

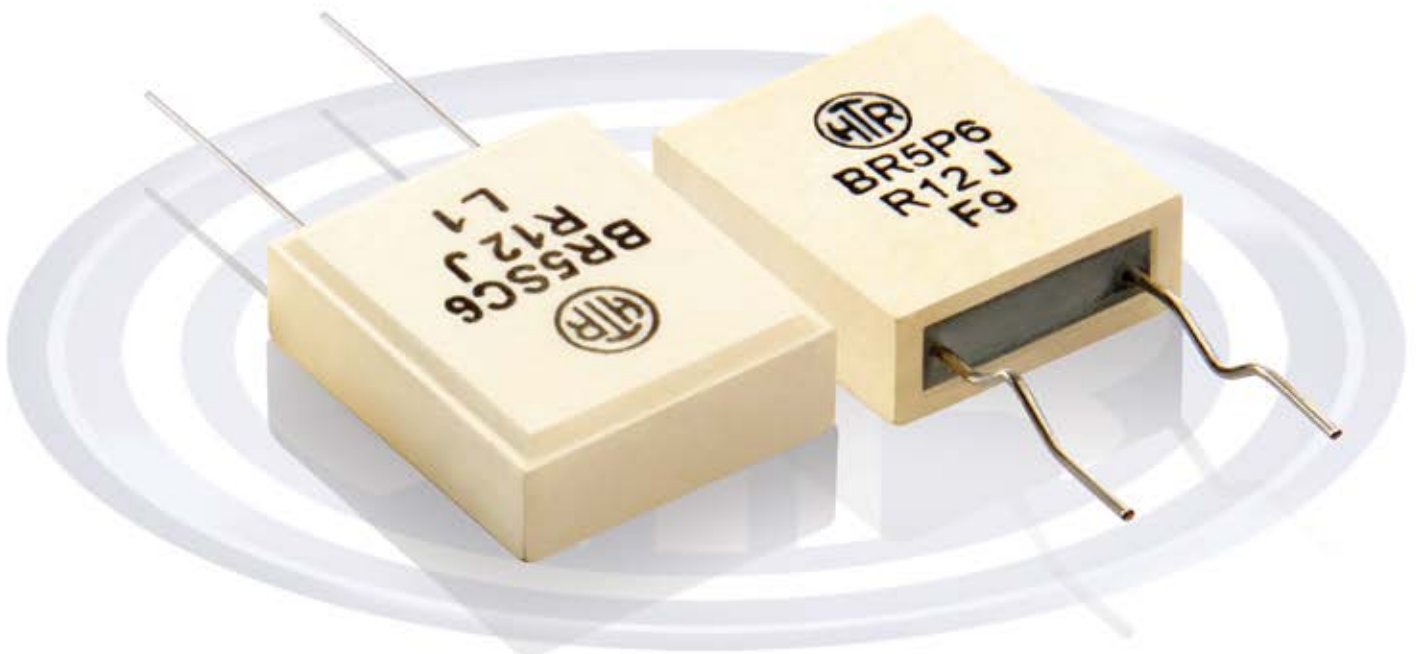
## CURRENT SENSE / LOW OHM CERAMIC ENCASED TYPE

### BR SERIES

#### CERAMIC ENCASED Slim Type Metal Plate Type / Low Inductance

- Power type current sensing resistor
  - Twin style now available
- Reduces switching distortion at high frequency
  - 2W to 10W
  - R01 to 1R8

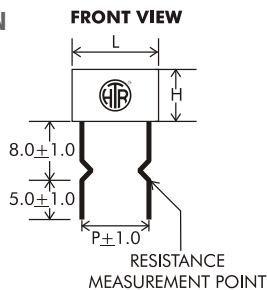
AEC-Q200 Qualified



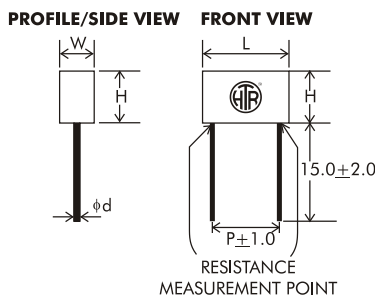


CURRENT SENSE / LOW OHM CERAMIC ENCASED TYPE  
**BR**

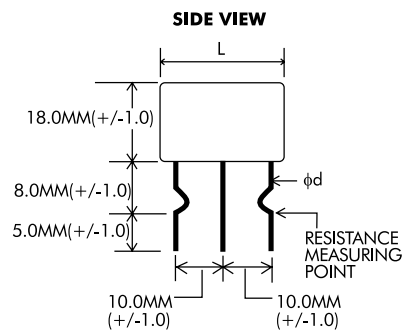
**PHYSICAL CONFIGURATION**



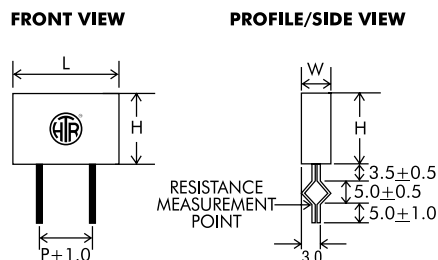
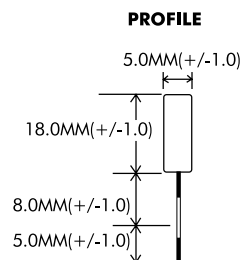
**TYPE BR**



**TYPE BR-S**



**TYPE BR-55**



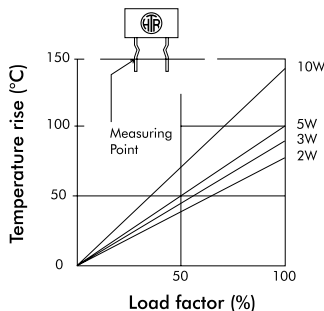
**TYPE BR-P**

HTR TYPE	POWER RATING at 70°C	DIMENSIONS (mm)					RESISTANCE RANGE		TYPICAL WEIGHT PER PC (gms)
		L ±1	W ±1	H ±1	φ d ±0.05	P ±1	min	max	
BR-2	2W	14.0	4.5	8.5	0.6/0.8	9.0	R01	R68	1.5
BR-3	3W	14.0	5.0	13.5	0.6/0.8	9.0	R01	R68	2.2
BR-5	5W	15.0	5.0	18.0	0.6/0.8	9.0	R01	1R0	3.4
BR-10	10W	26.5	5.0	18.0	0.8	20.0	R01	1R8	6.4
BR-55	5W+5W	26.5	5.0	18.0	0.8	10+10	R03x2	R47x2	7.0

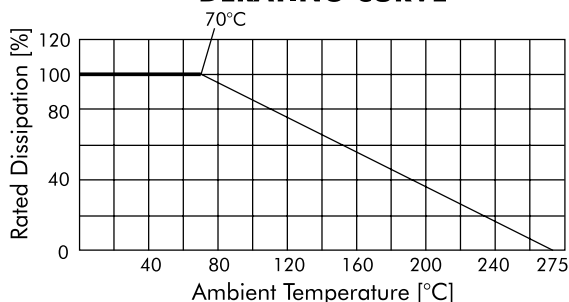
**Notes:**

- These resistors are available in a choice of 3 mounting configurations to suit the varied needs of different circuit designers.
- Type BR- and BR-P are two different preforming styles.
- Type BR-S has straight leads - MPC style and can be mounted flush with the PCB for rigid mounting.
- In the case of BR-55, the deviation in resistance value between the two internal resistors in any one piece is to be maintained at +/- 1% tolerance.
- The measurement point at which the resistance value must be checked is clearly indicated in the diagram given above.
- The resistance values must be checked using 4½ digit micro-ohm meter with four wire system & insulated clips.

**Temperature Rise Chart**



**DERATING CURVE**





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**BR**

## ELECTRICAL CHARACTERISTICS / DATA

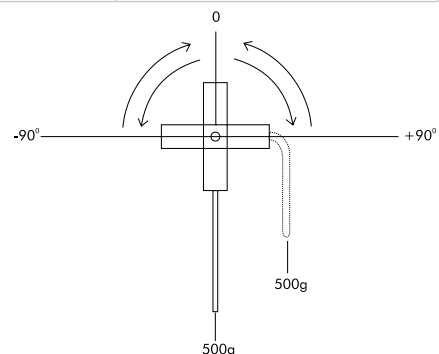
PARAMETER/PERFORMANCE TEST & TEST METHOD	PERFORMANCE REQUIREMENTS
<b>Power Rating</b> (Rated Ambient Temperature)	Full Power dissipation at 70°C and linearly derated to zero at +275°C (Refer Derating Curve above)
<b>Operating Temperature Range</b> (Ambient)	-55°C to +275°C with suitable derating as per derating curve shown above.
<b>Voltage Rating / Limiting Voltage / Max. Working Voltage</b>	$V = \sqrt{P \times R}$
<b>Resistance Tolerances Available JIS - C - 5202 para 5.1</b>	±10% (K); ±5% (J); ±3% (H)
<b>Resistance to Heat</b> (Ambient) Exposure to ambient heat 235°C (+0/-5°C) for 2 hours (-0/+0.1 hours). <b>Test condition</b> – Ambient temperature shall be raised gradually to 235°C from room temperature in 35 to 45 min. and returned to room temperature in the same way. Resistance value to be checked 1 hour after resistor is returned to room temperature.	$\Delta R \pm [2\% + R05]$

## ELECTRICAL & ENVIRONMENTAL CHARACTERISTICS / DATA

Parameter / Performance Test	Test Method - Details	Performance Requirements
<b>Short Time Overload</b>	JIS - C - 5202 para 5.5[Upto 3W - condition A (R.V x 2.5 for 5 secs) 5W and above - condition B(Voltage corresponding to 10 times power for 5 sec)	$\Delta R \pm [2\% + R05]$
<b>Dielectric Withstanding Voltage / Voltage Proof</b>	JIS - C - 5202 para 5.7 Condition F (Limiting voltage x 2 or 500V)	$\Delta R \pm [1\% + R05]$
<b>Temperature Co-efficient of Resistance</b>	JIS - C - 5202 para 5.2	± 325ppm/°C
<b>Insulation Resistance</b>	JIS - C - 5202 para 5.6 (Condition F)	>1000MΩ (Min)
<b>Endurance - under load with humidity</b>	JIS - C - 5202 para 7.9 1000 hours at 40°C ± 2°C, 95% R.H with 1/10 limiting voltage (1.5 hours on / 0.5 hours off)	$\Delta R \pm [5\% + R05]$ - Typical
<b>Load Life</b>	JIS - C - 5202 para 7.10 1000 hours at 70°C with limiting voltage (1.5 hours on / 0.5 off)	$\Delta R \pm [\leq 5\% + R05]$ - Average
<b>Temperature Cycling</b>	JIS - C - 5202 para 7.4 [Room temperature → -55°C → Room temperature → 155°C → Room temperature for 5 cycles]	$\Delta R \pm [2\% + R05]$ - Typical
<b>Damp Heat</b> (Steady State)	JIS - C - 5202 para 7.5	$\Delta R \pm [2\% + R05]$ - Average
<b>Solvent Resistance</b>	JIS - C - 5202 para 6.9 Solvent A - IPA for 60secs ± 10 secs.	No effect on case filling or marking
<b>Resistance to Soldering Heat</b>	The terminals shall be immersed in molten solder bath at 260°C (±10°C) for 3 secs (±0.5 secs). Approximately 4mm from resistor body. (For Pb free solder, please refer to factory)	$\Delta R \pm [1\% + R05]$ - Typical

## MECHANICAL SPECIFICATIONS

Parameter / Performance Test	Test Method - Details	Performance Requirements
<b>Robustness of Terminations</b>	Pull Test - Direct load for 15 secs 2 to 4.5 kgs Bend Test - At least 2 times - to 90° and back in both quadrants with 500gms suspended (Refer diagram below)	No effect
<b>Non Flammability</b>	JIS - C - 5202 para 7.12.3.1	No effect





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## TYPICAL APPLICATIONS

These low inductance and flame retardant resistors have evolved to become cost effective solutions for applications like the protection of the output transistor in audio visual equipment and current sensing in switching and linear power supplies. By providing low resistance value coupled with low inductance, the switching distortion with high frequency which affects the sound quality of audio equipment is minimized. The very nature of its size and construction makes the BR series thin and light weight which translates into the saving of PCB space.

### Note

- Types BR-2,3 and 5 are available with choice of lead diameters - 0.6mm or 0.8mm.  
If this is not specified at the time of ordering, the device will be supplied with 0.8mm diameters leads.
- The BR-5 type are also available with leads cropped to lengths specified by the customer if required. Please contact factory for details.
- The ceramic cases used may be steatite ceramic or corderite ceramic or high alumina ceramic. Hence, the ceramic cases may be off-white or variations of brown and variations of grey; colours which are inherent to these ceramic materials.

## ORDERING INFORMATION

Series	HTR Type	Packing	Resistance Value	Tolerance
BR	BR5 / BR5*	Bulk BR5 / BR5*	R15	K

- 1) For RoHS version – BR-5 \*
- 2) For cropped leads version - BR-5 SC