

## THERMALVAC

### Thermal VAC Test Cables to 50 GHz

#### Thermal-Vacuum Cables For Altitude & Thermal Testing



- Low Outgassing
- Phase Stable
- Vented Connectors
- Ideal for High Bay Testing
- Rugged Construction

MegaPhase Thermal VAC microwave test cables are manufactured specifically for customers testing space and airborne systems and components. This phase stable cable is ideal for high bay testing of RF payloads, and applications in the severe environment of thermal vacuum chambers, altitude chambers, thermal shock, or any other application requiring thermal stability.

#### Electrical Data

**Maximum Frequency:**  
50 GHz

**Impedance:**  
50  $\Omega$  nominal

**Propagation Velocity:**  
TV32 - 69% nominal  
TV50 - 80% nominal

**Time Delay:**  
TV32 - 1.47 ns/ft (4.82 ns/m)  
TV50 - 1.27 ns/ft (4.167 ns/m)

**Shielding Effectiveness:**  
-110 dB minimum (cable only)

**Dielectric Withstanding Voltage:**  
TV32 - 10 kV at 60 Hz  
TV50 - 1.2 kV at 60 Hz

**Capacitance:**  
TV32 - 29.0 pF/ft (95.1 pF/m)  
TV50 - 25.4 pF/ft (83.3 pF/m)

#### Mechanical Data

**Finished Outer Diameter:**  
0.285 in (0.724 cm)

**Static Bend Radius:**  
1.5 in (3.81 cm)

**Weight with Standard Jacket/Armor:**  
0.05 lbs/ft (0.067 kg/m)

**Crush Resistance:**  
250 lbs/linear in (44.6 kg/linear cm)

**Operating Temp. Range:**  
-67 to 392°F (-55 to 200°C)  
TV32 includes TV26, TV18, TV8, TV4  
TV50 includes TV40, TV34

#### Cable Construction

Inner Conductor: Solid Ag-plated Cu

Dielectric:

TV32 PTFE

TV50 Foamed FEP

Outer Conductor: TV32 - GrooveTube® Cu

TV50 - Ag plated Cu Foil/Braid

Standard Finish: Viton, Over Metallic Braid

#### Available Connectors

1.85mm, 2.4mm, 2.92mm, 3.5mm,

7mm, 7-16 DIN, BNC, SMA, TNC,

Type N, ZMA, ZN

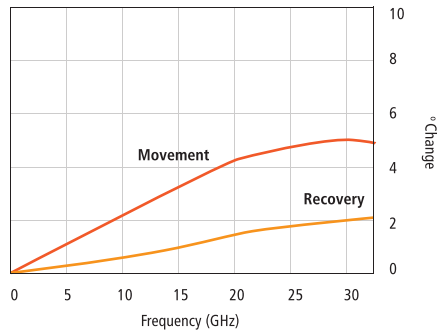
(maximum frequency dependent on cable; other connectors available)

#### Maximum Assembly Length

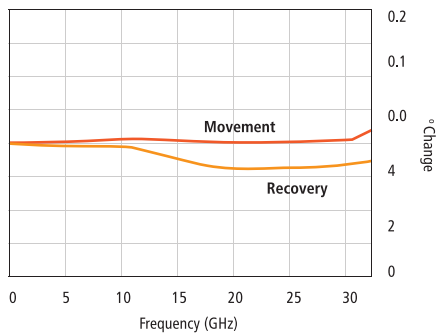
(Consult Factory)

## Thermal VAC Test Cables to 50 GHz (continued)

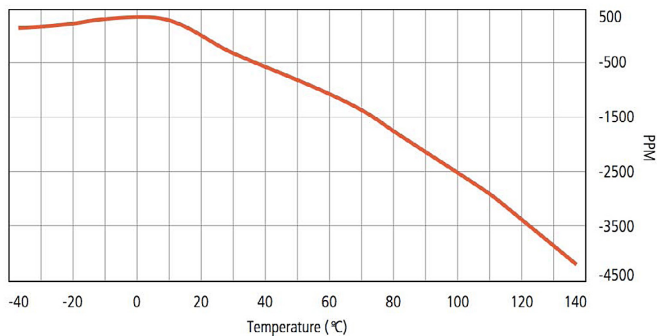
### TV32 Phase Change vs. Flexure



### TV32 Insertion Loss vs. Flexure



### TV32 Phase Change vs Temperature



### Specifications

Frequency		TV32 Series*		TV50**		Conn Loss dB	VSWR
		Attenuation		Attenuation			
Band	GHz	dB/ft	dB/m	dB/ft	dB/m		
UHF	0.3	0.062	0.203	0.104	0.341	0.006	1.10
	0.5	0.082	0.268	0.135	0.443	0.009	
	0.8	0.106	0.348	0.172	0.566	0.012	
L	1.0	0.120	0.394	0.194	0.635	0.014	
S	2.0	0.178	0.585	0.279	0.915	0.024	1.15
	2.4	0.199	0.652	0.307	1.009	0.027	
	3.0	0.227	0.744	0.347	1.137	0.032	
C	4.0	0.270	0.885	0.405	1.328	0.040	
	6.0	0.347	1.138	0.505	1.658	0.055	
X	8.0	0.417	1.367	0.593	1.945	0.070	1.20
	10.0	0.482	1.580	0.672	2.205	0.084	1.25
	12.4	0.555	1.822	0.759	2.491	0.101	1.30
Ku	15.0	0.631	2.070	0.847	2.779	0.118	
	18.0	0.715	2.345	0.941	3.089	0.139	
K	20.0	0.769	2.522	1.001	3.285	0.152	1.35
	22.0	0.821	2.695	1.059	3.475	0.165	
	24.0	0.873	2.865	1.115	3.659	0.178	
	26.5	0.937	3.073	1.183	3.881	0.194	
Ka	28.0	0.974	3.196	1.223	4.011	0.204	1.40
	30.0	1.024	3.358	1.274	4.181	0.217	
	32.0	1.072	3.518	1.325	4.347	0.230	
	34.0			1.375	4.510	0.243	
	36.0			1.423	4.669	0.256	
V	40.0			1.518	4.980	0.281	1.50
	45.0			1.633	5.356	0.313	
	50.0			1.743	5.719	0.344	

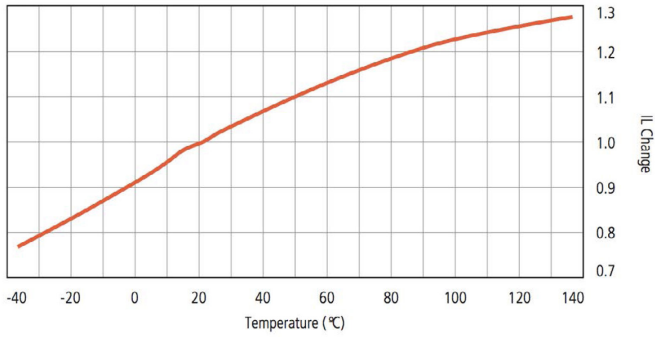
\*TV32 includes TV26, TV18, TV8, TV4

\*\*TV50 includes TV40, TV34

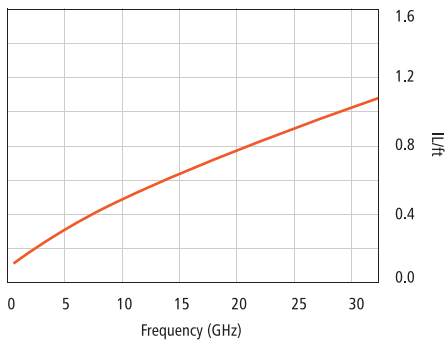


## Thermal VAC Test Cables to 50 GHz (continued)

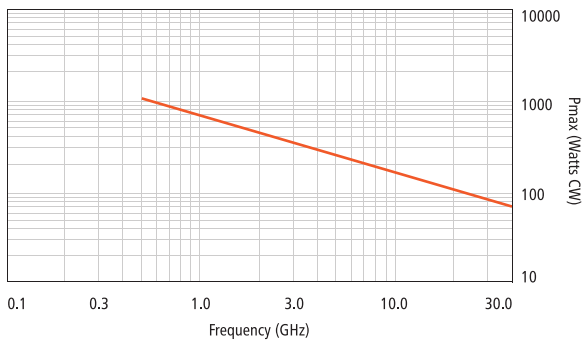
### TV32 Insertion Loss vs. Temperature



### TV32 Insertion Loss



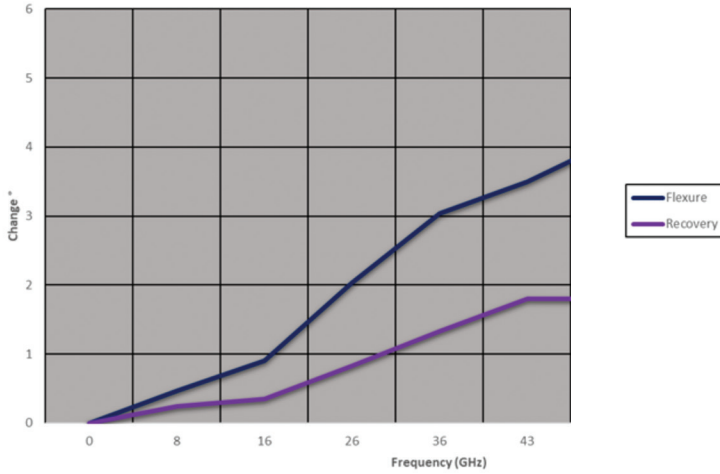
### TV32 Cable CW Power Handling





## Thermal VAC Test Cables to 50 GHz (continued)

### TV50 Phase vs. Flexures



### TV50 Phase vs. Temperature

