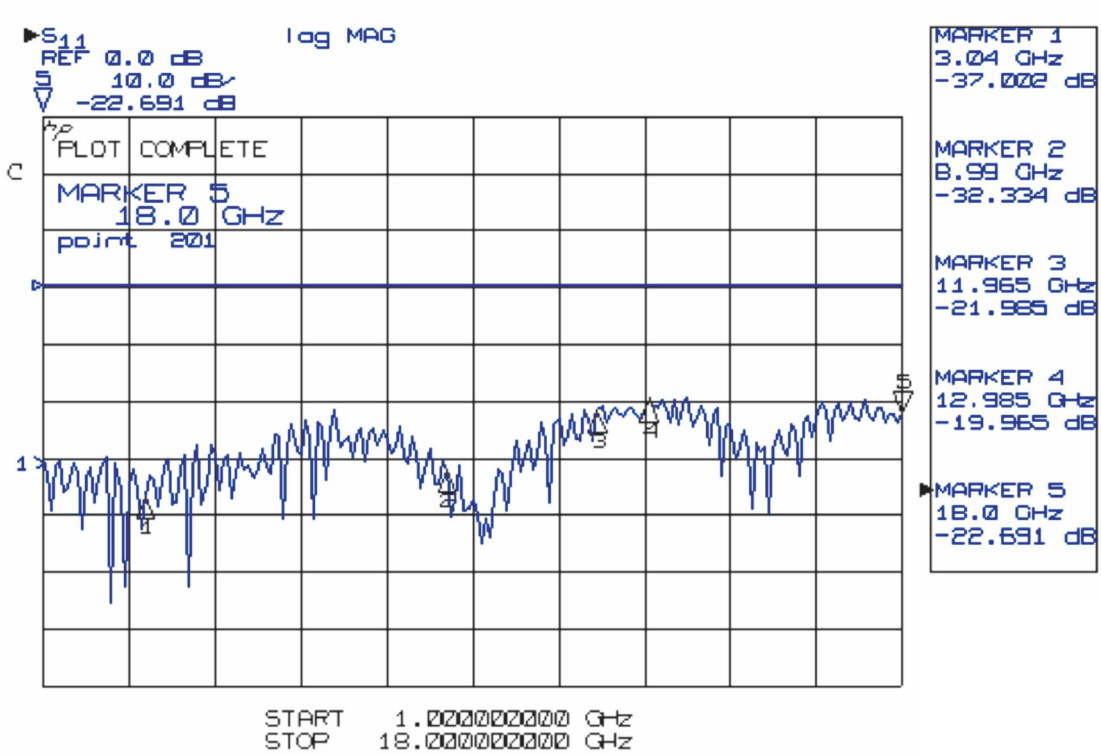
Electrical Specifications

Impedance	50 ohms
Velocity of Propagation	70 %
Shielding Effectiveness	better than -100 dB
Capacitance	29.9 pF/ft
Operating Frequency	DC - 18 GHz

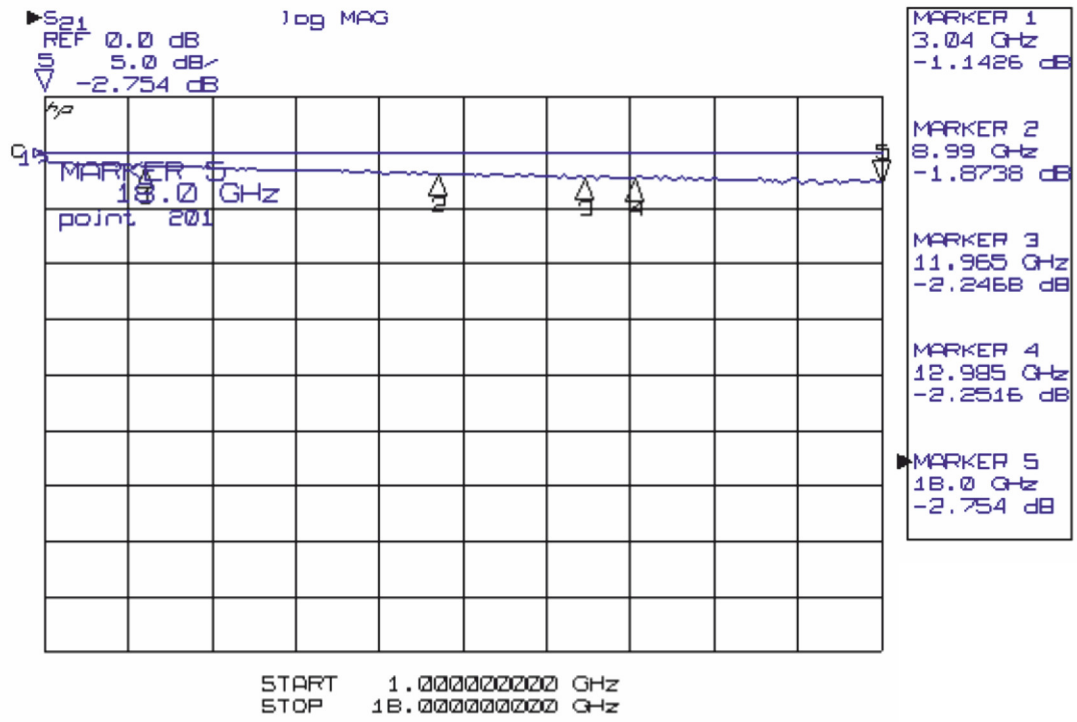
Attenuation & Power Handling Data

Frequency	Insertion Loss		Power Watts
	dB/ft	dB/m	
500 MHz	0.08	0.28	490
1 GHz	0.13	0.43	350
2 GHz	0.17	0.56	210
3 GHz	0.22	0.74	190
5 GHz	0.29	0.98	160
10 GHz	0.47	1.55	100
12 GHz	0.52	1.73	90
18 GHz	0.70	2.31	70

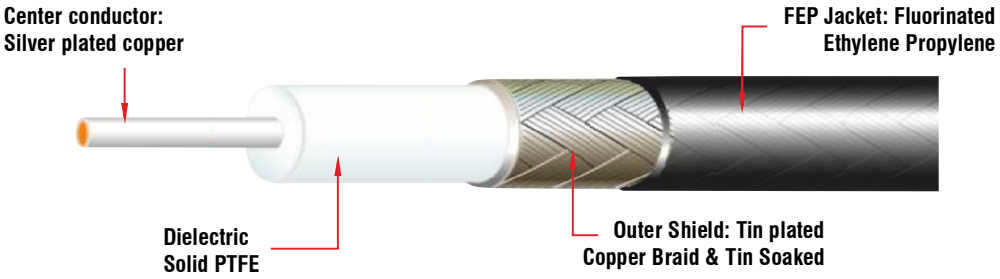
Return Loss of 1 meter, SF02 Cable Set with SMA(M) on both sides



Insertion Loss of 1 meter, SF02 Cable Set with SMA(M) on both sides



SF02 Cable Construction



Connectors Specifications

Specifications	SMA Connectors	N Connectors	TNC Connectors
Outer Conductor	Brass, Gold plated	Copper alloy	Copper Alloy
Center Conductor	Brass, Gold Plated	Brass, Gold Plated	Brass, Gold Plated
Insulation	PTFE	PTFE	PTFE
Gasket	Silicon Rubber	Silicon Rubber	Silicon Rubber
Frequency range	DC~18 GHz	DC~11 GHz	DC~11
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

	(Length)		(Connector 1)		(Connector 2)	
SF02 -	□ □	-	□ (□ / □)	-	□ (□ / □) -	□
	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 = SF02-1.0-SMA(M/ST)-SMA(M/ST)-M

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)							
SF02-0.5-SMA(M/ST)-SMA(M/ST)-M	0.5m	0.29	0.42	0.66	0.85	1.02	1.30
SF02-1.0-SMA(M/ST)-SMA(M/ST)-M	1m	0.75	0.95	1.20	1.75	1.89	2.70
SF02-2.0-SMA(M/ST)-SMA(M/ST)-M	2m	1.25	1.70	2.27	3.20	3.49	4.98
SF02-3.0-SMA(M/ST)-SMA(M/ST)-M	3m	1.75	2.45	3.34	4.75	5.15	7.30
SF02-5.0-SMA(M/ST)-SMA(M/ST)-M	5m	2.75	3.95	5.50	7.72	8.48	11.9
SF02-1.0-SMA(M/ST)-SMA(M/ST)-F	1 feet	0.19	0.30	0.44	0.58	0.68	0.88
SF02-2.0-SMA(M/ST)-SMA(M/ST)-F	2 feet	0.34	0.51	0.77	0.98	1.19	1.54
N (Male) Straight - N (Male) Straight (DC to 11 GHz)							
SF02-0.5-N(M/ST)-N(M/ST)-M	0.5m	0.30	0.45	0.67	0.86	1.03	-
SF02-1.0-N(M/ST)-N(M/ST)-M	1m	0.77	0.97	1.21	1.77	1.85	-
SF02-2.0-N(M/ST)-N(M/ST)-M	2m	1.27	1.72	2.28	3.25	3.51	-
SF02-3.0-N(M/ST)-N(M/ST)-M	3m	1.77	2.47	3.36	4.78	5.17	-
SF02-5.0-N(M/ST)-N(M/ST)-M	5m	2.78	3.98	5.51	7.76	8.50	-
SF02-1.0-N(M/ST)-N(M/ST)-F	1 feet	0.20	0.31	0.46	0.59	0.70	-
SF02-2.0-N(M/ST)-N(M/ST)-F	2 feet	0.35	0.52	0.79	1.01	1.21	-
TNC (Male) Straight - TNC (Male) Straight (DC to 11 GHz)							
SF02-0.5-TNC(M/ST)-TNC(M/ST)-M	0.5m	0.32	0.47	0.70	0.88	1.05	-
SF02-1.0-TNC(M/ST)-TNC(M/ST)-M	1m	0.79	0.99	1.24	1.79	1.88	-
SF02-2.0-TNC(M/ST)-TNC(M/ST)-M	2m	1.29	1.15	2.30	3.28	3.53	-
SF02-3.0-TNC(M/ST)-TNC(M/ST)-M	3m	1.79	2.49	3.39	4.80	5.20	-
SF02-5.0-TNC(M/ST)-TNC(M/ST)-M	5m	2.80	4.01	5.53	7.78	8.53	-
SF02-1.0-TNC(M/ST)-TNC(M/ST)-F	1 feet	0.22	0.33	0.48	0.61	0.72	-
SF02-2.0-TNC(M/ST)-TNC(M/ST)-F	2 feet	0.37	0.54	0.81	1.03	1.23	-
SMA (Male) Straight - SMA (Male) Right Angle (DC to 9 GHz)							
SF02-0.5-SMA(M/ST)-SMA(M/RA)-M	0.5m	0.31	0.46	0.67	0.87	-	-
SF02-1.0-SMA(M/ST)-SMA(M/RA)-M	1m	0.81	0.99	1.23	1.81	-	-
SF02-2.0-SMA(M/ST)-SMA(M/RA)-M	2m	1.31	1.17	2.28	3.30	-	-
SF02-3.0-SMA(M/ST)-SMA(M/RA)-M	3m	1.83	2.51	3.36	4.82	-	-
SF02-5.0-SMA(M/ST)-SMA(M/RA)-M	5m	2.82	4.03	5.53	7.80	-	-
SF02-2.0-SMA(M/ST)-SMA(M/RA)-F	2 feet	0.36	0.52	0.80	1.02	-	-
SMA (Male) Straight - N (Male) Straight (DC to 11 GHz)							
SF02-0.5-SMA(M/ST)-N(M/ST)-M	0.5m	0.29	0.44	0.66	0.85	1.02	-
SF02-1.0-SMA(M/ST)-N(M/ST)-M	1m	0.81	1.01	1.20	1.81	1.90	-
SF02-2.0-SMA(M/ST)-N(M/ST)-M	2m	1.32	1.18	2.27	3.27	3.50	-
SF02-3.0-SMA(M/ST)-N(M/ST)-M	3m	1.84	2.53	3.35	4.82	5.16	-
SF02-5.0-SMA(M/ST)-N(M/ST)-M	5m	2.83	4.05	5.58	7.82	8.55	-
SF02-1.0-SMA(M/ST)-N(M/ST)-F	2 feet	0.41	0.59	0.86	1.05	1.27	-

MIL Type Handformable RF Cable Sets, DC~18 GHz

Length Connector 1 Connector 2 Outer Jacket

- RF cable sets should be handformable, easy to bend
- Cable should retain its shape without springback
- Cable should be MIL-C-17 qualified
- Connectors should meet requirements of MIL-PRF-39012

Electrical Specifications

- Impedance: 50 ohms
- Frequency: DC ~ 18
- Velocity of Propagation: 69.5% approx.
- Shielding Effectiveness: better than 100 dB
- Insertion Loss: < 0.25 dB/feet @3 GHz
  < 0.50 dB/feet @10 GHz
  < 0.72 dB/feet @18 GHz
- Average Power: > 180 watts @3 GHz
  > 90 watts @10 GHz
  > 40 watts @18 GHz
- VSWR: < 1.30 (DC~11 GHz for SMA straight connectors)
  < 1.4 (DC~18 GHz for SMA straight connectors)
  < 1.4 (DC~7 GHz for SMA right angle connectors**)**

Physical & Mechanical Specifications

- Inner Conductor: Solid Silver Plated Copper
- Dielectric: PTFE
- Shield: Tin Plated Copper Braid, Tin Soaked
- FEP Jacket: <4.5 mm
- Bend Radius: < 40 mm (repeated bending)
  < 10 mm (static bending)
- Temperature Range: -40° ~ 80°C

Connector Specifications (SMA)

- Outer Conductor: Brass, Gold plated
- Center Conductor: Brass, Gold Plated
- Insulation: PTFE
- Frequency Range: DC ~ 18 GHz (for SMA straight connectors)
- Mating/Unmating : > 500 operations
- 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
- 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, temperature cycling

Connector Specifications (TNC)

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