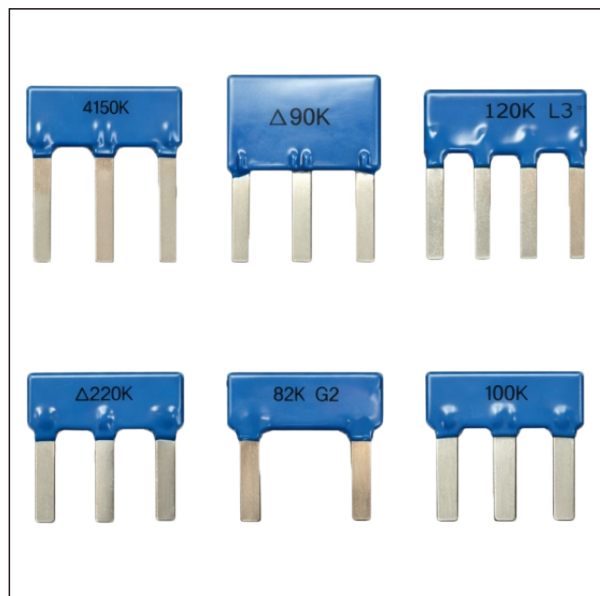


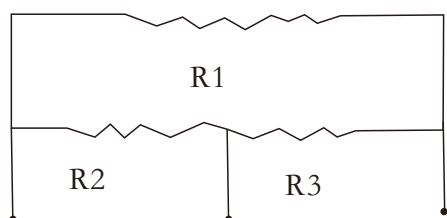


● Features

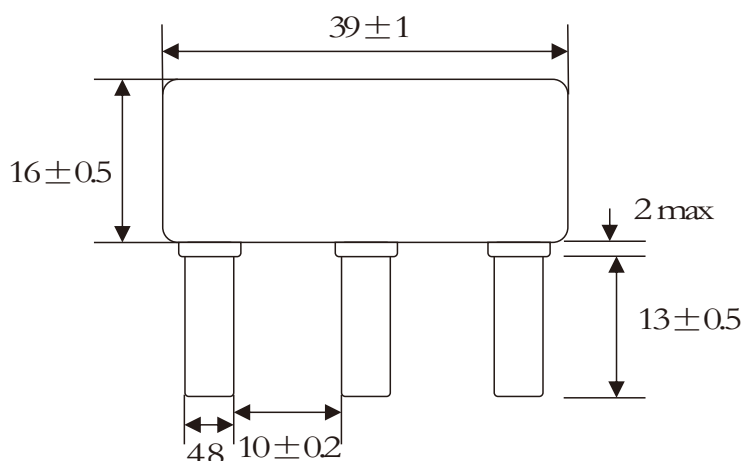
Discharge resistors (bleeder / discharge resistors) provide safe and reliable discharge of electrical charge on capacitors or DC lines after power is turned off. They prevent the risk of electric shock and enable safe servicing. Discharge resistors are installed on the terminals of capacitor assemblies, with the purpose of reducing the stored electrical charges in capacitors, as they can pose a danger to users (standard IEC 831 - electrical voltage at the capacitor terminals after 3 minutes after disconnection from the mains, must not exceed 75 V).

It is of course also possible to manufacture discharge resistors with any properties (resistance value, electrical connection, material, shape, color, length between resistor terminals), and printing (one-sided or two-sided), according to the customer's wishes.

● Construction



● Dimensions



● Ordering Information

Example:

HVM	5	J	2203
(1)	(2)	(3)	(4)
Series Name	Power Rating	Resistance Tolerance	Resistance

(1) Type: HVM SERIES

(2) Power Rating: 5=5W, 6=6W, 8=8W, 9=9W

(3) Tolerance: D= ± 0.5%, F= ± 1%, G= ± 2%, J= ± 5%, K= ± 10%

(4) Resistance Value: 2203=220KΩ

Reference Standards

IEC 831

Applications And Ratings

Type	Rated Power (W)	Resistance Range(Ω)	Maximum operating voltage	Tolerance
HVM	5-9W	27K-1000K	Single Use :20.0 kVDC Molded Use :35.0kVDC	F:±1%,G:±2%, J:±5%,K:±10%, M:±20%

Notes)

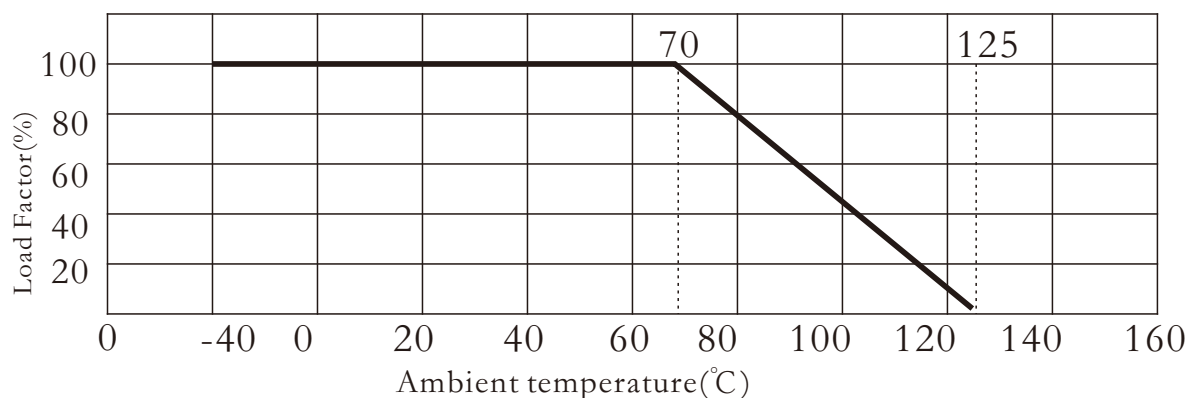
1. Resistance value is single resistor value.

2. Resistance Value(R)rated voltage(E)rated power(P) will be calculated from the following formula.

$$E = \sqrt{P \cdot R}$$

For example : $\sqrt{2.5W \cdot 10M\Omega} = 5.0kVDC$ (Maximum rated voltage)When the rated voltage exceeds the maximum operating voltage,the maximum operating voltage is regarded as the rated voltage.

Derating Curve



Technical Specifications

General & Application	Description: Comb-style Plug-in Thick-film Discharge Resistor Matrix for Low Voltage Power Factor Correction Capacitors (specifically for HVM series). Function: Incorporates thick-film resistors to automatically and safely discharge the residual electrical energy stored in a de-energized capacitor bank. It provides direct touch protection and speeds up installation by eliminating wiring
Electrical Characteristics	Nominal Resistance (R): 220 k Ω per phase. Resistance Marking Code: 220K (Tolerance $\pm 10\%$). Internal Circuit Design: Δ (Delta) Connection (Marked as Δ).Design note: The internally delta-connected resistor block connects seamlessly across the 3 feed-through terminals of a three-phase capacitor (Lines U, V, W). Maximum Continuous Operating Voltage ($[U_n]$): Up to 690V AC (Optimized for 400V, 415V, 440V, 525V at 50/60 Hz networks). Discharge Performance (Discharge Time):Standard Compliance: Fully complies with IEC 60831-1/2 international safety standards.Performance: Safely reduces the capacitor's residual voltage from the peak of rated voltage down to $\leq 75V$ within 3 minutes (180 seconds).
Materials & Environmental Data	Conductor Terminals: High-conductivity copper alloy with a heavy electro-tin plating (Sn) surface to minimize contact resistance and prevent oxidative degradation in high-vibration power cubicles.Insulation Housing: Thermally stable, flame-retardant polyamide/epoxy coating encapsulation.Flammability Rating: UL 94 V-0 Self-extinguishing (Ensures safety and prevents fire propagation under ultimate capacitor breakdown conditions).Dielectric Insulation Strength: Terminals to outer insulation enclosure $\geq 4000V$ AC.Ambient Operating Temperature: -40°C to +70°C (Designed for severe thermal conditions inside closed automatic capacitor banks).

● Performance

Test Items	Performance Requirements	Test Methods
Series circuit connection	A Connection (Delta Connection)	Printing code: A. Internally integrated with two or three sets of resistors, the 3 pins directly correspond to the U, V, and W capacitor terminals of the three-phase delta connection. Simply plug it in to discharge the three-phase capacitors simultaneously.
Maximum Continuous Operating Voltage	690VAC	Suitable for all mainstream low-voltage reactive power compensation systems on the market, such as 400V, 440V, 480V, 525V, etc.
Safe discharge time	≤ 3 minutes (180s)	Key indicator: After power failure, the residual peak voltage across the capacitor can be safely reduced to 75V or below within 3 minutes (fully compliant with the international standard IEC60831).
Transient energy impact resistance	High-energy, non-sensory thick film design	It can withstand instantaneous high-voltage pulses during power outages, and due to its inductance-free design, it will not generate reverse parasitic high-voltage spikes during discharge.
Rated operating frequency	50Hz/60Hz	Match the operation of the AC power system.
Pin Conductor Material	High-conductivity copper alloy (with overall electroless tin plating of high thickness on the surface), ensuring long-lasting contact, ultra-low contact resistance, and anti-oxidation performance.	
Operating Temperature Range	-40°C to +70°C (matching the harsh high-temperature environment inside the capacitor cabinet). Insulation Voltage Withstanding Grade: The dielectric strength between the pin conductor and the external blue insulating shell is ≥ 4000VAC (ensuring absolute safety when human hands or equipment come into contact with the housing).	
Housing Flame Retardancy Grade	Complies with the UL94V-0 standard. Even under high temperatures caused by capacitor electrical breakdown faults, the resistive housing will not self-ignite.	