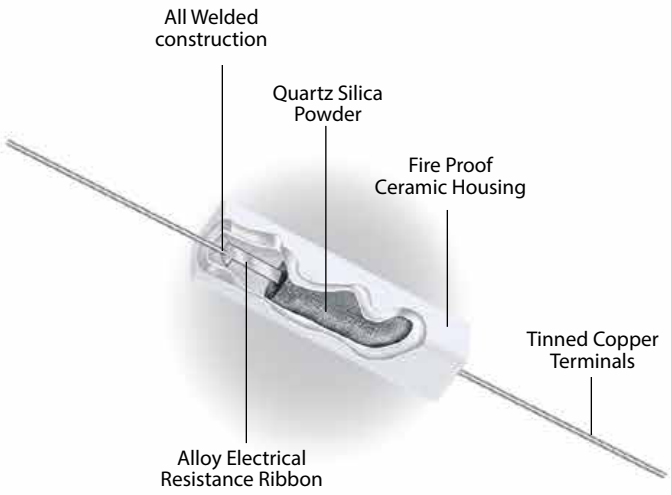


CURRENT SENSE / LOW OHM CERAMIC ENCASED TYPE

HEAL

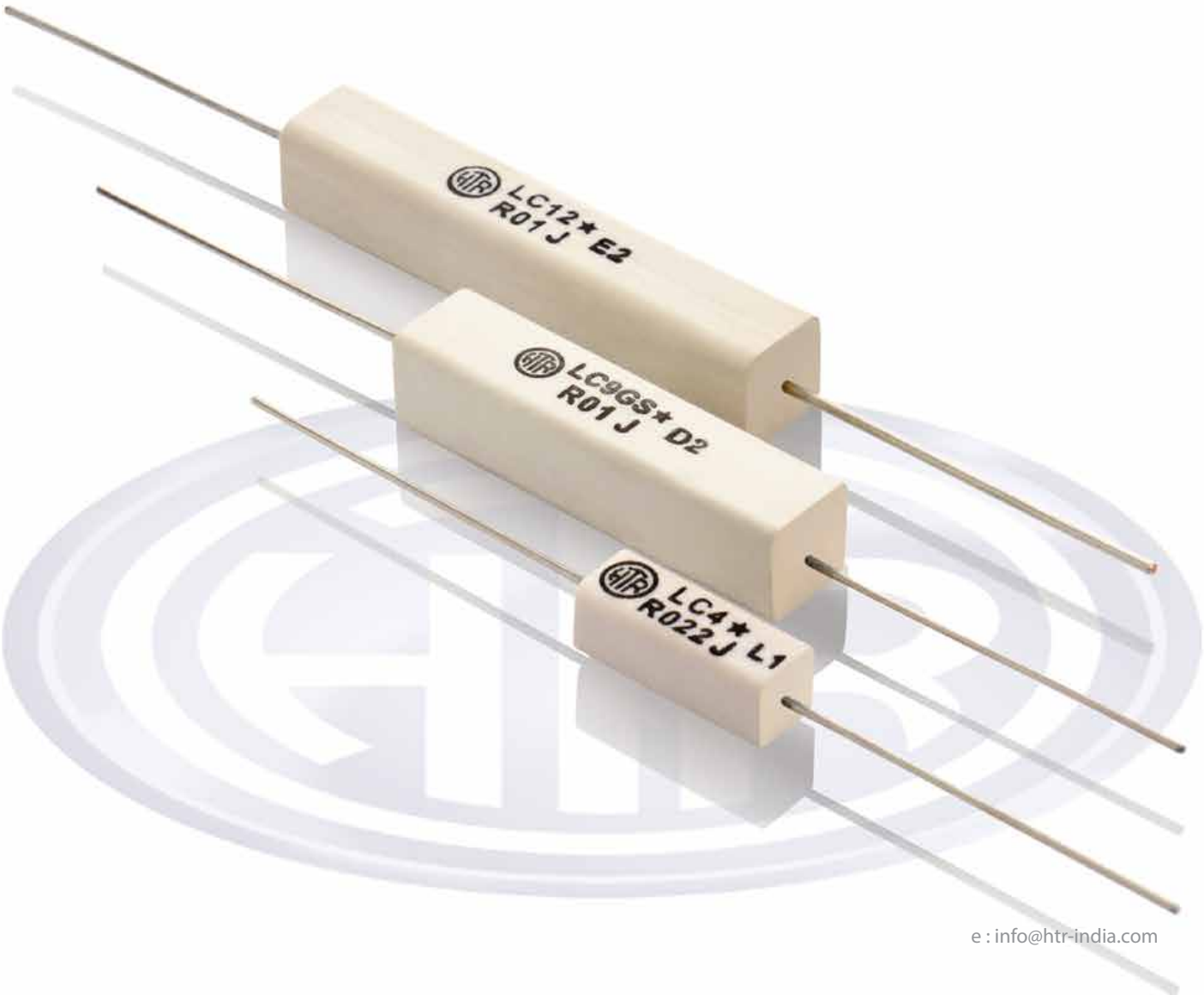
SERIES

LOW OHM/LOW INDUCTANCE

Current Sense Applications

- 2.5 W to 12 W
- R 0025 to R 20

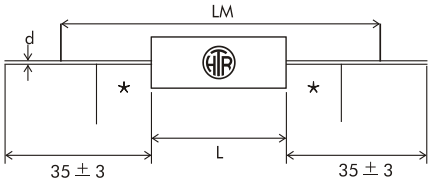
Pb-free * RoHS COMPLIANT

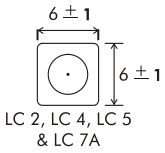


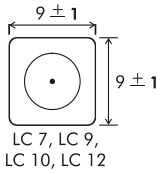
CURRENT SENSE / LOW OHM CERAMIC ENCASED TYPE

HEAL

PHYSICAL CONFIGURATION







*6mm, reduced solderability in this area

HTR TYPE	POWER RATING at 70°C	DIMENSIONS (mm)			RESISTANCE RANGE		TYPICAL WEIGHT PER PC (gms)
		L ±1.5	▲ LM ±1	d ±0.05	min	max	
LC 2	2.5 W	15.0	35.0	0.8	R0025	R047	1.6
LC 4	4 W	18.0	40.0	0.8	R003	R082	2.0
LC 5	5 W	25.0	45.0	0.8/1.0	R003	R10	2.3
LC 7	7.5 W	25.0	45.0	0.8/1.0	R003	R10	4.8
LC 7A	7 W	38.0	60.0	0.8/1.0	R004	R15	4.9
LC 9	9 W	38.0	60.0	0.8/1.0	R004	R15	7.3
LC 10	10 W	38.0	60.0	1.0	R004	R15	7.5
LC 12	12 W	50.0	70.0	1.0	R008	R20	10.0

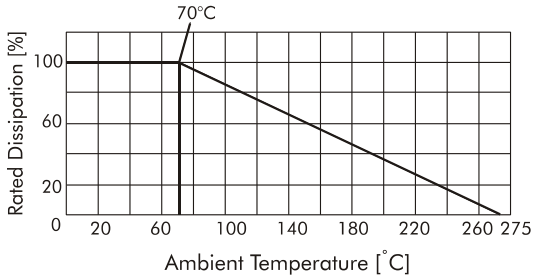
- Resistance values above the maximum range are possible on special request.

▲ Resistance values must be checked using 4½ digit micro-ohm meter with four wire system and insulated clips and the resistance value must be checked at dimension LM as given in the table above. In differing conditions please compensate by ± 0.4mΩ/cm.

- LC 5 / LC 7 / LC 7A & LC 9 are also available with 1.0mmØ terminations which contributes to lowering the TCR of the resistor.

* If customer require extra touch moulding then mark resistor with letter "GS".

DERATING CURVE



ELECTRICAL & ENVIRONMENTAL CHARACTERISTICS / DATA

PARAMETER/PERFORMANCE TEST&TEST METHOD	PERFORMANCE REQUIREMENTS
Power Rating (Rated Ambient Temperature)	Full Power dissipation at 70°C and linearly derated to zero at +275°C - [Refer Derating curve above]
Resistance Tolerances Available	±10% [K]; ±5% [J]; ±3% [H]; ±2%[G]; ±1% [F]; ±0.5% [D]
Temperature Range	-55°C to +275°C with suitable derating as per derating curve
Voltage Rating / Limiting Voltage / Max Working Voltage	$V = \sqrt{PxR}$
Voltage Proof / Dielectric Withstanding Voltage	ΔR ± (1% + R0005). No flashover, mechanical damage.
Short Time Overload (5 x Rated power for 5 secs)	ΔR ± [0.75% + R0005] - Average. ΔR ± [1.25% + R0005] - For resistance values near maximum range.
Temperature Co-efficient of Resistance [Measured from -55°C to +125°C referenced to +25°C]	± 60 ppm/°C to 900 ppm/°C [Depending on resistance value and can be lowered by using 1mmØ terminations]
Insulation Resistance	> 1000MΩ (min)
Temperature Cycling (Room temperature →-55°C→Room temperature →200°C →Room temperature for 5 cycles)	ΔR ± [0.5% + R0005]
Damp Heat (Steady State) [40°C at 93% R.H for 1000 hours - no load applied]	ΔR ± [0.5% + R0005] - Average
Endurance - Load Life [70°C with limiting voltage - 1.5 hours on / 0.5 hours off for 1000 hours]	ΔR ± [≤ 2.75% + R0005] - Average

MECHANICAL SPECIFICATIONS

PARAMETER/PERFORMANCE TEST&TEST METHOD	PERFORMANCE REQUIREMENTS
Terminal Tensile Strength	40 Newtons
Resistance to Soldering Heat (260 - 270°C for 10 sec)	ΔR ± [0.2% + R0005] - Typical
Solderability (As per IEC Pub. 60068 - 2 - 20 Ta)	Must meet the requirements laid down.
Marking	As per IEC Pub. 60062

TYPICAL APPLICATIONS

HEAL Series is an innovative method of providing low inductance resistors in a ceramic body. The resistive element consists of a flat metal band which is welded to tinned copper terminals before encapsulation. These resistors are finding increased use in current sensing for industrial and power conditioning applications.

For effective utilization of these resistors, please refer "Applications / Design notes for current sense resistors".

Note : The ceramic cases used may be steatite ceramic, 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.

ORDERING INFORMATION

Series	HTR Type	Packing	Resistance Value	Tolerance
HEAL	LC5 / LC5*	Bulk LC5 / LC5* Tape & Ammo LC5T / LC5*T Tape & Reel LC5TR / LC5*TR	R047	J

1. For RoHS version - LC5 *
2. For Tape / Reel - LC5 TR
3. For 1.0mm terminations - LC5 (1)
4. If current required during normal operation exceeds 31 amps on a continuous basis, it is advisable to opt for 2mm terminations. For this - LC5 (2).
5. "GS" stand for Grey Silox - applicable for customer who washes PCB with solvent - LC5 GS.

TAPING : Types LC 2, LC 4 & LC 5 can be supplied in taped form. Please refer the Tape / Reel specifications.