

HP05 Series High Power Resistors

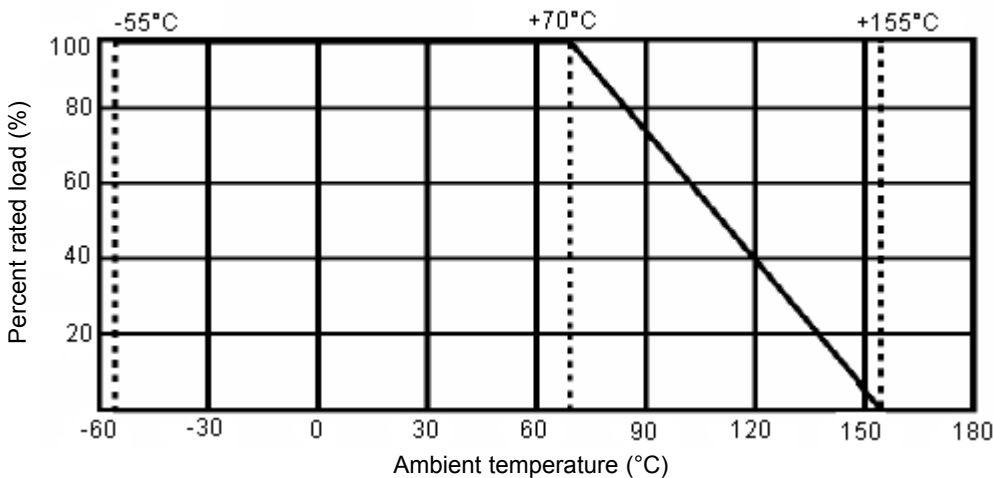


Specification Table

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)

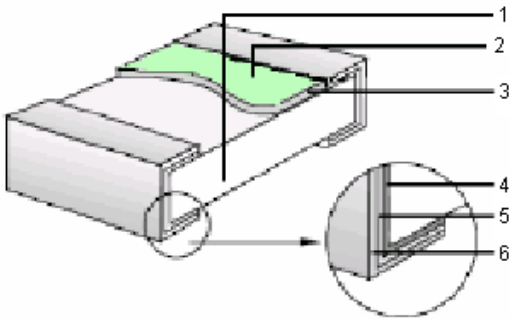
In no case shall the rated DC or RMS AC continuous working voltage be greater than the applicable maximum value.



HP05 Series High Power Resistors

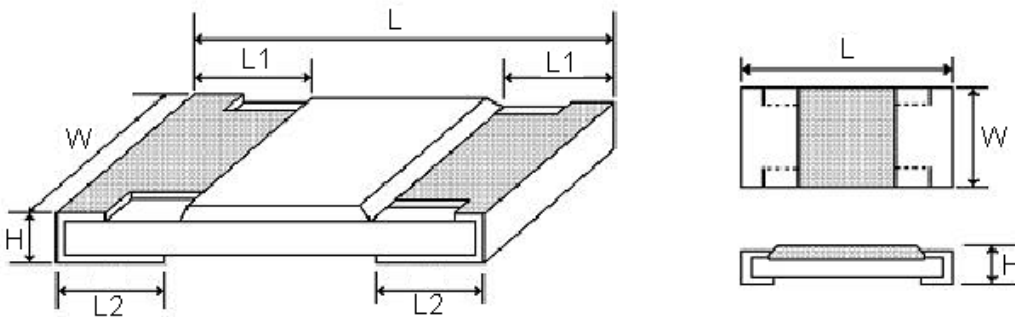


Construction:



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

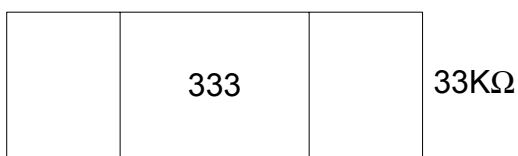
Dimensions : Millimetres

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 onedenoted number of zeros.



HP05 Series High Power Resistors



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°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°C and hold It for 10 \pm 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 \pm3°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 \pm2°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°C	30 minutes	2	Room temperature	10 to 15 minutes	3	+155°C \pm 2°C	30 minutes	4	Room temperature	10 to 15 minutes
Step	Temperature	Time															
1	-55°C \pm 3°C	30 minutes															
2	Room temperature	10 to 15 minutes															
3	+155°C \pm 2°C	30 minutes															
4	Room temperature	10 to 15 minutes															
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°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°C ambient.															

HP05 Series High Power Resistors



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	56.2
			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	68.1
			15.0				32.4				69.8
15	15	15	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	82.5
	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



HP05 Series High Power Resistors



Notes:

International Sales Offices:



AUSTRALIA - Farnell

Tel No: ++61 1300 361 005
Fax No: ++61 1300 361 225



FINLAND - Farnell

Tel No: ++ 358 9 560 7780
Fax No: ++ 358 9 345 5411



ITALY - Farnell

Tel No: ++ 39 02 93 995 200
Fax No: ++ 39 02 93 995 300



SPAIN - Farnell

Tel No: 901 20 20 80
Fax No: 901 20 20 90



AUSTRIA - Farnell

Tel No: ++ 43 662 2180 680
Fax No: ++ 43 662 2180 670



FRANCE - Farnell

Tel No: ++ 33 474 68 99 99
Fax No: ++ 33 474 68 99 90



MALAYSIA - Farnell-Newark

Tel No: ++ 60 3 7873 8000
Fax No: ++ 60 3 7873 7000



SWEDEN - Farnell

Tel No: ++ 46 8 730 50 00
Fax No: ++ 46 8 83 52 62



BELGIUM - Farnell

Tel No: ++ 32 3 475 2810
Fax No: ++ 32 3 227 3648



GERMANY - Farnell

Tel No: ++ 49 89 61 39 39 39
Fax No: ++ 49 89 613 59 01



NETHERLANDS - Farnell

Tel No: ++ 31 30 241 7373
Fax No: ++ 31 30 241 7333



SWITZERLAND - Farnell

Tel No: ++ 44 204 64 64
Fax No: ++ 44 204 64 54



BRAZIL - Farnell-Newark

Tel No: ++ 55 11 4066 9400
Fax No: ++ 55 11 4066 9410



HONG KONG - Farnell-Newark

Tel No: ++ 852 2268 9888
Fax No: ++ 852 2268 9899



NEW ZEALAND - Farnell

Tel No: 0800 90 80 80
Fax No: 0800 90 80 81



UK - Farnell

Tel No: ++ 44 8701 200 200
Fax No: ++ 44 8701 200 201



CHINA - Farnell-Newark

Tel No: ++86 10 6238 5152
Fax No: ++86 10 6238 5022



HUNGARY - Farnell

Tel No: ++ 44 870 1200 208
Fax No: ++ 44 870 1200 209



NORWAY - Farnell

Tel No: 800 146 70
Fax No: 800 146 76



UK - CPC

++ 44 8701 202 530
++ 44 8701 202 531



CZECH REPUBLIC - Farnell

Tel No: ++ 44 870 1200 208
Fax No: ++ 44 870 1200 209



INDIA - Farnell

Tel No: ++ 44 870 1200 208
Fax No: ++ 44 870 1200 209



PORTUGAL - Farnell

Tel No: ++ 34 93 475 8804
Fax No: ++ 34 93 474 5288



USA - Newark

Tel No: 800 463 9275



DENMARK - Farnell

Tel No: ++ 45 44 53 66 44
Fax No: ++ 45 44 53 66 06



IRELAND - Farnell

Tel No: ++ 353 1 830 9277
Fax No: ++ 353 1 830 9016



RUSSIA - Farnell

Tel No: ++ 44 870 1200 208
Fax No: ++ 44 870 1200 209



EXPORT - Farnell

Tel No: ++ 44 8701 200 208
Fax No: ++ 44 8701 200 209

For enquiries from all other markets



ESTONIA - Farnell

Tel No: ++ 358 9 560 7780
Fax No: ++ 358 9 345 5411



ISRAEL - Farnell

Tel No: ++ 180 937 0015
Fax No: ++ 180 937 0014



SINGAPORE - Farnell-Newark

Tel No: ++ 65 6788 0200
Fax No: ++ 65 6788 0300

<http://www.farnell.com>

<http://www.newark.com>

<http://www.cpc.co.uk>

Disclaimer This data sheet and its contents (the "Information") belong to the Premier Farnell Group (the "Group") or are licensed to it. No licence is granted for the use of it other than for information purposes in connection with the products to which it relates. No licence of any intellectual property rights is granted. The Information is subject to change without notice and replaces all data sheets previously supplied. The Information supplied is believed to be accurate but the Group assumes no responsibility for its accuracy or completeness, any error in or omission from it or for any use made of it. Users of this data sheet should check for themselves the Information and the suitability of the products for their purpose and not make any assumptions based on information included or omitted. Liability for loss or damage resulting from any reliance on the Information or use of it (including liability resulting from negligence or where the Group was aware of the possibility of such loss or damage arising) is excluded. This will not operate to limit or restrict the Group's liability for death or personal injury resulting from its negligence. SPC Multicomp is the registered trademark of the Group. © Premier Farnell plc 2008.

