# Series UPT®-800

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



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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**

- multiple resistors in 1 package
- 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)



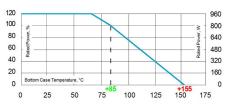
## **Technical Specifications**

# 1 % to ±2 % on special request for limited ohmic values with the reduction of the max. power / pulse rating (ask for details)    Temperature coefficient	Resistance value	0.1 $\Omega \leq$ 0.2 $\Omega$ (HC-version) > 0.2 $\Omega \leq$ 1 $M\Omega$ (higher values on special request)
# 150 ppm/°C (> 0.2 Ω ≤ 1 MΩ) standard lower TCR on special request for limited ohmic values  Power rating up to 800 W at 85°C bottom case temperature (see configurations)  Short time overload 1,000 W at 70°C for 10sec., ΔR = 0.4% max. (for configuration 2 and 3)  Maximum working voltage 5,000 V DC ≈ 3.500 V AC RMS (50 Hz) higher voltage on request, not exceeding max. power 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  Dielectric strength between R1-R2 > 5 kV DC (for conf. 4)  Partial discharge 4 kVrms < 10 pC (up to 7 kVrms < 10 pC on request) acc. to IEC 60270  Insulation resistance > 10 GΩ at 1.000 V up to 12 kV norm wave (1.5/50 μsec)  Inductance ≥ 80 nH (typical), measuring frequency 10 kHz  Capacity/parallel ≥ 40 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 Mounting - torque for additional insulation requirements  General pulse load information contact our local EBG representative or contact	Resistance tolerance	±1 % to ±2 % on special request for limited ohmic values with the reduction of the max. power / pulse
Short time overload  1,000 W at 70°C for 10sec., ΔR = 0.4% max. (for configuration 2 and 3)  Maximum working voltage  Electric strength voltage  Flectric strength voltage  Electric strength voltage  Flectric strength voltage  Flectric strength voltage  Flectric strength voltage  Flectric strength between R1-R2  Partial discharge  Insulation resistance  Inductance  Inductance  Capacity/mass  Capacity/parallel  Operating temperature  Mounting - torque for contacts  Ferminal tops for additional insulation requirements  General pulse load information  Maximum working voltage  1,000 W at 70°C for 10sec., ΔR = 0.4% max. (for configuration 2 and 3)  1,000 W at 70°C for 10sec., ΔR = 0.4% max. (for configuration 2 and 3)  1,000 W at 70°C for 10sec., ΔR = 0.4% max. (for configuration 2 and 3)  1,000 W at 70°C for 10sec., ΔR = 0.4% max. (for configuration 2 and 3)  1,000 W at 70°C for 10sec., ΔR = 0.4% max. (for configuration 2 and 3)  Flow V DC ≤ 3.500 V AC RMS (50 Hz)  Flow Capacity max. power  Flow V Mrms < 10 by Z, by C (for conf. 4)  Flow V Mrms < 10 pC  (up to 7 kVrms < 10 pC  (up to 12 kV rom wave (1.5/50 μsec)  2 80 nH (typical), measuring frequency 10 kHz  2 140 pF (typical), measuring frequency 10 kHz  2 40 pF (typical), measuring frequency 10 kHz  3 140 pF (typical), measuring frequency 10 kHz  4 kVrms < 10 pC  (up to 12 kVrms < 10 pC  (up to 1	Temperature coefficient	$\pm 150 \text{ ppm/}^{\circ}\text{C} (> 0.2 \Omega \leq 1 \text{ M}\Omega) \text{ standard}$
Maximum working voltage  Electric strength voltage  Flectric strength voltage  To 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  Dielectric strength between R1-R2  Partial discharge  A kVrms < 10 pC (up to 7 kVrms < 10 pC on request) acc. to IEC 60270  Insulation resistance  Inductance  Single shot voltage  Inductance  Capacity/mass  Capacity/parallel  Operating temperature  Mounting - torque for contacts  Mounting - torque  Contacts  Terminal tops for additional insulation requirements  General pulse load information  Terminal tops for additional insulation requirements  Figure 2,000 V DC ≥ 3.500 V AC RMS (50 Hz) higher higher to exceeding max. power  A kVrms < 2 fo Dt Z kVrms < 100 VA, test time 1 min. between the requirement and to exceeding max. power  To Have voltage on request, not exceeding max. power  To Have voltage on request, not exceeding max. power  To Have voltage on request, not exceeding max. power  To Have voltage on request, not exceeding max. power  To Have voltage on request, not exceeding max. power  To Have voltage on request, not exceeding max. power  To Have voltage on request, not exceeding max. power  To Have voltage on request, not exceeding max. power  To Have voltage on request, not exceeding max. power  To Have voltage on request, not exceeding max. power  To Have voltage on request, not exceeding max. power  To Have voltage on request, not exceeding max. power  To Have voltage on request in the xet time 1 min. between terminal und case (up to 12 kVrms or 10 pC (up to 7 k	Power rating	
Figure 1	Short time overload	1,000 W at 70°C for 10sec., $\Delta R = 0.4\%$ max. (for configuration 2 and 3)
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  Dielectric strength between R1-R2 > 5 kV DC (for conf. 4)  Partial discharge	Maximum working voltage	
Partial discharge  4 kVrms < 10 pC (up to 7 kVrms < 10 pC on request) acc. to IEC 60270  Insulation resistance  > 10 GΩ at 1.000 V  up to 12 kV norm wave (1.5/50 μsec)  Inductance  ≥ 80 nH (typical), measuring frequency 10 kHz  Capacity/mass  Capacity/parallel  Operating temperature  Operating temperature  Mounting - torque for contacts  Mounting - torque  Contacts  Terminal tops for additional insulation requirements  General pulse load information  A kVrms < 10 pC (up to 7 kVrms < 10 pC on request)  10 GΩ at 1.000 V  up to 12 kV norm wave (1.5/50 μsec)  2 40 pF (typical), measuring frequency 10 kHz  > 40 pF (typical), measuring frequency 10 kHz  - 55°C to +155°C  1.8 Nm to 2 Nm, screw-in depth max. 6 mm  1.6 Nm to 1.8 Nm M4 screws  standard M5 (M4 on special request) on special request (ask for details)	Electric strength voltage	between terminal und case (up to 12 kVrms on request) voltages above 10 kVrms are tested at DC
Insulation resistance   > 10 GΩ at 1.000 V	Dielectric strength between R1-R2	> 5 kV DC (for conf. 4)
Single shot voltage  Inductance  Inductance  Capacity/mass  Capacity/parallel  Operating temperature  Mounting - torque for contacts  Mounting - torque  Contacts  Contacts  Terminal tops for additional insulation requirements  Minductance  ≥ 80 nH (typical), measuring frequency 10 kHz  ≥ 40 pF (typical), measuring frequency 10 kHz  ≥ 40 pF (typical), measuring frequency 10 kHz  ≥ 40 pF (typical), measuring frequency 10 kHz  −55°C to +155°C  1.8 Nm to 2 Nm, screw-in depth max. 6 mm  1.6 Nm to 1.8 Nm M4 screws  standard M5 (M4 on special request)  on special request (ask for details)  contact our local EBG representative or contact	Partial discharge	(up to 7 kVrms < 10 pC on request)
Inductance       ≥ 80 nH (typical), measuring frequency 10 kHz         Capacity/mass       ≥ 140 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, screw-in depth max. 6 mm         Mounting - torque       1.6 Nm to 1.8 Nm M4 screws         Contacts       standard M5 (M4 on special request)         Terminal tops for additional insulation requirements       on special request (ask for details)         General pulse load information       contact our local EBG representative or contact	Insulation resistance	$>$ 10 G $\Omega$ at 1.000 V
Capacity/mass  Capacity/parallel  Capacity/parallel  Capacity/parallel  Operating temperature  Mounting - torque for contacts  Mounting - torque  Contacts  Contacts  Terminal tops for additional insulation requirements  Capacity/parallel  ≥ 40 pF (typical), measuring frequency 10 kHz  ≥ 40 pF (typical), measuring frequency 10 kHz  ≥ 55°C to +155°C  1.8 Nm to 2 Nm, screw-in depth max. 6 mm  1.6 Nm to 1.8 Nm M4 screws  standard M5 (M4 on special request)  on special request (ask for details)  contact our local EBG representative or contact	Single shot voltage	up to 12 kV norm wave (1.5/50 µsec)
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, screw-in depth max. 6 mm         Mounting - torque       1.6 Nm to 1.8 Nm M4 screws         Contacts       standard M5 (M4 on special request)         Terminal tops for additional insulation requirements       on special request (ask for details)         General pulse load information       contact our local EBG representative or contact	Inductance	$\geq 80~\text{nH}$ (typical), measuring frequency 10 kHz
Operating temperature  -55°C to +155°C  1.8 Nm to 2 Nm, screw-in depth max. 6 mm  1.6 Nm to 1.8 Nm M4 screws  Contacts  Terminal tops for additional insulation requirements  General pulse load information  -55°C to +155°C  1.8 Nm to 2 Nm, screw-in depth max. 6 mm  1.6 Nm to 1.8 Nm M4 screws  standard M5 (M4 on special request)  on special request (ask for details)  contact our local EBG representative or contact	Capacity/mass	$\geq$ 140 pF (typical), measuring frequency 10 kHz
Mounting - torque for contacts  Mounting - torque  Contacts  Terminal tops for additional insulation requirements  General pulse load information  1.8 Nm to 2 Nm, screw-in depth max. 6 mm  1.6 Nm to 1.8 Nm M4 screws  standard M5 (M4 on special request) on special request (ask for details)  contact our local EBG representative or contact	Capacity/parallel	$\geq 40~pF$ (typical), measuring frequency 10 kHz
Mounting - torque Contacts Contacts Terminal tops for additional insulation requirements General pulse load information  1.6 Nm to 1.8 Nm M4 screws standard M5 (M4 on special request) on special request (ask for details) contact our local EBG representative or contact	Operating temperature	-55°C to +155°C
Contacts standard M5 (M4 on special request)  Terminal tops for additional insulation requirements  General pulse load information contact our local EBG representative or contact	Mounting - torque for contacts	1.8 Nm to 2 Nm, screw-in depth max. 6 mm
Terminal tops for additional insulation requirements  General pulse load information  on special request (ask for details)  contact our local EBG representative or contact	Mounting - torque	1.6 Nm to 1.8 Nm M4 screws
requirements  General pulse load information contact our local EBG representative or contact		standard M5 (M4 on special request)
		on special request (ask for details)
	General pulse load information	

# **General Specifications**

#### Housing

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



Derating (thermal resist.) UPT®-800: 9.09 W/K (0.11 K/W) for configuration 2 and 3

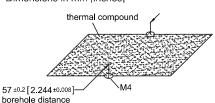
Power rating: 800 W at 85°C bottom case temperature\*

\* 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.

Please note most all of our UPT 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.

#### **Borehole Distance**

Dimensions in mm [inches]

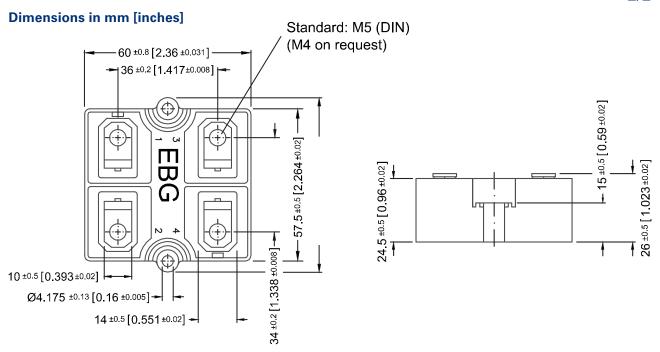


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## How to make an order

UPT-800-Configuration\_Ohmic Value\_Tolerance

### For example:

UPT-800-2 5R 10% or UPT-800-4 2x1K 5%

# Configurations (P / package)

Standard version

