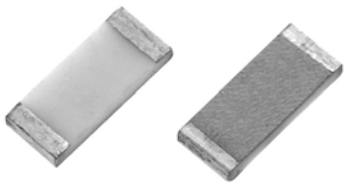
SURFACE MOUNT

Bulk Metal® Foil Technology
Discrete High Precision Surface Mount Chip Resistor



Product may not be to scale

FEATURES

- High Precision: Tolerance to ± 0.01% (see table 1)
- Low Temperature Coefficient of Resistance:
  Nominal TCR: + 0.5ppm/°C (- 55°C to + 125°C)
- Resistance Range: 10Ω to 30KΩ
- Load Life Stability: ± 0.01% maximum ΔR under full rated power at + 70°C for 2000 hours.
- Shelf Life Stability: 50ppm/year (0.005%) maximum ΔR non-hermetically sealed
- Power Rating at + 70°C: 125mW
- Maximum Working Voltage: 61V
- Maximum Weight: 11mg
- Voltage Coefficient: < 0.00001%/volt (< 0.1ppm/V)
- Current Noise: < 0.01μV(rms)/volt of applied voltage
- Non Inductive: < 0.08nH

The VSM1206 Precision Surface Mount Chip Resistor utilizes Ultra Precision Bulk Metal® Z Foil (BMZF) for the resistive element.

The BMZF technology provides inherently an extremely low and predictable Temperature Coefficient of Resistance (TCR), remarkable load life stability, low noise and availability of tight tolerance.

The TCR is a process capability not a selection process and for most of the range is independent of ohmic value and lot related variations. The TCR curve on Fig. 1 demonstrates the new revolutionary Z Foil with its TCR nominal of 0.5ppm/°C.

A voltage divider can be fashioned by using two arbitrarily selected VSM1206s with a resultant tracking specification of < 3ppm/°C. Extremely low tracking of < 1ppm/°C can be supplied upon request.

The VSM1206 has a conventional full wrap around robust termination which insures safe handling during manufacturing process, as well as providing stability during the multiple thermal cyclings it will see over its service life.

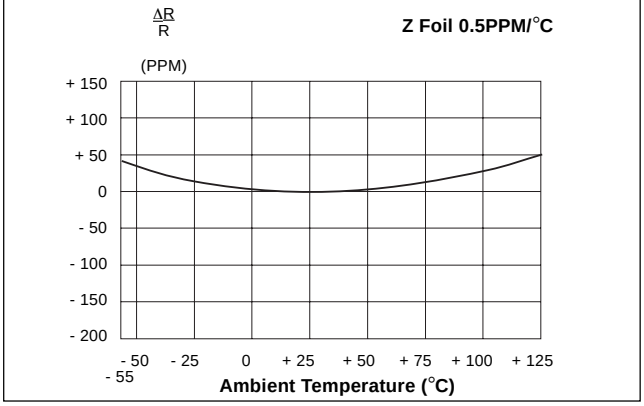
The availability of tight absolute tolerance provides a good cost solution for the variability of other components when compiling the total error budget. BMZF offers the best stability available; and is more than an order of magnitude better than thin film technology. The noise generated by the resistor is non measurable and its design and construction make it well suited for high frequency applications. The BMZF is the ultimate resistor component for analog applications.

TABLE 1 TOLERANCE AND TCR VS RESISTANCE VALUE

VALUE (Ω)	STANDARD TOLERANCE* (%)	MAXIMUM TCR**
100Ω to 30KΩ	± 0.01	± 2ppm/°C
50Ω to < 100Ω	± 0.05	± 3ppm/°C
25Ω to < 50Ω	± 0.1	± 3ppm/°C
10Ω to < 25Ω	± 0.25	± 4ppm/°C

*Tighter tolerances are available. Please contact Vishay Application Engineering.
**Over MIL range (- 55°C to + 125°C, + 25°C reference)

FIGURE 1 - NOMINAL TCR CURVE



The TCR for values < 100Ω are influenced by the termination composition and result in a deviation from this curve.

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• ISRAEL +972.3.557.0945 FAX: +972.3.558.9121 • SINGAPORE +65.788.6668 FAX: +65.788.0988 • USA +1 610 407-4800 FAX: +1 610 640-9081

TABLE 2 - TYPICAL PERFORMANCE SPECIFICATIONS

TEST	MIL-PRF-55342G CHARACTERISTIC E ΔR LIMITS	VSM1206 MAXIMUM ΔR LIMITS*
Thermal Shock	± 0.10%	± 0.02%
Low Temperature Operation	± 0.10%	± 0.02%
Short Time Overload	± 0.10%	± 0.02%
High Temperature Exposure	± 0.10%	± 0.03%
Resistance to Bonding	± 0.20%	± 0.01%
Moisture Resistance	± 0.20%	± 0.03%
Life 2000 hours @ + 70°C	± 0.50%	± 0.01%

*As shown + 0.01 Ohms to allow for measurement errors at low values.

FIGURE 2 - DERATING CURVE

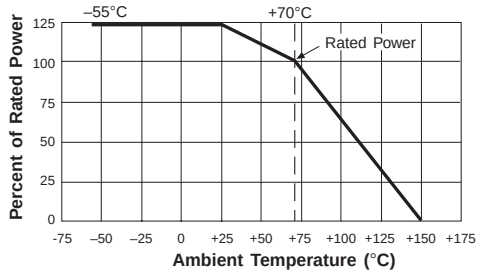
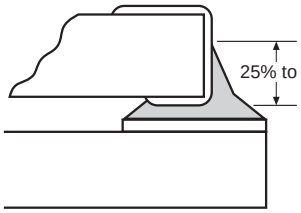


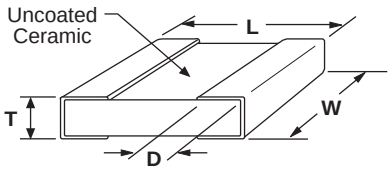
FIGURE 3 - RECOMMENDED MOUNTING



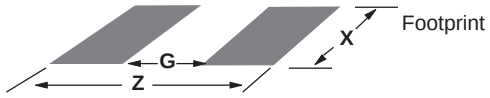
A low profile solder fillet is recommended to avoid unnecessary stresses along top edge of metallization. IR and vapor phase reflow are best. Avoid the use of cleaning agents which could attack epoxy resins, which form part of the resistor construction.

TABLE 3 - DIMENSIONS AND LAND PATTERN in inches (millimeters)

Bottom View for Mounting



Recommended Land Pattern



L ± 0.005 [0.13]	W ± 0.005 [0.13]	T MAXIMUM	D ± 0.005 [0.13]	Z* MAXIMUM	G* MINIMUM	X* MAXIMUM
0.126 [3.2]	0.062 [1.57]	0.025 [0.64]	0.020 [0.50]	0.175 [4.4]	0.059 [1.5]	0.071 [1.806]

*Land Pattern Dimensions are per IPC-782

TABLE 4 - ORDERING INFORMATION

MODEL	CHIP SIZE	RESISTANCE VALUE			TOLERANCE	TERMINATION	PACKAGING
VSM	1206	**RESISTANCE RANGE**	**LETTER DESIGNATOR**	**MULTIPLIER FACTOR**	T ± 0.01% Q ± 0.02% A ± 0.05% B ± 0.1% C ± 0.25% D ± 0.5% F ± 1.0%	B = Solderable	T = Tape and Reel W = Waffle Pack
		10Ω to < 1KΩ	R	x 1.0			
		Example: 249R00 = 249Ω					
		1K to 30K	K	x 10^3			
		Example: 10K000 = 10.0KΩ					

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