Series UXP®-600

600 W resistor, US Patent-No. 5,355,281

EBG RESISTORS

A Miba Group Company

For variable speed drives, power supplies, control devices, robotics, motor control and other power designs, the easy mounting fixture assures an auto-calibrated pressure to the cooling plate of about 300 N.

Features

- 600 W operating power
- Non-Inductive design
- ROHS compliant
- High insulation & partial discharge performance
- Materials in accordance with UL 94 V-0
- Resistor is also available with preapplied PCM (Phase Change Material) (ask for details)

Technical Specifications

Resistance value	≥0.03 Ω ≤ 1.5 MΩ (higher values on request)
Resistance tolerance	±5 % to ±10 % ±1 % to ±2 % on special request for limited ohmic values with the reduction of the max. power / pulse rating (ask for details)
Temperature coefficient	±500 ppm/°C (0.1 Ω ≤ 0.2 Ω) standard ±150 ppm/°C (> 0.2 Ω ≤ 1.5 MΩ) standard lower TCR on special request for limited ohmic values
Power rating	600 W at 85°C bottom case temperature
Short time overload	1,000 W at 70°C for 10sec., ΔR = 0.4% max.
Maximum working voltage	5,000 V DC ≙ 3.500 V AC RMS (50 Hz) higher voltage on request, not exceeding max. power
Maximum continuous current	150 A (HC or UHC version)
Electric strength voltage	7 kVrms / 50 Hz / 500 VA, test time 1 min. between terminal und case (up to 12 kVrms on request) voltages above 10 kVrms are tested at DC equivalent to avoid pre damage of component
Partial discharge	4 kVrms < 10 pC (up to 7 kVrms < 10 pC on request) acc. to IEC 60270
Peak current	up to 1,500 A depending on pulse length and frequency (ask for details)
Insulation resistance	> 10 GΩ at 1,000 V
Single shot voltage	up to 12 kV norm wave (1.5/50 µsec)
Creeping distance	> 42mm (standard, higher on request)
Air distance	> 14mm (standard, higher on request)
Inductance	≤ 80 nH (typical), measuring frequency 10 kHz
Capacity/mass	≤ 110 pF (typical), measuring frequency 10 kHz
Capacity/parallel	≤ 40 pF (typical), measuring frequency 10 kHz
Operating temperature	-55°C to +155°C
Mounting - torque for contacts	1.8 Nm to 2 Nm
Mounting - torque	1.6 Nm to 1.8 Nm M4 screws
Internal temperature sensor available on request	PT-1000 / PT-100 / Type K / Type J (ask for details)
Cable variation available on request	HV-cable / Flying leads (ask for details)
Standard cable Type	H&S Radox 9 GKW AX 1,5mm² (other cable types on special request)
Weight	~120 g

General Specifications

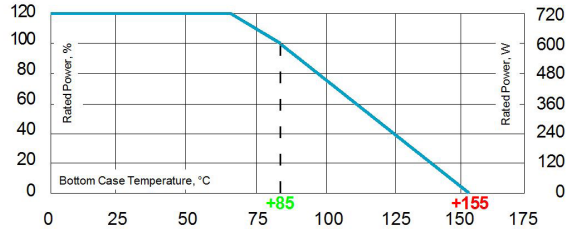
Electric support
Alumina ceramic metalized with EBG ALTOX film on the bottom for improved heat transfer and optimum discharge

Encapsulation
Resin-filled epoxy casing with large creeping distance to mass, large air distance between the terminals and high insulation resistance (CTI 600)

Resistance Element
Special design for low inductance and capacitance values. The element employs our special METOXFILM, which demonstrates stability while covering high wattage and pulse loading

Housing
Housings are made without color additives. The color definition is natural and can vary in different pigmentation

Contacts
- Easy load connection with M4 and M5 screws (Inch thread terminals on request)
- Connector height available from 25 to 42 mm
- Various sleeves for increasing creeping distance up to 85 mm or potted cable connections are available on request
- Contacts standard M5 (M4 on special request - connection screw thread max. 7 mm



Derating (thermal resist.) UXP®-600: 8.33 W/K (0.12 K/W)
Power rating: 600 W at 85°C bottom case temperature*
Please ask for detailed mounting procedure!

* This value is only applicable when using a thermal conduction to the heat sink Rth-cs<0.025 K/W. This value can be obtained 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.

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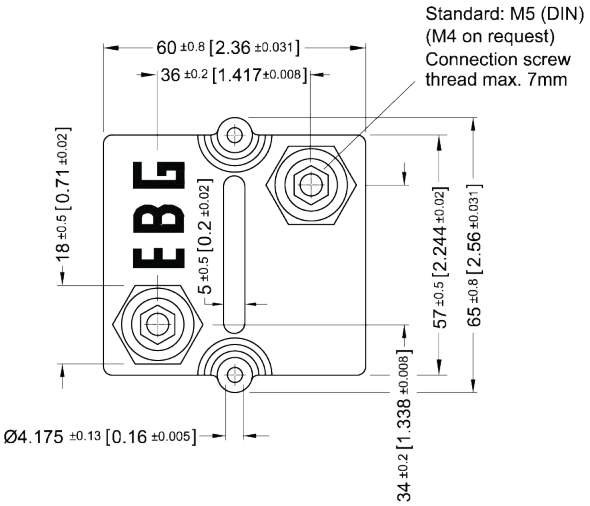
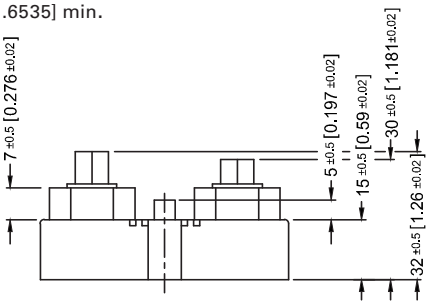
Dimensions in mm [inches]



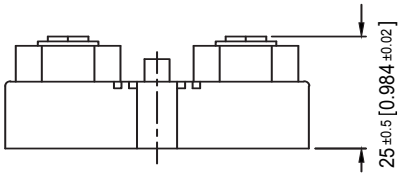
Standard Terminals

Air distance: 14mm [0.5512] min.
Creeping distance: 42mm [1.6535] min.

Terminal height 30/32
Standard



Terminal height 25/25
Optional



How to make a request

- **Standard terminal**
  UXP-600_Ohmic Value_Tolerance_Terminal Height_Contact

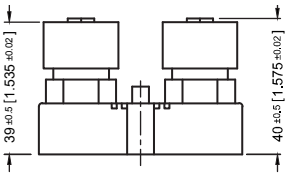
  For example
  UXP-600 5R 10% 30/32 M5

- **Examples for optional terminals**
  UXP-600 5R 10% 25/25 M5 or UXP-600-7 5R 10%

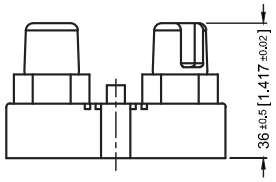
Terminal Options (for increased air & creeping distances)

Other terminal dimensions available, contact for more information

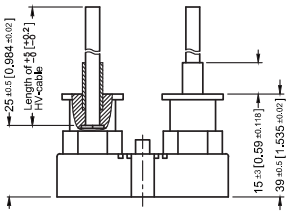
UXP-600-9
Air distance: 25mm [0.984] min.
Creeping distance: 83mm [3.267] min.



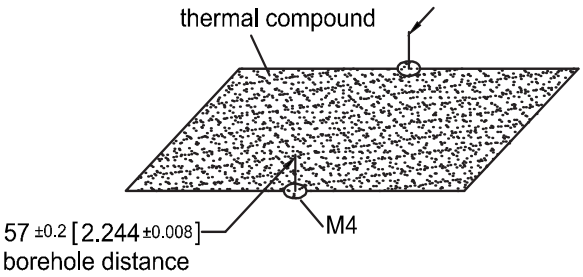
UXP-600-7
Air distance: 26.7mm [1.0512] min.
Creeping distance: 50mm [1.968] min.



UXP-600-8
Air and creeping distance
depends on length of HV-cable



Borehole Distance



Test Specifications*

Test	Method	Tolerance Drift**
Short time overload	1,000 W/10sec.	0.40%
Humidity steady state	56 days/40°C/95%	0.25%
Temp. Cycling	-55/+125/5cycles	0.20%
Shock	40g/4,000 times	0.25%
Vibrations	2-500Hz/10g	0.25%
Load life 3,000cyl	PN 30 min. on / 30 min off	0.40%
Terminal strengths	200 N for hexa. thread contacts	0.05%

* The test methods are according to IEC 60068-2

** The tolerance drift is the possible change of the resistance value because of the certain test

Please note most all of our UXP customers have their own custom designed drawing. Therefore please do not hesitate to discuss your special needs with the local representative or contact us directly.

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

Series UXP®-600

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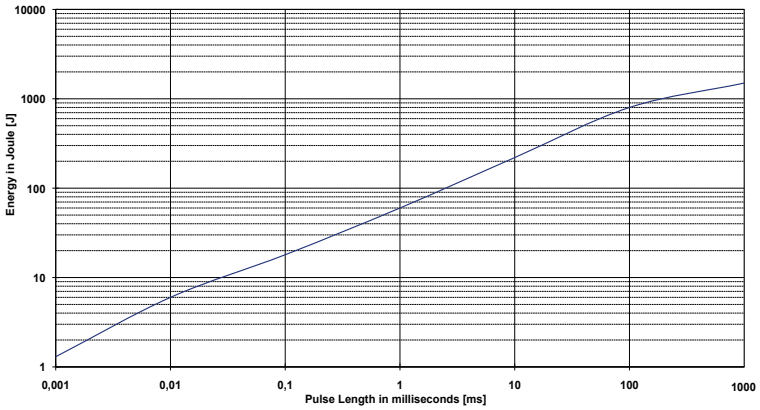
Pulse Energy Curve (typical rating for UXP-600 with 10R and 10 % tolerance)

Note: These energy values are reference values, depending on ohmic value 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)

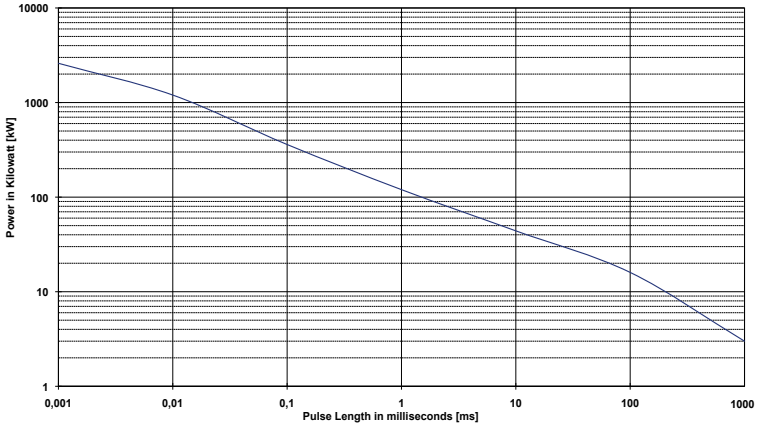
Example

At 1 ms tau the UXP-600 with 10R can withstand an energy level of about 60 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 UXP-600 is a result out of the nominal power 600 W divided by the operating frequency (at 85°C bottom case) (E = 600 W / F)

Pulse Power Curve (typical rating for UXP-600 with 10R and 10 % tolerance)

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 120 kW max. (Pp = 2*E / T)→, if the time between two such peaks is ≥ 1s

Legal Disclaimer Notice

Disclaimer

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