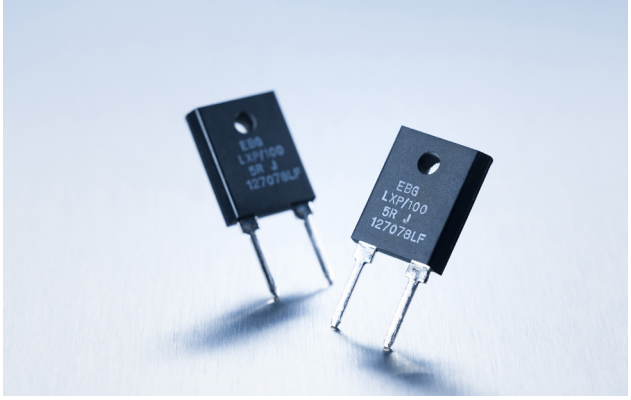
Series LXP-100 B TO-247

100 W Thick Film Resistor for high-frequency and pulse-loading applications
Version B for enforced mechanical stability

AEC-Q200 ready

Miba Resistors offers the completely encapsulated and insulated TO-247 package for low ohmic value and Non-Inductive design for high-frequency and pulse-loading applications. Ideal use for power supplies. The LXP-100 B series is rated at 100 W mounted to a heat sink.

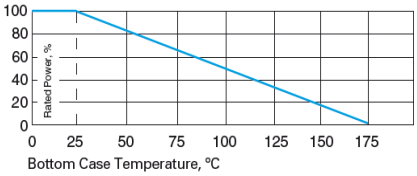


Features

- 100 W operating power
- **TO-247 package** configuration
- Single-screw mounting simplifies attachment to heat sink
- A fully molded housing for environmental protection
- Resistor package completely insulated from heat sink
- **Tube packing available (packing unit: 35 pcs. / tube)**
- For perfect heat dissipation, the use of mounting clamps is suggested (ask for details)
- Non-Inductive design
- ROHS compliant
- Materials in accordance with UL 94 V-0

Technical Specifications

Resistance value	0.05 Ω to 1 MΩ (other values on special request)
Resistance tolerance	±10 % to ±1 %
Temperature coefficient	> 10 Ω: ±50 ppm/°C referenced to 25°C, ΔR taken at +105°C (other TCR on special request for limited ohmic values)
Power rating	100 W at 25°C bottom case temperature derated to 0 W at 175°C
Short time overload	1.5x rated power with applied voltage not to exceed 1.5x V max. for 5 s.onds, ΔR < ±(0.50 % + 0.0005 Ω)
Operating voltage	350 V, max. 500 V on special request
Insulation resistance	> 10 GΩ at 1000 V DC
Dielectric strength voltage	1800 V AC
Dieletric strength	MIL-STD-202, method 301 (1,800 V AC, 60 s.) ΔR < ±(0.15 % + 0.0005 Ω)
Load life	MIL-R-39009D 4.8.13, 2000 h at rated power, ΔR < ±(1.0 % + 0.0005 Ω)
Moisture resistance	-10°C to +65°C, RH > 90 % cycle 240 h, ΔR < ±(0.50 % + 0.0005 Ω)
Thermal shock	MIL-STD-202, method 107, Cond. F, ΔR < ±(0.50 % + 0.0005 Ω)
Terminal strength	MIL-STD-202, method 211, Cond. A (Pull Test) 2.4 N ΔR < ±(0.20 % + 0.0005 Ω)
Vibration, high frequency	MIL-STD-202, method 204, Cond. D, ΔR < ±(0.40 % + 0.0005 Ω)
Inductance (serial)	typical 20 nH, measuring frequency 10 kHz
Lead material	tinned copper
Mounting	0.7 Nm to 0.9 Nm M4 using a M3 screw and a compression wahser mounting technique
Weight	~4 g



Derating (thermal resist.) LXP-100 B:
0.66 W/K (1.5 K/W)

Without a heat sink, when in open air at 25°C, the LXP-100 B is rated for 3 W. Derating for temperature above 25°C is 0.023 W/K.

Case temperature must be used for definition of the applied power limit. Case temperature measurement must be done with a thermocouple contacting the center of the component mounted on the designed heat sink. Thermal grease should be applied properly.

This value is only applicable when using thermal conduction to heat sink Rth-cs <0.025 K/W. This value can be attained by using a thermal transfer compound with a heat conductivity of 1 W/mK. The flatness of the cooling plate must be bettern than 0.05 mm overall. Surface roughness should not exceed 6.4 µm.

How to make a request

LXP-100 B_Ohmic Value_Tolerance

For example:
LXP-100 B 20R 10%

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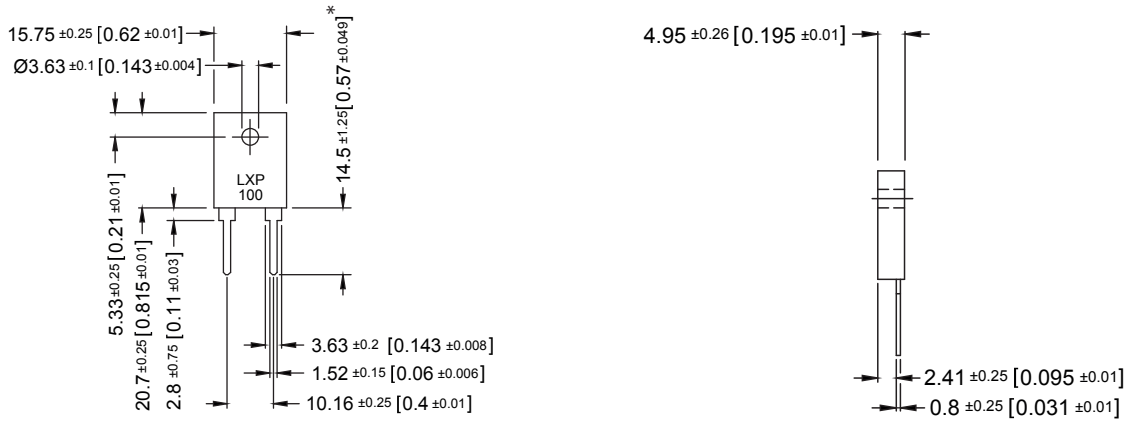
Dimensions in mm [inches]



* longer contacts availabe (ask for details)

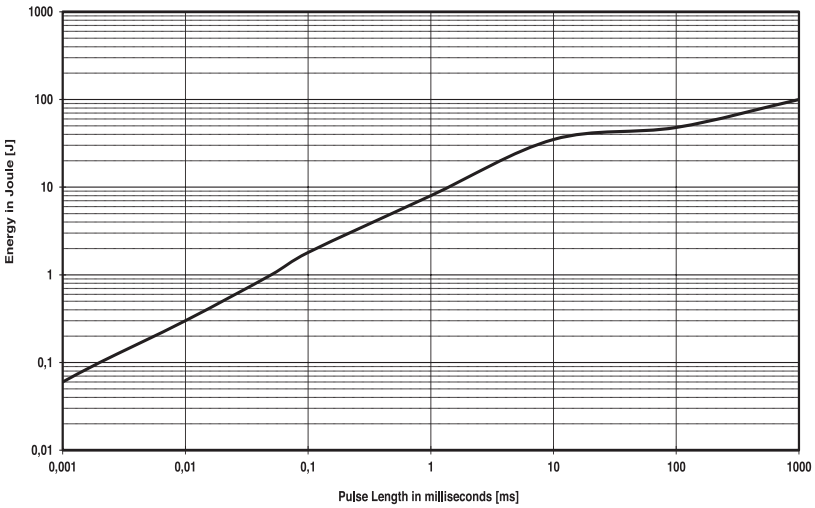
Pulse Energy Curve (typical rating for LXP-100 B)

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: 1s.
- 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 LXP-100 B can withstand an energy level of about 8 J, when the pulse pause time is ≥ 1s

At a symmetrical frequency > 1 kHz at pulse length ≥ 10 µs. the maximum applied pulse energy for LXP-100 B is an result out of the normal power 100 W divided by the operating frequency (at 25°C bottom case) (E = 100 W / F)

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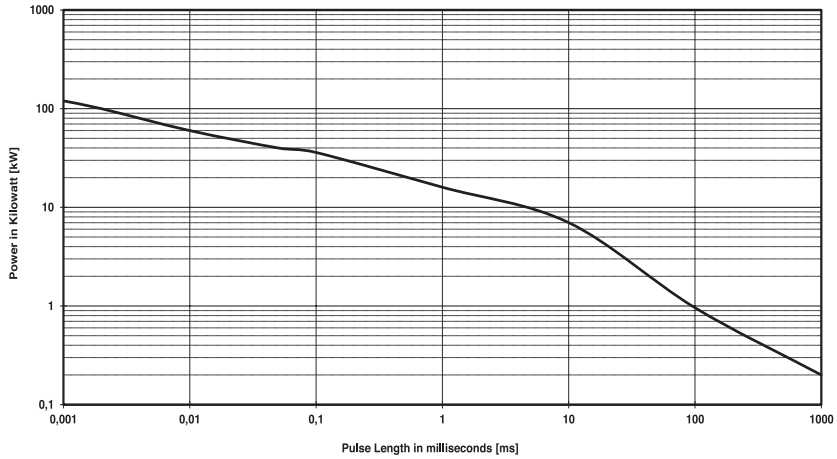
Pulse Power Curve (typical rating for LXP-100 B)

The power curve shows the max. possible power which can be applied for a certain duration.
Referring to the same test procedure as described at page 35.



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

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