

Bulk Metal[®] Foil Technology Miniature, Ultimate Tracking Surface Mount Divider



Product may not be to scale

This extremely small surface mount voltage divider made of Bulk Metal[®] Foil technology offers the ultimate in tracking and ultimate in ratio stability. Additionally Bulk Metal[®] Foil has an extremely low absolute temperature coefficient of resistance so the temperature differential caused by power unbalances associated with large ratios will not adversely affect the tracking specification. The absence of noise generation by the resistor make it the ultimate component.

FEATURES

- Ratio Tracking: to $\pm 0.1\text{ppm}/^\circ\text{C}$
- Ratio Match Tolerance: to $\pm 0.005\%$
- Absolute Tolerance: to $\pm 0.01\%$
- Nominal TCR: $+ 0.6\text{ppm}/^\circ\text{C}$ (0 to 25°C)
 $- 0.6\text{ppm}/^\circ\text{C}$ (25 to 60°C)
- Resistance Value Ratios 1:1 to 1:20
- Non Inductive Planar Design
- Current Noise: $< - 40\text{dB}$
- Load Life (Ratio Stability): $< \pm 0.01\%$

TABLE 1 - RESISTANCE VALUES/RATIO CHARACTERISTICS

RATIOS R1/R2	AVAILABLE	RATIO TRACKING	BEST RATIO MATCH TOLERANCE
10K/10K	1:1	0.1ppm/°C	$\pm 0.005\%$
5K/10K	1:2	0.1ppm/°C	$\pm 0.005\%$
2.5K/10K	1:4	0.3ppm/°C	$\pm 0.01\%$
2.0K/10K	1:5	0.3ppm/°C	$\pm 0.01\%$
1.0K/9K	1:9	0.5ppm/°C	$\pm 0.02\%$
1.0K/10K	1:10	0.5ppm/°C	$\pm 0.02\%$
500Ω/10K	1:20	0.5ppm/°C	$\pm 0.02\%$

FIGURE 1 - VISHAY VSMD1505 NOMINAL TCR (0°C TO +60°C)

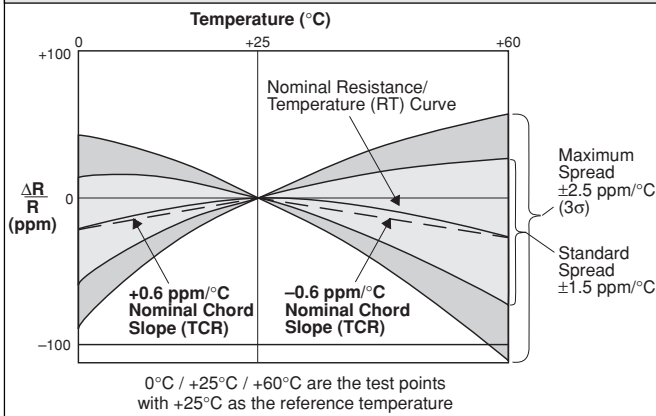


FIGURE 2 - DELTA RATIO VERSUS TEMPERATURE

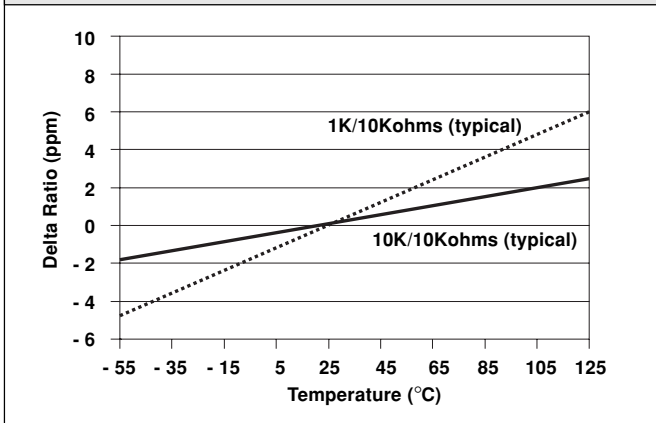
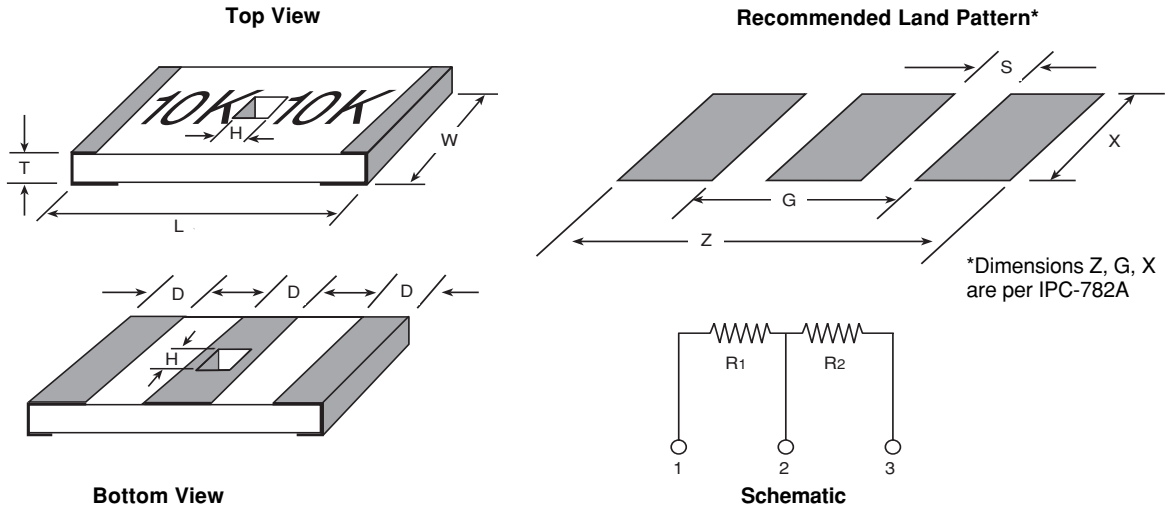


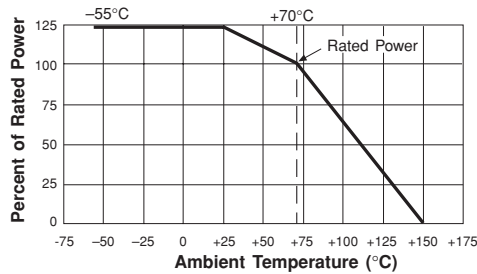
TABLE 2 - TYPICAL PERFORMANCE SPECIFICATIONS

TEST	MIL-PRF-55342G CHARACTERISTIC E ΔR LIMITS	VSM MAXIMUM ΔR LIMITS*
Thermal Shock	$\pm 0.10\%$	$\pm 0.02\%$
Low Temperature Operation	$\pm 0.10\%$	$\pm 0.02\%$
Short Time Overload	$\pm 0.10\%$	$\pm 0.02\%$
High Temperature Exposure	$\pm 0.10\%$	$\pm 0.05\%$
Resistance to Bonding	$\pm 0.20\%$	$\pm 0.05\%$
Moisture Resistance	$\pm 0.20\%$	$\pm 0.10\%$
Load Life (Ratio Stability)	—	$\pm 0.01\%$
*ΔR's plus additional 0.0005 ohm for measurement error.		
Weight	10mg.	
Packaging	Waffle pack standard Tape & reel Available	

FIGURE 3 - MODEL VSM1505D DIMENSIONS in inches (millimeters)


*Dimensions Z, G, X are per IPC-782A

CHIP SIZE () = mm	L	W	T	D	H
1505	0.150 ± 0.005 (3.81 ± 0.13)	0.050 ± 0.005 (1.27 ± 0.13)	0.025 Maximum (0.64)	0.018 ± 0.005 (0.46 ± 0.13)	0.015 Typical (0.381)
LAND PATTERN	Z	G	X	S	
	0.193 ± 0.004 (4.90 ± 0.1)	0.096 ± 0.004 (2.44 ± 0.1)	0.050 ± 0.004 (1.27 ± 0.1)	0.024 Typical (0.6)	

FIGURE 4 - POWER DERATING CURVE

NOTE:

VSMD1505 has a power rating of 50mW for each element @ + 70°C and a maximum working voltage of 22V for each element.

TABLE 3 - ORDERING INFORMATION - MODEL VSMD1505

MODEL NUMBER	RESISTANCE VALUE*	ABSOLUTE TOLERANCE	RATIO MATCH TOLERANCE
VSMD1505	R1 = 10KΩ R2 = 10KΩ	± 0.01% ± 0.01%	±0.005%

*Specify the value of R1 and R2 (even if both values are the same) as well as the absolute tolerance and Ratio Match tolerance.

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