

## Charging Resistor for EV Hybrid Wirewound Technology


**RoHS  
COMPLIANT**
**FEATURES**

- Technology: hybrid wirewound
- High energy / volume ratio
- Easy mounting (faston connection 6.35 [0.250"])
- Possibility to mount on heatsink
- AEC-Q200 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

**APPLICATIONS**

- Precharge
- Discharge
- Active discharge resistor

**LINKS TO ADDITIONAL RESOURCES**

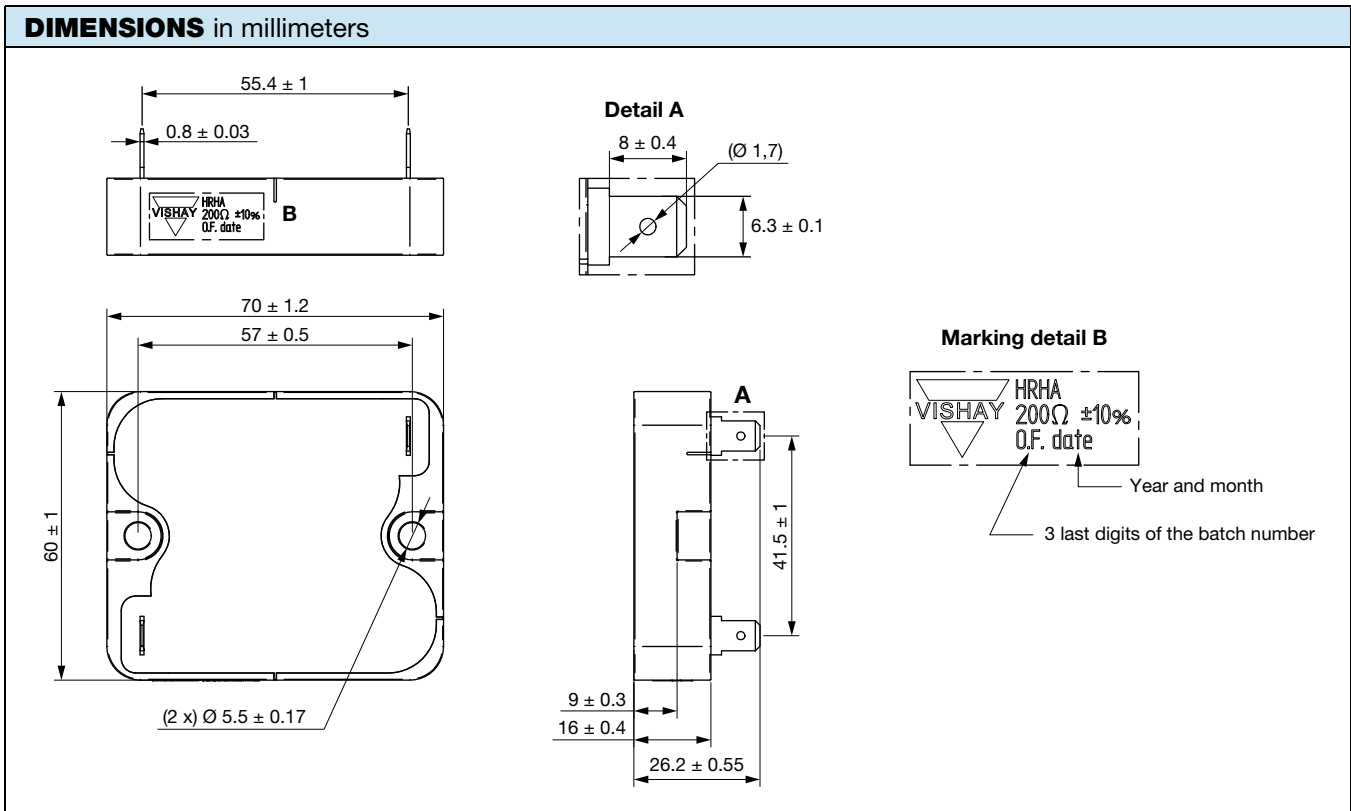

3D Models

STANDARD ELECTRICAL SPECIFICATIONS				
GLOBAL MODEL	POWER RATING ON STAINLESS STEEL <sup>(1)</sup> W	POWER RATING ON PAMITHERM <sup>(1)</sup> W	RESISTANCE RANGE $\Omega$	TOLERANCE $\pm$ %
HRHA	90	54	1 to 1K	5, 10

**Note**
<sup>(1)</sup> 6 mm thickness, see Fig. 2

TECHNICAL SPECIFICATIONS		
PARAMETER	UNIT	RESISTOR CHARACTERISTICS
Temperature coefficient	ppm/°C	$\pm$ 100 (typical)
Operating temperature range	°C	-55 to +250

GENERAL CHARACTERISTICS	
Dielectric base	Ceramic
Resistive circuit	Hybrid wirewound
Terminals	Stainless steel
Ohmic values	E24 (other on request)
Maximum operating voltage between terminals (by design)	1000 V <sub>DC</sub>
Dielectric voltage	3000 V <sub>RMS</sub> (higher on request), 50 Hz, 1 min
Creepage distance	14 mm
Clearance distance	14 mm
Weight	160 g max.



**MOUNTING**

For soldering recommendations please see [www.vishay.com/doc?32595](http://www.vishay.com/doc?32595)

**DISSIPATION**

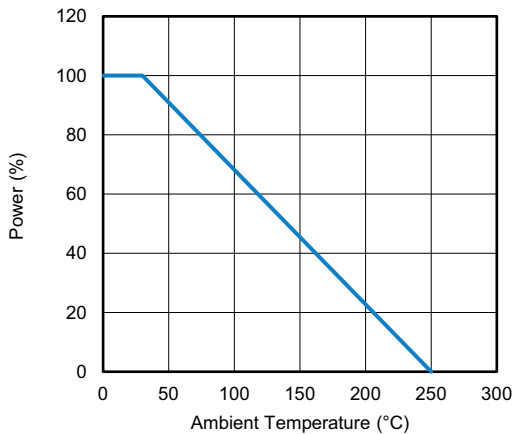


Fig. 1 - Permanent Applicable Power as a Function of Ambient Temperature

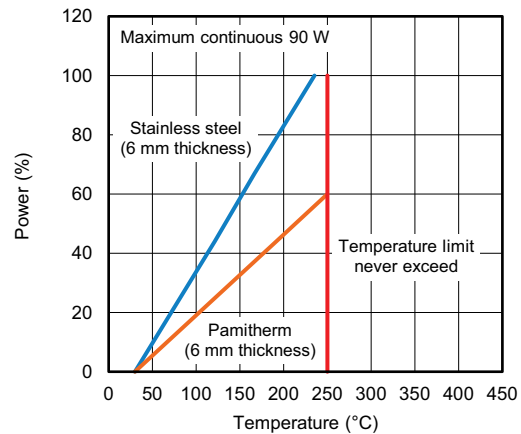


Fig. 2 - Bottom Case Temperature as a Function of the Power Applied at  $T_{amb} = 30 \text{ }^\circ\text{C}$

<b>ENERGY</b>		
<b>Energy mode at 30 °C room temperature</b>	Stainless steel (6 mm thickness)	Pamitherm (6 mm thickness)
<b>Refer to Fig. 2 for bottom case temperature vs. pulse number</b>	PULSE – DURATION – WAIT <sup>(1)</sup>	PULSE – DURATION – WAIT <sup>(1)</sup>
<b>Continuous cycle - short circuit wave (refer to Fig. 3)</b>	9000 J - 1.8 s - 100 s	9000 J - 1.8 s - 167 s
<b>Continuous cycle - RC discharge wave (refer to Fig. 4)</b>	1850 J - 0.74 s - 30 s	1850 J - 0.74 s - 34 s

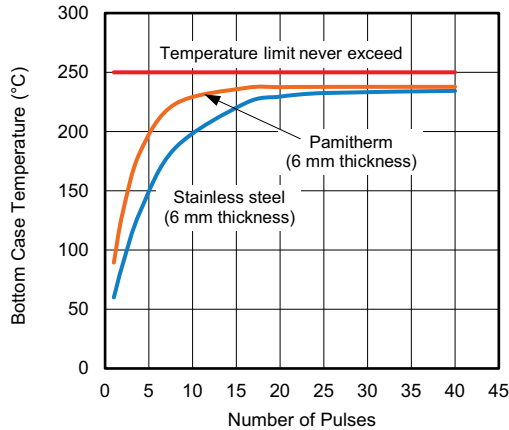


Fig. 3 - Bottom Case Temperature With Continuous Short Circuit Cycle 9000 J at  $T_{amb} = 30\text{ °C}$

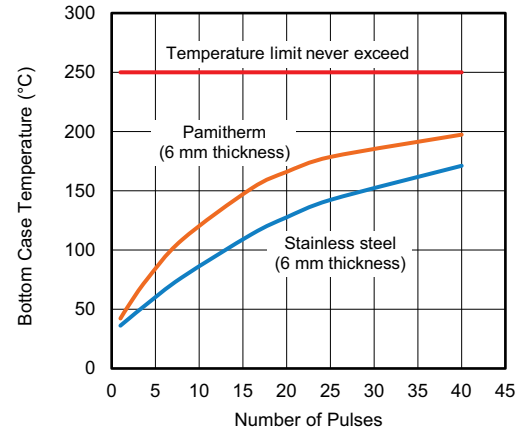


Fig. 4 - Bottom Case Temperature With Continuous RC Discharge Cycle 1850 J at  $T_{amb} = 30\text{ °C}$

<b>ORDERING INFORMATION</b>					
<b>HRHA</b>	<b>F</b>	<b>N</b>	<b>22U</b>	<b>5 %</b>	<b>BO12</b>
MODEL	TERMINATION	COATING	RESISTANCE VALUE	TOLERANCE	PACKAGING

<b>GLOBAL PART NUMBER INFORMATION</b>						
H	R	H	A	F	C	2 0 0 0
1				2	3	4
1	2	3	4	5	6	7
PRODUCT TYPE	TERMINATION	COATING (if applicable)	RESISTANCE VALUE	TOLERANCE	PACKAGING	INDUSTRIALIZATION NUMBER
HRHA	F = faston	C = coated N = not coated	The first three digits are significant figures and the last specifies the number of zeros to follow, R designates decimal point. 4702 = 47 kΩ 47R0 = 47 Ω	J = 5 % K = 10 %	B = box Box quantity depends of model and size	Specific digits for custom design (if applicable)

<b>EXAMPLES</b>		
MODEL	DESCRIPTION	PART NUMBER
HRHA	HRHAFN22R0JB	HRHA F N 22U 5 % BO12
HRHA	HRH AFC22R0JB	HRHA F C 22U 5 % BO12



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