smiths interconnect
bringing technology to life

Lab-Flex® T Series

Phase Tested Coaxial Cable Assemblies

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Specifically designed for Radar and Test applications requiring precise phase stability over temperature.

Smiths Interconnect's Lab-Flex® T Series of coaxial cable assemblies provides consistent electrical performance over higher frequencies and larger temperature extremes.

Customers benefit from improved system performance, particularly for applications requiring critical signal timing.

The Lab-Flex T® Series is a unique design specifically tailored to minimize phase change when subjected to a wide range of temperatures. It also has a very stable nature around room temperature. As such, Radar, Test & Measurement applications are ideal for this product line.

All products have gone through extensive qualification testing in order to validate today's rigorous application requirements per customer and industry. The T series assemblies are made with a special Foam Fluoropolymer insulation to minimize phase deviation over a wide temperature range while all but eliminating the "Knee" at room temperature. The attenuation characteristics are similar to low loss PTFE due to the foam insulator design. The 065T, 100T, and 160T products represent the most common sizes needed for today's applications. Test reports are available on request.

Features and Benefits

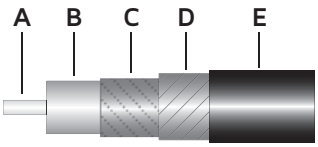
- Up to 50 GHz
- Phase vs. Temp testing available on request including "tracking" cable pairs
- Temperature stable foam dielectric for minimum phase change
- Phased Matched Pairs and Sets available (standard tolerance is +/- one degree per GHz or +/-2.8 picoseconds)

Applications

- Radar, Tx, Rx, links of same electrical length over temperature
- Commercial and Military markets
- Test & Measurement
- Space, GEO/MEO/LEO and Small Satellites

Technical Characteristics

Lab-Flex® T Series		065T	100T	160T
Electrical				
Frequency, Max (GHz)		50	50	40
Impedance, nominal (Ω)		50	50	50
Velocity of Propagation (%)		79	80	80
Shielding Effectiveness, 18 GHz (dB/ft)		>100	>100	>100
Capacitance (pF/ft)		26	25.4	23.3
Delay (ns/ft), (ns/meter)		1.29, 4.24	1.27, 4.17	1.27, 4.17
Attenuation k1 (db/100ft) @ 23 deg C		0.934	0.534	0.341
Attenuation k2 (db/100ft) @ 23 deg C		0.000602	0.000803	0.000891
Attenuation (Typical) at any Frequency = k1 x SqRt (FMHz) + k2 x (FMHz)				
Mechanical & Environmental				
Weight (lbs/100ft), (Kg/100m)		0.412, 0.614	1.10, 1.64	2.47, 3.68
Temperature Range (˚C)		-65 to +165	-65 to +165	-65 to +165
Minimum Bend Radius (inch), (mm)		0.250, 6.35	0.350, 8.90	0.500, 12.70
Construction				
Inner Conductor	A	Solid SPC	Solid SPC	Solid SPC
Dielectric	B	Foam Fluoropolymer	Foam Fluoropolymer	Foam Fluoropolymer
First Outer Shield	C	SPC Spiral	SPC Spiral	SPC Spiral
Second Outer Shield	D	SPC Round	SPC Round	SPC Round
Jacket (inch O.D.)	E	0.065, FEP	0.100, FEP	0.160, FEP



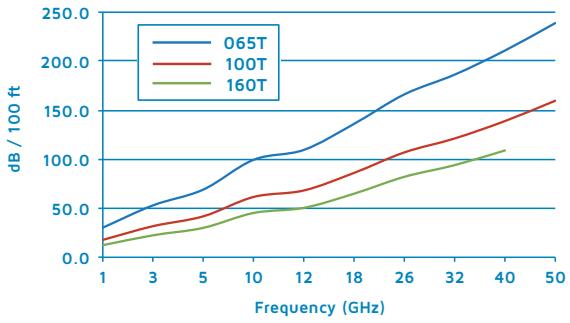
Lab-Flex® T

Attenuation (dB/100ft)

GHz	065T	100T	160T
1	30.1	17.7	12.3
3	52.9	31.7	22.4
5	69.0	41.8	30.0
10	99.4	61.5	45.2
12	109.5	68.1	50.4
18	136.1	86.1	64.9
26	166.2	107.0	82.1
32	186.3	121.2	94.0
40	210.9	139.0	109.0
50	238.9	159.7	

Typical Cable Loss at +25° C & Sea Level

Attenuation vs Frequency

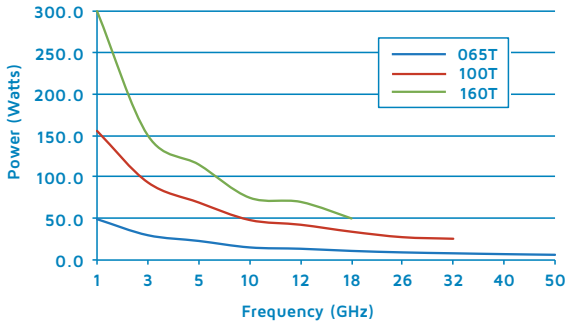


Average Power Rating (Watts)

GHz	065T	100T	160T
1	49.3	155.7	300
3	29.9	93.5	150
5	23.0	69.3	115
10	15.2	48.2	75
12	13.6	42.5	70
18	11.0	34.1	50
26	9.2	27.5	
32	8.1	25.6	
40	7.1	21.9	
50	6.3	19.3	

Power Rating at +25° C & Sea Level

Average Power Rating



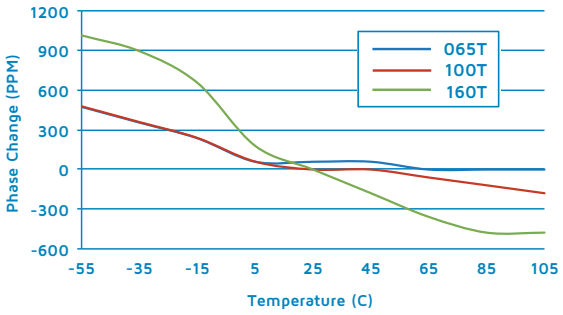
Technical Characteristics

Phase vs. Temperature (PPM)

Temperature (°C)	065T	100T	160T
-55	474	478	1014
-35	355	359	895
-15	237	239	656
5	59	60	179
25	59	0	0
45	59	0	-179
65	0	-60	-358
85	0	-119	-477
105	0	-179	-477

Typical Values

Phase vs. Temperature (°C)

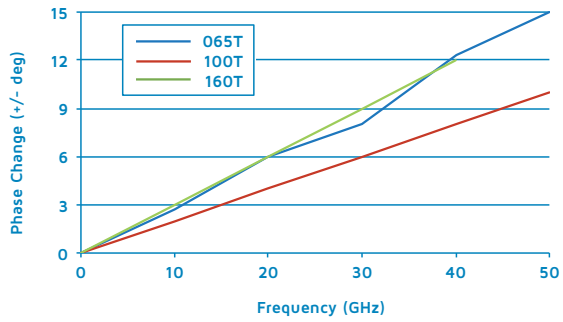


Phase vs. Flexure

Frequency (GHz)	065T (+/-deg)	100T (+/-deg)	160T (+/-deg)
0	0	0	0
10	2.7	2	3
20	6	4	6
30	8	6	9
40	12.3	8	12
50	15	10	

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
065T, 100T, 160T	SMS	SMA	Male	Straight	H	SS	P	0.01	18
065T, 100T, 160T	KMS	2.92mm	Male	Straight	H	SS	P	0.01	40
065T, 100T	MMS	2.4mm	Male	Straight	H	SS	P	0.01	50
065T, 100T	SMPFS	SMP	Female	Straight	N/A	Be	G	0.02	40
065T, 100T	SMPFR	SMP	Female	Right Angle	N/A	Be	G	0.02	40
065T, 100T	SMPMFS	SMPM	Female	Straight	N/A	Be	G	0.02	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
065T, 100T, 160T	+/-2.8 ps[4]	Phase Match	Standard Tolerance of +/-2.8ps
065T, 100T, 160T	RoHS[5]	RoHS Compliant	Per EU Directive 2002/95/EC

[4]for phase matched assemblies (+/-2.8ps) is required to be added to the end of standard part number
example: SMS-160T-24.0-SMS +/-2.8ps

[5]for RoHS assemblies (RoHS) is required to be added to the end of standard part number
example: SMS-160T-24.0-SMS-RoHS

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

1 Connector #1

SMS	SMA Male Straight	MMS	2.4mm Male Straight	SMPFR	SMP Female Right Angle
KMS	2.92mm Male Straight	SMPFS	SMP Female Straight	SMPMFS	SMPM Female Straight

2 Cable *(fixed)*

065T	Lab-Flex® 065T	100T	Lab-Flex® 100T	160T	Lab-Flex® 160T

3 Length *(inches)*

36.0	Example: 36 in.

4 Connector #2

SMS	SMA Male Straight	KMS	2.9mm Male Straight	MMS	2.4mm Male Straight

5 Assembly Option

+/-2.8ps	+/-2.8ps Phase Matched Electrical Length	RoHS	RoHS Compliant Per EU Directive 2002/95/EC

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