Series GXP 120, SOT-227

120 W Power Resistor in the "ISOTOP" power device

AEC-Q200 ready

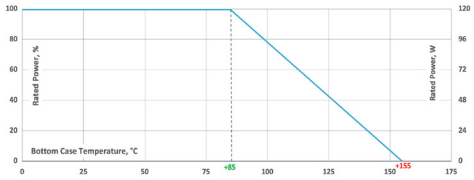
Due to our Non-Inductive design, the GXP series is ideally suited for high-frequency and pulse-loading applications. Through direct mounting on a heat sink, significant cost advantage can be realized. Main applications are: variable speed drives, power supplies, control devices, telecommunications, robotics, motor controls and other switching devices.

Features

- multiple resistors in 1 package
- Non-Inductive design
- ROHS compliant
- Materials in accordance with UL 94 V-0
- Resistor is also available with UL certification (ask for details)
- Thermal interface management available (ask for details)

Technical Specifications

Resistance value	0.1 Ω to 1 MΩ
Resistance tolerance	±1 % to ± 10 %
Temperature coefficient	> 1R: ±250 ppm/°C (at +85°C ref. to +25°C) lower TCR on special request for limited ohmic values
Power rating	up to 120 W at 85°C bottom case temperature (see configurations)
Short time overload	1.5x rated power at 85°C bottom case temperature for 10 s., ΔR = 0.4% max. (for conf. 1, 2 and 3)
Operating working voltage	500 V up to 1500 V = "S"-version up to 1500 V + higher pulse capability = "U"-version
Partial discharge	up to 2000 Vrms / 80pC Tests only on special request
Voltage proof	dielectric strength up to 4000 V DC against ground
Insulation resistance	> 10 GΩ at 1000 V DC
Isolation voltage betweeen R1 & R2	500 V DC (1000 V DC on special request)
Protection class	acc. to IEC 950/CSA22.2 950/M-89 and EN 60950.88:2
Comparative Tracking Index (CTI)	standard > 200 V (> 600 V on special request = "H"-version)
Heat resistance to cooling plate	Rth < 0.45 K/W
Capacitance/mass	45 pF (typical), measuring frequency 10 kHz
Serial inductivity	GXP-1 typical 40 nH, measuring frequency 10 kHz
Working temperature range	-55°C to +155°C
Mounting - torque for base plate (static)	1.3 Nm to 1.5 Nm M4 screws
Mounting - torque for contacts (static)	1.1 Nm to 1.3 Nm M4 screws, screw-in depth max. 5 mm
Weight	~26 g



Derating (thermal resist.) GXP-120:
2.22 W/K (0.45 K/W) (for conf. 1, 2 and 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 a request

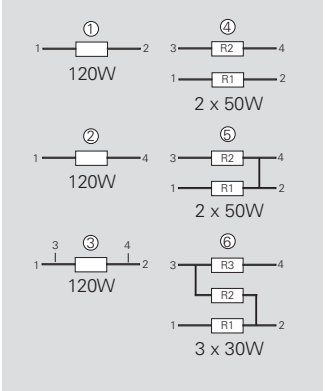
GXP-Configuration_Ohmic Value_Tolerance

For example:
GXP-1 1R 10% or GXP-4 2x50K 5%

Example for higher working voltage or CTI
GXP-4-S 2x40R 10% or GXPH-2 40K 10%

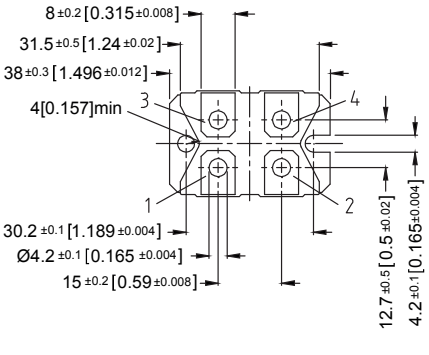
"S"-version: special trimming process
"U"-version: untrimmed
"H"-version: type with CTI >600

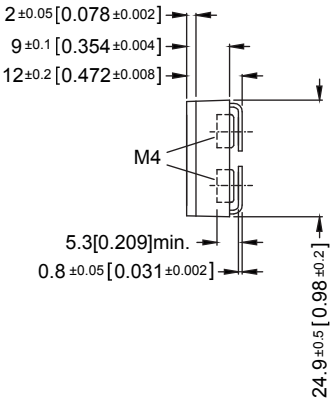
Configurations (P / package)



Version 5: ohmic value between contact 2 and 4 aprox. 3mΩ

Dimensions in mm [inches]





The above spec. sheet features our standard products. For further options please contact your local Miba Resistors representative.

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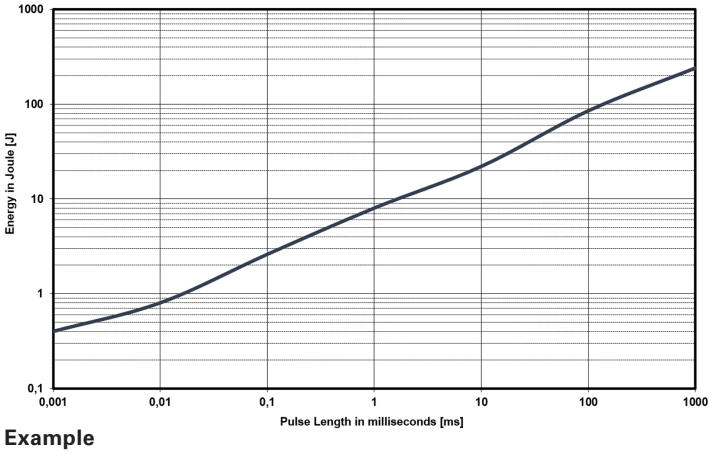
Pulse Energy Curve (typical rating for GXP 120)

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: 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)

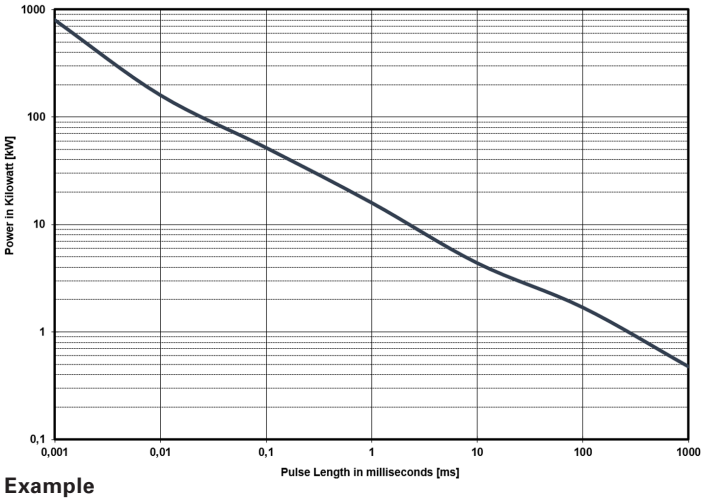
Example

At 1 ms tau the GXP 120 with e.g. 1 Ω to 10 Ω 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 GXP 120 is a result out of the nominal power 120 W divided by the operating frequency (at 85°C bottom case) (E = 120 W / F)

Pulse Power Curve (typical rating for GXP 120)

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

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