NON-INDUCTIVE POWER RESISTORS

GXP-A-120 / SOT-227

Electrical specifications and mounting

Up to 120 W / SOT-227

Non-inductive power resistor for high-frequency and pulsed loads. Direct heat sink mounting suits variable-speed drives, power supplies, control equipment, telecommunications, robotics and motor drives.

Multiple resistors per package. RoHS compliant per source. Materials per UL 94 V-0. Consult for UL-certified versions and thermal interface options. Source describes AEC-Q200 readiness.

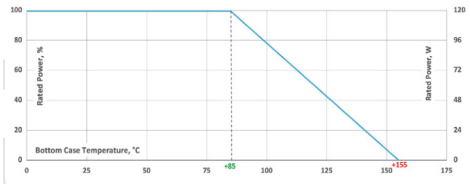


SOT-227 package appearance reference

Technical specifications

PARAMETER	SPECIFICATION
Rated power	Up to 120 W at 85 °C bottom case (config. 1–3)
Resistance range	0.1 Ω to 1 MΩ
Resistance tolerance	±1% to ±10%
Temperature coefficient	>1 Ω: ±250 ppm/°C at +85 °C, ref. +25 °C. Lower TCR by request for selected values.
Short-time overload	1.5× rated power for 10 s at 85 °C bottom case. ΔR ≤0.4% (config. 1–3).
Series inductance	Config. 1: 40 nH typ. at 10 kHz
Capacitance to ground	45 pF typ. at 10 kHz
Working voltage	500 V standard. S: up to 1,500 V. U: up to 1,500 V with higher pulse capability.
Partial discharge	Up to 2,000 V RMS / 80 pC. Tested by request only.
Dielectric strength	Up to 4,000 V DC to ground
Insulation resistance	>10 GΩ at 1,000 V DC
R1–R2 isolation	500 V DC (1,000 V DC by request)
Comparative tracking index	Standard >200 V. H version >600 V by request.
Protection class reference	IEC 950 / CSA 22.2 950/M-89 and EN 60950.88:2 (source notation)
Thermal resistance to cooling plate	Rth <0.45 K/W
Operating temperature	−55 °C to +155 °C
Base mounting torque	1.3–1.5 N·m | M4 screws
Contact fastening torque	1.1–1.3 N·m | M4, depth ≤5 mm
Weight	Approx. 26 g

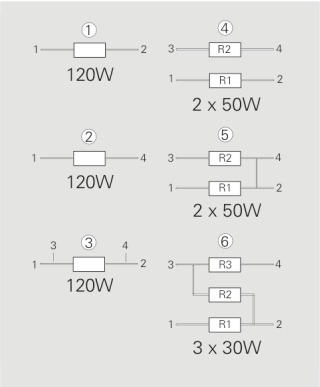
Power derating



Configurations 1–3: 2.22 W/K derating (0.45 K/W). Use thermal compound ≥1 W/(m·K). Cooling plate flatness <0.05 mm overall. Surface roughness ≤6.4 µm.

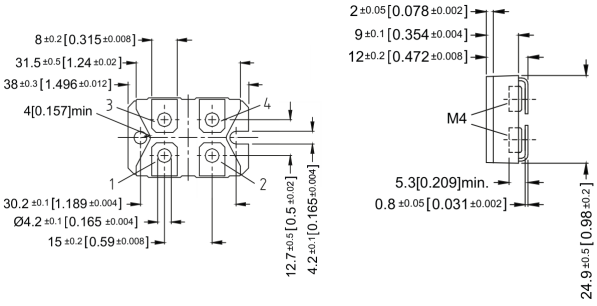
The source gives 2.22 W/K and separately plots 120 W at 85 °C and 0 W at 155 °C. Those endpoints do not yield the stated slope.

Circuit configurations



Configurations 1–3: 120 W per package. 4 and 5: 2 × 50 W. 6: 3 × 30 W. In configuration 5, terminals 2 and 4 measure approximately 3 mΩ.

Outline dimensions · mm [inches]



Ordering format: series, configuration, resistance, tolerance. Examples: GXP-A-1 1R 10%, GXP-A-4 2×50K 5%, GXP-A-4-S 2×40R 10%, GXP-AH-2 40K 10%. S: special trimming. U: untrimmed. H: CTI >600 V.

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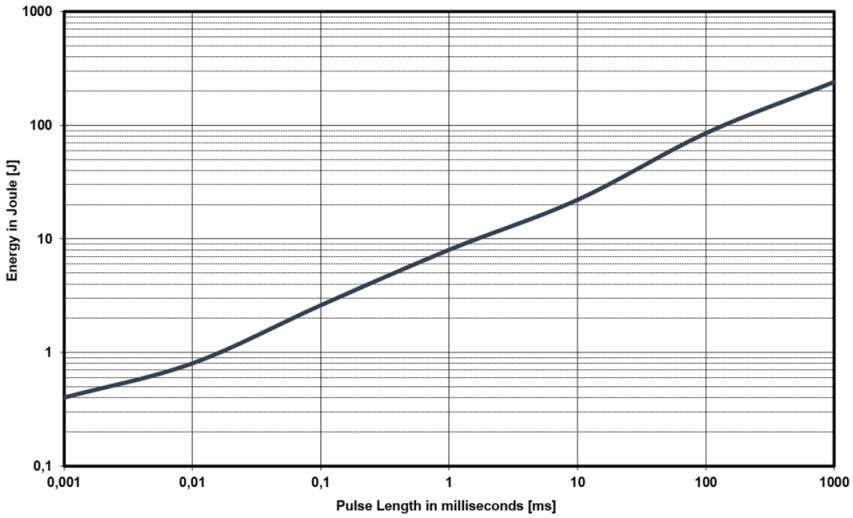
Typical pulse energy and peak power

Test setup

Resistors mounted on a water-cooled heat sink with thermal compound rated 0.9 W/(m·K). Inlet water +50 °C. Test duration 10 min per resistor, with a 1 s interval between pulses. A change greater than 0.1% in pre/post resistance was a failure.

Both curves use an exponential pulse. Pulse width is the time constant τ, in ms. Pulses are separated by 1 s. Typical capacity varies with resistance and resistive paste.

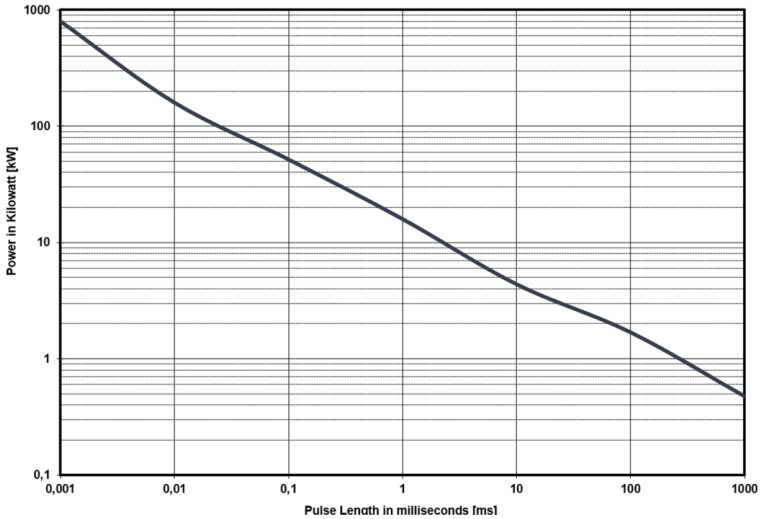
Typical pulse energy



Pulse width (ms) / energy (J)

Approx. 8 J at τ = 1 ms for 1–10 Ω and a pause ≥1 s. At symmetrical frequency F >1 kHz and pulse width ≥10 µs, use E = 120 W / F at 85 °C bottom case.

Typical peak pulse power



Pulse width (ms) / peak power (kW)

Approx. 16 kW peak at τ = 1 ms with a pause ≥1 s, based on Pp = 2E / τ and the same test setup.