



**LOW OHM POWER  
RESISTORS**

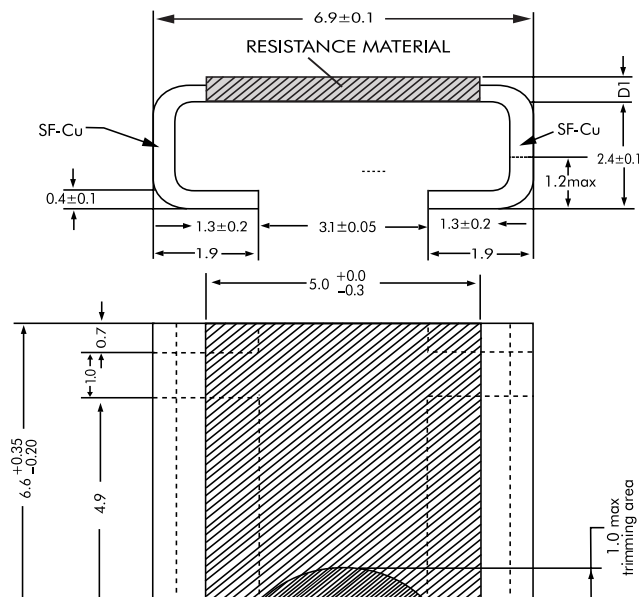
**HBE  
SERIES  
Size 2725**

- 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

**As per AEC-Q200**



**PHYSICAL CONFIGURATION**



**DIMENSIONAL TABLE**

SR NO.	HI-TECH PART NAME	WATTAGE AT 100° C	WATTAGE AT 70° C	D1 (mm)	INTERNAL HEAT RESISTANCE (Rthi)	TCR (PPM)	TYPICAL WT. PER PC (Gms)
1	HBE7W* R0007 F	7W	12W	0.47 ± 0.10	10° K/W	<50	0.47
2	HBE5W* R0002 F	5W	12W	1.20 ± 0.10	4° K/W	< 20	0.73
3	HBE5W* R0003 F	5W	12W	0.99 ± 0.10	5° K/W	< 50	0.65
4	HBE5W* R0005 F	5W	9W	0.59 ± 0.10	8° K/W	< 20	0.45
5	HBE5W* R001 F	5W	7W	0.33 ± 0.10	15° K/W	< 50	0.30
6	HBE4W* R002 F	4W	7W	0.53 ± 0.10	14° K/W	< 50	0.50
7	HBE3W* R003 F	3W	5W	0.35 ± 0.10	21° K/W	< 50	0.31
8	HBE2W* R004 F	2W	4W	0.35 ± 0.10	28° K/W	<50	0.30
9	HBE2W* R005 F	2W	3W	0.35 ± 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.

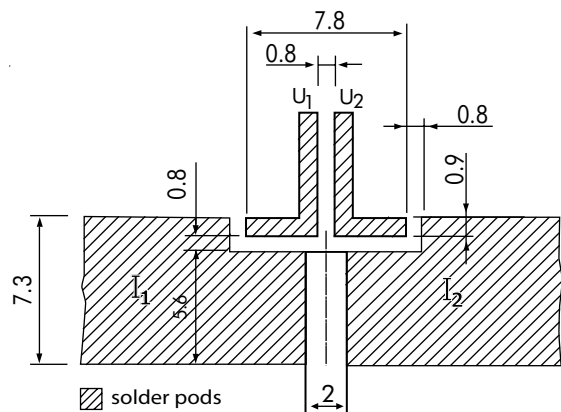
**ELECTRICAL AND ENVIRONMENTAL CHARACTERISTICS**

PARAMETER / PERFORMANCE TEST & TEST METHOD	PERFORMANCE REQUIREMENTS
<b>Power Rating</b>	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.
<b>Inductance</b>	< 3nH
<b>Resistance Tolerance</b>	± 1% (0.5% and other tolerance available on request)
<b>Temperature Range</b>	- 55° C to +170° C (Suitably derated as per derating curve provided)
<b>Voltage Rating / Limiting / Max. Working Voltage</b> (Subject to max. Terminal Temperature of 120° C)	$\sqrt{P \times R}$
<b>Low Temperature Storage and Operation</b> [-65° C for 24 h]	$\Delta R \pm 0.1\%$ - Average
<b>Temperature Coefficient of Resistance</b> (Ambient Temperature Range 20° C - 60° C)	From 20 ppm / K (Depending on Resistance Value)
<b>Temperature Cycling -2000 cycles</b> (-55° C to 150° C)	$\Delta R \pm 0.5\%$ - Average
<b>Life Test / Operational Life - 2000 h rated power with Temperature limitation on Terminal kept at 120° C</b>	$\Delta R \pm 1\%$ - Average (In covered condition)
<b>Moisture Resistance</b> [MIL-STD-202 method108]	$\Delta R \pm 0.1\%$ - Average
<b>Mechanical Shock</b> [100 g. 6 ms half sine]	$\Delta R \pm 0.2\%$ - Typical
<b>Vibration, High Frequency</b> [20 g. 10-2000 Hz]	$\Delta R \pm 0.2\%$ - Typical
<b>Bias Humidity</b> [+85° C, 85% RH, 1000h]	$\Delta R \pm 0.5\%$ - Typical



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**RECOMMENDED PCB - LAYOUT**



**RECOMMENDED SOLDER PROFILE**

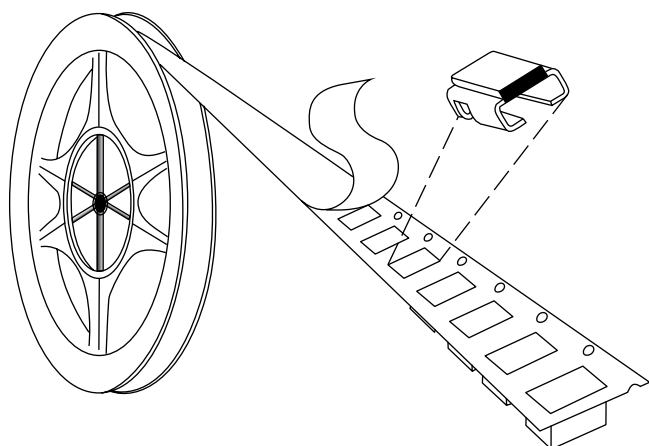
Reflow, IR soldering			
Temperature (°C)	260	255	217
Time (Sec)	Peak	40	90

**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 - 500pcs. & 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	16mm	1400 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.

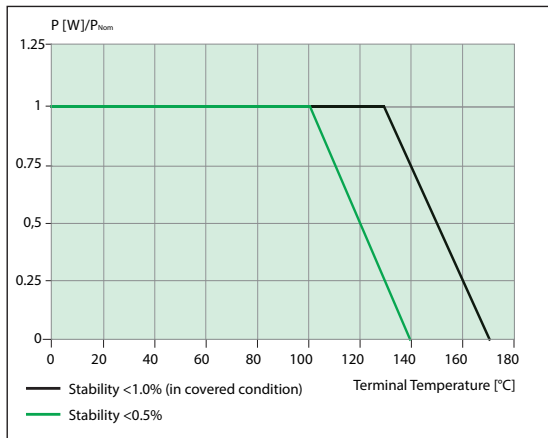
**MARKING**

HTR PART NO	PRINTING
HBE7W* R0007 F	HTR R0007 1% DATECODE

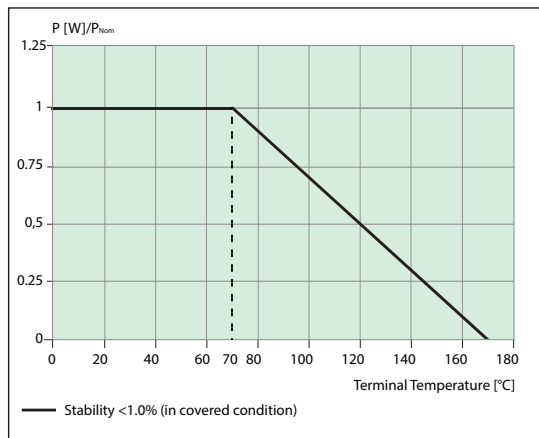
**ORDERING INFORMATION**

SERIES	TYPE	PACKING	RESISTANCE VALUE	TOLERANCE
HBE	HBE5W / HBE5W*	Bulk - HBE5W / HBE5W* Tape & Reel - HBE5WTR / HBE5W*TR	R001	F

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

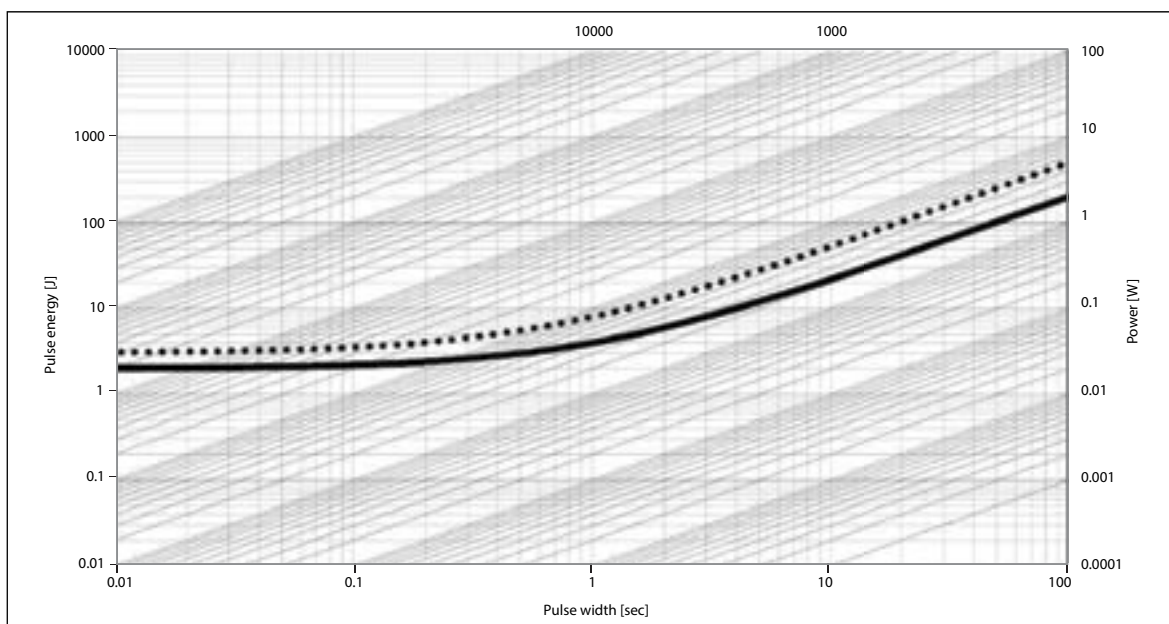


**TYPICAL POWER DERATING CURVE FOR RESISTOR WHEN FULL POWER IS AT 70°C**



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 P 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**

