

WIRE WOUND RESISTORS CERAMIC ENCASED TYPE

HCP SERIES

PRECISION POWER

Ceramic Encased Wire Wound Resistors PC Board Applications

- 3 W to 20 W
- Fire Proof
- R10 to 56K
- Choice of PCB terminal stand-off heights with lock-in mounting tabs

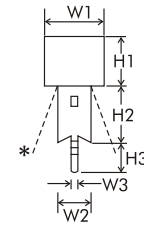
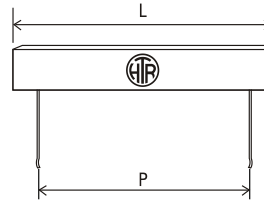
AEC-Q200 Qualified





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PHYSICAL CONFIGURATION

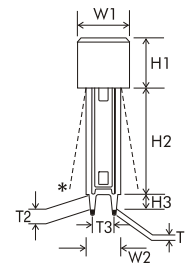
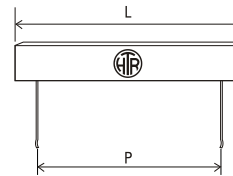


TYPES A, B & C

TYPE	POWER RATING at 70°C	DIMENSIONS (mm)								RESISTANCE RANGE		TYPICAL WEIGHT PER PC (gms)
		L ±1.5	W1 ±1	H1 ±1	P ±1.0	H2 ±3	H3 ±0.5	W2 ±0.3	W3 ±0.2	min	max	
CP-3A	3W	24.5	9.5	9.5	12.0	15.0	4.5	7.3	1.4	R10	15K	6.4
CP-5	5W	28.0	9.5	9.5	15.0	15.0	4.5	7.3	1.4	R10	18K	6.9
CP-5A		28.0	9.5	9.5	15.0	26.0	4.5	7.3	1.5			8.0
CP-7	7W	35.0	9.5	9.5	22.5	15.0	4.5	7.3	1.4	R10	30K	8.3
CP-7A		35.0	9.5	9.5	22.5	26.0	4.5	7.3	1.5			9.3
CP-7A (25)		39.0	9.5	9.5	25.0	26.0	4.5	7.3	1.5			R10
CP-10	10W	48.0	9.5	9.5	35.0	15.0	4.5	7.3	1.4	R10	47K	10.8
CP-10A		48.0	9.5	9.5	35.0	26.0	4.5	7.3	1.5			11.6
CP-15	15W	48.0	12.5	12.5	32.5	15.0	4.5	7.3	1.4	R10	43K	17.5
CP-15A (25°C)	48.0	12.5	12.5	32.5	26.0	4.5	7.3	1.5	18.6			
CP-15B	15W	48.0	12.5	12.5	32.5	15.0	5.0	10.0	2.7	R10	43K	17.0
CP-15C (25°C)	48.0	12.5	12.5	32.5	30.0	5.0	10.0	2.7	20.0			
CP20	20W	63.0	12.5	12.5	48.0	15.0	4.5	7.3	1.4	R15	56K	22.9
CP20A (25°C)	63.0	12.5	12.5	48.0	26.0	4.5	7.3	1.5	23.8			
CP-20B	20W	63.0	12.5	12.5	48.0	15.0	5.0	10.0	2.7	R15	56K	23.5
CP-20C (25°C)	63.0	12.5	12.5	48.0	30.0	5.0	10.0	2.7	26.5			

* Maximum Misalignment 5°

PHYSICAL CONFIGURATION



TYPE Z

TYPE	POWER RATING at 70°C	DIMENSIONS (mm)										RESISTANCE RANGE		TYPICAL WEIGHT PER PC (gms)
		L ±1.5	W1 ±1	H1 ±1	P ±1	H2 ±2	H3 ±0.5	W2 ±0.3	T1 ±0.2	T2 ±0.2	T3 ±0.2	min	max	
CP-5Z	5W	28.0	9.5	9.5	15.0	22.0	4.5	7.3	1.1	1.5	3.5	R10	18K	7.5
CP-7Z	7W	35.0	9.5	9.5	22.5	22.0	4.5	7.3	1.1	1.5	3.5	R10	30K	8.5
CP-10Z	10W	48.0	9.5	9.5	35.0	22.0	4.5	7.3	1.1	1.5	3.5	R10	47K	10.6
CP-15Z (25°C)	15W	48.0	12.5	12.5	32.5	30.0	5.0	10.0	1.5	2.0	5.0	R10	43K	19.5
CP-20Z (25°C)	20W	63.0	12.5	12.5	48.0	30.0	5.0	10.0	1.5	2.0	5.0	R15	56K	25.0

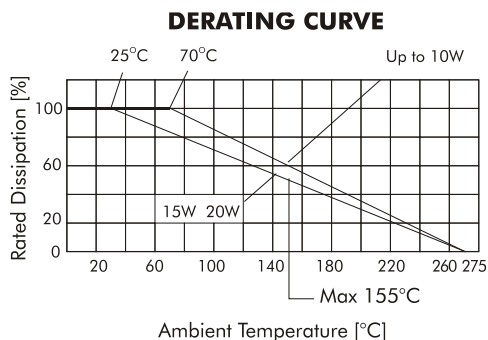
* Maximum Misalignment 5°

Note:

CP15 / 15A, 15B, 15C can also be supplied in a pitch of 35mm. Please specify if required. In this pitch (max) resistance value will be 47K.



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ELECTRICAL CHARACTERISTICS / DATA

PARAMETER/PERFORMANCE TEST & TEST METHOD	PERFORMANCE REQUIREMENTS
Power Rating (Rated Ambient Temperature)	Upto 10W, full power dissipation at 70°C and 15W/ 20W, full power dissipation at 25°C and linearly derated to zero at +275°C (Refer Derating Curve above)
Operating Temperature Range (Ambient)	-55°C to +275°C with suitable derating as per derating curve
Voltage Rating / Limiting Voltage / Max. Working Voltage	$V = \sqrt{P \times R}$
Maximum Overload Voltage	Varies depending on resistance value, duration of overload and type of pulse waveform (contact factory for details)
Resistance Tolerances Available JIS - C - 5202 para 5.1	±10% (K); ±5% (J)

ELECTRICAL AND ENVIRONMENTAL CHARACTERISTICS

PARAMETER/ PERFORMANCE TEST	TEST METHOD- DETAILS	PERFORMANCE REQUIREMENTS
Short Time Overload	JIS - C - 5202 para 5.5 Upto 3W - condition A (RV x 2.5 for 5 secs) 5W and above - condition B (Voltage corresponding to 10 times power for 5 secs)	$\Delta R \pm [2\% + R05]$
Dielectric Withstanding Voltage / Voltage Proof	JIS - C - 5202 para 5.7 Condition F (Limiting voltage x 2 or 500V)	$\Delta R \pm [1\% + R05]$ (No flashover, arcing or insulation breakdown)
Temperature Co-efficient of Resistance	JIS - C - 5202 para 5.2	± 90 ppm / °C [$>10R$] ± 80 ppm / °C [$<10R$] ± 200 ppm / °C [$<R10$]
Insulation Resistance	JIS - C - 5202 para 5.6 (Condition F)	$>1000M\Omega$ (Min)
Pulse Overload / Intermittent Overload	JIS - C - 5202 para 5.8 (Limiting Voltage x 4) 1 sec on / 25 secs off 10,000 cycles ± 200 cycles	$\Delta R \pm [2\% + R05]$
Endurance - under load with humidity	JIS - C - 5202 para 7.9 1000 hours at 40°C ± 2°C, 95% R.H with limiting voltage (1.5 hours on/0.5 hours off)	$\Delta R \pm [\leq 5\% + R05]$
Load Life	JIS - C - 5202 para 7.10 1000 hours at 70°C with limiting voltage (1.5 hours on / 0.5 off)	$\Delta R \pm [3\% + R05]$ - Average
Temperature Cycling	JIS - C - 5202 para 7.4 [Room temperature → -55°C → Room temperature → 155°C → Room temperature for 5 cycles]	$\Delta R \pm [2\% + R05]$ - Average
Damp Heat (Steady State)	JIS - C - 5202 para 7.5	$\Delta R \pm [3\% + R05]$
Solvent Resistance	JIS - C - 5202 para 6.9 Solvent A - IPA for 60secs ± 10 secs.	No effect on case filling or marking

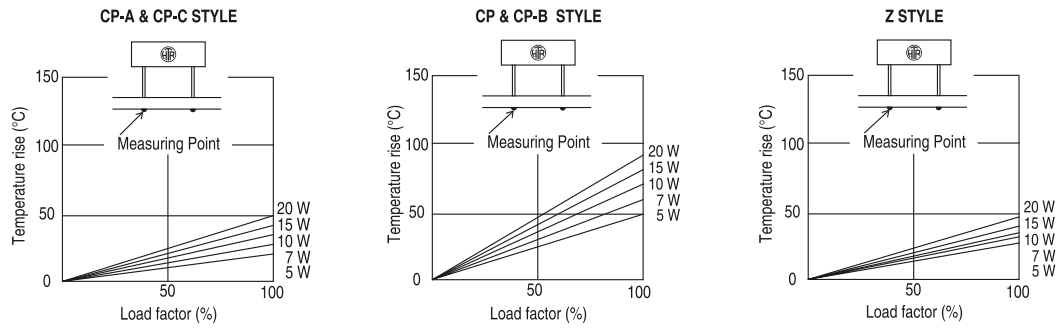
MECHANICAL SPECIFICATIONS

PARAMETER/ PERFORMANCE TEST	TEST METHOD- DETAILS	PERFORMANCE REQUIREMENTS
Pull Test / Robustness of Terminations	Direct load for 15 secs 2 to 4.5 kgs depending on size	No effect
Solderability	JIS - C - 5202 para 6.5 (Dwell time in solder - 3 secs (± 0.5 secs)	$\Delta R \pm [1\% + R05]$ Continuous and satisfactory (95% Min coverage)



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TEMPERATURE RISE CHART



PCB DESIGN SUGGESTIONS

Power Rating	CP - & CP-A TYPES	HCP - Z TYPES	P
5W			15.0
7W			22.5
10W			35.0
15W			32.5
20W			48.0
	CP-B & CP-C TYPES		

TYPICAL APPLICATIONS

HCP series has terminations as per international dimensions so they can be merely snapped on to PC boards having international designs / size and then wave soldered. For PCB design suggestions, please refer to the section above.

HCP series resistors can function as a dual purpose device - fuse as well as resistor. Since this involves a compromise between fusing and resistive functions, each design is tailored to ensure desired performance. Please consult factory with requirements.

Note :

1. The ceramic cases used may be steatite ceramic or corderite ceramic or high alumina ceramic. Thus, the ceramic cases may be off-white or variations of brown / grey, colours which are inherent to these ceramic material.
2. Types CP-10 / 10A, CP-15 / 15A / 15B / 15C / 15CP / 15Z & CP-20 / CP-20A / 20B / 20C / 20Z may have cases with bottom bumps as per international practice.

ORDERING INFORMATION

Series	Type	Packing	Resistance Value	Tolerance
HCP	CP-5/CP-5*	Bulk CP-5/CP-5*	10R	J

For RoHS version - CP-5*