

HP05 Series High Power Resistors

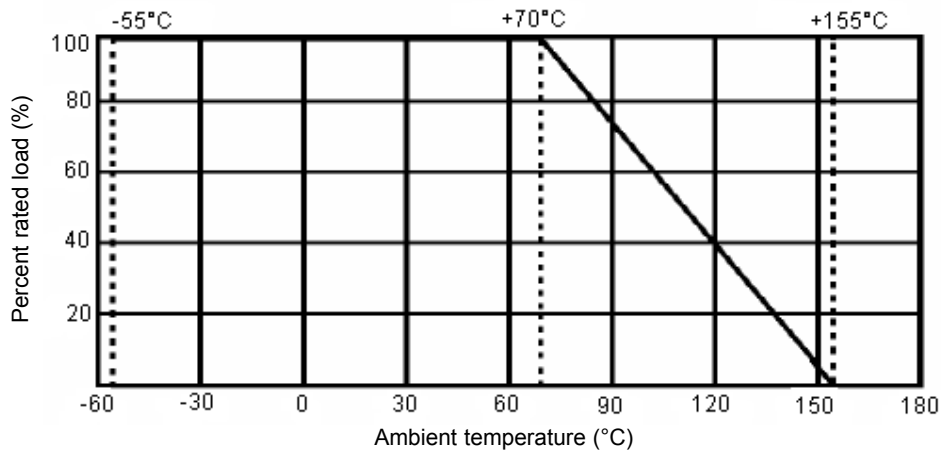


Specification Table

Type	Power Rating (W)	Maximum Working Voltage (V)	Maximum Overload Voltage (V)	Dielectric Withstanding Voltage (V)	Temperature Range (°C)	Ambient Temperature (°C)
HP05	0.25	150	300	500	-55 to +155	70

Power Rating:

Resistors shall have a power rating based on continuous load operation at an ambient temperature of 70°C. For temperature in excess of 70°C, the load shall be derate.



Voltage rating:

Resistors shall have a rated direct-current (DC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial-line frequency and waveform corresponding to the power rating, as determined from the following formula :

$$RCWV = \sqrt{P \times R}$$

Where : RCWV = Rated DC or RMS AC continuous working voltage at commercial-line frequency and waveform (volt).

P = Power rating (watt)

R = Nominal resistance (ohm)

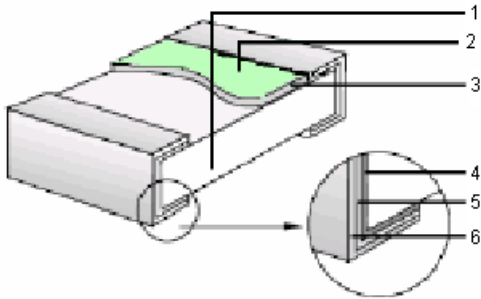
In no case shall the rated DC or RMS AC continuous working voltage be greater than the applicable maximum value.



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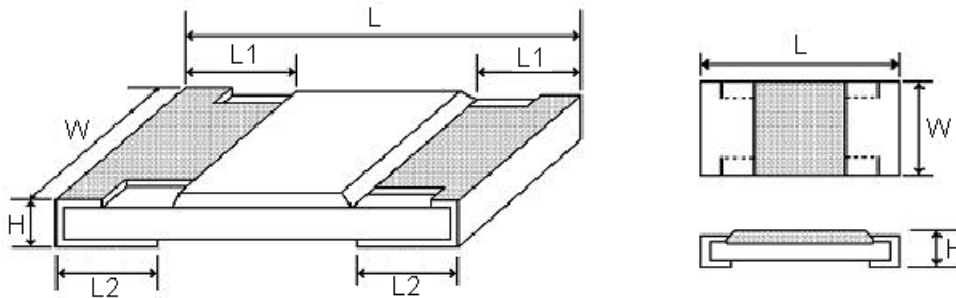


Construction:



1. High Purity Alumina Substrate.
2. Protective covering.
3. Resistive covering.
4. Termination inner (Ag/Pd).
5. Termination (between) Ni plating.
6. Termination (outer) Sn plating.

Power rating and dimensions



Dimensions : Millimetres

Dimensions

Type	L	W	H	L1	L2
HP05	2.00 ±0.15	1.25 + 0.15 - 0.10	0.55 ±0.10	0.40 ±0.20	0.40 ±0.20

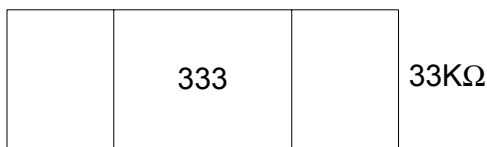
Dimensions : Millimetres

Power Rating

Type	Power Rating at 70°C (W)	Tolerance %	Resistance Range (Ω)	Standard Series
HP05	0.25W	±5	1 to 10M	E-24

Marking on the Resistors

A ±5% Tolerance: the first two digits are significant figures of resistance and the third one denoted number of zeros.



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Performance specification

Characteristics	Limits	Test Methods (JIS C 5201-1)															
Temperature coefficient	$\leq 10E: \pm 200PPM/^{\circ}C$ $> 10E: \pm 100PPM/^{\circ}C$	Natural resistance change per temperature degree centigrade $R2-R1/ R1 (t2-t1) \times 10^6 (PPm/^{\circ}C)$. R1 : Resistance value at room temperature (t1) R2 : Resistance value at room temperature plus 100°C (t2). Test pattern : Room temperature(t1), Room temperature+100°C(t2)															
Short time overload	Resistance change rate is $\pm 5\% (2.0\% + 0.1\Omega)$ maximum $\pm 1\% (1.0\% + 0.1\Omega)$ maximum	Permanent resistance change after the application of a potential of 2.5 times RCWV for 5 seconds.															
Terminal bending	$\pm (1.0\% + 0.05\Omega)$ maximum	Twist of Test Board : Y/X = 3/90 mm for 60 seconds.															
Dielectric withstanding voltage	No evidence of flashover mechanical damage, arcing or insulation break down.	Clamped in the trough of a 90°C metallic V-BLOCK and shall be tested at AC potential respectively specified in the type for 60-70 seconds.															
Solderability	Minimum 95% coverage	Test temperature of solder : 245 $\pm 3^{\circ}C$; dipping time in Soldwe : 2-3 seconds.															
Soldering heat	Resistance change rate is $\pm(1\%+0.05\Omega)$ Maximum	Dip the resistor into a solder bath having a temperatuer Of 260°C $\pm 3^{\circ}C$ and hold It for 10 ± 1 seconds.															
Temperature cycling	$\pm 5\% (1.0\% + 0.05\Omega)$ maximum $\pm 1\% (0.5\% + 0.05\Omega)$ maximum	Resistance change after continuous 5 cycles for duty cycle specified below: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Step</th> <th>Temperature</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55°C $\pm 3^{\circ}C$</td> <td>30 minutes</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>10 to 15 minutes</td> </tr> <tr> <td>3</td> <td>+155°C $\pm 2^{\circ}C$</td> <td>30 minutes</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>10 to 15 minutes</td> </tr> </tbody> </table>	Step	Temperature	Time	1	-55°C $\pm 3^{\circ}C$	30 minutes	2	Room temperature	10 to 15 minutes	3	+155°C $\pm 2^{\circ}C$	30 minutes	4	Room temperature	10 to 15 minutes
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Load life in humidity	Resistance change rate is $\pm 5\% (3.0\% + 0.1\Omega)$ maximum $\pm 1\% (1.0\% + 0.1\Omega)$ maximum	Resistance change after 1000 hours (1.5 hours "on", 0.5 hour "off") at RCWV in a humidity chamber controlled at 40°C $\pm 2^{\circ}C$ and 90 to 95% relative humidity.															
Load life	Resistance change rate is $\pm 5\% (3.0\% + 0.1\Omega)$ maximum $\pm 1\% (1.0\% + 0.1\Omega)$ maximum	Permanent resistance change after 1000 hours operating at RCWV with duty cycle of (1.5 hours "on", 0.5 hour "off") at 70°C $\pm 2^{\circ}C$ ambient.															



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Resistance Preferred Value Range

E6	E12	E24	E96	E6	E12	E24	E96	E6	E12	E24	E96
10	10	10	10.0				21.5				46.4
			10.2	22	22	22	22.1	47	47	47	47.5
			10.5				22.6				48.7
			10.7				23.2				49.9
		11	11.0				23.7			51	51.1
			11.3			24	24.3				52.3
			11.5				24.9				53.6
			11.8				25.5				54.9
	12	12	12.1				26.1	56	56	56	56.2
			12.4				27.7				57.6
			12.7			27	27.4				59.0
		13	13.0				28.0				60.4
			13.3				28.7			62	61.9
			13.7				29.4				63.4
			14.0			30	30.1				64.9
			14.3				30.9				66.5
			14.7				31.6	68	68	68	68.1
15	15	15	15.0				32.4				69.8
			15.4	33	33	33	33.2				71.5
			15.8				34.0				73.2
		16	16.2				34.8			75	75.0
			16.5				35.7				76.8
			16.9			36	36.5				78.7
			17.4				37.4				80.6
			17.8				38.3	82	82	82	82.5
	18	18	18.2		39	39	39.2				84.5
			18.7				40.2				86.6
			19.1				41.2				88.7
			19.6				42.2			91	90.9
		20	20.0			43	43.2				93.1
			20.5				44.2				95.3
			21.0				45.3				97.6

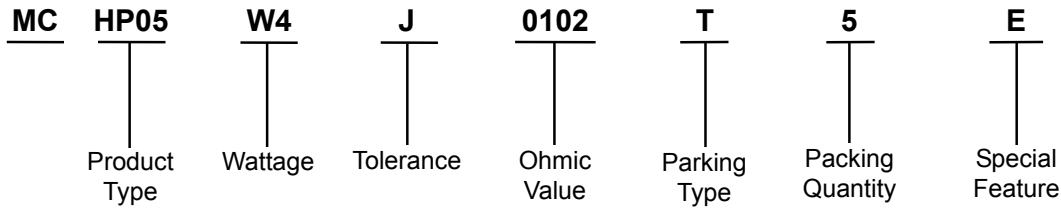
Above values in accordance with IEC Publication 63 (1963) and BS2488



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Part Number Explanation:



- Product Type** : HP05 = 0805.
- Wattage** : W4 = 1/4W.
- Tolerance** : J = ±5%.
- Ohmic Value** : Where R = Ohms = Ω.
K = Kiloohms = KΩ.
M = Megaohms = MΩ.
And replaces the decimal point.
eg: 1R5 = 1.5Ω.
4K7 = 4.7KΩ.
6M8 = 6.8MΩ.
- Parking Type** : T = T/R Packing.
- Packing Quantity** : 5 = 5000 pieces.
- Special Feature** : E = Lead free.

Stocked Values

Tolerance	Wattage (W)	Preferred Value Range	Range Value
1%	0.063	E96	1R5 - 1M
1%	0.1	E24	1R5 - 1M
1%	0.125	E24	10R - 1M



HP05 Series High Power Resistors



Notes:

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