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

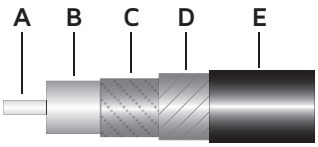
- Up to 50 GHz
- Phase vs. Temp testing available on request including "tracking" cable pairs
- Temperature stable foam dielectric for minimum phase change
- Phased Matched Pairs and Sets available (standard tolerance is +/- one degree per GHz or +/-2.8 picoseconds)

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



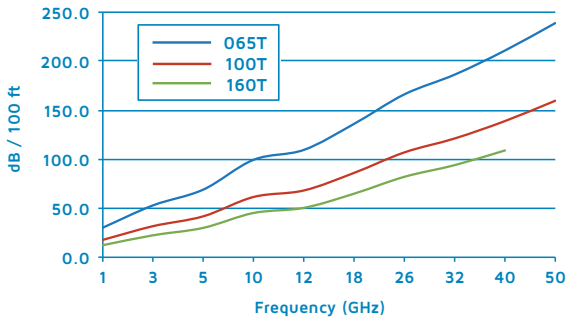
Lab-Flex® T

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

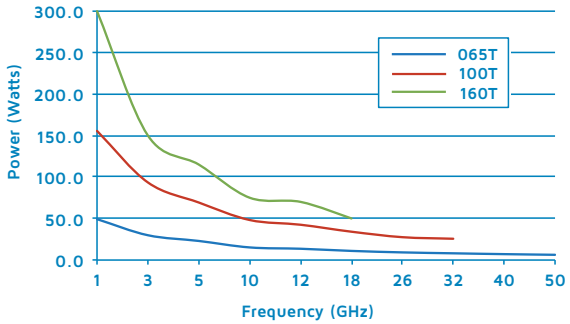


Average Power Rating (Watts)

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



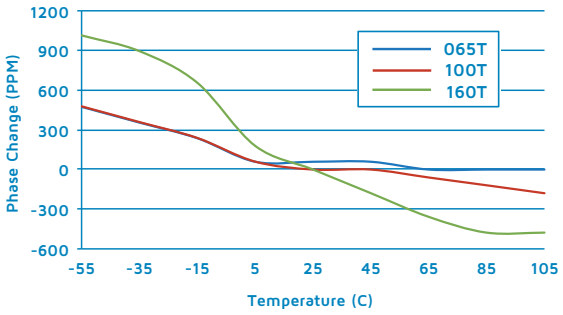
Technical Characteristics

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)

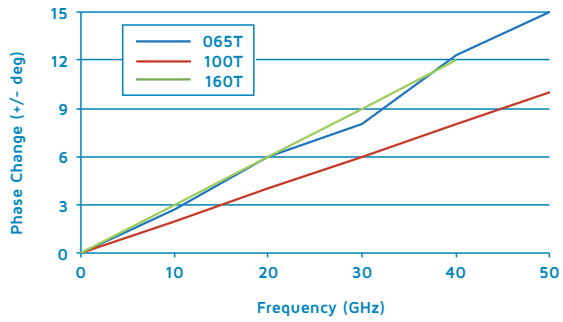


Phase vs. Flexure

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

_ _ _ _ _ _ -	_ _ _ T -	_ _ . _ -	_ _ _ -	_ _ _ _
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)*

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

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

Global
Support

UK Headquarters

- London, UK
  +44 20 7004 1600
  info.uk@smithsinterconnect.com

US Headquarters

- Stuart, FL
  +1 772 286 9300
  info.us@smithsinterconnect.com

Americas

- Costa Mesa, CA
  +1 714 371 1100
  info.us@smithsinterconnect.com
- Milpitas, CA
  +1 408 957 9607 x-1125
  info.us@smithsinterconnect.com
- Stuart, FL
  +1 772 286 9300
  info.us@smithsinterconnect.com
- Hudson, MA
  +1 978 568 0451
  info.us@smithsinterconnect.com
- Northampton, MA
  +1 413 582 9620
  info.northampton@smithsinterconnectinc.com
- Tampa, FL
  + 1 813 901 7200
  info.tampa@smithsinterconnectinc.com
- Kansas City, KS
  +1 913 342 5544
  info.us@smithsinterconnect.com
- Salisbury, MD
  +1 800 780 2169
  info.us@smithsinterconnect.com
- Thousand Oaks, CA
  +1 805 267 0100
  info.thousandoaks@smithsinterconnectinc.com

Europe

- Deggendorf, Germany
  +49 991 250 120
  info.de@smithsinterconnect.com
- Genova, Italy
  +39 0 10 60361
  info.it@smithsinterconnect.com
- Dundee, UK
  +44 1382 427 200
  info.dundee@smithsinterconnect.com
- Rouen, France
  +33 2 32 96 91 76
  info.fr@smithsinterconnect.com
- Elstree, UK
  +44 20 8236 2400
  info.uk@smithsinterconnect.com

Asia

- Shanghai, China
  +86 21 3318 4650
  info.asia@smithsinterconnect.com
- Suzhou, China
  +86 512 6273 1188
  info.asia@smithsinterconnect.com
- Singapore
  +65 6846 1655
  info.asia@smithsinterconnect.com

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