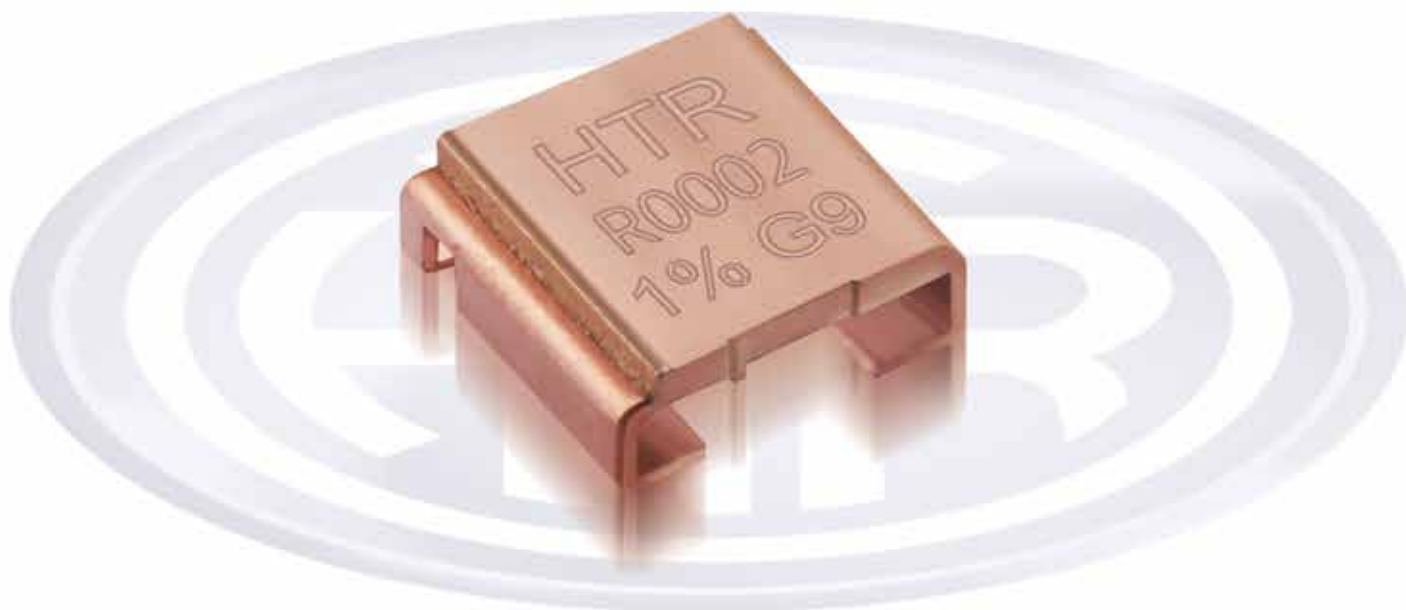




**LOW OHM POWER
RESISTORS**

**HBE
SERIES
Size 2726**

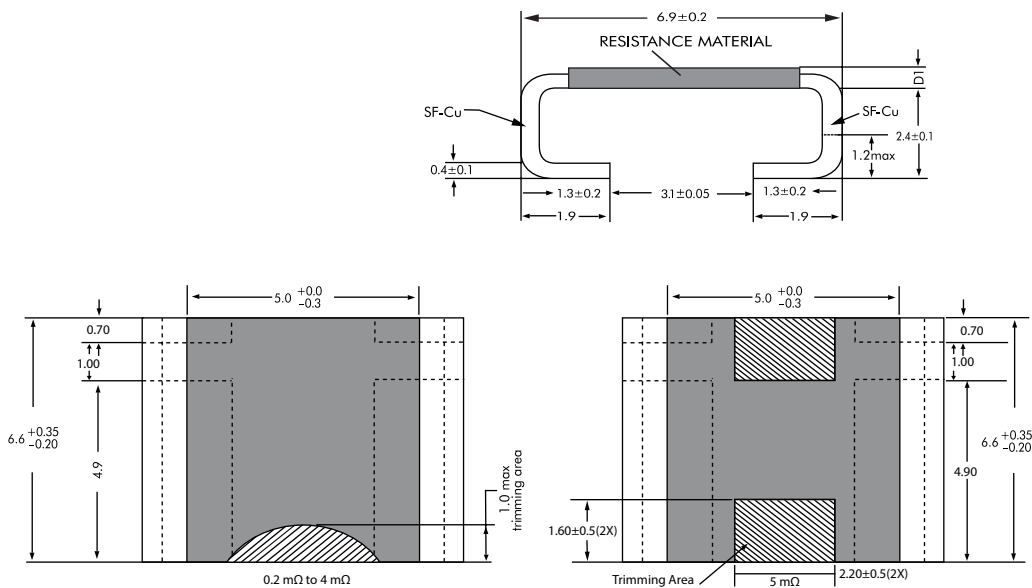
- Open frame electron beam welded punched out type.
- Power Rating at 100°C - upto 7W
- Power Rating at 70°C - upto 12W
R0002 to R005





LOW OHM
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PHYSICAL CONFIGURATION



DIMENSIONAL TABLE

SR NO.	HTR TYPE	RESISTANCE VALUE	TOLERANCE	WATTAGE AT 100° C	WATTAGE AT 70° C	D1 (mm)	INTERNAL HEAT RESISTANCE (Rthi)	TCR (PPM)	TYPICAL WT. PER PC (Gms)
1	HBE7W R0007	R0007	$\pm 0.25, \pm 0.5, \pm 1, \pm 2, \pm 3, \pm 5\%$	7W	12W	0.47 ± 0.10	10° K/W	<50	0.47
2	HBE5W R0002	R0002	$\pm 0.25, \pm 0.5, \pm 1, \pm 2, \pm 3, \pm 5\%$	5W	12W	1.30 ± 0.10	4° K/W	< 20	0.73
3	HBE5W R0003	R0003	$\pm 0.25, \pm 0.5, \pm 1, \pm 2, \pm 3, \pm 5\%$	5W	12W	0.99 ± 0.10	5° K/W	< 50	0.65
4	HBE5W R0005	R0005	$\pm 0.25, \pm 0.5, \pm 1, \pm 2, \pm 3, \pm 5\%$	5W	9W	0.65 ± 0.10	8° K/W	< 20	0.45
5	HBE5W R001	R001	$\pm 0.25, \pm 0.5, \pm 1, \pm 2, \pm 3, \pm 5\%$	5W	7W	0.35 ± 0.10	15° K/W	< 50	0.30
6	HBE4W R002	R002	$\pm 0.25, \pm 0.5, \pm 1, \pm 2, \pm 3, \pm 5\%$	4W	7W	0.50 ± 0.10	14° K/W	< 50	0.50
7	HBE3W R003	R003	$\pm 0.25, \pm 0.5, \pm 1, \pm 2, \pm 3, \pm 5\%$	3W	5W	0.34 ± 0.10	21° K/W	< 50	0.31
8	HBE2W R004	R004	$\pm 0.25, \pm 0.5, \pm 1, \pm 2, \pm 3, \pm 5\%$	2W	4W	0.34 ± 0.10	28° K/W	<50	0.30
9	HBE2W R005	R005	$\pm 0.25, \pm 0.5, \pm 1, \pm 2, \pm 3, \pm 5\%$	2W	3W	0.34 ± 0.10	33° K/W	<50	0.28

APPLICATIONS

- Current sensor for power hybrid applications.
- Automotive applications that require high current capability.
- Frequency converters.
- Power modules.

FEATURES

- 5W constant power possible in R0005.
- 4 terminal connections for exceptionally accurate measurement.
- Excellent long term stability due to nature of construction.



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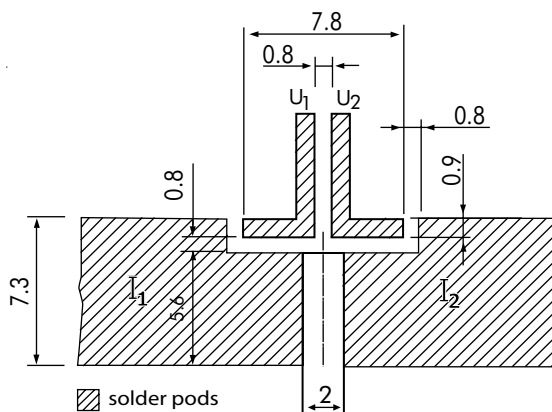
ELECTRICAL AND ENVIRONMENTAL CHARACTERISTICS

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 100° C & linearly derated to zero at +140° C. For Manganin (< 1% Stability) - Full power dissipation at 130° C and linearly derated to zero at +170° C.
Inductance	< 3nH
Temperature Range	- 65° C to +170° C (Suitably derated as per derating curve provided)
Voltage Rating / Limiting / Max. Working Voltage (Subject to max. Terminal Temperature of 140° C)	$\sqrt{P \times R}$
Low Temperature Storage and Operation [-65° C for 250 h]	$\Delta R \pm 0.1\%$ - Average
Temperature Coefficient of Resistance (Ambient Temperature Range 20° C - 60° C)	From 20 ppm / K (Depending on Resistance Value)
Temperature Cycling -2000 cycles (-55° C to 150° C)	$\Delta R \pm 0.5\%$ - Average
Life Test / Operational Life - 2000 h rated power with Temperature limitation on Terminal kept at 140° C	$\Delta R \pm 1\%$ - Average (In covered condition)
Moisture Resistance [MIL-STD-202 method106]	$\Delta R \pm 0.1\%$ - Average
Mechanical Shock [100 g. 6 ms half sine]	$\Delta R \pm 0.2\%$ - Typical
Vibration, High Frequency [20 g. 10-2000 Hz]	$\Delta R \pm 0.2\%$ - Typical
Bias Humidity [+85° C, 85% RH, 1000h]	$\Delta R \pm 0.5\%$ - Typical
Resistance to Soldering Heat	260°C for 10 sec / 8h steam aging
High Temperature Exposure – 2000h / 170°C	$\Delta R \pm 1\%$ - Average (In covered condition)

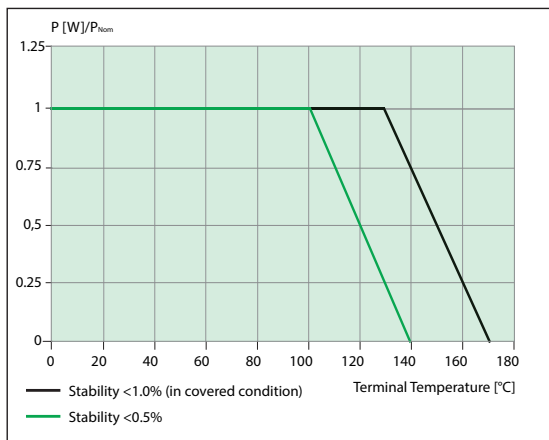
RECOMMENDED SOLDER PROFILE

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

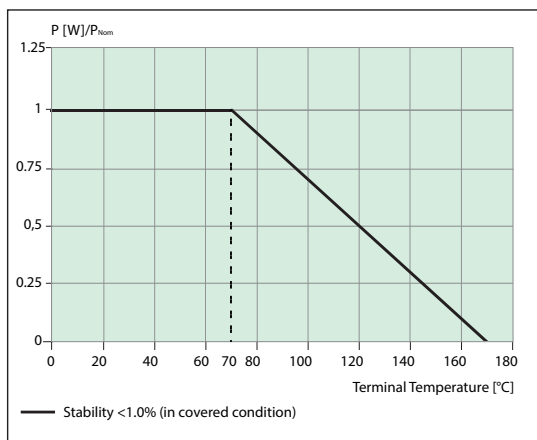
RECOMMENDED PCB - LAYOUT



TYPICAL POWER DERATING CURVE FOR RESISTOR WHEN FULL POWER IS AT 100°C & 130°C

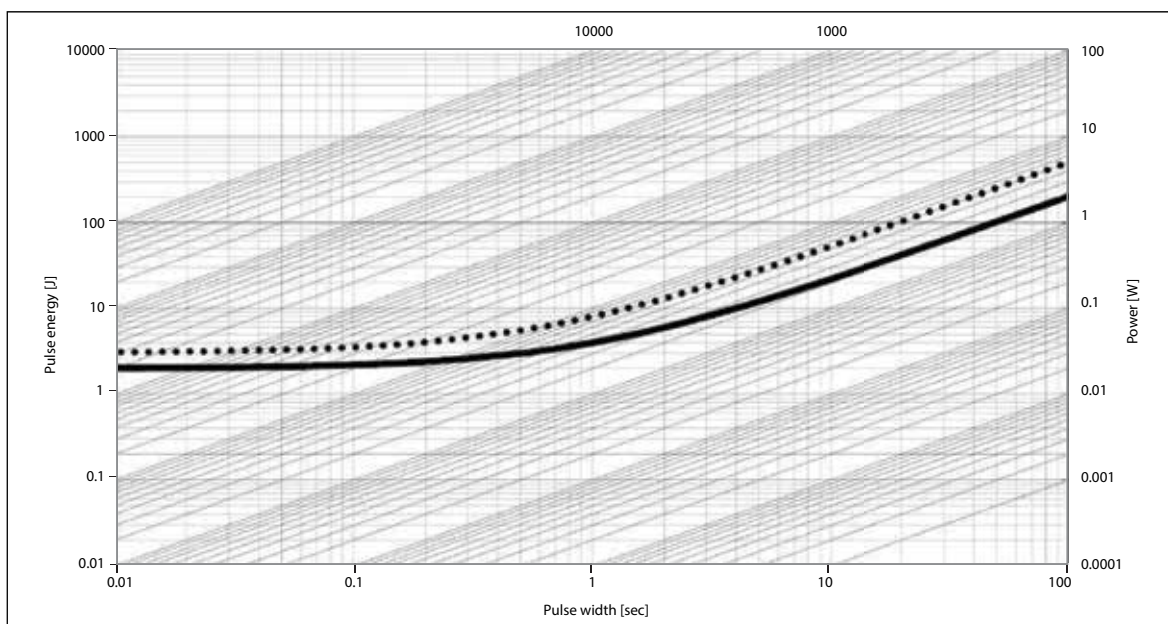


TYPICAL POWER DERATING CURVE FOR RESISTOR WHEN FULL POWER IS AT 70°C



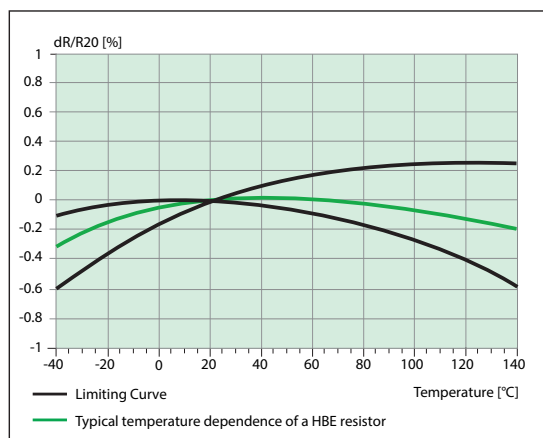
In case the Design Engineer requires a specific graph of a particular component it can be supplied on request.

MAXIMUM PULSE ENERGY WITH RESPECT TO PULSE POWER FOR PERMANENT 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





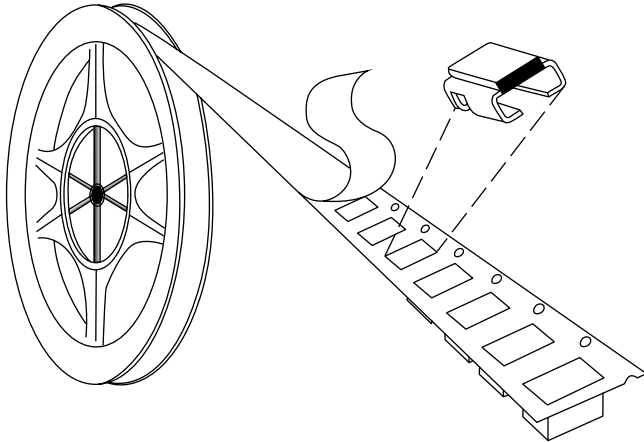
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PACKAGING

A. BULK

Resistors shall be packed in plastic Box-K44 of approximate size 162X104X37mm- 1500pcs/box & this box will be vacuum sealed with polythene of 100 micron. With enclose silica gel.

B. TAPE & REEL PACKING



SPECIFICATION	TAPEWIDTH	PARTS PER REEL
EIA-481-D	16mm	1400 pcs

STORAGE CONDITION

Shelf Life (packed) : Temp 25°C to 35°C, Humidity 30 to 80% RH, Shelf life-12 months floor

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

ORDERING INFORMATION AS AN EXAMPLE

SERIES	HTR PART NO.	TYPE	RESISTANCE VALUE	TOLERANCE	MARKING ON RESISTOR
HBE	HBE5W	Tape & Reel – HBE5WTR	R001	± 1%	HTR R001 1% DATECODE
HBE	HBE5W	Bulk - HBE5W	R0002	± 0.5%	HTR R0002 0.5% DATECODE
HBE	HBE7W	Tape & Reel – HBE7WTR	R0007	± 5%	HTR R0007 5% DATECODE

Part no of HBE5W , Tape and reel with resistance value R001 and 1% tolerance, will be HBE5WTR R001 ±1%

Part no of HBE5W, Bulk with resistance value R0002 and 0.5% tolerance, will be HBE5W R0002 ±0.5%

Part no of HBE7W, Tape and reel with resistance value R0007 and 5% tolerance, will be HBE7WTR R0007 ±5%