AEC-Q200 Qualified

Pb-free RoHS COMPLIANT

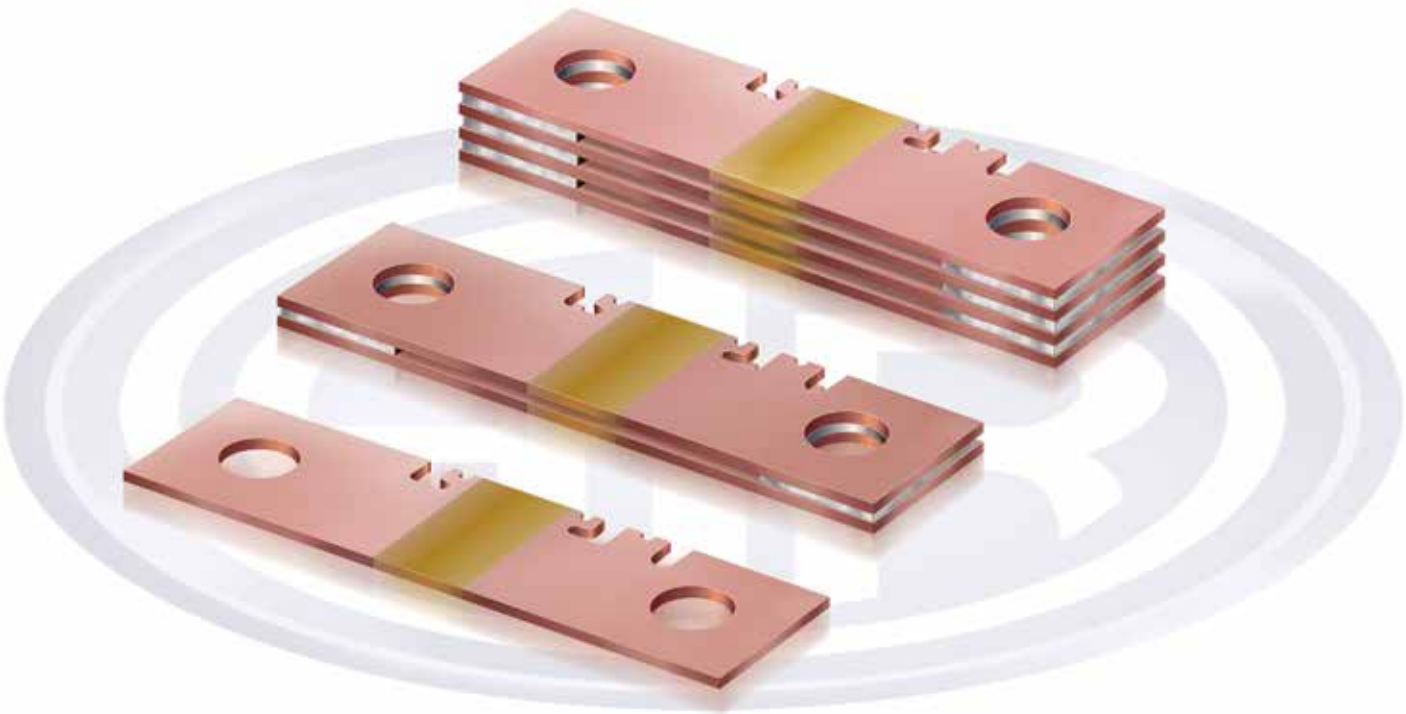
POWER METAL STRIP SHUNT RESISTORS FOR ENERGY METERS

HVE

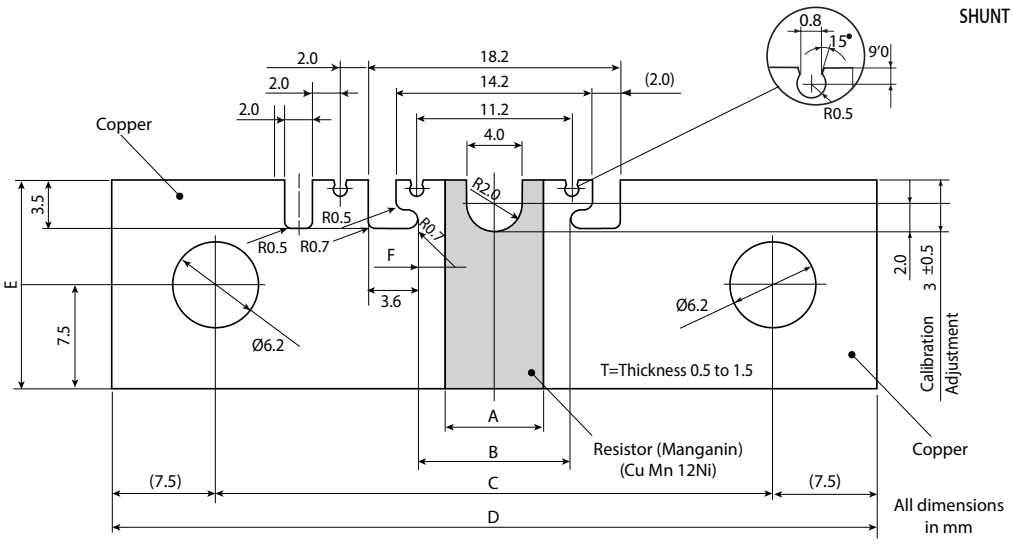
SERIES

Size 5515

- 4-Terminal (Kelvin) connection design.
- Extremely low resistance values.
- Very low inductance (<0.5nH)
- Negligible EMF (3µ V/°C)



PHYSICAL CONFIGURATION



DIMENSIONAL TABLE

Sr No.	HTR Type	Resistance Value	Tolerance	A	B	C	D	E	F
1	HVE5W R0001	R0001	±1, ±3, ±5, ±10%	6.0	11	40	55.0	15	2.5
2	HVE5W R00016	R00016	±1, ±3, ±5, ±10%	7.0	11	40	55.0	15	2.0
3	HVE5W R00025	R00025	±1, ±3, ±5, ±10%	7.0	11	40	55.0	15	2.0
4	HVE5W R0002	R0002	±1, ±3, ±5, ±10%	7.0	11	40	55.0	15	2.0
5	HVE5W R0003	R0003	±1, ±3, ±5, ±10%	7.0	11	40	55.0	15	2.0
6	HVE5W R0004	R0004	±1, ±3, ±5, ±10%	7.0	11	40	55.0	15	2.0
7	HVE5W R0005	R0005	±1, ±3, ±5, ±10%	8.0	11	40	55.0	15	1.5

Dimensions Tolerances ISO 2768	
Size Range	Tolerance
0.5 to 3	±0.1
3 to 6	±0.1
6 to 30	±0.2
30 to 120	±0.3
120 to 400	±0.5
400 to 1000	±0.8
1000 to 2000	±1.2

Note: These resistors can also be supplied soldered together in parallel connection / stacked (refer picture on page 1 of this datasheet) to create lower resistance value & enhanced heat dissipation.

APPLICATIONS

- Designed for precision energy meter applications.
- Current sensing in bus bar.
- Current sensing in welding equipments.
- Current sensing in battery chargers.

FEATURES

- Upto 5W permanent power in free air.
- High pulse power rating (1KW for 0.1 Sec - Single pulse).
- Punched component of Electron Beam Welded Copper / Manganina Copper / Copper Strip (Cu Mn 12Ni).
- These resistors can also be supplied soldered together in parallel connection in stacked format to create lower resistance value & enhanced heat dissipation.

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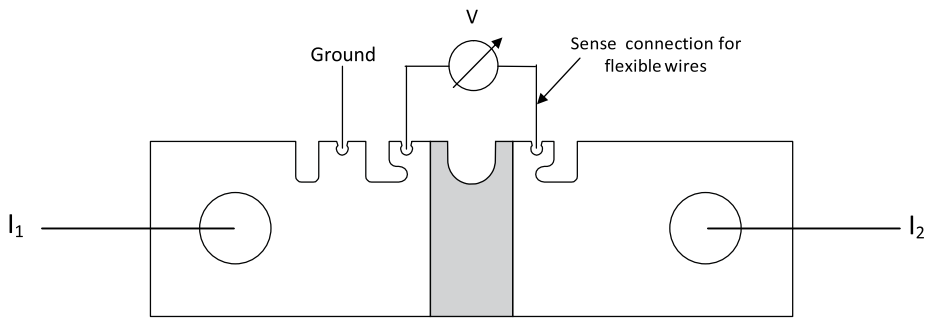
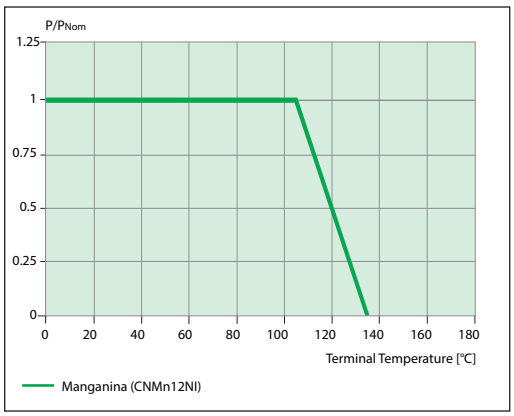
ELECTRICAL AND ENVIRONMENTAL CHARACTERISTICS

PARAMETER / PERFORMANCE TEST / METHOD	PERFORMANCE REQUIREMENTS
Power Rating	5W For Manganina (Cu Mn 12 Ni) - Full power dissipation at 105°C & linearly derated to zero at +135°C.
Inductance	< 0.5nH to < 3nH
Temperature Range	- 55°C to +140°C
Voltage Rating / Limiting Voltage / Max. Working Voltage (Subject to max. terminal temperature of 120°C)	$\sqrt{P \times R}$
Temperature Coefficient of Resistance (Ambient temperature range 20°C - 60°C)	< 20 ppm / K (depending on resistance value)
Life Test / Operational Life - 2000 h rated power with Temperature limitation on Terminal kept at 120° C	ΔR ± 1% - Average
Thermal EMV (0-60° C)	0.3µV/°C
Internal heat resistance (Rthi)	From 2°K/W
Thermal Shock MIL-STD-202 method 107-B1	0.2 %
Short Time Overload MIL-R-26E (5 times rated power, 5 Sec)	0.2 %
Solderability MIL-STD-202 method 208	>95% coverage
Resistance to Solvents MIL-STD-202 method 215, 2.1a, 2.1d	no damage
Low Temperature Storage & Operation MIL-STD-26E	0.1%
Resistance to Soldering Heat MIL-STD-202 method 210B	0.1%
Moisture Resistance MIL-STD-202 method 106	0.1%
Shock MIL-STD-202 method 213-A	0.2 %
Vibration, High Frequency MIL-STD-202 method 204B	0.2 %
Storage Life at Elevated Temperature MIL-STD-202 method 108-F	0.3 %
High Temperature Exposure 125°C, 2000h	0.3 %

CONNECTION DIAGRAM

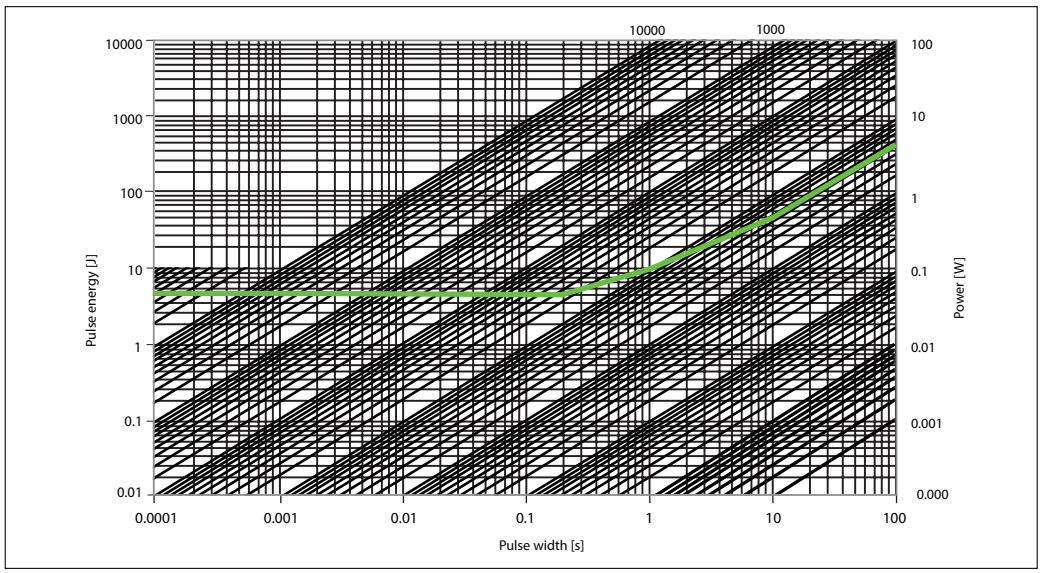


TYPICAL POWER DERATING CURVE FOR RESISTOR WHEN FULL POWER IS AT 105° C



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



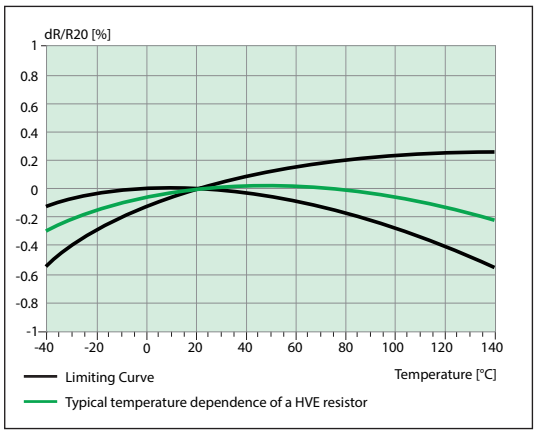
Pulse power for continuous operation.

This curve is only valid for the resistance value R0002.

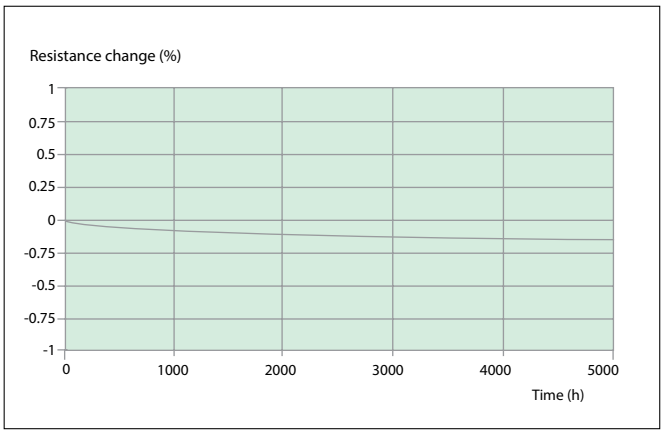
The shape of the curve in the range below 0.1 sec will be different for other resistance values.

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



TYPICAL CURVE SHOWING LONG TERM STABILITY OF MANGANINA (Cu Mn 12Ni) RESISTORS AT 140°C



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PACKAGING

SR NO.	HTR TYPE	PIECES PER INNER BOX	2-STACKED & SOLDERED PIECES PER INNER BOX	4-STACKED & SOLDERED PIECES PER INNER BOX	INNER BOX DIMENSION (Length X Width X Height))
1	HVE5W R0001	200	100	50	162mm X 104mm X 37mm
2	HVE5W R00016	250	100	50	127mm X 87mm X 30mm
3	HVE5W R00025	250	100	50	127mm X 87mm X 30mm
4	HVE5W R0002	200	100	50	127mm X 87mm X 30mm
5	HVE5W R0003	250	100	50	127mm X 87mm X 30mm
6	HVE5W R0004	250	100	50	127mm X 87mm X 30mm
7	HVE5W R0005	200	100	50	127mm X 87mm X 30mm

STORAGE CONDITION

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

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

Floor Life for plated pieces (Unpacked) : Temp 25°C to 35°C, Humidity 30 to 80% RH, Floor life - 6 months.

ORDERING INFORMATION AS AN EXAMPLE

SERIES	HTR TYPE No.	TYPE	RESISTANCE VALUE	TOLERANCE	MARKING OF RESISTOR
HVE	HVE5W R0002 ±5%	HVE5W	R0002	±5%	HTR R0002 5% DATECODE
HVE	HVE5W R00016 ±5%	HVE5W	R00016	±5%	HTR R00016 5% DATECODE
HVE	HVE5W R0005 ±5%	HVE5W	R0005	±5%	HTR R0005 5% DATECODE

- Part no of HVE, with resistance value R0002 and 5% tolarance.
  HTR part no. will be **HVE5W R0002 ±5%.**
- Part no of HVE, with resistance value R00016 and 5% tolarance.
  HTR part no. will be **HVE5W R00016 ±5%.**
- Part no of HVE, with resistance value R0005 and 5% tolarance.
  HTR part no. will be **HVE5W R0005 ±5%.**