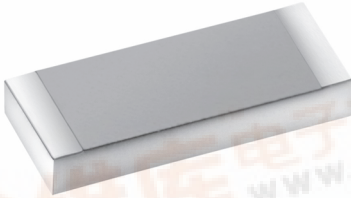




VFC1506

Vishay Foil Resistors

High Precision Flip Chip, (Patents Pending in Industrialized Countries)



Product may not be to scale

The VFC1506 is a surface mountable flip chip resistor that utilizes Ultra Precision Bulk Metal[®] “Z” Foil. This product differs from other Vishay Bulk Metal[®] Foil surface mount devices in as much as it is installed with the foil side facing the PCB providing better power handling capabilities. The Foil element is isolated from the PCB by a protective overcoating. This overcoating plus the overall product design isolates the resistor from handling and installation stresses. The temperature coefficient of resistance (TCR) curve below shows the new revolutionary “Z” Foil with its nominal TCR of 0.5ppm/°C. The Bulk Metal[®] Foil characteristics of excellent long term stability, low noise and availability of tight tolerance are maintained in this Flip Chip configuration. The VFC1506 is available in any value within the specified resistance range. The flip chip configuration is more economical for high volume, analog applications where high precision is required.

FEATURES

- Nominal TCR: 0.5ppm/°C (- 55°C to + 125°C)
- Resistance Range: 10Ω to 40kΩ
- Tolerance: to ± 0.01%
- Load Life Stability: ± 0.01% maximum ΔR under full rated power at + 70°C for 2000 hours
- Shelf Life Stability: 50ppm (0.005%) over several years
- Voltage Coefficient: < 0.00001%/volt (< 0.1ppm/V)
- Current Noise: < 0.010μV (rms)/volt of applied voltage
- Non Inductive: < 0.08
- Terminal Finishes Available:
 - Lead (Pb)-free (Sn 99.3% Cu 0.7%)
 - Tin/Lead Alloy (Sn 62% Pb 36% Ag 2%)

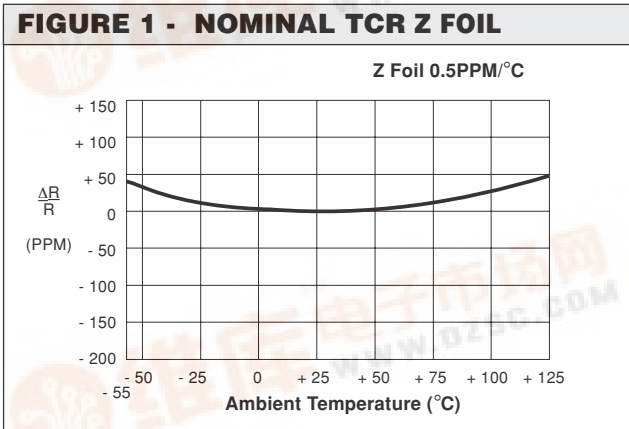
TABLE 1 - RESISTANCE VALUE VS TOLERANCE AND TCR

VALUE (Ω)	STANDARD TOLERANCE (%)*	MAXIMUM TCR**
100Ω to 40kΩ	± 0.01	± 2.0ppm/°C
50Ω to < 100Ω	± 0.05	± 3.0ppm/°C
25Ω to < 50Ω	± 0.1	± 4.0ppm/°C
10Ω to < 25Ω	± 0.25	± 5.0ppm/°C

*Tighter tolerances are available. Please contact Application Engineering.

**Range; - 55°C to + 125°C, + 25°C reference.

FIGURE 1 - NOMINAL TCR Z FOIL



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

TABLE 2 - TYPICAL PERFORMANCE SPECIFICATIONS

TEST	MIL-PRF-55342 CHARACTERISTIC E ΔR LIMITS*	VFC1506 MAXIMUM ΔR LIMITS**
Temperature Coefficient of Resistance	± 25ppm/°C	See Table 1
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%	± 0.02%
Moisture Resistance	± 0.20%	± 0.03%
Life 2000hrs at + 70°C	± 0.50%	± 0.01%

NOTES:

* As shown + 0.01Ω to allow for measurement error.

** As shown + 0.01Ω to allow for measurement error for values less than 100Ω.



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Bulk Metal[®] Foil Technology
High Precision Flip Chip, Patent Pending

FIGURE 2 - POWER DERATING CURVE

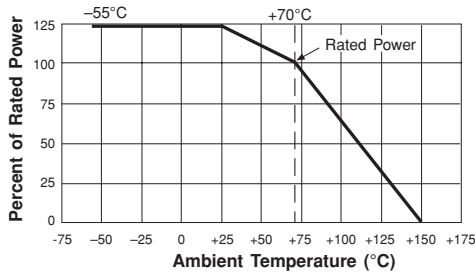


FIGURE 3 - CHIP CONFIGURATION

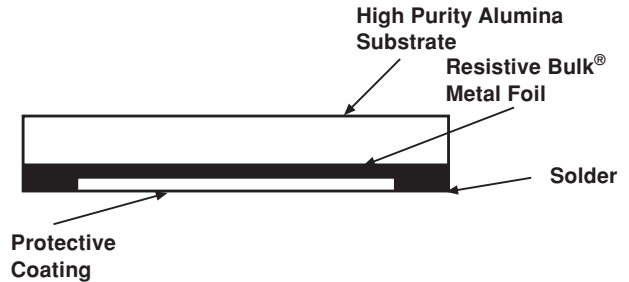
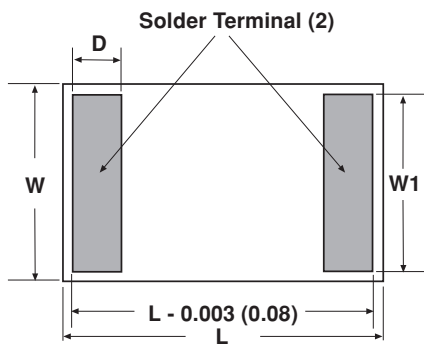
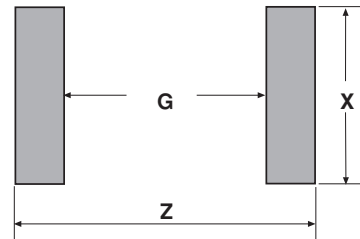


FIGURE 4 - DIMENSIONS AND LAND PATTERN in inches (millimeters)

Bottom View (Showing Terminals for Mounting):



Land Pattern



CHIP SIZE	L ± 0.005 (0.13)	W ± 0.005 (0.13)	THICKNESS MAXIMUM	D ± 0.003 (0.08)	W1 ± 0.003 (± 0.008)	Z ± 0.003 (± 0.008)	G ± 0.003 (± 0.008)	X ± 0.003 (± 0.008)
1506	0.150 (3.81)	0.062 (1.57)	0.025 (0.64)	0.012 (0.30)	0.059 (1.50)	0.150 (3.81)	0.120 (3.05)	0.062 (1.57)

TABLE 3 - PROPERTIES

RESISTANCE RANGE (Ω)	POWER + 70°C (mW)	MAXIMUM VOLTAGE (V)	MAXIMUM WEIGHT (mg)
10R - 40K	125	61	12

TABLE 4 - ORDERING INFORMATION

MODEL	CHIP SIZE	RESISTANCE VALUE	TOLERANCE	TERMINATION	PACKAGING																																					
VFC	1506	<table border="0"> <tr> <td>RESISTANCE RANGE</td> <td>LETTER DESIGNATOR</td> <td>MULTIPLIER FACTOR</td> </tr> <tr> <td>10Ω to <1KΩ</td> <td>R</td> <td>x 1.0</td> </tr> <tr> <td colspan="3">Example: 249R00 = 249Ω</td> </tr> <tr> <td>1K to 40KΩ</td> <td>K</td> <td>x 10³</td> </tr> <tr> <td colspan="3">Example: 10K000 = 10.0KΩ</td> </tr> </table>	RESISTANCE RANGE	LETTER DESIGNATOR	MULTIPLIER FACTOR	10Ω to <1KΩ	R	x 1.0	Example: 249R00 = 249Ω			1K to 40KΩ	K	x 10 ³	Example: 10K000 = 10.0KΩ			<table border="0"> <tr><td>T</td><td>± 0.01%</td></tr> <tr><td>Q</td><td>± 0.02%</td></tr> <tr><td>A</td><td>± 0.05%</td></tr> <tr><td>B</td><td>± 0.1%</td></tr> <tr><td>C</td><td>± 0.25%</td></tr> <tr><td>D</td><td>± 0.5%</td></tr> <tr><td>F</td><td>± 1.0%</td></tr> </table>	T	± 0.01%	Q	± 0.02%	A	± 0.05%	B	± 0.1%	C	± 0.25%	D	± 0.5%	F	± 1.0%	<table border="0"> <tr><td>S</td><td>Lead (Pb)-free</td></tr> <tr><td>B</td><td>Tin/Lead</td></tr> </table>	S	Lead (Pb)-free	B	Tin/Lead	<table border="0"> <tr><td>T</td><td>Tape and Reel</td></tr> <tr><td>W</td><td>Waffle Pack</td></tr> </table>	T	Tape and Reel	W	Waffle Pack
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Patent Pending

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