



LOW OHM POWER RESISTORS

HBM SERIES Size 1216

- 5-Watts Permanent Power
- Constant Current up to 100 amps (0.5 mΩ)
- Four Terminal Configuration
- Excellent long-term stability
- Max. Solder Temperature up to 350°C/30 sec
- RoHS and REACH Compliant
 - AEC-Q200 Compliant

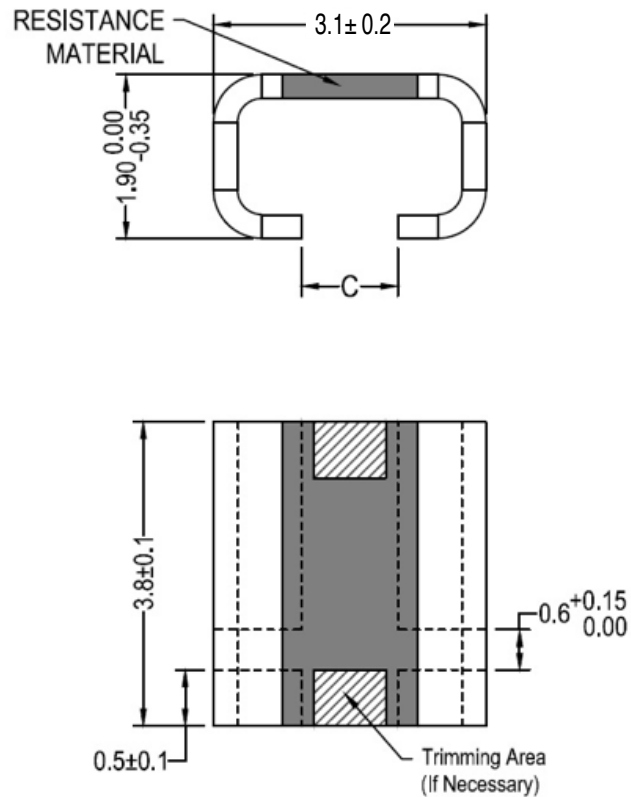
AEC-Q200 Qualified





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PHYSICAL CONFIGURATION



DIMENSIONAL TABLE

SR NO.	HTR TYPE	RESISTANCE VALUE	TOLERANCE*	WATTAGE AT 100° C	WATTAGE AT 70° C	C ±0.15	INTERNAL HEAT RESISTANCE (Rthi)	TCR (PPM)
1	HBM5W R0003	R0003	± 1, ± 3, ± 5	5W	10W	0.95	5	<75
2	HBM5W R0004	R0004	± 1, ± 3, ± 5%	5W	10W	0.95	6.5	<50
3	HBM5W R0005	R0005	± 1, ± 3, ± 5%	5W	9W	0.95	8	<50
4	HBM3W R001	R001	± 1, ± 3, ± 5%	3W	7W	0.95	13	<50
5	HBM2W R002	R002	± 1, ± 3, ± 5%	2W	5W	0.95	17	<50
6	HBM2W R003	R003	± 1, ± 3, ± 5%	2W	4W	0.95	35	<50

APPLICATIONS

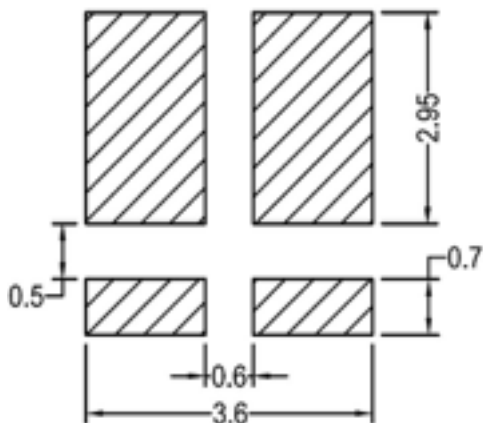
- Current sensor for power hybrid applications.
- Automotive applications that require high current capability.
- Frequency convertors.
- Power modules.



RECOMMENDED SOLDER PROFILE

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

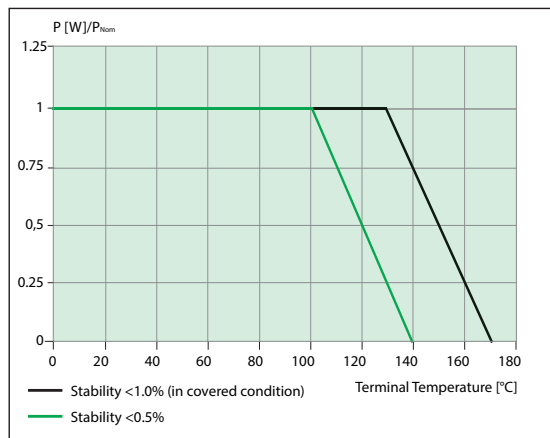
RECOMMENDED PCB - LAYOUT



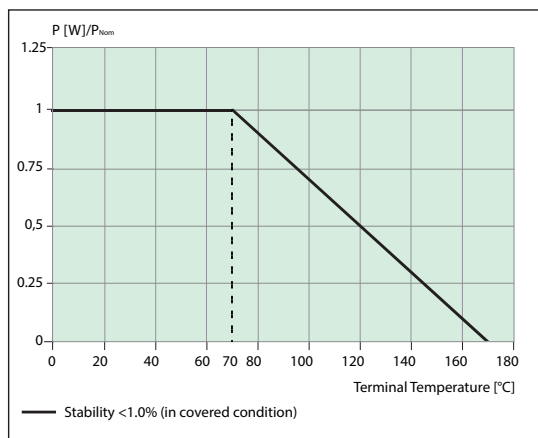
ELECTRICAL AND ENVIRONMENTAL CHARACTERISTICS

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	< 2nH
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 125° C	$\Delta R \pm 1\%$ - Average (In covered condition)
Moisture Resistance [MIL-STD-202 method108]	$\Delta R \pm 0.1\%$ - 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)

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

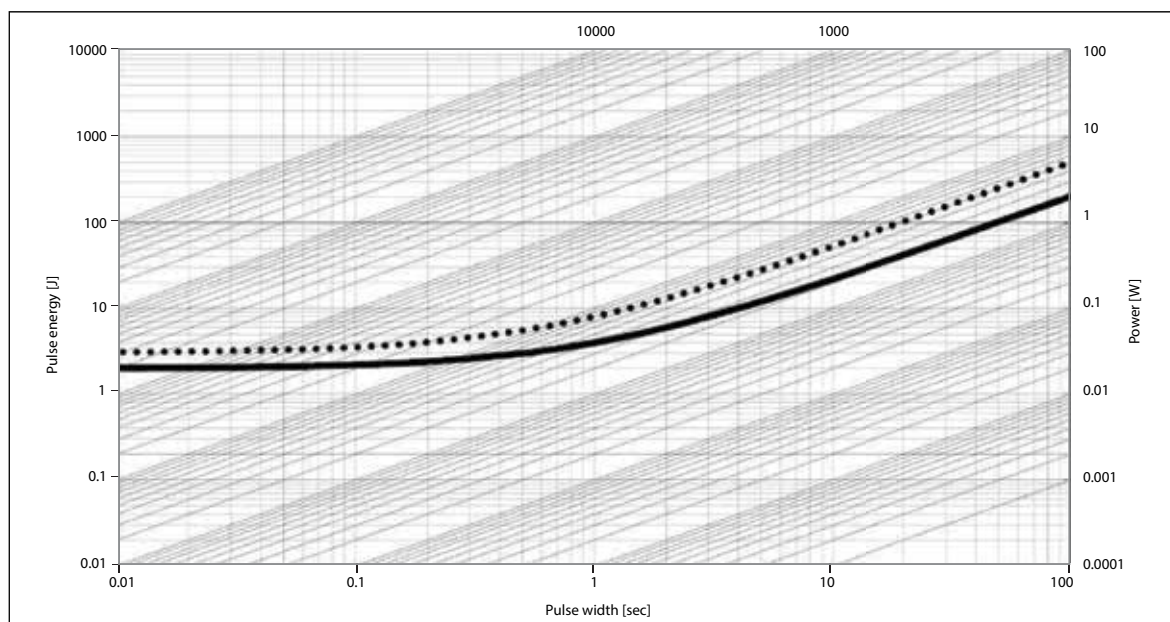


TYPICAL POWER DERATING CURVE FOR RESISTOR WHEN FULL POWER IS AT 70°C



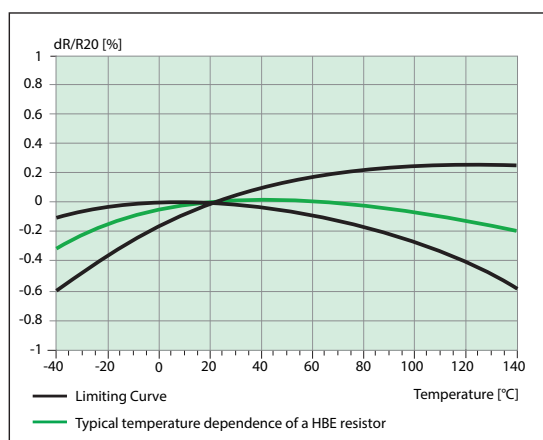
In case the Design Engineer requires a specific graph of a particular component it can be supplied on request.

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



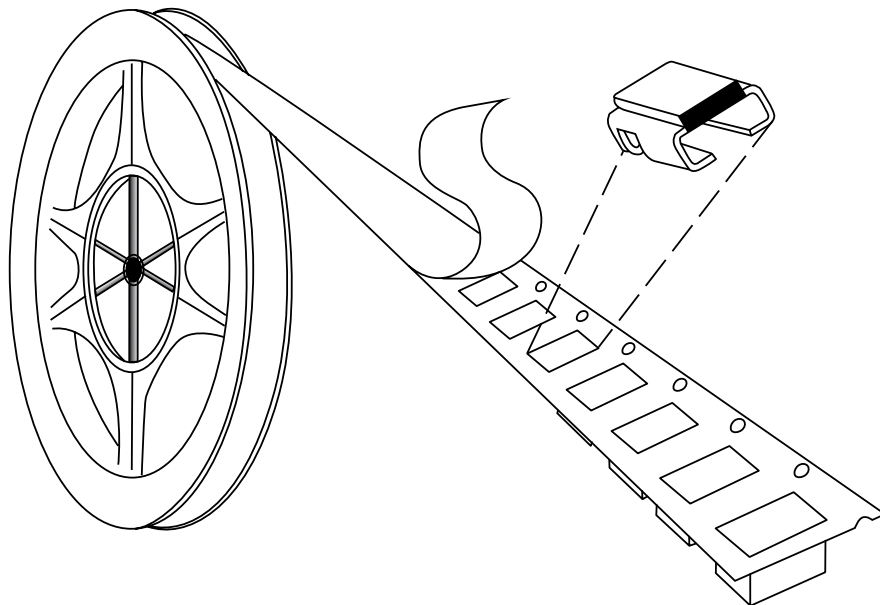


PACKAGING

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	12mm	2000 pcs

STORAGE CONDITION

Shelf Life (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

ORDERING INFORMATION

SERIES	HTR PART NO.	TYPE	PACKING	RESISTANCE VALUE	TOLERANCE
HBM	HBM3W R001	HBM3W	Bulk - HBM3W	R001	1%

Part no of HBM3W, Tape and reel with resistance value R001 and 1% tolerance, HTR part no. will be HBM3WTR R001 ±1%