LSPA800 Heatsink-Mounted Power Resistor

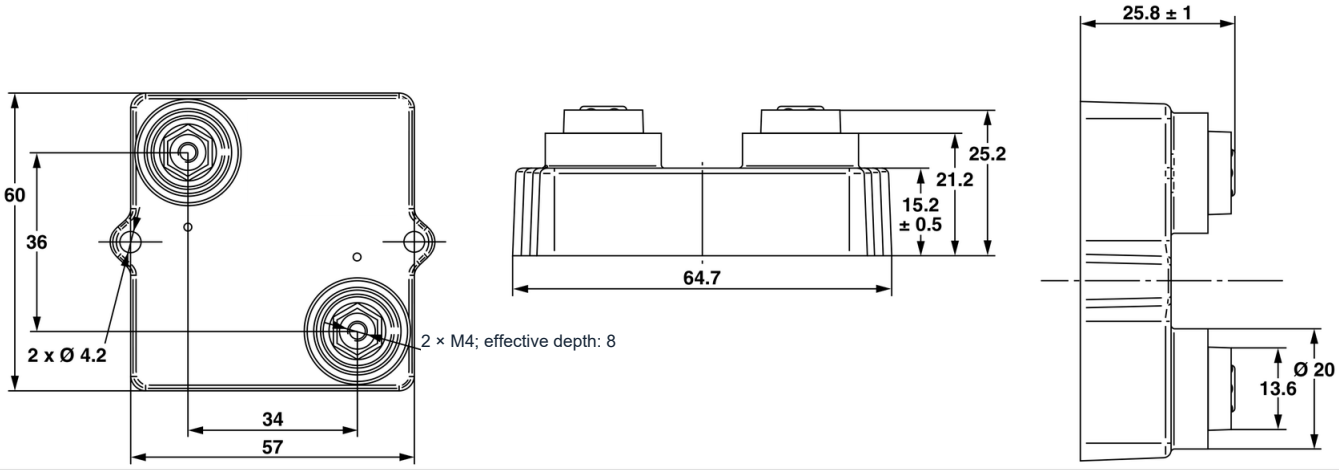
Thick-Film Technology

Features



- Meets NF-EN45545-2 requirement 26.
- Up to 800 W at a case temperature of 85°C.
- Wide resistance range: 0.3 Ω to 900 kΩ, E24 series.
- Non-inductive.
- Easy mounting.
- Low heat radiation from the case.
- Material category: see related notes for compliance definitions.
- RoHS compliant and lead-free.

Dimensions (mm)



Note: Unless otherwise specified, tolerances are ±0.2 mm.

Standard Electrical Specifications

Model	Resistance range (Ω)	Rated power P85°C (W)	Limiting element voltage UL (V)	Tolerance (±%)	Temp. coefficient (±ppm/°C)	Critical resistance (Ω)
LSPA800	0.3 to 900K	800	5K	1, 2, 5, 10	150, 300, 500	31.25K

Mechanical Specifications

Item	Specification
Flammability	Insulated case: UL 94 V-0
Resistive element	Thick film
Substrate	Alumina
Terminal connection	M4 screws
Terminal tightening torque	2 Nm
Heatsink tightening torque	2 Nm
Maximum torque	2.5 Nm
Weight	83 g ±10%

Environmental Specifications

Item	Specification
Temperature range	-55°C to +175°C
Climatic category	55 / 175 / 56

Technical Specifications

Item	Specification
Rated power and thermal resistance	800 W at case +85°C RTH(j-c): 0.112°C/W
Temperature coefficient -55°C / +175°C IEC 60115-1	R ≤ 1 Ω: ±500 ppm/°C 1 Ω < R ≤ 10 Ω: ±300 ppm/°C R > 10 Ω: ±150 ppm/°C
Dielectric strength IEC 60115-1, 1 min 10 mA maximum	7 kVRMS or 12 kVRMS
Lightning surge test 1.2/50 µs IEC 61000-4-5	Up to 12 kV
Insulation resistance	≥10⁴ MΩ
Inductance	≤0.1 µH
charge (LSPA800) only)	≤100 pC / 7 kV ≤10 pC / 5 kV Other cases: contact us

Performance

Test	Conditions	Requirement
Short-time overload	IEC 60115-1 1.5 × Pr / 10 s Umax. ≤ UL = 5000 V	±(0.25% + 0.05 Ω)
Rapid temperature change	IEC 60115-1 / IEC 30068-2-14, Test Na 50 cycles; -55°C to +175°C	±(0.5% + 0.05 Ω)
Load life	IEC 60115-1 1000 h (90/30), Pr, 85°C	±(0.5% + 0.05 Ω)
Steady damp heat	IEC 60115-1 56 days, RH 95%, 40°C	±(0.5% + 0.05 Ω)
Vibration	MIL STD 202, Method 204, Condition D (10 g; 5/500 Hz)	±(0.25% + 0.05 Ω)
Climatic sequence	IEC 60115-1 (55 / 175 / 56)	±(1% + 0.05 Ω)

Heatsink Mounting Recommendations

• Clean the contact surfaces thoroughly.

• Heatsink flatness should be within 0.05 mm to 0.1 mm per 100 mm.

• Heatsink roughness should be approximately 6.3 μm. For improved heat transfer, coat the contact surfaces (alumina and heatsink) with INLANX Past 340 silicone grease, or use INLANX Pad II thermal film for simpler and faster mounting.

• Secure the resistor to the heatsink with two screws under controlled pressure. Tighten to 2 Nm to achieve the full rated power.

Heatsink tightening torque	LSPA800
	2 Nm

• Each product is supplied with the following accessories:

- Heatsink mounting: two CHC M4 × 25 screws, grade 8.8, and two M4 contact lock washers.

- Connections: two TH M4 × 6/6 screws and two M4 contact lock washers.

Heatsink Selection

Select a heatsink for the operating conditions (power and ambient temperature). The maximum operating temperature must not exceed 175°C. Calculate dissipated power as follows:

$$P = \Delta T / [RTH(j\text{-}c) + RTH(c\text{-}h) + RTH(h\text{-}a)]$$

P: power in W.

ΔT: difference between the maximum operating temperature and ambient temperature.

RTH(j-c): thermal resistance measured between the resistive layer and the resistor outer surface. This is the component thermal resistance (see the environmental parameters in the specifications).

RTH(c-h): thermal resistance between the resistor outer surface and the heatsink top surface, including the interface (silicone grease or thermal pad) and the effect of mounting quality.

RTH(h-a): heatsink thermal resistance.

Example

RTH(c-a) for an LSPA800 dissipating 180 W at an ambient temperature of +50°C.

ΔT ≤ 175 °C - 50 °C = 125 °C

RTH(j-c) + RTH(c-h) + RTH(h-a) = ΔT/P = 125/180 = 0.69 °C/W

RTH(j-c) = 0.112 °C/W

RTH(c-h) + RTH(h-a) = 0.69 °C/W - 0.112 °C/W = 0.578 °C/W

Cooling Configurations

Parameter	Config. 1: Water cooling CP15 heatsink INLANX PAST 340 grease	Config. 2: Air cooling P207/250 heatsink INLANX PAST 340 grease	Config. 3: Water cooling CP15 heatsink INLANX-PAD II thermal pad	Config. 4: Air cooling P207/250 heatsink INLANX-PAD II thermal pad
Dissipated power (W)	710	282	307	180
Resistive element temp. (°C)	175	175	175	175
RTH(j-c), max. (°C/W)	0.112	0.112	0.112	0.112
RTH(c-h), typical (°C/W)	0.05	0.13	0.34	0.43
RTH(h-a), max. (°C/W)	0.059	0.29	0.059	0.29
Fluid temperature (°C)	18	25	18	25

• Config. 1: INLANX CP15 water-cooled heatsink (304 × 95.3 × 8 mm), water flow 4 LPM, with INLANX Past 340 silicone grease.

• Config. 2: INLANX P207/250 air-cooled heatsink (250 × 200 × 72 mm), with INLANX Past 340 silicone grease.

• Config. 3: INLANX CP15 water-cooled heatsink (304 × 95.3 × 8 mm), water flow 4 LPM, with INLANX-Pad II thermal pad.

• Config. 4: INLANX P207/250 air-cooled heatsink (250 × 200 × 72 mm), with INLANX-Pad II thermal pad.

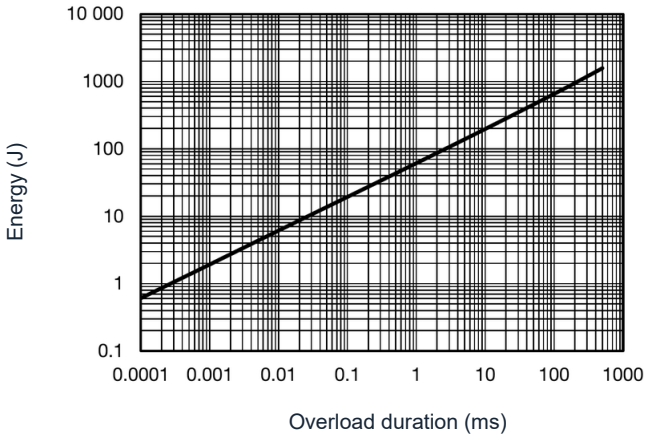
Overload

In all cases, the applied voltage must remain below UL = 5000 V.

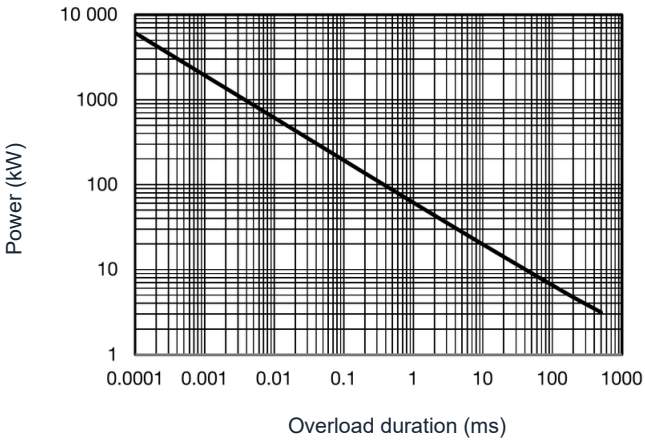
Short-time overload: 1.5 × Pr / 10 s.

Occasional overload: the curves below apply to resistors in free air or mounted on a heatsink.

Energy Curve



Power Curve

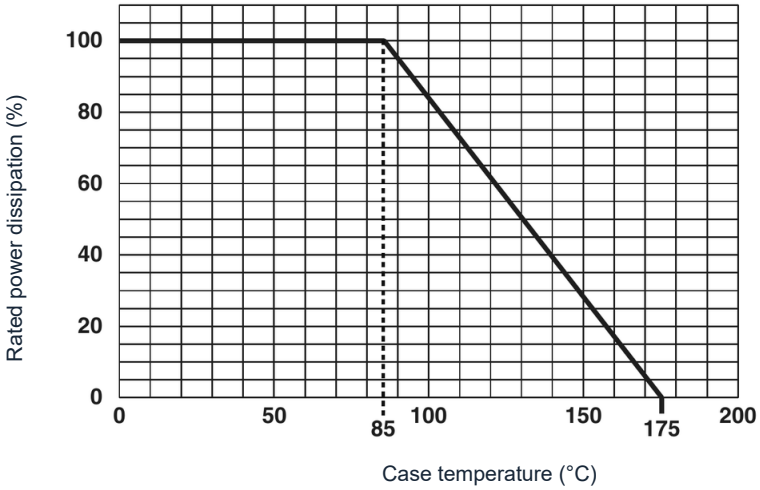


Marking and Packaging

Series, type, resistance (Ω), tolerance (%), manufacturing date and INLANX trademark.

Packaging: 15 pieces per box.

Rated Power



Keep the case temperature within the limits specified in the graph.

For optimum heat transfer, apply silicone grease or thermal film to the contact surfaces. Tighten the heatsink mounting screws to 2 Nm.

Ordering Information

Model	Type	Resistance	Tolerance	Custom design	Packaging	Lead-free (Pb)
LSPA	800	100 kΩ	± 1 %	xxx	BO15	e

Tolerances: ±1%, ±2%, ±5%, ±10%. Custom designs: special TCR, dimensions and other options on request.

Global Part Number Information

LSPA0800 H 4 7 R 0 J B

Field	Description
Global model	LSPA800
Dielectric strength	L = 7 kV dielectric strength; H = 12 kV dielectric strength D = partial discharge ≤100 pC / 7 kV and ≤10 pC / 5 kV
Resistance	First three digits are significant; the last digit gives the number of following zeros. R indicates the decimal point. 48R7 = 48.7 Ω; 47R0 = 47 Ω; 1001 = 1 kΩ 4R70 = 4.7 Ω; R240 = 0.24 Ω
Tolerance	F = 1%; G = 2%; J = 5%; K = 10%
Packaging	B = 15 pieces per box
Special	When applicable: ZAx