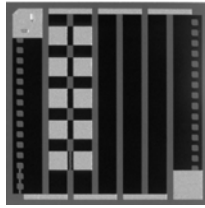


## Thin Film Power Resistors



Product may not be to scale

The PWB series resistor chips offer a 1 W power rating in a relatively small size. They offer one of the best combinations of size and power available.

The PWBs are manufactured using Vishay Electro-Films (EFI) sophisticated thin film equipment and manufacturing technology. The PWBs are 100 % electrically tested and visually inspected to MIL-STD-883, method 2032, class H or class K.

### FEATURES

- Wire bondable
- Power: 1 W
- Chip size: 0.070 inches square
- Case: 0707
- Resistance range: 0.3  $\Omega$  to 20 k $\Omega$
- Oxidized silicon substrate for good power dissipation
- Resistor material: Tantalum nitride, self-passivating
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



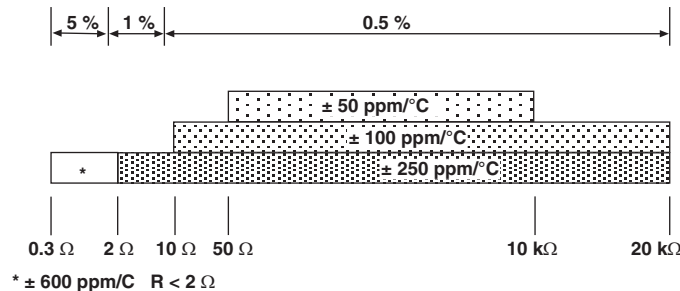
### APPLICATIONS

The PWB resistor chips are used mainly in higher power circuits of amplifiers where increased power loads require a more specialized resistor.

### TEMPERATURE COEFFICIENT OF RESISTANCE, VALUES, AND TOLERANCES

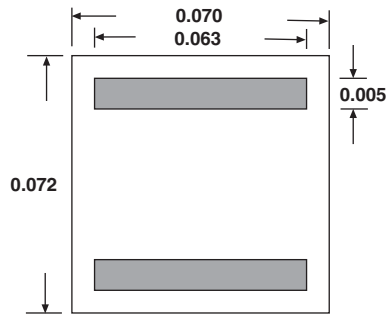
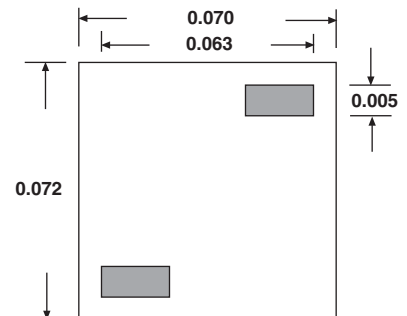
PARAMETER	VALUE	UNIT
Total Resistance Range	0.3 to 20K	$\Omega$
Standard Tolerances	$\pm 0.5$ , $\pm 1$ , $\pm 5$	%
TCR	$\pm 50$ , $\pm 100$ , $\pm 250$	ppm/ $^{\circ}$ C

#### Tightest Standard Tolerance Available



### STANDARD ELECTRICAL SPECIFICATIONS

PARAMETER	VALUE	UNIT
Noise, MIL-STD-202, Method 308 100 $\Omega$ to 250 k $\Omega$ < 100 $\Omega$ or > 251 k $\Omega$	- 35 typ. - 20 typ.	dB
Moisture Resistance, MIL-STD-202, Method 106	$\pm 0.5$ max. $\Delta R/R$	%
Stability, 1000 h, + 125 $^{\circ}$ C, 500 mW	$\pm 0.5$ max. $\Delta R/R$	%
Operating Temperature Range	- 55 to + 125	$^{\circ}$ C
Thermal Shock, MIL-STD-202, Method 107, Test Condition F	$\pm 0.1$ max. $\Delta R/R$	%
High Temperature Exposure, + 150 $^{\circ}$ C, 100 h	$\pm 0.2$ max. $\Delta R/R$	%
Dielectric Voltage Breakdown	200	V
Insulation Resistance	$10^{12}$ min.	$\Omega$
Operating Voltage Steady State 5 x Rated Power	100 max. 200 max.	V
DC Power Rating at + 70 $^{\circ}$ C (Derated to zero at + 175 $^{\circ}$ C) (Conductive epoxy die attach to alumina substrate)	1	W
5 x Rated Power Short-Time Overload, + 25 $^{\circ}$ C, 5 s	$\pm 0.25$ max. $\Delta R/R$	%

**DIMENSIONS** in inches

**TYPICAL RANGE**  
 $R < 240 \Omega$ 

**TYPICAL RANGE**  
 $240 \Omega$  to  $20 \text{ k}\Omega$ 
**SCHEMATIC**


MECHANICAL SPECIFICATIONS	
PARAMETER	VALUE
Chip Size	0.070" x 0.070" $\pm$ 0.005" (1.781 mm x 1.781 mm $\pm$ 0.127 mm)
Chip Thickness	0.010" $\pm$ 0.002" (0.254 mm $\pm$ 0.05 mm)
Chip Substrate Material	Oxidized silicon, 10 kÅ minimum SiO <sub>2</sub>
Resistor Material	Tantalum nitride, self-passivating
Bonding Pad Size	0.005" x 0.010" (0.127 mm x 0.254 mm) minimum
Number of Pads	2
Pad Material	10 kÅ minimum aluminum (Au optional)
Backing	None, lapped semiconductor silicon (Au back optional)

GLOBAL PART NUMBER INFORMATION													
Global Part Number:			PWB50000FKANHWS			PWB12500KCGGKWS							
Global Part Number Description:			PWB 5K 1% 100 ppm Al None H WS			PWB 1.25K 10% 100 ppm Au Au K WS							
<b>P</b>	<b>W</b>	<b>B</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>F</b>	<b>K</b>	<b>A</b>	<b>N</b>	<b>H</b>	<b>W</b>	<b>S</b>
MODEL	RESISTANCE	RESISTANCE MULTIPLIER CODE	TOLERANCE CODE (%)	TCR (ppm/°C)	TERMINATION	BACK METAL	VISUAL CLASS	PACKAGING CODE					
<b>PWB</b> 70 x 70 size Power resistor	First 4 digits are significant figures of resistance	<b>D</b> = 0.0001 <b>C</b> = 0.001 <b>B</b> = 0.01 <b>A</b> = 0.1 <b>0</b> = 1 <b>1</b> = 10	<b>D</b> = 0.5 <b>F</b> = 1.0 <b>G</b> = 2.0 <b>J</b> = 5.0 <b>K</b> = 10	<b>C</b> = $\pm$ 50 <b>K</b> = $\pm$ 100 <b>M</b> = $\pm$ 250 <b>Z</b> = + 600/ - 100	<b>G</b> = Au <b>A</b> = Al	<b>G</b> = Au <b>N</b> = None	<b>H</b> = Class H <b>K</b> = Class K	<b>WS</b> = Waffle pack 100 min, 1 mult					



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