NON-INDUCTIVE POWER RESISTORS

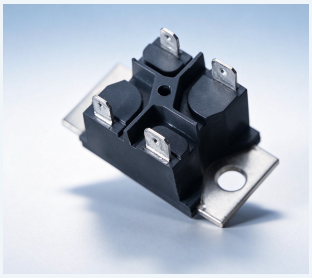
VHP-A

Electrical specifications, insulation and mounting

Up to 180 W at 85 °C bottom case

Heatsink-mounted, non-inductive power resistor with an elevated housing and up to three resistors per package. The raised package increases creepage distance.

RoHS compliant. Materials in accordance with UL 94 V-0 and VDE 0160. Thermal interface options on request.



Technical ratings

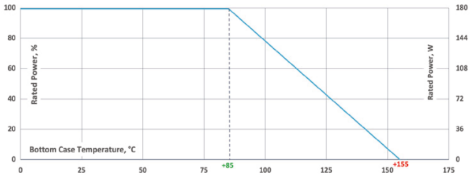
PARAMETER	SPECIFICATION
Rated power	Up to 180 W at 85 °C bottom case
Resistance range	1 Ω to 1 MΩ
Resistance tolerance	±1% to ±10%
Temperature coefficient	±250 ppm/°C
Operating temperature	−55 °C to +155 °C
Capacitance to case	45 pF typical at 10 kHz
Standard working voltage	500 V
S / U working voltage	Up to 1,500 V
Dielectric withstand	5,000 V DC / 3,000 V AC
Insulation resistance	>10 GΩ at 1,000 V DC
R1–R2 isolation	500 V DC
Standard CTI	>200 V
H version CTI	>600 V
Thermal resistance to cooling plate	<0.40 K/W
Base plate torque	1.3–1.5 N·m · M5 screws
Weight	Approx. 38 g

TCR at +85 °C, referenced to +25 °C. Higher resistance values and lower TCR for selected values on request.

S: special trimming. U: untrimmed, with higher pulse capability. H: CTI >600 V.

R1–R2 isolation up to 1,000 V DC on request.

Power derating

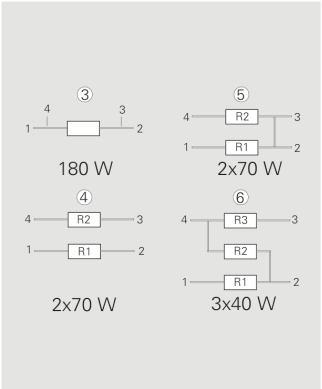


Configuration 3: 2.5 W/K (0.40 K/W).

Thermal compound conductivity ≥1 W/(m·K).

Cooling plate flatness <0.05 mm. Surface roughness ≤6.4 µm.

Circuit configurations



Source note for configuration 5: approximately 3 mΩ between contacts 2 and 3.

Electrical clearance and creepage

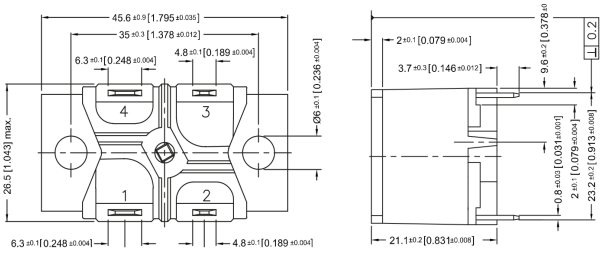
Electrical clearance · mm

CONTACTS	NO PLUG	WITH PLUG
#1–#2 / #3–#4	9.2	8.2
#1–#4 / #2–#3	21.9	20.9
#2 or #3 to M5 screw + washer	16.3	15.9
#1 or #4 to M5 screw + washer	15.5	15.0

Creepage distance · mm

CONTACTS	NO PLUG	WITH PLUG
#1–#2 / #3–#4	20.2	19.0
#1–#4 / #2–#3	27.4	25.8
#2 or #3 to base plate	20.2	19.8
#1 or #4 to base plate	19.5	18.9

Outline dimensions · mm [inches]



Ordering format: series / configuration / resistance / tolerance

Ordering examples VHP-A-5 2×2R 10% / VHP-A-6 3×8K 5% / VHP-A-5-S 10R 5%

VHP-A

Typical pulse energy and power

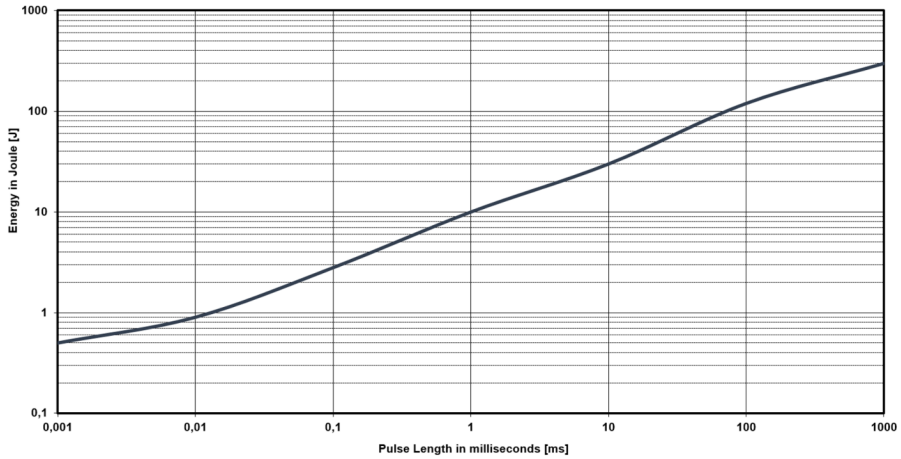
Test procedure

Exponential pulses. Pulse length equals one time constant τ. Pause between pulses: 1 s.

Water-cooled heatsink with thermal compound rated 0.9 W/(m·K). Inlet water at +50 °C. Test duration: 10 min per resistor.

Resistance was measured before and after testing. A change greater than 0.1% was classified as a failure.

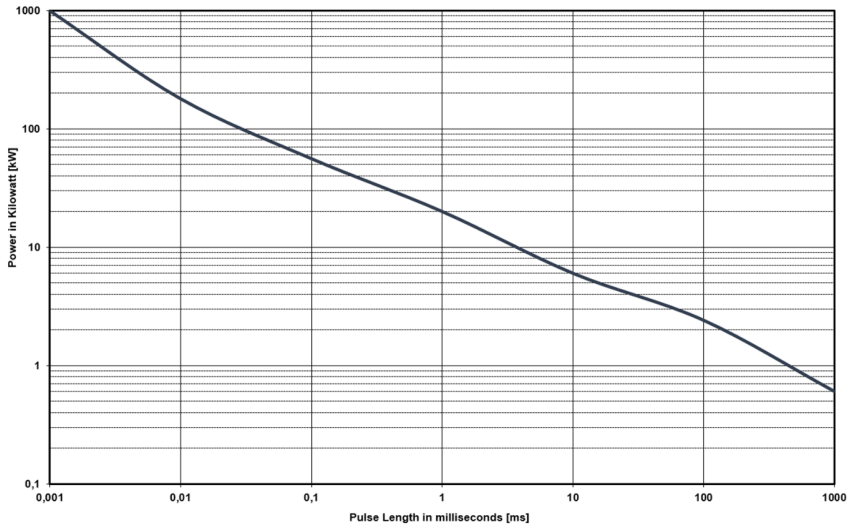
Typical pulse energy curve



Typical reference for 1–10 Ω: about 10 J at τ = 1 ms and a pause ≥1 s. The limit varies with resistance and resistive paste.

For symmetrical pulses at f >1 kHz, pulse length ≥10 µs and bottom case at 85 °C, E = 180 W / f.

Typical pulse power curve



Typical example: about 20 kW at τ = 1 ms with a pause ≥1 s. Pp = 2E / τ.