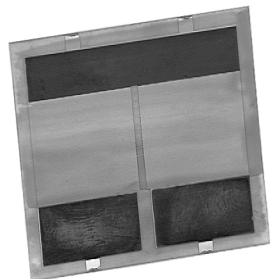


## Bulk Metal<sup>®</sup> Foil Technology Power Plate Resistors



Product may not  
be to scale

These power plate resistors can dissipate up to 25 watts per sq. inch of resistive area when properly heat sunk. They are made of foil on 0.025 Inches thick high alumina and therefore are a near zero volume power resistor. Current straps can be soldered to the copper terminal pads and voltage probes can be added for Kelvin connection.

Thermal response time is extremely fast due to the short thermal path through the ceramic to the heat sink. Thus momentary overloads are possible without generating a dangerous internal hot spot.

Series V3PR Precision Power Plate Resistors are available in 2 basic configuration styles based on resistance value, trimmability, frequency response and flexibility of design.

**LO-OHM** Family features low resistance values (i.e.: 0.25 ohms to 2 ohms typical), loose resistance tolerances, fast response time, high power capability— or high stability vs. power based on resistor area. The same substrate can contain both resistors and heaters. See Figure 1.

**HI-OHM** Model 300589 is a standard configuration 1 Inch x 1 Inch square plate trimmable to any resistance value between 10Ωohms and 5Kohms within ± 0.005%. See Figure 2.

Both Power Plate styles are in an ideal configuration for effective heat sinking and temperature monitoring.

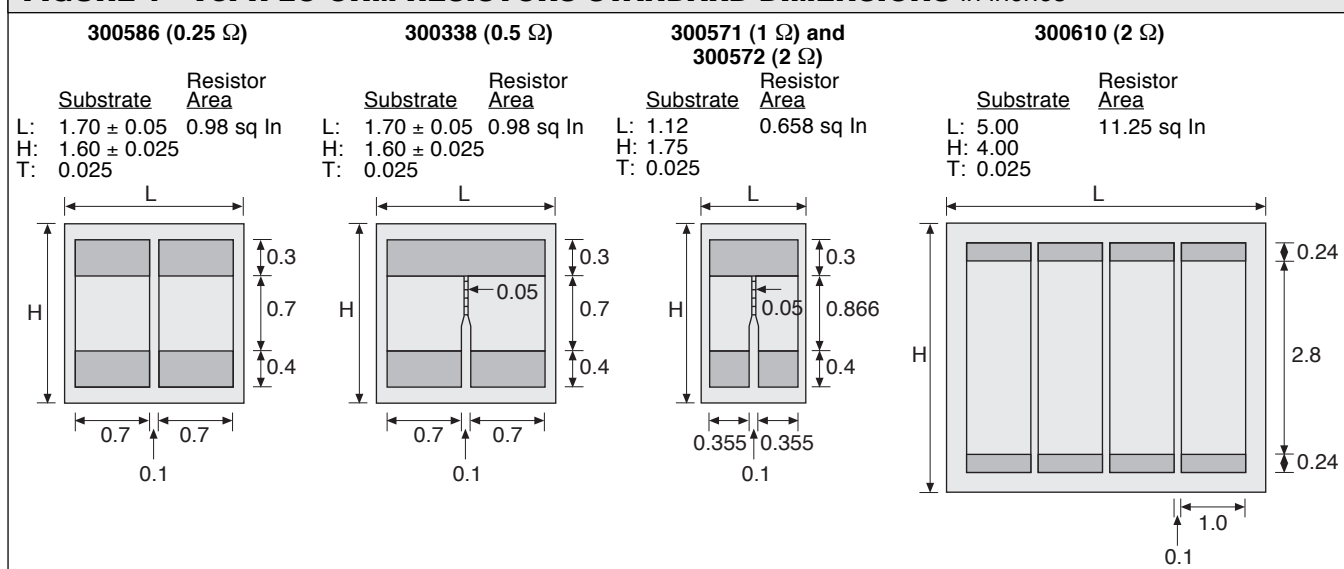
### TYPICAL APPLICATIONS

**LO-OHM** This resistor is ideal for use as a sense resistor in deflection amplifier circuits where low noise and high speed are essential in a high power, high stability application. For example, in a CRT radar sweep display the linearity and repeatability of the center point and the sweep can be kept at optimum as the related current through the sense resistor increases from zero to maximum current corresponding to center, zero, and edge of the display. Other typical applications include; CRT film recorders, flying spot scanners, electron beam integrated circuit mask generation, electron beam recording equipment, electron microscopes, graphics display computers, fire control radar display systems, heads-up display systems and high speed video character display systems.

**HI-OHM** When used as a sense resistor in an airborne fixed gyro navigation control computer, this resistor dissipates low power in normal flight. When the aircraft negotiates a turn, the resistor experiences a surge of power which must be dissipated before the navigation system is again stable. While the plane is taxiing on the ground this resistor may experience as much as a 30 watt surge for 15 seconds and must return to within 0.001% of its initial value within 15 minutes.

Custom Product Designs can be tailored to your specific applications while the product is in advanced stage. All specifications are subject to change without notice.

**FIGURE 1 - V3PR LO-OHM RESISTORS STANDARD DIMENSIONS** in inches



#### SALES

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**TABLE 1 - V3PR LO-OHM RESISTORS SPECIFICATIONS**

Model	300586	300338	300571	300572	300610
Resistance Range	0.25Ω (2/Plate)	0.5Ω	1Ω	2Ω	2Ω (4/Plate) <sup>5</sup>
Resistance Tolerance	± 15%	to ± 0.5%	to ± 0.25%	to ± 0.25%	± 15%
Temperature Coefficient of Resistance (TCR) <sup>1</sup>	± 10ppm/°C typical (+ 25°C to + 70°C); tighter TCR's available				
Load-Life Stability	± 0.03% Max ΔR under full rated power @ + 125°C for 2,000 hrs				
Shelf-Life Stability	± 0.0025% Max ΔR/yr				
Power <sup>6</sup> (Total Plate)	25 watts	25 watts	20 watts	20 watts	>100 watts
Current (Max)	7 Amps/R	7 Amps	4.5 Amps	3.1 Amps	3.5 Amps/R
Current Noise	< 0.010μV(rms)/volt of applied voltage				
High Frequency Operation Inductance <sup>4</sup>	< 2μH through 30mHz				
Capacitance	non-measurable				

**TABLE 2 - V3PR HI-OHM RESISTOR SPECIFICATIONS**

Model	300589
Resistance Range <sup>7</sup>	10Ω to 5KΩ
Resistance Tolerance	to ± 0.005%; user trimmable also
Temperature Coefficient of Resistance (TCR) <sup>1</sup>	± 2ppm/°C nominal
Load Life Stability	± 0.03% Maximum ΔR 2,000 hrs, full rated power @ + 125°C
Shelf Life Stability	± 0.0025% Maximum ΔR/yr
Power <sup>6</sup>	Recommendations <sup>2</sup> 3 watts in free air (0.55 Amps Maximum) 6 watts on aluminum heat sink <sup>3</sup> (0.77 Amps Maximum) 10 watts on water cooled copper heat sink (1 Amp Maximum)
Current Noise	< 0.010μV(rms)/volt of applied voltage
High Frequency Operation Rise/Decay Time	1ns @ 1KΩ typical
Inductance <sup>4</sup>	0.3μH typical
Capacitance	non-measurable

**NOTES:**

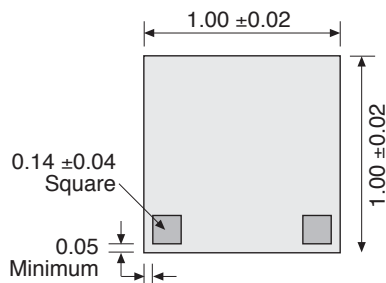
- Because of the variety of applications including types of heat sinks, power applied, temperature range, etc., the effective temperature coefficient of initial prototype units may be measured in actual use. A correction factor can then be applied to the production lots to adjust the TCR and achieve the desired effect in use.
- For extreme or worst case conditions.
- Aluminum heat sink dimensions:  
1.5 Inches L x 1.5 Inches W x 0.5 Inches T  
(38.1mm) L x (38.1mm) W x (12.7mm) T
- A short heavy wire contact is recommended to maintain low-inductance. Example: 16 gage copper wire adds 0.02μH/inch.
- Can be cross-wired for any combination of resistors and/or heaters utilizing individual 2 ohms resistors on same substrate.
- Based on approximately 10 watts/sq inch with heat sink to keep total film temperature below +100°C. Termination must be capable of carrying the current.
- Not all values tooled. Consult Applications Engineering for currently available values.

## SALES

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**FIGURE 2 - V3PR HI-OHM RESISTOR DIMENSIONS** in inches

Model 300589

**TABLE 3 - ORDERING INFORMATION**

Specify Vishay V3PR LO-OHM resistors as follows:

Order by 300XXX number. No other information is necessary.

Specify Vishay V3PR HI-OHM 300589 power plate resistors as follows:

Example:

<b>300589</b>	<b>5K0000</b>	<b>0.1%</b>
—	—	—
MODEL NO.	RESISTANCE VALUE	TOLERANCE

Resistance Value, in ohms, is expressed by a series of 6 characters, 5 of which represent significant digits while the 6th is a dual purpose letter that designates both the multiplier and the location of the comma or decimal.

RESISTANCE RANGE	LETTER DESIGNATOR	MULTIPLIER FACTOR	EXAMPLE
10Ω to < 1KΩ	R	x1	100R01 = 100.01Ω
1KΩ to < 5KΩ	K	x10 <sup>3</sup>	15K231 = 15,231Ω

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