

Series HPP 150

150 W Power Resistor according to VDE 0160 und UL 94 V-0

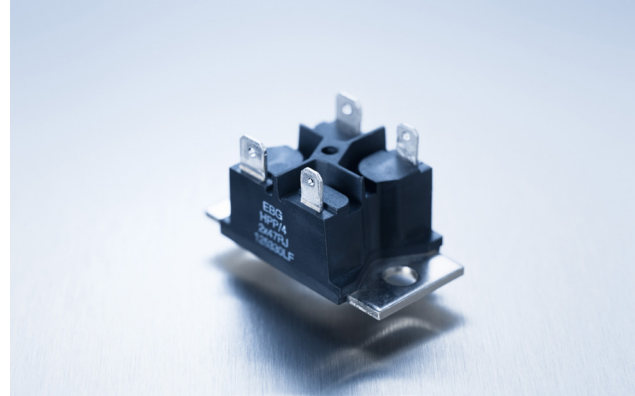


A Miba Group Company

EBG Resistors's HPP series is rated at 150 W mounted to a heat sink. The increased height of the package makes the resistor ideal in applications where creeping distance must meet the VDE 0160 and UL 94 V-0 standards.

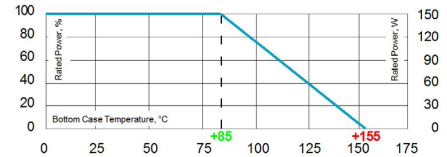
Features

- multiple resistors in 1 package
- Easy mounting using already existing infrastructure
- Non-Inductive design
- ROHS compliant
- Materials in accordance with UL 94 V-0 and VDE 0160



Technical Specifications

Resistance value	1 Ω ≤ 1 MΩ (other values on special request)
Resistance tolerance	±1 % to ±10 %
Temperature coefficient	±250 ppm/°C (at +85°C ref. to +25°C) lower TCR on special request for limited ohmic values
Power rating	up to 150 W at 85°C bottom case temperature (see configurations)
Maximum working voltage	500 V (up to 1,000 V DC on special request = "S"-version)
Voltage proof	5,000 V DC, 3,000 V AC
Insulations resistance	> 10 GΩ at 1,000 V DC
Insolation voltage between R1 & R2	500 V (1,000 V on special request)
Comparative Tracking Index (CTI)	standard > 200 V (> 500 V on special request = "H"-version)
Heat resistance to cooling plate	Rth < 0.47 K/W
Capacitance/mass	45 pF (typical), measuring frequency 10 kHz
Working temperatur range	-55°C to +155°C
Mounting - torque for base plate (static)	1.3 Nm to 1.5 Nm M5 screws
Weight	~38 g



Derating (thermal resist.) HPP-150:
2.14 W/K (0.47 K/W) (for conf. 3)

Best results can be reached by using a thermal transfer compound with a heat conductivity of at least 1 W/mK. The flatness of the cooling plate must be better than 0.05 mm overall. Surface roughness should not exceed 6.4 µm.

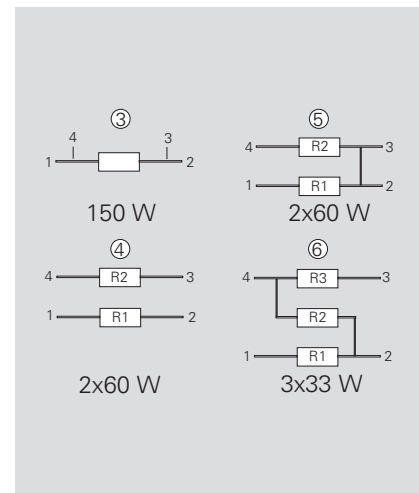
How to make an order

HPP-Configuration_Ohmic Value_Tolerance

For example:
HPP-5 2x2R 10% or HPP-6 3x8K 5%

Example for higher working voltage:
HPP-4-S 2x10R 5%

Configurations (P / package)



Version 5: ohmic value between contact 2 and 3 = 3 mΩ

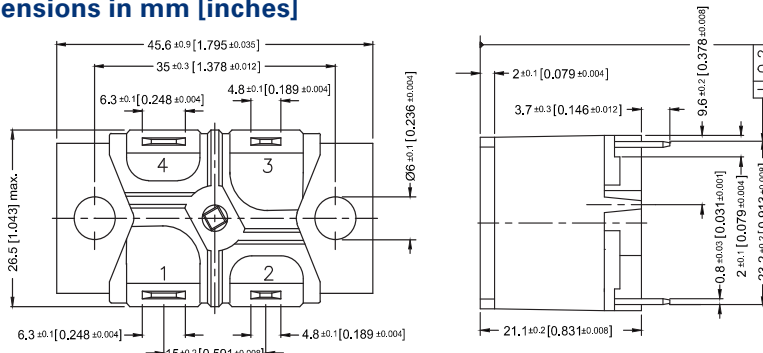
Air distance contact to contact:

- | | | |
|---|--|--------------------|
| ③ | Contacts 1 and 2 resp. 3 and 4
- without fast-on-Plug:
- with fast-on-Plug: | 9.2 mm
8.2 mm |
| ④ | Contacts 1 and 4 resp. 2 and 3
- without fast-on-Plug:
- with fast-on-Plug: | 21.9 mm
20.9 mm |
| ⑤ | Contacts 2 resp. 3 and M5
- mounting screw with washer
- without fast-on-Plug:
- with fast-on-Plug: | 16.3 mm
15.9 mm |
| ⑥ | Contacts 1 resp. 4 and M5
- mounting screw with washer
- without fast-on-Plug:
- with fast-on-Plug: | 15.5 mm
15.0 mm |

Creeping distance:

- | | | |
|---|---|--------------------|
| ③ | Contacts 1 and 2 resp. 3 and 4
- without fast-on-Plug:
- with fast-on-Plug: | 20.2 mm
19.0 mm |
| ④ | Contacts 1 and 4 resp. 2 and 3
- without fast-on-Plug:
- with fast-on-Plug: | 27.4 mm
25.8 mm |
| ⑤ | Contacts 2 resp. 3 to base plate
- without fast-on-Plug:
- with fast-on-Plug: | 20.2 mm
19.8 mm |
| ⑥ | Contacts 1 resp. 4 to base plate
- without fast-on-Plug:
- with fast-on-Plug: | 19.5 mm
18.9 mm |

Dimensions in mm [inches]



The above spec. sheet features our standard products. For further options please contact our local EBG representative or contact us directly.

Series HPP 150



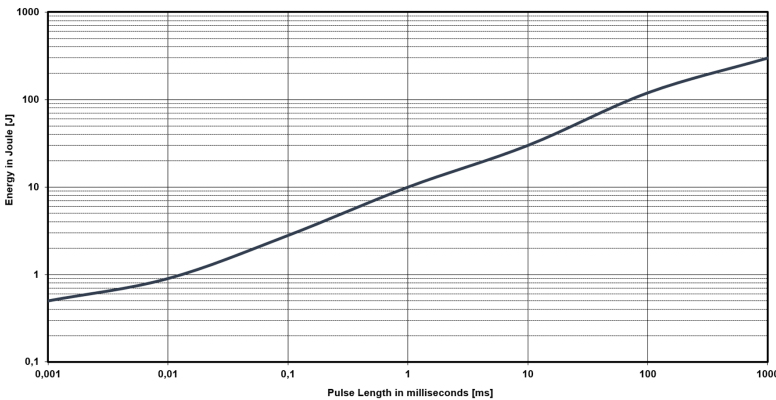
Pulse Energy Curve (typical rating for HPP 150)

Note: These energy values are reference values → depending on ohmic value e.g. 1 Ω to 10 Ω and used resistive paste, a variation in max. energy load capability is possible

Test procedure

Every test resistor was mounted with thermal compound (0.9 W/mK) on a water cooled heatsink

- Constant inlet water temperature: +50°C
- The test time of each tested resistor: 10min.
- Break time between two pulses: 1sec.
- To determine good / defect parts the ohmic value was measured before and after tests: a change of tolerance of more than 0.1% means defect



Description of Pulse Energy Curve

- Shape of pulse = e-function
- Time between two pulses = 1 second
- Pulse length = time constant of 1 tau (1 means ... tau = 1ms)

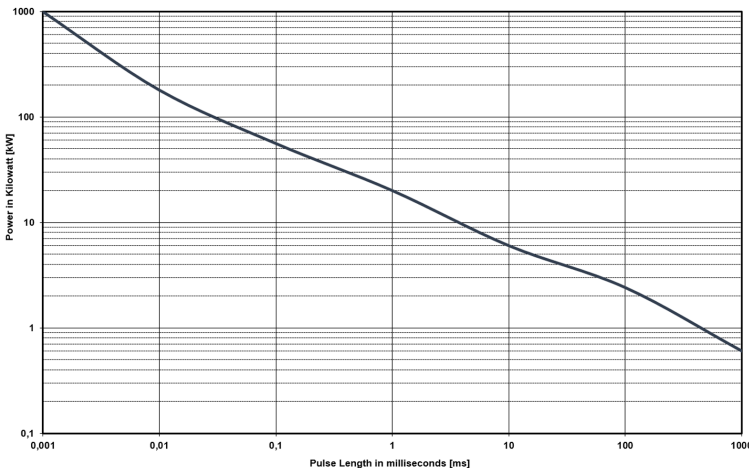
Example

At 1 ms tau the HPP 150 with e.g. 1 Ω to 10 Ω can withstand an energy level of about 10 J, when the pulse pause time is ≥ 1s

At a symmetrical frequency > 1 kHz at pulse length ≥ 10 μsec. the maximum applied pulse energy for HPP 150 is a result out of the nominal power 150 W divided by the operating frequency (at 85°C bottom case) (E = 150 W / F)

Pulse Power Curve (typical rating for HPP 150)

The power curve shows the max. possible power which can be applied for a certain duration. Referring to the same test procedure as described above.



Description of Pulse Power Curve

- Shape of pulse = e-function
- Time between two pulses = 1 second
- Pulse length = time constant of 1 tau (1 means ... tau = 1ms)

Example

For the time-constant of 1 ms you can apply about 20 kW max. ($P_p = 2 \cdot E / T$) →, if the time between two such peaks is ≥ 1s

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