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LOW OHM POWER RESISTORS

HEE

SERIES
Size 5930

• Open frame electron beam welded punched out type.
•Power Rating at 100°C - upto 10W
•Power Rating at 70°C - upto 15W
R0001 to R002

As per AEC-Q200

Pb-free * RoHS COMPLIANT

e : info@htr-india.com

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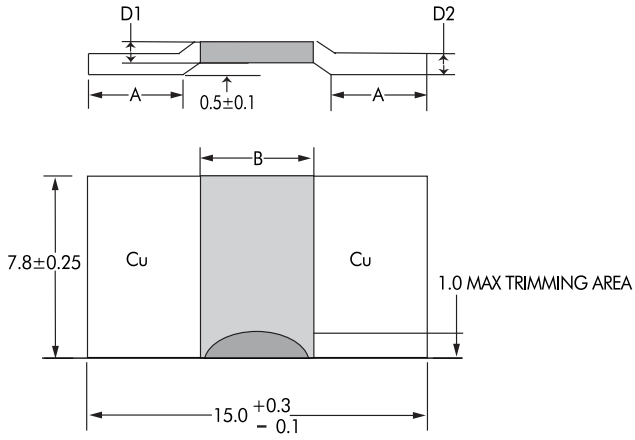
PHYSICAL CONFIGURATION



DIMENSIONAL TABLE

SR NO.	HTR TYPE	WATTAGE AT 100° C	WATTAGE AT 70° C	A (mm)	B (mm)	D1 (mm)	D2 (mm)	INTERNAL HEAT RESISTANCE (Rthi)	TCR (ppm)	TYPICAL WT. PER PC (gms)
1	HEE10W* R0001 F	10W	15W	4.95(+0.1/-0.7)	3.7 (+0.2/-0.3)	1.47 ± 0.10	1.47 ± 0.10	2° K/W	< 200	1.65
2	HEE10W* R0002 F	10W	15W	4.2(+0.1/-0.7)	5.0 (+0.2/-0.3)	1.37 ± 0.10	1.37 ± 0.10	3° K/W	< 100	1.60
3	HEE7W* R0003 F	7W	10W	4.2(+0.1/-0.7)	5.0 (+0.2/-0.3)	0.91 ± 0.10	0.91 ± 0.10	4.5° K/W	< 100	1.10
4	HEE7W* R0005 F	7W	10W	4.2(+0.1/-0.7)	4.4 (+0.2/-0.3)	1.63 ± 0.10	1.63 ± 0.10	5° K/W	< 75	1.62
5	HEE6W* R0005 F	6W	8W	4.2(+0.1/-0.7)	5.0 (+0.2/-0.3)	0.55 ± 0.10	0.55 ± 0.10	8° K/W	< 75	0.61
6	HEE6W* R001 F	6W	9W	4.2(+0.1/-0.7)	4.9 (+0.2/-0.3)	0.91 ± 0.10	0.91 ± 0.10	8° K/W	< 50	0.90
7	HEE5W* R0006 F	5W	8W	4.2(+0.1/-0.7)	5.0 (+0.2/-0.3)	0.46 ± 0.10	0.46 ± 0.10	10° K/W	< 75	0.53
8	HEE4W* R002 F	4W	6W	4.2(+0.1/-0.7)	4.9 (+0.2/-0.3)	0.46 ± 0.10	0.46 ± 0.10	16° K/W	< 50	0.44

APPLICATIONS

- Accurate current sensing for power hybrid applications.
- Suitable for welding on bus bars.
- High current applications for automotive market.
- Frequency convertors.
- Power modules.

FEATURES

- 10W constant power possible in R0002.
- Capable of carrying current upto 225amp (R0002) continuous basis.
- Sturdy copper connectors.
- Excellent long term stability.
- Maximum solder temperature upto 350°C for 30 seconds.

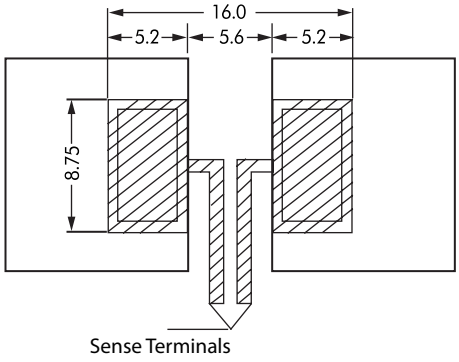
ELECTRICAL AND ENVIRONMENTAL CHARACTERISTICS

PARAMETER / PERFORMANCE TEST & TEST METHOD	PERFORMANCE REQUIREMENTS
Power Rating	For FeCrAl - Full power dissipation at 70° C and linearly derated to zero at +170° C. For Manganin (< 0.5% Improved Stability) - Full power dissipation at 90° C & linearly derated to zero at +140° C. For Manganin (< 1% Stability) - Full power dissipation at 120° C and linearly derated to zero at +170° C.
Inductance	< 3nH
Resistance Tolerance	± 1% (0.5% and other tolerance available on request)
Temperature Range	- 55° C to +170° C
Voltage Rating / Limiting Voltage / Max. Working Voltage (Subject to max. Terminal Temperature of 120° C)	$\sqrt{P \times R}$
Low Temperature Storage and Operation [-65° C for 24 h**]**	ΔR ± 0.1% - Average
Temperature Coefficient of Resistance (Ambient Temperature Range 20° C - 60° C)	From 50 ppm / K (Depending on Resistance Value)
Temperature Cycling -2000 cycles (-55° C to 150° C)	ΔR ± 0.5% - Average
Life Test / Operational Life - 2000 h rated power with Temperature limitation on Terminal kept at 120° C	ΔR ± 1% - Average
Moisture Resistance [MIL-STD-202 method106]	ΔR ± 0.1% - Average
Mechanical Shock [100 g. 6 ms half sine]	ΔR ± 0.2% - Typical
Vibration, High Frequency [20 g. 10-2000 Hz]	ΔR ± 0.2% - Typical
Bias Humidity [+85° C, 85% RH, 1000h]	ΔR ± 0.5% - Typical

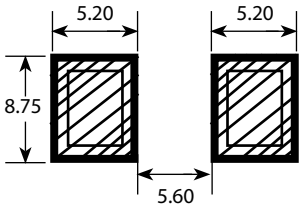
RECOMMENDED SOLDER PROFILE

Reflow, IR - and wave soldering			
Temperature (°C)	260	255	217
Time (Sec)	Peak	40	90

Recommended PCB layout for high precision applications



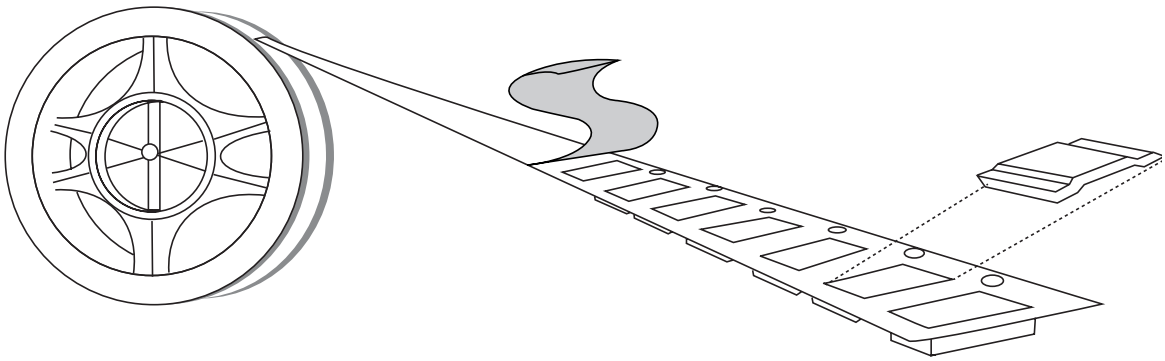
Recommended PCB layout for normal application



PACKING

A. BULK

Resistors shall be packed in sealed plastic packets with silica gel pouch placed in small cardboard cartons (Type 'I' Box) of approximate size 70mmx70mmx70mm - 1000pcs. & such 4 Boxes packed in (Type 'A' Box) of approximate size 200mmx150mmx70mm & 8 Boxes in (Type 'B' Box) of approximate size 295mmx140mmx80mm. & such 36 Boxes of Type 'I' or 6 Boxes of Type 'A' packed in Master Carton of approximate size 320mmx245mmx245mm.



B. TAPE & REEL PACKING

SPECIFICATION	TAPEWIDTH	PARTS PER REEL
EIA-481-D	24mm	2000 pcs

Storage Condition (Packed) : Temp 25°C to 35°C, Humidity 30 to 80% RH, Shelf life-12 months

Floor Life (Unpacked) : Temp 25°C to 35°C, Humidity 30 to 80% RH, Floor life-15 days

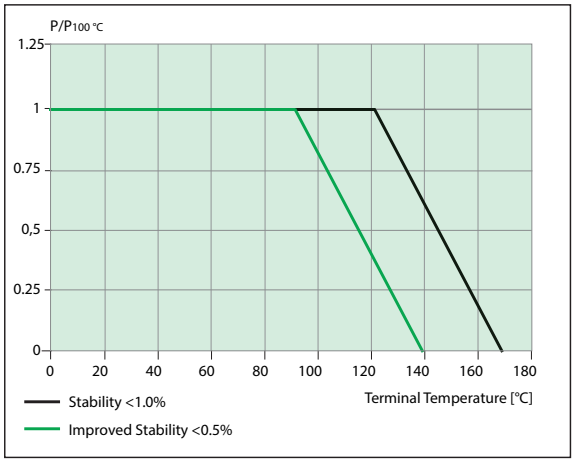
MARKING

HTR PART NO	PRINTING
HEE10W*ROOO1 F	HTR HEE ROOO1 1% DATECODE

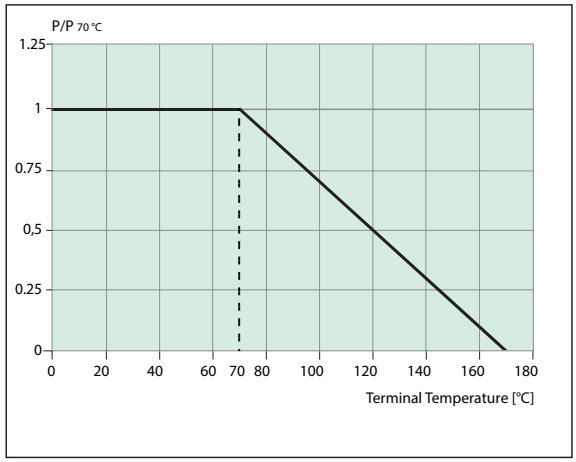
ORDERING INFORMATION

SERIES	TYPE	PACKING	RESISTANCE VALUE	TOLERANCE
HEE	HEE6W / HEE6W*	Bulk - HEE6W / HEE6W* Tape & Reel - HEE6WTR / HEE6W*TR	R001	F

TYPICAL POWER DERATING CURVE FOR RESISTOR WHEN FULL POWER IS AT 90°C & 120°C

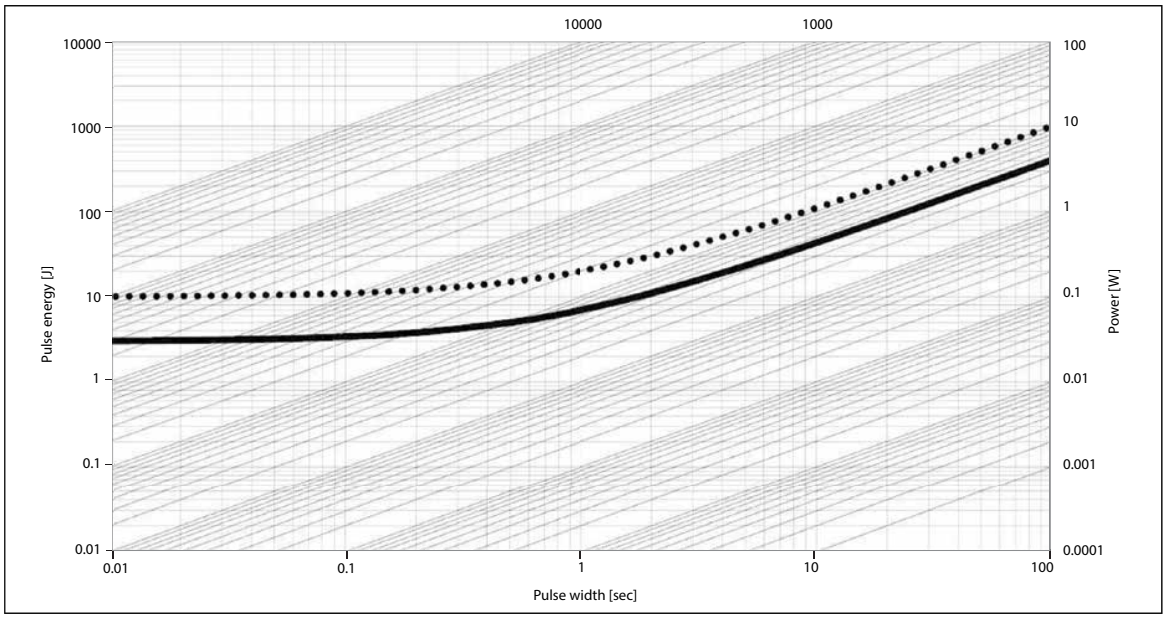


TYPICAL POWER DERATING CURVE FOR RESISTOR WHEN FULL POWER IS AT 70°C



In case the Design Engineer requires a specific graph of a particular component it can be supplied on request.

MAXIMUM PULSE ENERGY WITH RESPECT TO PULSE POWER FOR PERMANANT OPERATION



In this graph the max. & min. curve are shown as ••• and — for all resistance values, the area between the max. & min. curve is applicable.
In case the Design Engineer requires a specific graph of a particular component it can be supplied on request.

TYPICAL TEMPERATURE DEPENDANCE OF THE ELECTRICAL RESISTANCE