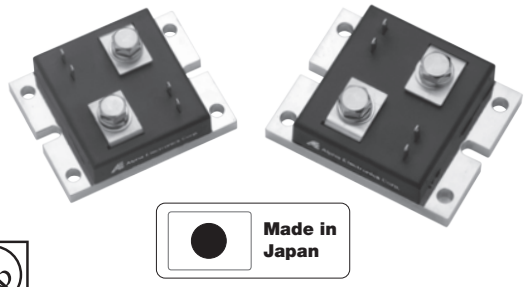
Alpha Electronics
A VPG Brand

High Power Precision Shunt Resistor, Up to 500W



Pb-free Available

RoHS COMPLIANT

CAUTION — tighten screws at
- current terminals: <5.2N · m
- voltage terminals: <0.0195N · m

FEATURES

- **Temperature coefficient of resistance (TCR)**
  +25°C to +60°C, +25°C ref.: 0 ±1 ppm/°C
  –25°C to +125°C, +25°C ref.: 0 ±5 ppm/°C
- Utilizing Ni-Cr Bulk Metal® Foil Technology for realizing low TCR
- Low thermal resistance with Copper plate
  - Improved to 0.1°C/W from 0.3°C/W (conventional model)
  - Maximum rated power up to 500W on heat sink
- Extended max. ambient temperature to 125°C (85°C with conventional model)
- Built-in Pt100 sensor monitor temperature of resistive element
  - Easily define size of suitable heat sink
  - As safety function for continuous operation

CONTRUCTION OF MATERIALS

- Base plate: Nickel-plated Copper
- Current terminal: Nickel-plated Copper (T = 1.0 mm)
- Voltage and Pt terminals: Nickel-plated Copper (T = 0.5 mm)
- Package: PPS Injection-molded case

APPLICATIONS

- Output reference of precision power supply
- Reference of charge-discharge test for high capacity batteries

COMPOSITION OF TYPE NUMBER

Example:

FNP Z R0100 B

- B — Tolerance
- R0100 — Resistance Value*
- Z — TCR
- FNP — Type

* R is a dual-purpose letter that designates both the value range (R for ohmic) and the location of decimal point.

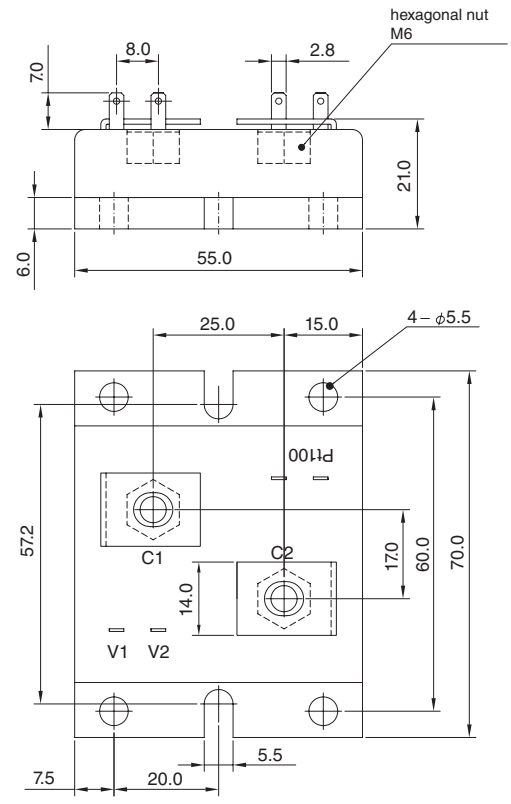
TCR—RESISTANCE VS. TOLERANCE

Tolerance of Built-in Pt100 Sensor:
±[0.8 + 0.008(t)]°C

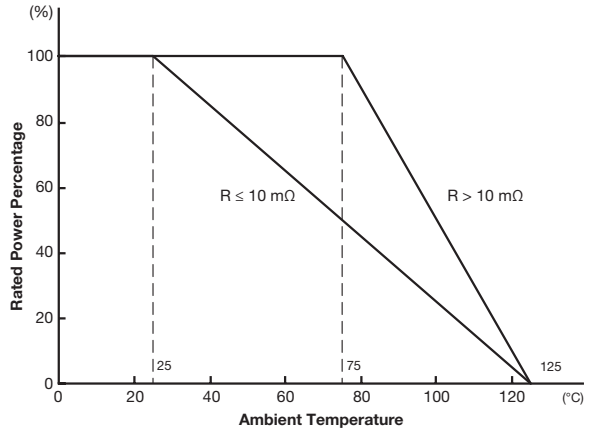
TCR (ppm/°C)	Resistance Range (Ω)	Tolerance (%)	Rated Power (W)
0 ±1 (Z) 0 ±2.5 (Y) (+25°C to +60°C) 0 ±5 (X) (–25°C to +125°C)	0.001 to 10**	±0.05 (A) ±0.1 (B) ±0.5 (D) ±1.0 (F)	500 (on heat sink*)

* Keep temperature of element surface less than 125°C.
** Please contact us for available resistance value

CONFIGURATION—Dimensions in mm



POWER DERATING CURVE



TEMPERATURE CHARACTERISTICS OF RESISTANCE

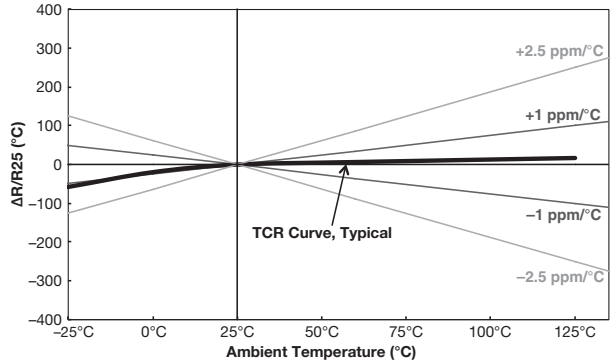
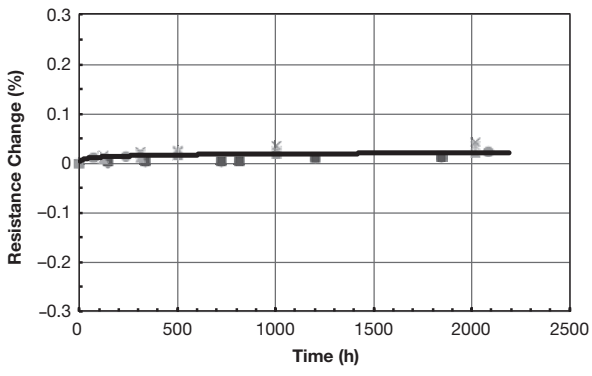


TABLE 2—PERFORMANCE

PARAMETERS	SPECIFICATION	
Maximum Rated Operating Temperature	25°C (R ≤10 mΩ)	75°C (R >10 mΩ)
Working Temperature Range	–55°C to +125°C	
Maximum Working Current	320 A	
Single Pulse Power Load	50 J (tp <10 msec)	
Dielectric Withstanding Voltage	AC 500 V	
Inductance	<10 nH	
Internal Thermal Resistance (element/base plate)	R_θ <0.1°C/W (R >10 mΩ)	
	R_θ <0.2°C/W (R ≤10 mΩ)	
Life (200 W, Element Temperature 100°C)	±0.2% (2000 h)	
High Temperature Exposure (125°C)	±0.2% (2000 h)	

LIFE (200 W, ELEMENT TEMPERATURE +100°C)



HIGH TEMPERATURE EXPOSURE (+125°C)