smiths interconnect
bringing technology to life

ASR/ASR-F Series

VNA/PNA Coaxial Test Cable Assemblies

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ASR/ASR-F Series, specifically designed for the Test & Measurement market. Ideal for making precise RF measurements where phase, low insertion loss, and repeatability are needed.

Smiths Interconnect's ASR/ASR-F product portfolio provides customers with a VNA/PNA grade solution for test applications requiring signal stability and repeatability. The combination of consistent performance and high reliability products translates to lower cost of ownership while improving testing performance. The benefits enable customers to be more competitive with support of an established technology partner.

The ASR/ASR-F cables are designed specifically to minimize phase change and demonstrate precision repeatability when subjected to a wide range of testing parameters. They also have a very stable nature around room temperature. As such, Test & Measurement applications are ideal for this product line.

The ASR is a Semi-Rigid assembly with armor for precision phase measurements. The ASR-F, while keeping most of this precision, allows for more dynamic movement during the measurement process due to its flexible cable. Repeatability is the main goal for both cables. The attenuation is reduced to a minimum with low loss PTFE dielectrics found in both cables. Cables can be manufactured with NMD connectors in order to attach directly to analyzer ports. Over the years, these characteristics have earned ASR/ASR-F cables an excellent reputation for use in Test & Measurement environments. Test reports are available on request.

Features and Benefits

- Up to 50 GHz
- 40% lower loss than Solid PTFE dielectrics
- Measurement Repeatability and Stability
- Phased Matched Pairs and Sets Available (standard tolerance is +/- one degree per GHz or +/-2.8 picoseconds)

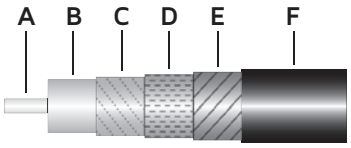
Applications

- Test & Measurement

Technical Characteristics

ASR/ASR-F Series		ASR	ASR-F
Electrical			
Frequency, Max (GHz)		50	50
Impedance, nominal (Ω)		50	50
Velocity of Propagation (%)		76.5	74
Shielding Effectiveness, 18 GHz (dB/ft)		>100	>90
Capacitance (pF/ft)		26.9	26.7
Delay (ns/ft), (ns/meter)		1.33 (4.37)	1.37 (4.40)
Attenuation k1 (db/100ft) @ 25°C		0.54	0.4332
Attenuation k2 (db/100ft) @ 25°C		0.0003	0.000531
Attenuation (Typical) at any Frequency = k1 x SqRt (FMHz) + k2 x (FMHz)			
Mechanical & Environmental			
Temperature Range (˚C)		-55 to +100	-65 to +200
Minimum Bend Radius (inch), (mm)		1.5, 38.10	1.5, 38.10
Construction			
Inner Conductor	A	Solid SPC	Solid SPC
Dielectric	B	ePTFE	ePTFE
First Outer Shield	C	Tin Plated Copper	SPC Flat
Second Outer Shield	D	Polyolefin Protection	Metalized Foil
Third Outer Shield	E	-	SPC Round
Jacket (inch O.D.)	F	(.290) Stainless Steel Armor	**FEP

**ASR-F has Monocoil Armor, extruded Silicone and Abrasion jacket over FEP. Typical diameter is .340 inches



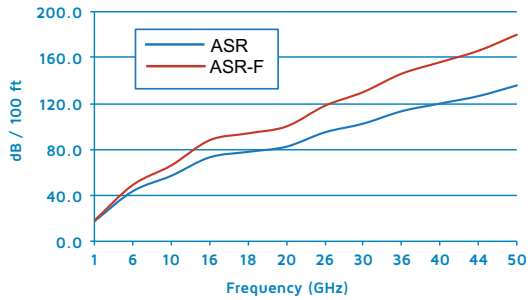
ASR/ASR-F**

Attenuation (dB/100ft)

GHz	ASR	ASR-F
1	17.4	18.0
6	43.6	49.0
10	57.0	66.0
16	73.1	88.0
18	77.9	94.0
20	82.4	100.0
26	94.9	118.0
30	102.5	130.0
36	113.3	146.0
40	120.0	156.0
44	126.5	166.0
50	135.8	180.0

Typical Cable Loss at +25° C & Sea Level

Attenuation vs Frequency

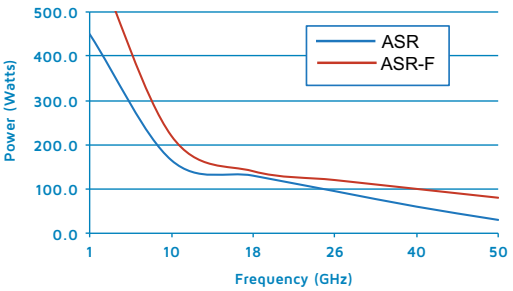


Average Power Rating (Watts)

GHz	ASR	ASR-F
1	450.0	650.0
10	165.0	220.0
18	130.0	140.0
26	95.0	120.0
40	60.0	100.0
50	30.0	80.0

Cable Power handling at +25° C & Sea Level

Average Power Rating



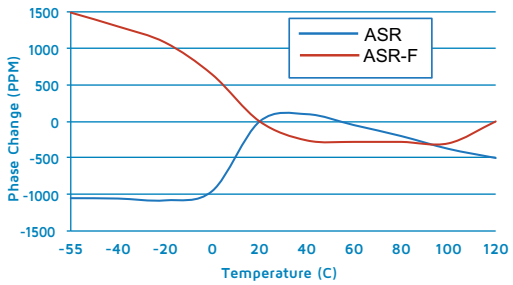
Technical Characteristics

Phase vs. Temperature (PPM)

Temperature (°C)	ASR	ASR-F
-55.0	-1050.0	1490.0
-40.0	-1055.0	1300.0
-20.0	-1080.0	1080.0
0.0	-950.0	640.0
20.0	0.0	0.0
40.0	100.0	-260.0
60.0	-50.0	-280.0
80.0	-200.0	-280.0
100.0	-375.0	-300.0
120.0	-500.0	0.0

Typical Values

Phase vs. Temperature (°C)

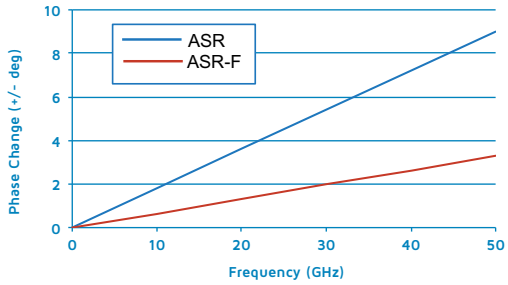


Phase vs. Flexure

Frequency (GHz)	ASR (+/-deg)	ASR-F (+/-deg)
0	0	0
10	1.8	0.6
20	3.6	1.3
30	5.4	2
40	7.2	2.6
50	9	3.3

Typical Values +25° C

Phase vs. Flexure



Cable Code	Connector Code	Series	Gender	Type	C-Nut Style[1]	Body Material[2]	Body Finish[3]	Loss per GHz	Frequency Max GHz
ASR-F	SMS	SMA	Male	Straight	HK	SS	P	0.01	18
ASR, ASR-F	NMS	Type-N	Male	Straight	HK	SS	P	0.01	18
ASR, ASR-F	NFS	Type-N	Female	Straight	N/A	SS	P	0.015	18
ASR, ASR-F	S3KMS	3.5mm	Male	Straight	HK	SS	P	0.01	35
ASR, ASR-F	S3KFS	3.5mm	Female	Straight	N/A	SS	P	0.015	35
ASR, ASR-F	NMD-S3KFS	3.5mm	Female	Straight	HK	SS	P	0.015	35
ASR, ASR-F	KMS	2.92mm	Male	Straight	HK	SS	P	0.01	40
ASR, ASR-F	KFS	2.92mm	Female	Straight	N/A	SS	P	0.015	40
ASR, ASR-F	NMD-KFS	2.92mm	Female	Straight	HK	SS	P	0.015	50
ASR, ASR-F	MMS	2.4mm	Male	Straight	HK	SS	P	0.01	50
ASR, ASR-F	MFS	2.4mm	Female	Straight	N/A	SS	P	0.015	50
ASR, ASR-F	NMD-MFS	2.4mm	Female	Straight	HK	SS	P	0.015	50

[1] C-Nut Style: H=Hex, K-Knurled, HK=Hex Nut & Knurled
[2] Body Materials: B=Brass, SS=Stainless, Be=Beryllium Copper
[3] Body Finish: N=Nickel, S=Silver, G=Gold, P=Passivated
Sex of connector is determined by center conductor

Cable Code	Option Code	Option Description	Option Details
ASR, ASR-F	+/-2.8 ps[4]	Phase Match	Standard Tolerance of +/-2.8ps

[4]for phase matched assemblies (+/-2.8ps) is required to be added to the end of standard part number
example: NMS-200ASR-120.0-NMS +/-2.8ps

Custom Options:
The above connectors and options represent the most common types used. Smiths Interconnect offers a wide range of cables, connectors and options. If you do not see an option you require please consult the sales department.

How To Order

1	2	3	4	5
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1 Connector #1

SMS	SMA Male Straight	KMS	2.92mm Male Straight
NMS	Type-N Male Straight	KFS	2.92mm Female Straight
NFS	Type-N Female Straight	NMD-KFS	2.92mm Female Straight
S3KMS	3.5mm Male Straight	MMS	2.4mm Male Straight
S3KFS	3.5mm Female Straight	MFS	2.4mm Female Straight
NMD-S3KFS	3.5mm Female Straight	NMD-MFS	2.4mm Female Straight

2 Cable *(fixed)*

ASR	Lab-Flex ASR	ASR-F	Lab-Flex ASR-F

3 Length *(inches)*

36.0	Example: 36 in.

4 Connector #2

SMS	SMA Male Straight	S3KMS	3.5 mm Male Straight	MMS	2.4mm Male Straight
NMS	Type-N Male Straight	KMS	2.92 Male Straight		

5 Assembly Option

+/-2.8 ps	+/-2.8ps Phase Matched Electrical Length

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