



**LOW OHM POWER
RESISTORS**

**HHE
SERIES
Size 3820**

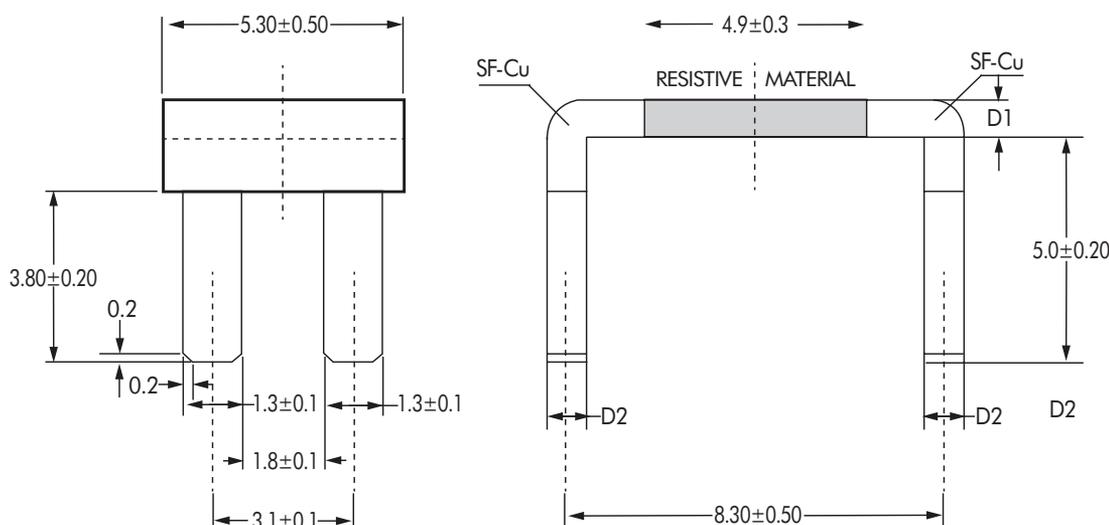
- Open frame electron beam welded punched out type.
 - Power Rating at 100°C - upto 5W
 - Power Rating at 70°C - upto 7W
- R0003 to R002





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PHYSICAL CONFIGURATION



DIMENSIONAL TABLE

SR NO.	HTR TYPE	WATTAGE AT 100° C	WATTAGE AT 70° C	D1 (mm)	D2 (mm)	INTERNAL HEAT RESISTANCE (Rthi)	TCR (ppm)	TYPICAL WT. PER PC (gms)
1	HHESW R0003 F	5W	10W	1.42 ± 0.10	1.42 ± 0.10	4° K/W	< 100	1.10
2	HHESW R0005 F	5W	9W	0.86 ± 0.10	0.86 ± 0.10	7° K/W	< 100	0.65
3	HHESW R001 F	5W	8W	1.36 ± 0.10	1.36 ± 0.10	8° K/W	< 100	0.89
4	HHE4W R002 F	4W	6W	0.68 ± 0.10	0.68 ± 0.10	15° K/W	< 100	0.44

APPLICATIONS

- Power tools due to nature of physical construction.
- High current applications for the automotive sector.
- Frequency converters.
- Power modules.

FEATURES

- 5W constant power possible in R0003.
- Constant current carrying capability upto 120amp (R0003).
- Sturdy copper connectors.
- Excellent long term stability.

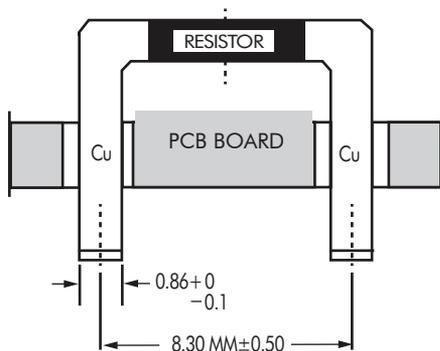
ELECTRICAL AND ENVIRONMENTAL CHARACTERISTICS

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 105° C & linearly derated to zero at +140° C. For Manganin (< 1% Stability) - Full power dissipation at 135° 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 (Suitably derated as per derating curve provided)
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]	$\Delta R \pm 0.2\%$ - Average
Temperature Coefficient of Resistance (Ambient Temperature Range 20° C - 60° C)	From 100 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 120° C	$\Delta R \pm 1\%$ - Average
Moisture Resistance [MIL-STD-202 method106]	$\Delta R \pm 0.1\%$ - Typical
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

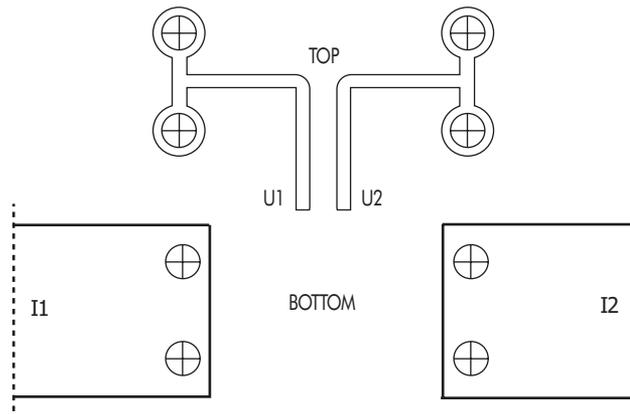


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GUIDE FOR MOUNTING



GUIDE FOR PCB LAYOUT



RECOMMENDED SOLDER PROFILE

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

PACKING

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.

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
HHE5W R0003 ±1%	HTR R0003 1% DATECODE

ORDERING INFORMATION

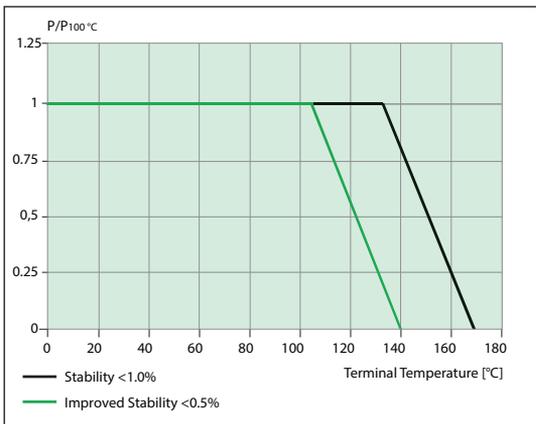
SERIES	TYPE	PACKING	RESISTANCE VALUE	TOLERANCE
HHE	(Without Sleeve) - HHE5W (With Sleeve) - HHE5W(S)	Bulk (Without Sleeve) - HHE5W Bulk (With Sleeve) - HHE5W(S)	R0005	±1%

Note : For HTR part number with sleeve - Resistors element covered with SILICONE RUBBER SLEEVE to prevent solder on element.

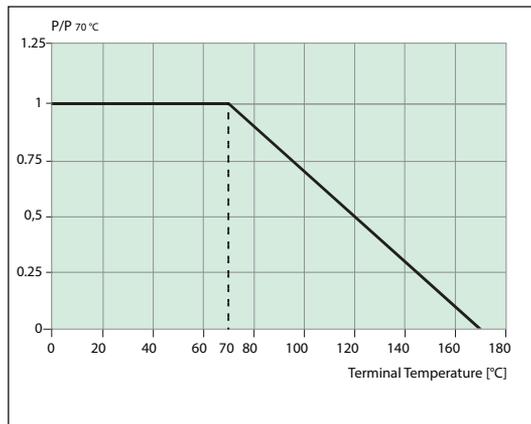
Sleeve Rated at 220°C (Can withstand 220°C without deterioration to its properties)

Part no of HHE5W with resistance value R0005 and 1% tolerance will be HHE5W R0005 ±1%

TYPICAL POWER DERATING CURVE FOR RESISTOR WHEN FULL POWER IS AT 105°C & 135°C

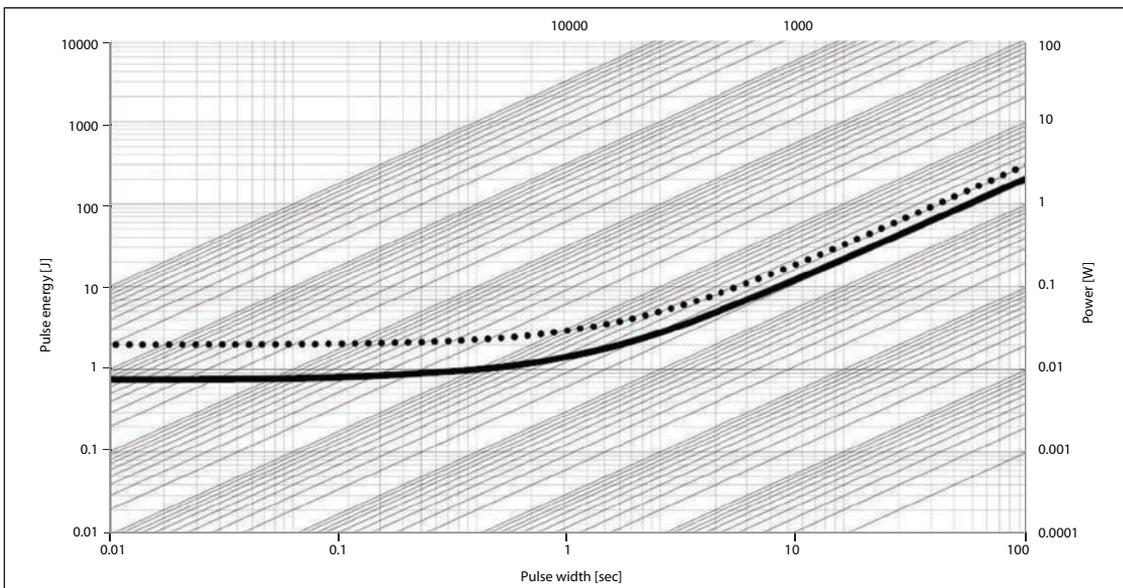


TYPICAL POWER DERATING CURVE FOR RESISTOR WHEN FULL POWER IS AT 70°C



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 DEPENDENCE OF HHE SERIES

