# RHPP-120W Power Resistor

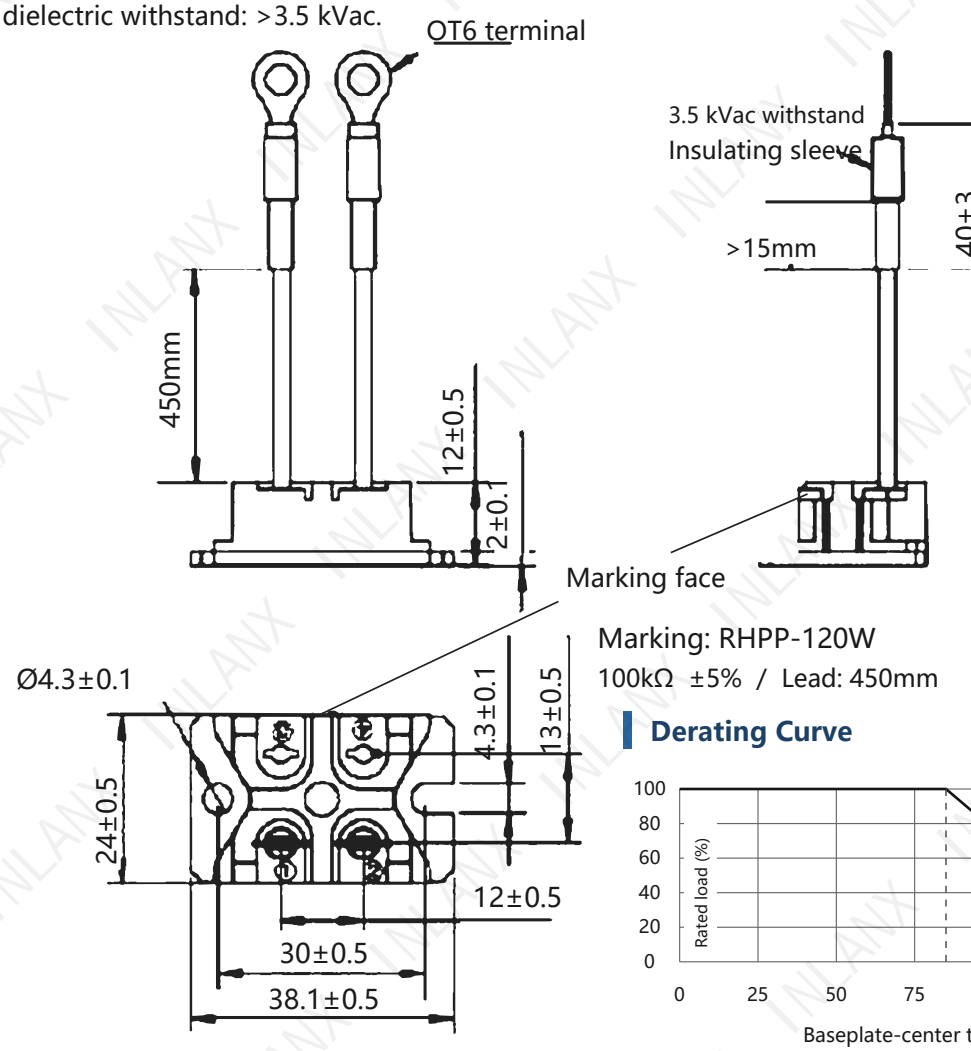
## Product Specification

| Model | RHPP-120W |
|---|---|
| Rated power | 120W |
| Nominal resistance | 100kΩ |
| Tolerance | ±5% |
| Lead length | 450mm |
| Operating temperature | −55°C to +155°C |
| Rated ambient temperature | 70°C |
| Terminal installation | M4; max. 1.5N·m |



## Outline and Mounting Dimensions • mm

Red insulating sleeve at each terminal.
Sleeve dielectric withstand: >3.5 kVac.




## Derating Curve

# Electrical, Environmental and Reliability Requirements

## Electrical and Environmental Parameters

| | | | |
|---|---|---|---|
| Max. working voltage | 1500 Vdc | Installation altitude | ≤2000m |
| Insulation resistance | ≥10GΩ | Storage temperature | −10°C to +40°C |
| Dielectric withstand | 4000 Vdc | Relative humidity | ≤80% |
| Lead insulation | 6 kVac / 1min | Category temperatures | −55°C / +155°C |
| Heat-shrink insulation | 3.5 kVac / 1min | Steady damp-heat condition | 56 days / 40°C; RH≥95% |
| Distributed capacitance | 45pF | Resistance temperature characteristic | $\pm 250\times10^{-6}$ kΩ (source unit) |

Temperature-characteristic unit retained from the source; reference temperature: room temperature.

## Performance and Test Requirements

| Test | Conditions | Requirement |
|---|---|---|
| Overload | 2 × rated power, limited to 1.5 × maximum working voltage; 5 seconds. | ΔR≤±(0.4%R+0.1Ω) |
| Moisture resistance | 56 days / 40°C; RH≥95%. | ΔR≤±(0.25%+0.001Ω) |
| Terminal strength | Flexible lead pull: 10N. Stud terminal torque: 1.0N·m. | ΔR<±(1%R+0.05Ω) |
| Low-temperature performance | Measure DC resistance. Within 1 hour, place the mounted resistor at −65°C±2°C for 24h±4h. Recover at 25°C±5°C for 2–8 hours. Re-measure DC resistance and inspect for mechanical damage. | Re-measure DC resistance; inspect for mechanical damage. |
| Load life | Rated power for 1000 hours; baseplate temperature 85°C. | ΔR≤±(1.0%+0.001Ω) |
| 70°C endurance | 70°C±2°C; 1000h. Check appearance and resistance at 48h, 500h and 1000h; insulation resistance at 1000h. Apply DC rated voltage: 1.5h ON / 0.5h OFF. | ΔR≤±(5%R+0.1Ω); no abnormal damage; legible marking; insulation resistance >1GΩ. |
| Heat resistance | 200°C±5°C oven for 120 minutes; recover at room temperature for 90 minutes, then measure resistance. | ΔR≤±(5%R+0.1Ω); no visible damage. |
| Room-temperature load | Apply 1.5 × the rated-power voltage or 1.2 × the limiting element voltage, whichever is lower, for 24 hours. Recover at room temperature without load for 120 minutes, then measure resistance. | ΔR≤±(5%R+0.1Ω); no visible damage. |
| High-frequency vibration | 10–500Hz; 10g; 6h. | ΔR≤±(0.2%R+0.01Ω) |
| Thermal shock | MIL-Std-202, Method 107, cond. F. | ΔR≤±(0.3%+0.001Ω) |
| Temperature-rise test | Apply rated current under the specified conditions. | Component temperature rises must not exceed the limits on page 3. |

# Temperature-rise Limits and Temperature Testing

## Component Temperature-rise Limits

| Component | Material / condition | Rise limit (K) |
|---|---|---|
| Resistor element | Cast iron; iron-chromium-aluminium | 350 |
| Resistor element | Constantan | 300 |
| Terminal | Bare copper | 60 |
| Terminal | Copper or brass, tinned | 65 |
| Terminal | Copper or brass, silver- or nickel-plated | 70[a] |
| Terminal | Other metals | ≤65[b] |
| Enclosure | Where an enclosure is fitted | 200[c] |
| Airflow at enclosure outlet | — | 200[c] |

a The terminal temperature-rise limit of 70K is based on PVC cable.
b The limit depends on experience and life tests, but must not exceed 65K.
c Provide protection against contact with flammable materials or accidental human contact. Unless otherwise specified, the 200K limit may be exceeded. State installation-position and protective-measure requirements in the product standard or manual.

## Temperature-characteristic Test Sequence

| Sequence | Qualification test (°C) | Group B inspection[a] (°C) |
|---|---|---|
| 1 | Room temperature[b] | Room temperature[b] |
| 2 | −15±3 | −55±3 |
| 3 | −55±3 | Room temperature[b] |
| 4 | Room temperature[b] | (150±3)/(175±3)[c] |
| 5 | 65±3 | — |
| 6 | 125±3 | — |
| 7 | (150±3)/(175±3)[c] | — |

a The supplier may select test sequence 3, 4, 1, 2.
b This is the reference temperature for each subsequent test temperature.
c If the upper category temperature is below the stated test temperature, use the resistor's upper category temperature.

Environmental compliance: RoHS and relevant environmental directives.

## Ordering Information

| Model | Power | Resistance / tolerance | Lead length |
|---|---|---|---|
| RHPP-120W | 120W | 100kΩ / ±5% | 450mm |