



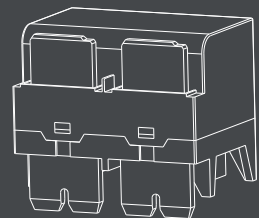
Your Partner for Safety



Power Relay

for New Energy

www.ptgrelay.com

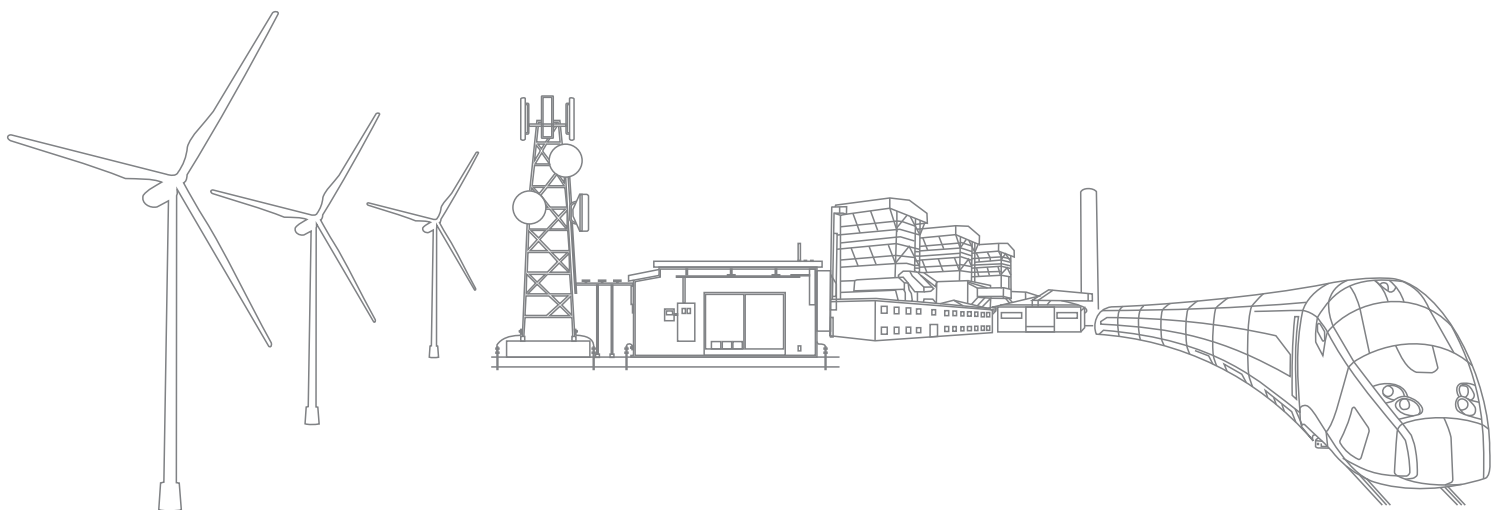


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PTG PV Relays

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We built up the great
professional team and
cutting-edge technology
and equipments to
successfully achieve
our mission:
To ensure your personal
and property safety.



Expertise

PTG, a group of experts with more than 20 years experiences in electrical safety solution. It provides comprehensive and competitive solutions for Power, New Energy, Telecommunications, Construction, Transportation, Oil and Gas industries.

Technologies

PTG owns over 40 patents, and its world leading technology makes it honored as National High Technology Enterprise.

Products

It offers complete range of surge protection products: from direct lightning to equipment side fine protection, including power supply, data network, industrial equipment, building electric, etc, and specific relays for new energy systems. The products are qualified by third party organizations, such as TUV, KEMA, CB, CE, UL.

Quality

ISO 9001 and full functional electrical lab ensure the strict quality control; Automation production line ensures the performance consistency.

R&D

PTG invests 10% of revenue annually into R&D, and it offers customization products and solutions.

Manufacture

PTG owns two manufacturing sites in Shenzhen, one full automatic production factory for relay, one semi-production factory for SPD.

Management

PTG uses tailored ERP system to track and monitor every process from incoming to delivery, it leads to short lead time, as well as customer satisfaction.

Social Responsibility

PTG operates ISO 14001 and ISO 45001 strictly.



Laboratory and Testing

PTG owns a world-class lightning protection laboratory in Shenzhen compliance to IEC and GB standards

- 8/20 μ s impulse current generator up to 200 kA
- 10/350 μ s impulse current generator up to 110 kA
- 1.2/50-8/20 μ s combined wave generator up to 20 kV/10 kA
- Transient overvoltage test (TOV) 1200 V/300 A
- Environmental testers, including high temperature and humidity, cold and hot shock, vibration, drop, salt spray, etc



Laboratory and Testing

PTG owns a full function laboratory for relays in Shenzhen according to IEC, UL and GB standards

- Mechanical & electrical durability test systems
- Impulse withstand voltage tester
- Temperature rise test system
- Synthetic relay parameter tester
- Environmental testers, including high temperature and humidity, cold and hot shock, vibration, drop, salt spray, etc



Relays

Concept

A relay is an electronically operated switch that is remotely activated by an electromagnet which pulls a set of contacts to either make or break a circuit. Electrical relays are commonly used for switching signals, radio frequencies, high current circuits when using a lower current circuit, and loads such as resistive, motor, lamp, inductive, and capacitive applications. This is helpful when an in-line switch or existing circuit does not have the capacity to handle the required current.

Functions

- Galvanic separation of the primary or actuating circuit and load circuits
- Single-input/multiple-output capability
- Separation of different load circuits for multi-pole relays
- Separation of AC and DC circuits
- Interface between electronic and power circuits
- Multiple switching operations – time delay, signal condition, among others
- Serves as an amplifier

Working principle

Relays have the same subsystems and principles of operation regardless of whether these are electromechanical relays or electronic relays or designed to switch signal or high-power loads. Relays convert an electrical input signal on the primary side to an intermediate and non-electric physical signal. These devices also reconvert the non-electric physical signal to operate a switching element (secondary side) such as contacts which switch and conduct electrical current (i.e., output, load current). Relays use the non-electric signal between the primary and secondary side to provide the necessary galvanic separation between the input and output circuits. Relays enable a single output that can activate multiple circuits and functions, which helps increase cost savings because high current capacity switches cost more than lower current versions. Relays can also perform logic functions on certain inputs, such as latching an output on and off from a momentary input. When a switch cannot take a high current or is operated by electronic circuit, the relay can be operated by switch circuits. Arcing combined with contact bouncing is one of the parameters that limits inrush current. Care has to be taken during the design and testing phase of an application so that the peak inrush current will not exceed the relay specification, you need a high inrush relay when you need to address inrush currents that can be extremely high.



Technical Definitions

Electromechanical relay

Electrical relay in which the intended response results mainly from the movement of mechanical elements.

Monostable relay

Electrical relay which, having responded to an energizing quantity and having changed its condition, returns to its previous condition when that quantity is removed.

Make contact

Contact which is closed when the relay is in its operate condition and which is open when the relay is in its release condition.

Break contact

Contact which is open when the relay is in its operate condition and which is closed when the relay is in its release condition.

Change-over contact

Combination of two contact circuits with three contact members, one of which is common to the two contact circuits; such that when one of these contact circuits is open, the other is closed.

Contact form

Different applications require specific switching functions of the relay contacts; various contact forms are specified and described in different ways. The most common are:

| Contact form | Designator | Circuit symbol |
|---|--------------|----------------|
| 1 pole normal open contact | SPST-NO (a) | |
| 1 pole normal close contact | SPST-NC (b) | |
| 1 pole changeover contact | SPDT (c) | |
| 1 pole normal open with bridge contact | SPST-NO (a) | |
| 1 pole normal close with bridge contact | SPST-NC (b) | |
| 1 pole changeover with bridge contact | SPST (c) | |
| 2 poles normal open contact | DPST-NO (2a) | |
| 2 poles normal close contact | DPST-NC (2b) | |
| 2 poles changeover contact | DPDT (2c) | |

Contact current

Electric current which a relay contact carries before opening or after closing.

Switching current

Electric current which a relay contact makes and/or breaks.

Switching voltage

Voltage between the contact members before closing or after opening of a relay contact.

Contact resistance

Electrical resistance between the relay terminals of a closed contact, measured with indicated measuring current and indicated source voltage. The specified contact resistance is reached reliably only above a particular load. Considerably increased contact resistances can occur with smaller loads. After a prolonged period of a steady state operate/release position or storage of the relay a certain number of cycles are recommended before measurement of the contact resistance.

Contact gap

Shortest distance between the open contact points.

Coil voltage

Voltage applied across the coil terminals.

Coil power

Power consumption of the coil at rated coil voltage and coil resistance, with coil temperature at 23°C, given as rated typical value.

Coil resistance

Electrical resistance of the relay coil at reference temperature; this value is indicated for the coil without any other devices in parallel (e.g. coil suppression, diode, etc.).

Operate voltage

Value of coil voltage at which a monostable relay operates.

Operate voltage U1

Value of the coil voltage at which a relay operates, having previously been energized at the same voltage and with rated contact load (thermal equilibrium has to be achieved).

Operate voltage without preenergizing U0

Minimum permissible input voltage at which the relay operates, for a coil temperature equal to the reference temperature (23°C coil temperature without preenergizing).

Technical Definitions

Release voltage

The input voltage at or below which a monostable relay releases to the rest state at the reference temperature.

Operate time (DC coils)

The time interval that elapses from energizing a monostable relay in the rest state with the rated voltage (pulse or square signal) at an ambient temperature of 23°C to the moment when the last output circuit is closed or opened (bounce time not included). The operate time varies with the applied coil voltage and the ambient/coil temperature. This definition refers to DC-coils only, due to the dependency of the phase angle considerably longer operate times may occur with AC magnetic systems.

Release time

The time interval that elapses from the point of time at which a monostable relay in the operating state has the rated voltage disconnected to the point of time at which the last output circuit has closed or opened (not including the bounce time). Unless otherwise stated the indicated times are maximum values and are valid for energization with rated voltage, without any components in series or parallel to the coil, and at reference temperature.

Dielectric strength

Voltage (rms value in AC voltage, 50 Hz 1 min) the insulation can withstand between relay elements that are insulated from one another, measured at the final production test.

Insulation resistance

Electrical resistance (initial product condition) measured by applying a DC voltage of 500V between two elements of a component that are insulated from one another as measured at the final production test.

The requirements according to IEC 61810-1 are:

- for functional insulation > 2 MOhm
- for basic insulation > 2 MOhm and
- for reinforced insulation > 7 MOhm.

Category of protection

Types of relays, based upon environmental protection (relay technology RT), IEC 61810-7 describes the degree of sealing of the relay case or its contact unit:

RT 0: unenclosed relay

Relay not provided with a protective case.

RT I: dust protected relay

Relay provided with a case which protects its mechanism from dust.

RT II: flux proof relay

Relay capable of being automatically soldered without allowing the migration of solder fluxes beyond the intended areas. These are the contacts, movable parts of the magnetic system and their immediate environment.

RT III: wash tight relay (Plastic sealed relay)

Relay capable of being automatically soldered and subsequently undergoing a washing process to remove flux residues without allowing the ingress of flux or washing solvents.

The test to evaluate the sealing of the case for wash tight relays is performed according to the IEC 60068-2-17.

RT IV: sealed relay

Relay provided with a case which has no venting to the outside atmosphere, and having a time constant better than 2×10^4 s in accordance with IEC 60068-2-17.

RT V: hermetically sealed relay

Sealed relay having an enhanced level of sealing, assuring a time constant better than 2×10^6 s in accordance with IEC 60068-2-17.

Technical Definitions

Shock resistance (destruction)

This test is used to evaluate the resistance of the relay to heavy mechanical shocks leading to a permanent damage to the relay. This test is performed according to the IEC 60068-2-27.

Shock resistance (function)

This test is used to evaluate the resistance of the relay to mechanical shocks such as those that could occur in transport or during operation (no opening of closed relay contacts with a duration $> 10 \mu\text{s}$). This test is performed according to the IEC 60068-2-27.

Data valid for all relay axes unless otherwise stated. Nevertheless it is recommended to avoid shock especially in armature and contact movement direction.

Vibration resistance (destructive)

This test is used to evaluate the resistance of the relay to heavy mechanical vibration leading to a permanent damage to the relay. This test is performed according to the IEC 60068-2-27.

Vibration resistance (functional)

This test is used to evaluate the resistance of the relay to harmonic mechanical oscillations such as those that could occur in transport or during operation. No opening of closed relay contacts or closing of open relay contacts with a duration $> 10 \mu\text{s}$ is allowed to occur during the test. This test is performed according to the IEC 60068-2-6. Unless otherwise stated the values refer to a frequency range 30...150 Hz.

Switching capacity

Product of the switching current and switching voltage (in W for direct current, in VA for alternating current).

Creepage distance

Depending on the insulation design, usually the shortest distance along the surface of the insulating material between conductive parts according to IEC 61810-1.

Clearance distance

Shortest distance in air between two conductive parts or between a conductive part and the accessible surface of the relay.

Frequency of operation

Number of operation cycles (opening and closing of contacts) per unit of time. The switching rate is usually indicated for switching under rated load; unless otherwise stated at ambient temperature 23°C and without any circuitry in parallel to the coil (no coil suppression circuit, e.g. diode). With contact loads considerably below rated load a higher frequency of operation may be admissible. This has to be tested for the specific application. For further assistance please contact our application support.

Mechanical endurance

Number of cycles without contact load during which the relay remains within the specified characteristics.

Electrical endurance

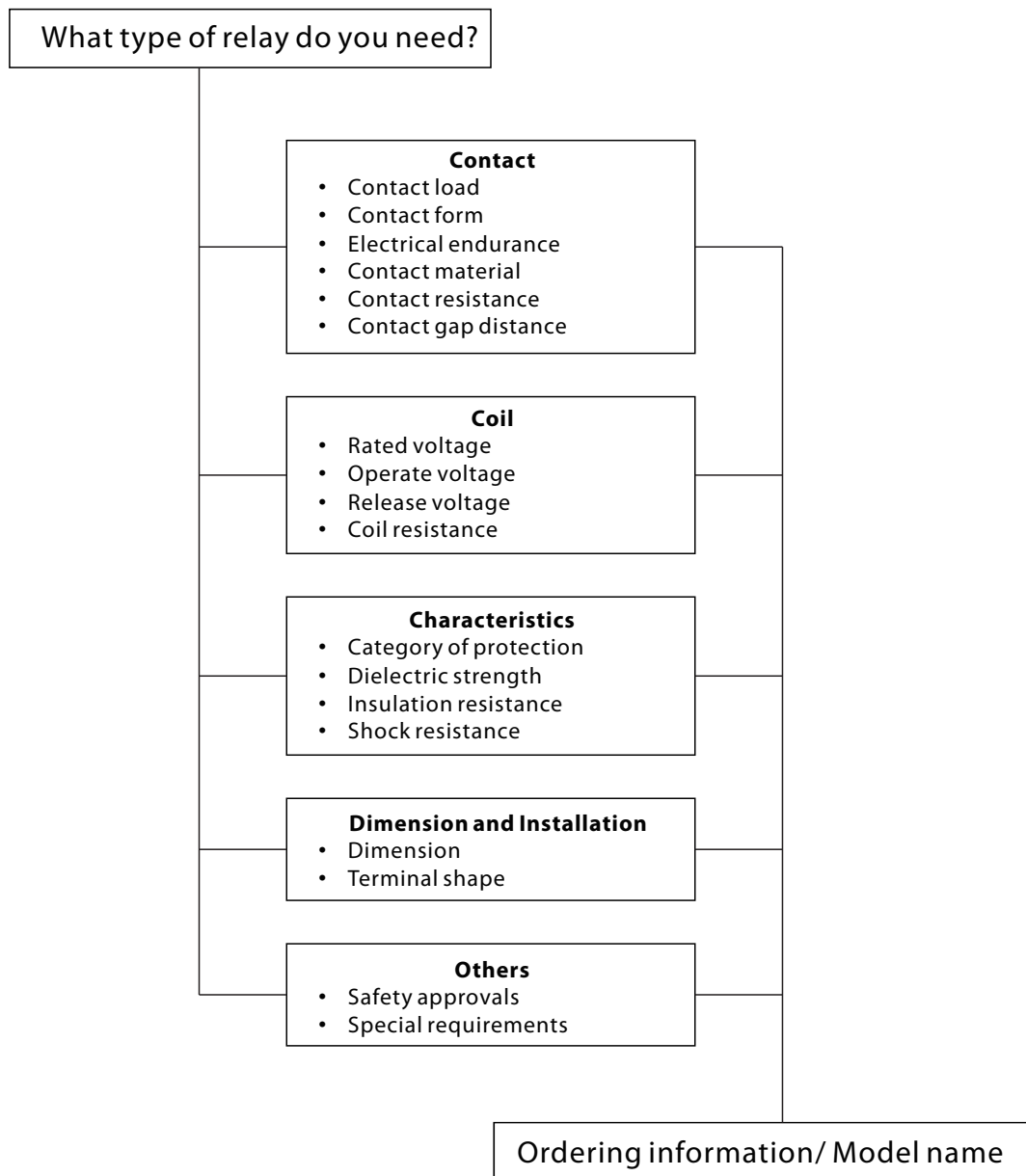
Number of cycles a relay can perform with electrical contact load defined under specified conditions according IEC 61810-1 and IEC 61810-2.

Environmental endurance

Generic term for the relay endurance under different climatic conditions. Appropriate test conditions are classified in IEC 60068.

Type Selection Guidance

This guide helps the user select one or more relays which may be appropriate for a given application. The user should then refer to detailed specifications elsewhere in this catalog to determine the actual model name to be specified. It will be more reliable if the characteristics of relays can be tested in the practical environment.



Precautions for Applying the Relay

To properly use the relay, when the relay is selected and its characteristics are learnt, the precautions for using are required to be known and ensure the reliable operation of the relay.

The following precautions will be considered in application:

- 1) The relays are used within the range of the parameters listed in the catalogue, to the extent that it is possible;
- 2) The rated load and the life are the referent values, which will be different due to the different environments, load features and types. Therefore they should be tested in the practical or stimulated application;
- 3) AC relays are controlled by sine wave to the extent that it is possible;
- 4) To maintain the performances of relays, please do not make the relay drop or be shocked strongly. Suggest that the relays dropped not be used;
- 5) Relays are used in the ambient temperature and normal humidity and in the atmosphere with less dust and harmful gas;
- 6) Except for the above there are other precautions, please refer to the “Precautions” of the relay specification.

PTG PV Relays

SPECIAL

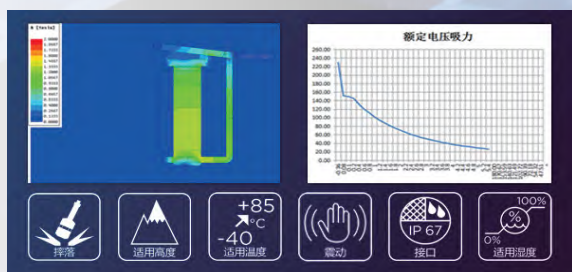
PTG, a group of experts with more than 20 years experiences, devotes itself in producing reliable and excellence relay products. Its high standard testing lab enables full set of type tests and reliability tests according to UL 508, EN 61810, GB 21711, and the products are certified by third party authorities, such as UL, TUV, CQC.

SPECIFIC

PTG cultivates the photovoltaic industry and creates a full range of solutions for photovoltaic inverters. Our expert team collects and combines the practical applications from industry for innovation and optimization. The products have the characteristics of high load current, strong impact current resistance, large contact gap, low heating temperature rise, low power loss and so on, which makes the application environment of photovoltaic inverter broad.

SMART

Patented automatic production line realizes the whole process without contact, so as to ensure the high efficiency and consistency of production. Apart from ISO 9001, tailored ERP system and on-site real-time data intelligent acquisition system closely monitor all details and processes from incoming materials to shipment, so as to realize accurate early warning and traceability. on-site real-time data intelligent acquisition system closely monitor all details and processes from incoming materials to delivery, so as to realize accurate early warning and traceability.



PA2 Series

1 pole 16 A / 2 poles 8 A power relay

- Creepage distance between coil and contacts greater than 12mm
- Impulse withstand voltage up to 10 KV
- One pole 16 A switching capability, two poles 8 A switching capability
- Miniature, 15 mm height only
- UL insulation system: Class F



■ Model Number Legend

PA2 - \square \square \square \square - \square
 1 2 3 4 5

1 Coil Voltage

012 : 12 VDC

024 : 24 VDC

...

2 Contact Form

1A : SPST (a)

1C : SPDT (c)

2A : DPST (2a)

2C : DPDT (2c)

3 Category of Protection

S : Plastic sealed

P : Flux proofed

4 Version

1 : 5.0 mm 1 pole 16 A

2 : 5.0 mm 1 pole 12 A

3 : 3.5 mm 1 pole 12 A

4 : 5.0 mm 2 poles 8 A

5 Special Code

Nil : Standard product

XXX : Special requirement

■ Application

- PV inverter
- Home appliances
- Audio-visual products
- OA equipment
- Industrial machinery
- Air-conditioners

■ Ordering Information

| Series Name | Terminal Shape | Contact Form | Category of Protection | Model | Coil Voltage (VDC) | MPQ |
|--------------------------------------|----------------|--------------|------------------------|---------------------|---------------------------------|----------------------------------|
| PA2 1 Pole 16 A | PCB terminals | SPST-NO (a) | Plastic sealed | PA2- \square 1AS1 | 5, 6, 9, 12, 24, 48, 60, 110 | 20 pcs/tube or 50 pcs/tray |
| | | | Flux proofed | PA2- \square 1AP1 | | |
| | | SPDT (c) | Plastic sealed | PA2- \square 1CS1 | | |
| | | | Flux proofed | PA2- \square 1CP1 | | |
| PA2 1 Pole 12 A 5 mm pinning | PCB terminals | SPST-NO (a) | Plastic sealed | PA2- \square 1AS2 | | |
| | | | Flux proofed | PA2- \square 1AP2 | | |
| | | SPDT (c) | Plastic sealed | PA2- \square 1CS2 | | |
| | | | Flux proofed | PA2- \square 1CP2 | | |
| PA2 1 Pole 12 A 3.5 mm pinning | PCB terminals | SPST-NO (a) | Plastic sealed | PA2- \square 1AS3 | | |
| | | | Flux proofed | PA2- \square 1AP3 | | |
| | | SPDT (c) | Plastic sealed | PA2- \square 1CS3 | | |
| | | | Flux proofed | PA2- \square 1CP3 | | |
| PA2 2 poles 8 A | PCB terminals | DPST-NO (2a) | Plastic sealed | PA2- \square 2AS4 | | |
| | | | Flux proofed | PA2- \square 2AP4 | | |
| | | DPDT (2c) | Plastic sealed | PA2- \square 2CS4 | | |
| | | | Flux proofed | PA2- \square 2CP4 | | |

Note: When ordering, add the rated coil voltage to the model number.

■ Coil Ratings

| Rated Voltage (V) | Rated Current (mA±10%) | Coil Resistance (Ω±10%) | Must Operate Voltage (V) | Must Release Voltage (V) | Max. Voltage (V) | Power Consumption (mW) |
|----------------------|---------------------------|----------------------------|--------------------------------|--------------------------------|-------------------------------|------------------------------|
| DC5 | 80.0 | 62.5 | 70% max. of rated voltage | 10% max. of rated voltage | 150% max. of rated voltage | Approx. 400 |
| DC6 | 66.7 | 90.0 | | | | |
| DC9 | 44.4 | 202.5 | | | | |
| DC12 | 33.3 | 360.0 | | | | |
| DC24 | 16.7 | 1,440.0 | | | | |
| DC48 | 8.3 | 5,760.0 | | | | |
| DC60 | 8.0 | 7,500.0 | | | | Approx. 480 |
| DC110 | 4.4 | 25,200.0 | | | | |

- Notes:**
1. The rated current and coil resistance are measured at a coil temperature of 23°C;
 2. The maximum allowable voltage refers to the maximum voltage that the relay coil can withstand in a short time;
 3. For products with rated voltage ≥ 48 VDC, in order to protect the coil from damage, measures must be taken to restrain the coil from overvoltage in testing and application.

■ Contact Ratings (1 Pole)

| Classification | Resistive Load | |
|------------------------|-----------------------------|-----------------------------|
| Model | 16 A type | 12 A type |
| Contact Form | SPST (1a), SPDT (1c) | |
| Contact Type | Single | |
| Contact Material | Ag-alloy (Cd free) | |
| Contact Rating | 250 VAC 16 A 24 VDC 16 A | 250 VAC 12 A 24 VDC 16 A |
| Max. Switching Voltage | 400 VAC/ 300 VDC | |
| Max. Switching Current | 16 A | 12 A |
| Max. Switching Power | 4,000 VA | 3,000 VA |

■ Contact Ratings (2 Poles)

| | |
|------------------------|---------------------------|
| Classification | Resistive load |
| Model | 8 A type |
| Contact Form | DPST (2a), DPDT (2c) |
| Contact Type | Double |
| Contact Material | Ag-alloy (Cd free) |
| Contact Rating | 250 VAC 8 A 24 VDC 8 A |
| Max. Switching Voltage | 400 VAC/ 300 VDC |
| Max. Switching Current | 8 A |
| Max. Switching Power | 2,000 VA |

- Notes:** Unless otherwise specified, the above values are the initial values tested at room temperature.

■ Characteristics

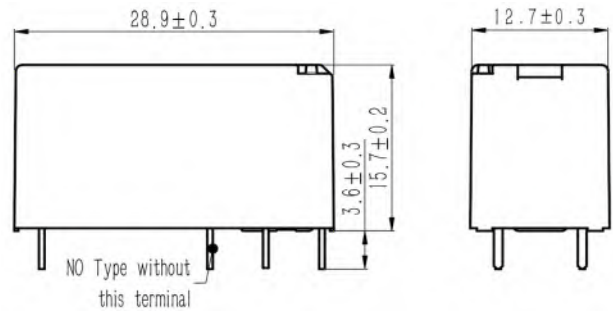
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|---------------------------|--|---|
| Contact Resistance | | 100 mΩ max. (at 1 A/ 6 VDC) |
| Operate Time | | ≤10 ms |
| Release Time | | ≤6 ms |
| Insulation Resistance | | ≥1,000 MΩ (500 VDC) |
| Dielectric Strength | Between Coil and Contacts | 5,000 VAC, 1 mA, 50/60 Hz for 1 min |
| | Between Contacts of The Same Polarity | 1,000 VAC, 1 mA, 50/60 Hz for 1 min |
| | Between Contacts of Different Polarity | 2,500 VAC, 1 mA, 50/60 Hz for 1 min |
| Impulse Withstand Voltage | Between Coil and Contacts | 10 KV (1.2/50 μs) |
| Vibration Resistance | Destruction | 10~55~10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude) |
| | Malfunction | 10~55~10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude) |
| Shock Resistance | Destruction | 980 m/s ² (100 G) |
| | Malfunction | 98 m/s ² (10 G) |
| Durability | Mechanical | 10,000,000 OPS (at 18,000 OPS/hr) |
| | Electrical (Res. load) | 50,000 OPS (at 360 OPS/hr) |
| Ambient Temperature | | -40°C to 85°C (with no icing or condensation) |
| Humidity | | 5~85% RH |
| Unit Weight | | Approx. 13 g |

- Notes:**
- 1. Values in the above table are the initial values at 23°C;
 - 2. The release time is the value measured when the diode is connected at both ends of the coil;

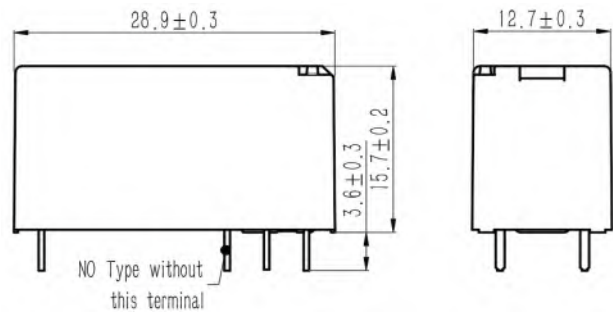
■ Dimensions

Unit: (mm)

1 Pole 5.0 mm Pinning and 2 Poles types



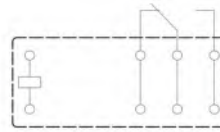
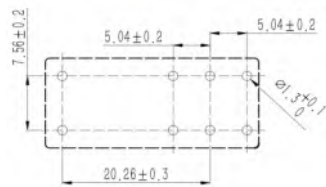
1 Pole 3.5 mm Pinning type



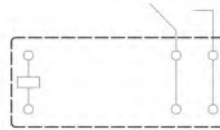
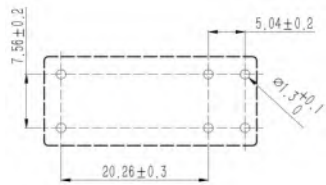
■ Installation and Wiring (Bottom view)

Unit: (mm)

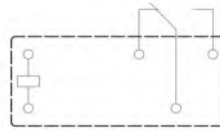
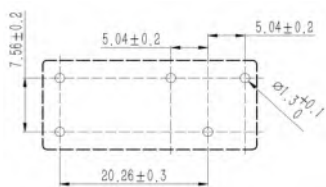
PA2-□1CS(P)1



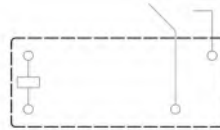
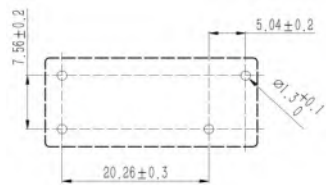
PA2-□1AS(P)1



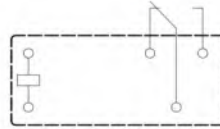
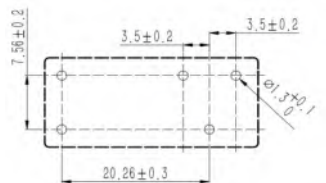
PA2-□1CS(P)2



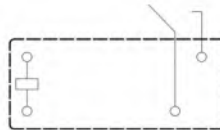
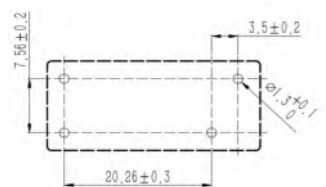
PA2-□1AS(P)2



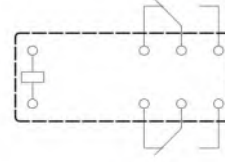
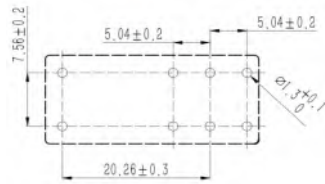
PA2-□1CS(P)3



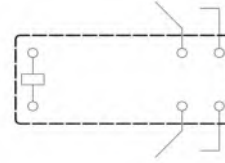
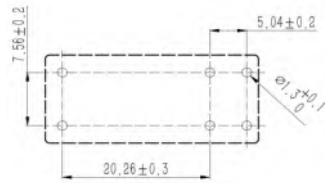
PA2-□1AS(P)3



PA2-□2CS(P)4



PA2-□2AS(P)4



■ Precautions

Unless otherwise stated, the standard environment conditions of measurement or testing are as followings:

- The ambient temperature is 23+5°C;
- The atmospheric pressure is 96+10 kPa;
- The relative humidity is 50%+25% RH;
- When mounting the relay on the PCB, DIODE is not allowed since it will shorten the life cycle. For protection consideration, a surge absorber (ZNR) is recommended to absorb the coil pulse;
- Please avoid falling, collision, and impact on this product or the performance will be affected.

PB3 Series

30 ~ 63 A power relay

- 4 kV dielectric strength (between coil and contacts)
- Creepage distance reaches 5.5 mm
- Plastic sealed and flux proofed types optional
- Product in accordance to IEC 60335-1 optional
- 2.5 mm contact gap (compliant to European PV Standard VDE 126)
- UL insulation system: Class F



■ Model Number Legend

PB3 - $\frac{\square}{1}$ $\frac{\square}{2}$ / $\frac{\square}{3}$ $\frac{\square}{4}$ $\frac{\square}{5}$ $\frac{\square}{6}$ $\frac{\square}{7}$ - $\frac{\square}{8}$ $\frac{\square}{9}$

1 Coil Voltage

05 : 5 VDC

06 : 6 VDC

...

3 Category of protection

S : Plastic sealed

P : Flux proofed

5 Termination

Nil : Without Pin NO.6

Y : With Pin NO.6 (H-type none Pin 6)

7 Dielectric Strength

Nil : 2.5 KVAC between coil & contacts

V : 4 KVAC between coil & contacts

(Only for Y termination)

9 Special Code

Nil : Standard product

XXX : Special requirement

2 Contact Form

A : SPST-NO (a)

B : SPST-NC (b)

C : SPDT (c)

4 Coil Power:

L : 900 mW

H : 2,250 mW

6 Contact Material:

1 : AgSnO₂

2 : AgNi

8 Contact Load

Nil : Standard

G35 : 35 A (Only H-type)

G40 : 40 A (For L and H-type)

G43 : 43 A (Only H-type)

G50 : 50 A (Only H-type)

G63 : 63 A (Only H-type)

■ Application

- PV inverter
- Energy storage equipment
- UPS
- Telecom power supply

■ Ordering Information

| Series Name | Terminal Shape | Contact Form | Category of protection | Model | Coil Voltage (VDC) | MPQ |
|-------------|----------------|--------------|------------------------|-----------------|---------------------------------|----------------------------|
| PB3-L | PCB terminals | SPST-NO (a) | Plastic sealed | PB3-□A/SL□1□-□□ | 5, 6, 9, 12, 15, 18, 24, 36, 48 | 20 pcs/Tube or 25 pcs/Tray |
| | | | Flux proofed | PB3-□A/PL□1□-□□ | | |
| | | SPST-NC (b) | Plastic sealed | PB3-□B/SL□1□-□□ | | |
| | | | Flux proofed | PB3-□B/PL□1□-□□ | | |
| | | SPDT (c) | Plastic sealed | PB3-□C/SL□1□-□□ | | |
| | | | Flux proofed | PB3-□C/PL□1□-□□ | | |
| PB3-H | PCB terminals | SPST-NO (a) | Plastic sealed | PB3-□A/SH1V-□□ | | |
| | | | Flux proofed | PB3-□A/PH1V-□□ | | |

Notes: When ordering, add the rated coil voltage to the model number.

■ Coil Ratings

L-type

| Rated Voltage (V) | Rated Current (mA±10%) | Coil Resistance (Ω±10%) | Must Operate Voltage (V) | Must Release voltage (V) | Max. Voltage (V) | Power Consumption (mW) |
|----------------------|---------------------------|----------------------------|--------------------------------|--------------------------------|--------------------------|------------------------------|
| DC5 | 180.0 | 27.8 | 75% max. of rated voltage | 10% min. of rated voltage | 130% of rated voltage | Approx. 900 |
| DC6 | 150.0 | 40.0 | | | | |
| DC9 | 100.0 | 90.0 | | | | |
| DC12 | 75.0 | 160.0 | | | | |
| DC15 | 60.0 | 250.0 | | | | |
| DC18 | 50.0 | 360.0 | | | | |
| DC24 | 37.5 | 640.0 | | | | |
| DC36 | 25.0 | 1,440.0 | | | | |
| DC48 | 18.8 | 2,560.0 | | | | |

H-type

31

| Rated Voltage (V) | Rated Current (mA±10%) | Coil Resistance (Ω±10%) | Must Operate Voltage (V) | Must Release Voltage (V) | Max.Voltage (V) | Power Consumption (mW) |
|-----------------------|---------------------------|--|--------------------------------|--------------------------------|--------------------------|------------------------------|
| DC5 | 450.0 | 11.1 | 75% max. of rated voltage | 10% min. of rated voltage | 130% of rated voltage | Approx. 2,250 |
| DC6 | 375.0 | 16.0 | | | | |
| DC9 | 250.0 | 36.0 | | | | |
| DC12 | 187.5 | 64.0 | | | | |
| DC15 | 150.0 | 100.0 | | | | |
| DC18 | 125.0 | 144.0 | | | | |
| DC24 | 93.8 | 256.0 | | | | |
| DC36 | 62.5 | 576.0 | | | | |
| DC48 | 46.9 | 1,024.0 | | | | |
| Holding voltage (VDC) | | ≤ 45% U _N (at 25°C) ≤ 50% U _N (at 85°C) | | | | |

- Notes:**
1. The rated current and coil resistance are measured at a coil temperature of 23°C;
 2. Should the coil voltage be reduced to 55%~60% U_N after energizing for 100ms;
 3. The maximum allowable voltage refers to the maximum voltage that the relay coil can withstand in a short time;
 4. For products with rated voltage ≥ 48 VDC, in order to protect the coil from damage, measures must be taken to restrain the coil from overvoltage in testing and application.

■ Contact Ratings

| Classification | Resistive Load | | | | |
|------------------------|-----------------------------|-----------------------------------|------------------|------------------|-----------------|
| Model | L-type | | | H-type | |
| Contact Form | SPST-NO (a) | SPST-NC (b) | SPDT (c) | | SPST-NO (a) |
| Contact Type | Single | | | | |
| Contact Material | Ag-alloy (Cd free) | | | | |
| Contact Rating | 277 VAC 30 A 28 VDC 30 A | 277 VAC 30/25 A 28 VDC 30/25 A | NO: 250 VAC 30 A | NC: 250 VAC 15 A | 277 VAC 43/35 A |
| | 277 VAC 40 A | | | | |
| | 277 VAC 50 A | | NO: 277 VAC 20 A | NC: 277 VAC 10 A | 277 VAC 50/63 A |
| Max. Switching Voltage | 277 VAC | | | | |
| Max. Switching Current | 50 A | 30 A | 30 A | | 63 A |
| Max. Switching Power | 13,850 VA | 8, 310 VA | 8, 310 VA | | 17, 451 VA |

Notes: Unless otherwise specified, the above values are the initial values tested at room temperature.

■ Characteristics

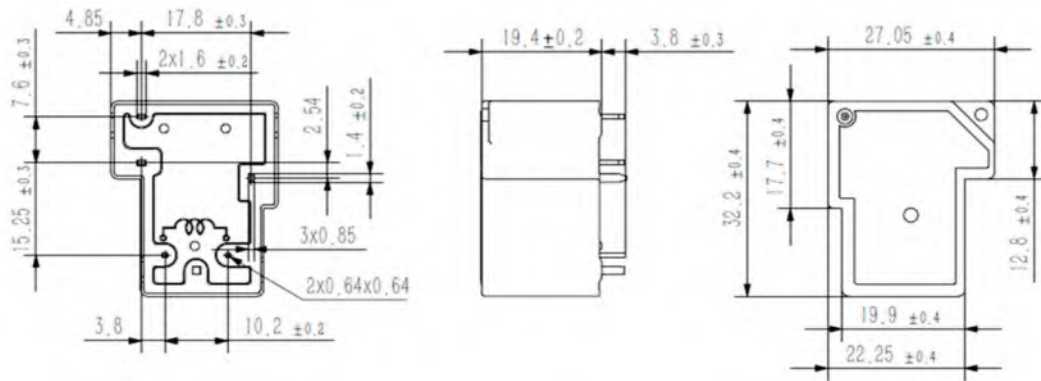
| Contact Resistance | | 100 mΩ max. (at 1 A/ 6 VDC) |
|---------------------------|---------------------------------------|--|
| Operate Time | | ≤15 ms |
| Release Time | | ≤10 ms |
| Insulation Resistance | | ≥1, 000 MΩ (500 VDC) |
| Dielectric Strength | Between Coil & Contacts | 4, 000 VAC, 1 mA, 50/60 Hz for 1 min |
| | Between Contacts of The Same Polarity | 2, 500 VAC, 1 mA, 50/60 Hz for 1 min |
| Impulse Withstand Voltage | Between Coil & Contacts | 6 KV (1.2/50 μs) |
| Vibration Resistance | Destruction | 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude) |
| | Malfunction | 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude) |
| Shock Resistance | Destruction | 980 m/s ² (100 G) |
| | Malfunction | 98 m/s ² (10 G) |
| Durability | Mechanical | 10, 000, 000 OPS (at 18, 000 OPS/hr) |
| | Electrical (Res. load) | L-type: 277 VAC NO: 30 A, 1x10 ⁵ OPS, 105°C, 1 s on 9 s off 277 VAC NO: 40 A, 2x10 ⁴ OPS, 85°C, 1 s on 9 s off, Flux proofed 250 VAC NO: 30 A, NC: 15 A, 1x10 ⁵ OPS, 105°C, 5 s on 5 s off, Flux proofed 277 VAC NO: 25 A, NC: 10 A, 1x10 ⁵ OPS, 105°C, 5 s on 5 s off, Flux proofed H-type: 277/250/240 VAC, 3x10 ⁴ OPS, 1 s on 9 s off, Flux proofed 40/35 A, 85°C 50/63 A, 40°C make 15 A(0.15 s), carry 50/63 A(0.7 s), break 15 A(0.15 s), 85°C |
| Ambient Temperature | | -40°C to 85°C (with no icing or condensation) |
| Humidity | | 5~85% RH |
| Unit Weight | | Approx. L-type: 25 g, H-type: 36 g |

- Notes:**
1. Values in the above table are the initial values at 23°C;
 2. The release time is the value measured when the diode is connected at both ends of the coil;
 3. When measuring the electrical life of plastic encapsulated relay, open the vent hole;
 4. The outgoing circuit of relay shall be designed with sufficient current carrying section to avoid overheating.

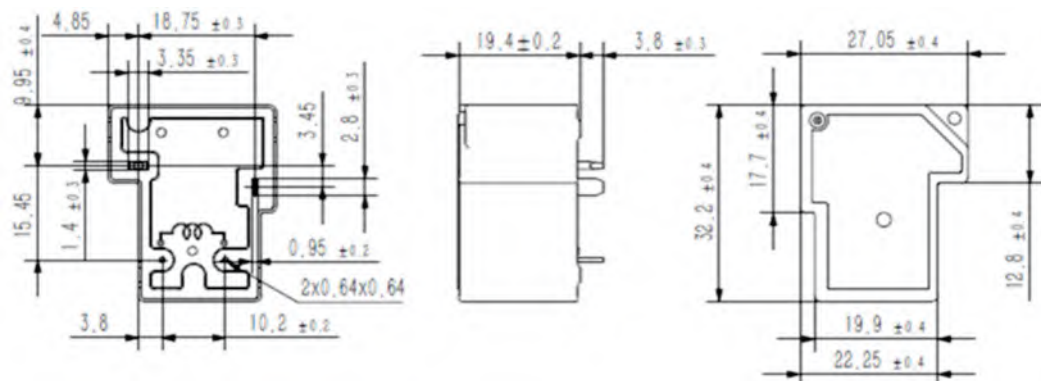
■ Dimensions

Unit: (mm)

L-type



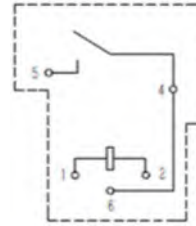
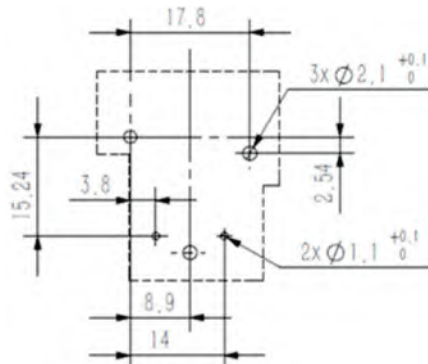
H-type



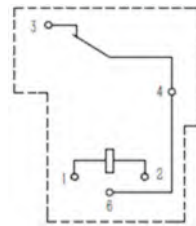
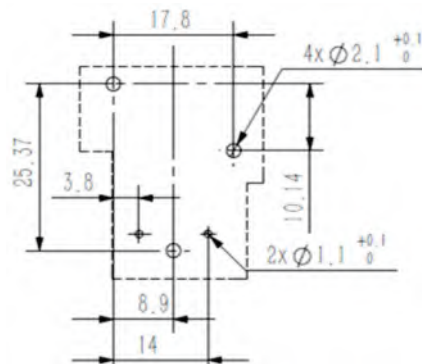
■ Installation and Wiring (Bottom view)

Unit: (mm)

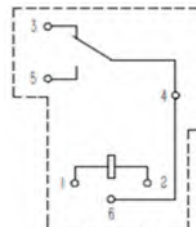
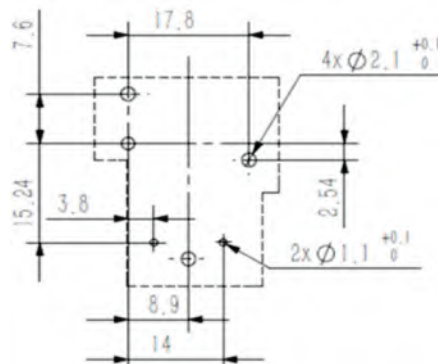
PB3-□A/□LY1-□□



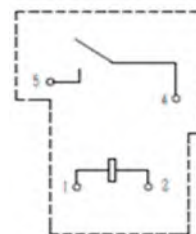
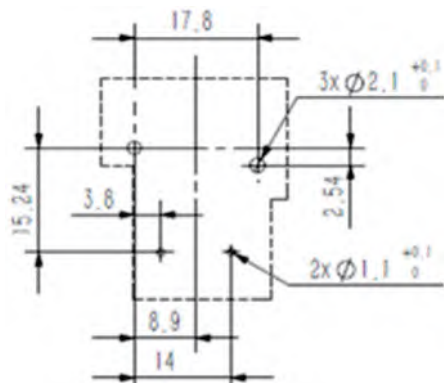
PB3-□B/□LY1-□□



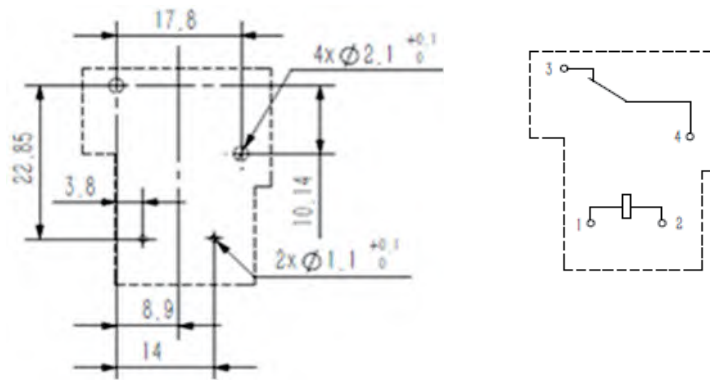
PB3-□C/□LY1-□□



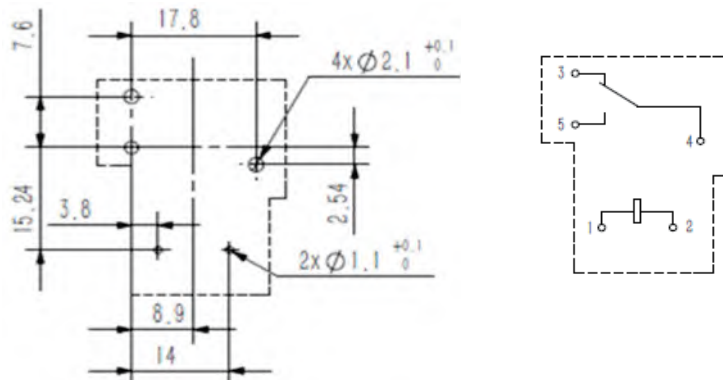
PB3-□A/□L1V-□□



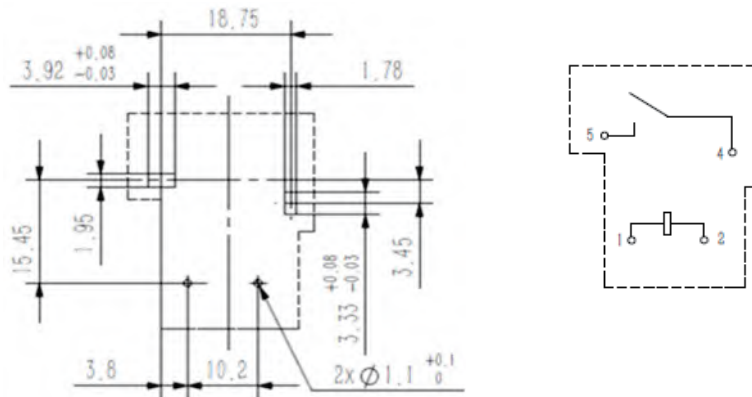
PB3-□B/□L1V-□□



PB3-□A/□H1V-□□



PB3-□A/□H1V-□□



■ Precautions

Unless otherwise stated, the standard environment conditions of measurement or testing are as follows:

- The ambient temperature is 23±5°C;
- The atmospheric pressure is 96±10 kPa;
- The relative humidity is 50%±25% RH;
- When mounting the relay on the PCB, DIODE is not allowed since it will shorten the life cycle. For protection consideration, a surge absorber (ZNR) is recommended to absorb the coil pulse;
- Please avoid falling, collision, and impact on this product or the performance will be affected.

PG3 Series

26 ~ 50 A power relay

- 4.5 kV dielectric strength (between coil and contacts)
- Creepage distance reaches 8.0 mm
- Plastic sealed and flux proofed types optional
- Product in accordance to IEC 60335-1
- 1.5 mm, 1.8 mm, 2.0 mm contact gap optional (compliant to IEC 62109-2011)
- UL insulation system: Class F



■ Model Number Legend

PG3 - $\frac{\square}{1}$ $\frac{\square}{2}$ / $\frac{\square}{3}$ $\frac{\square}{4}$ - $\frac{\square}{5}$

1 Coil Voltage

06 : 6 VDC

09 : 12 VDC

...

3 Category of protection

S : Plastic sealed

P : Flux proofed

5 Contact Material

1 : AgSnO₂

2 : AgNi

7 Special Code

Nil : Standard product

XXX : Special requirement

2 Contact Form

A : SPST-NO (a)

4 Coil Power:

L : 900 mW

D : 1,400 mW

H : 1,600 mW

6 Contact Load

Nil : 26 A (PG3-L)

G31 : 31 A (PG3-D)

G43 : 43 A (PG3-H)

G35 : 35 A (PG3-D)

G50 : 50 A (PG3-H)

■ Application

- PV inverter
- Energy storage equipment
- UPS
- Industrial machinery

■ Ordering Information

| Series Name | Terminal Shape | Contact Form | Category of Protection | Model | Coil Voltage (VDC) | MPQ |
|-------------|----------------|--------------|------------------------|---------------------------------------|--------------------|-------------|
| PG3-L | PCB terminals | SPST-NO (a) | Plastic sealed | PG3- \square A/SL \square | 6, 9, 12, 18, 24 | 50 pcs/Tray |
| | | | Flux proofed | PG3- \square A/PL \square | | |
| PG3-D | | | Plastic sealed | PG3- \square A/SD- $\square\square$ | | |
| | | | Flux proofed | PG3- \square A/PD- $\square\square$ | | |
| PG3-H | | | Plastic sealed | PG3- \square A/PH- $\square\square$ | | |
| | | | Flux proofed | PG3- \square A/PH- $\square\square$ | | |

Notes: When ordering, add the rated coil voltage to the model number.

■ Coil Ratings

L-type

| Rated Voltage (V) | Rated Current (mA±10%) | Coil Resistance (Ω±10%) | Must Operate Voltage (V) | Must Release Voltage (V) | Max.Voltage (V) | Power Consumption (mW) |
|----------------------|---------------------------|----------------------------|--------------------------------|--------------------------------|--------------------------|------------------------------|
| DC6 | 150.0 | 40.0 | 75% max. of rated voltage | 5% min. of rated voltage | 110% of rated voltage | Approx.900 |
| DC9 | 100.0 | 90.0 | | | | |
| DC12 | 75.0 | 160.0 | | | | |
| DC18 | 50.0 | 360.0 | | | | |
| DC24 | 37.5 | 640.0 | | | | |

D-type

| Rated Voltage (V) | Rated Current (mA±10%) | Coil Resistance (Ω±10%) | Must Operate Voltage (V) | Must Release Voltage (V) | Max.Voltage (V) | Power Consumption (mW) |
|-----------------------|---------------------------|---|--------------------------------|--------------------------------|--------------------------|------------------------------|
| DC6 | 233.3 | 25.7 | 75% max. of rated voltage | 5% min. of rated voltage | 120% of rated voltage | Approx.1,400 |
| DC9 | 155.6 | 57.9 | | | | |
| DC12 | 116.7 | 102.9 | | | | |
| DC18 | 77.8 | 231.4 | | | | |
| DC24 | 58.3 | 411.4 | | | | |
| Holding voltage (VDC) | | 50% to 110% U _N (at 23°C) 55% to 80% U _N (at 85°C) | | | | |

H-type

| Rated Voltage (V) | Rated Current (mA±10%) | Coil Resistance (Ω±10%) | Must Operate Voltage (V) | Must Release Voltage (V) | Max.Voltage (V) | Power Consumption (mW) |
|-----------------------|---------------------------|---|--------------------------------|--------------------------------|--------------------------|------------------------------|
| DC6 | 266.7 | 22.5 | 75% max. of rated voltage | 5% min. of rated voltage | 120% of rated voltage | Approx.1,600 |
| DC9 | 177.8 | 50.6 | | | | |
| DC12 | 133.3 | 90.0 | | | | |
| DC18 | 88.9 | 202.5 | | | | |
| DC24 | 66.7 | 360.0 | | | | |
| Holding voltage (VDC) | | 50% to 110% U _N (at 23°C) 55% to 80% U _N (at 85°C) | | | | |

- Notes:**
1. Unless specified, the above parameters are initial values tested at room temperature (23°C);
 2. Should the coil voltage be reduced to the holding voltage after energizing for 100ms;
 3. The maximum allowable voltage refers to the max. voltage that the relay coil could withstand in a short period of time.
 4. For products with rated voltage ≥ 24 VDC, in order to protect the coil from damage, measures must be taken to restrain the coil from overvoltage in testing and application.

■ Contact Ratings

L-type

| Classification | Resistive Load | |
|------------------------|--------------------|--------------|
| Model | PG3-L | |
| Contact gap | 1.5 mm | |
| Contact Form | SPST-NO (A) | |
| Contact Type | Single | |
| Contact Material | Ag-alloy (Cd free) | |
| Contact Rating | 30 VDC 26 A | 277 VAC 26 A |
| Max. Switching Voltage | 30 VDC | 277 VAC |
| Max. Switching Current | 26 A | |
| Max. Switching Power | 780 W | 7,202 VA |

D-type

| Classification | Resistive Load | | | |
|------------------------|--------------------|---|--------------|---|
| Model | PG3-D | | | |
| Contact gap | 1.8 mm | | 2.0 mm | |
| Contact Form | SPST-NO (A) | | | |
| Contact Type | Single | | | |
| Contact Material | Ag-alloy (Cd free) | | | |
| Contact Rating | 277 VAC 35 A | 277 VAC 35 A Inductive load (cosϕ =0.8) | 277 VAC 31 A | 277 VAC 31 A Inductive load (cosϕ =0.8) |
| Max. Switching Voltage | 277 VAC | | | |
| Max. Switching Current | 35 A | | 31 A | |
| Max. Switching Power | 9,695 VA | | 8,587 VA | |

H-type

| Classification | Resistive Load | |
|------------------------|--------------------|--------------|
| Model | PG3-H | |
| Contact gap | 1.8 mm | 2.0 mm |
| Contact Form | SPST-NO (A) | |
| Contact Type | Single | |
| Contact Material | Ag-alloy (Cd free) | |
| Contact Rating | 480 VAC 50 A | 480 VAC 43 A |
| Max. Switching Voltage | 480 VAC | |
| Max. Switching Current | 50 A | 43 A |
| Max. Switching Power | 24,000 VA | 20,640 VAC |

Notes: Unless otherwise specified, the above values are the initial values tested at room temperature.

■ Characteristics

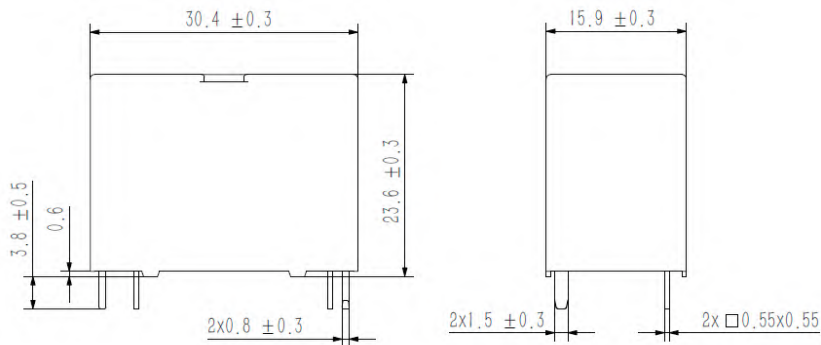
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|----------------------------------|--|--|
| Contact Resistance | | 100 mΩ max. (at 1 A/ 6 VDC) |
| Operate Time | | ≤20 ms |
| Release Time | | ≤10 ms |
| Insulation Resistance | | ≥1,000 MΩ (500 VDC) |
| Dielectric Strength | Between Coil & Contacts | 4,500 VAC, 1 mA, 50/60 Hz for 1 min |
| | Between Contacts of The Same Polarity | 2,500 VAC, 1 mA, 50/60 Hz for 1 min |
| Impulse Withstand Voltage | Between Coil & Contacts | 10 KV (1.2/50 μs) |
| Vibration Resistance | Destruction | 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude) |
| | Malfunction | 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude) |
| Shock Resistance | Destruction | 980 m/s ² (100 G) |
| | Malfunction | 98 m/s ² (10 G) |
| Durability | Mechanical | 100,000 OPS (at 7,200 OPS/hr) |
| | Electrical (Res. load) | L-type: 277 VAC 26 A, 1x10 ⁵ OPS D-type: 277 VAC 31 A, 3x10 ⁴ OPS 277 VAC make 20 A carry 35 A break 20 A, 3x10 ⁴ OPS H-type: 480 VAC 43 A, 3x10 ⁴ OPS 480 VAC make 20 A carry 50 A break 20 A, 3x10 ⁴ OPS at 85°C, 1 s on 9 s off |
| Ambient Temperature | | -40°C to 85°C (with no icing or condensation) |
| Humidity | | 5~85% RH |
| Unit Weight | | Approx.: L-type: 21 g, D-type: 25 g |

- Notes:**
1. Values in the above table are the initial values at 23°C;
 2. The release time is the value measured when the diode is connected at both ends of the coil;
 3. The outgoing circuit of relay shall be designed with sufficient current carrying section to avoid overheating.

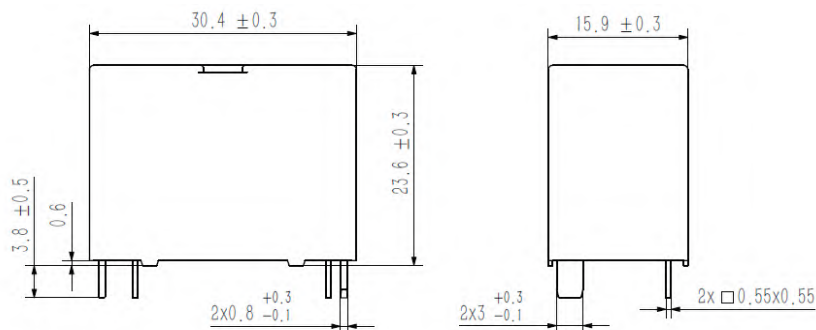
■ Dimensions

Unit: (mm)

L&D-type



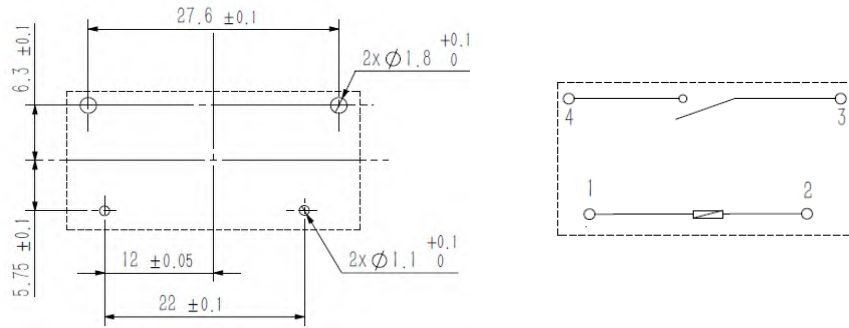
H-type



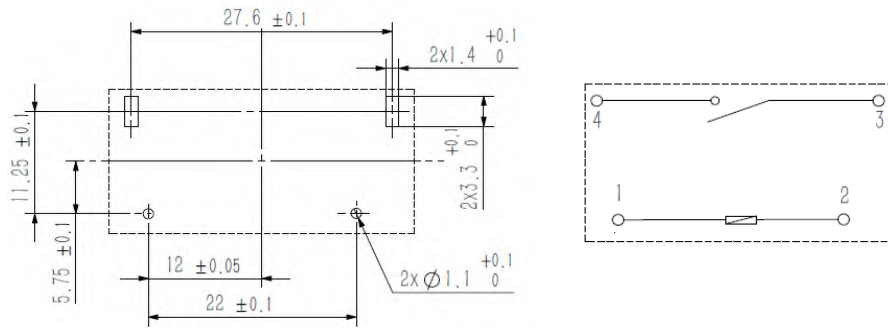
■ Installation and Wiring (Bottom view)

Unit: (mm)

L&D-type



H-type



■ Precautions

Unless otherwise stated, the standard environment conditions of measurement or testing are as follows:

- The ambient temperature is $23 \pm 5^\circ\text{C}$;
- The atmospheric pressure is 96 ± 10 kPa;
- The relative humidity is $50\% \pm 25\%$ RH;
- When mounting the relay on the PCB, DIODE is not allowed since it will shorten the life cycle. For protection consideration, a surge absorber (ZNR) is recommended to absorb the coil pulse;
- Please avoid falling, collision, and impact on this product or the performance will be affected.

PC3 Series

75 ~ 120 A power relay

- High switching capacity
- Large contact gap reached 4 mm
- Low heating temperature raise
- Coil protection voltage applied for low power loss
- Class-F insulation grade



■ Model Number Legend

PC3 - $\frac{\square}{1}$ $\frac{\square}{2}$ / $\frac{\square}{3}$ $\frac{\square}{4}$ - $\frac{\square}{5}$

1 Coil Voltage

05 : 5 VDC

06 : 6 VDC

...

3 Contact Material

1 : AgSnO₂

2 : AgNi

5 Special Code

Nil : Standard product

XXX : Special requirement

2 Contact Form

A : SPST-NO (a)

4 Contact Load

A75 : 75 A A90 : 90 A

A100 : 100 A A120 : 120 A

■ Application

- PV inverter
- Energy storage equipment
- Industrial machinery

■ Ordering Information

| Series Name | Terminal Shape | Contact Form | Category of Protection | Model | Coil Voltage (VDC) | MPQ |
|-------------|----------------|--------------|------------------------|--------------|---------------------|-------------|
| PC3 | PCB terminals | SPST-NO (a) | Flux proofed | PC3-□A/□A75 | 5, 6, 9, 12, 18, 24 | 20 pcs/Tray |
| | | | | PC3-□A/□A90 | | |
| | | | | PC3-□A/□A100 | | |
| | | | | PC3-□A/□A120 | | |

Notes: When ordering, add the rated coil voltage to the model number.

■ Coil Ratings

| Rated Voltage (V) | Rated Current (mA±10%) | Coil Resistance (Ω±10%) | Must Operate Voltage (V) | Must Release Voltage (V) | Max.Voltage (V) | Power Consumption (mW) |
|-----------------------|---------------------------|--|--------------------------------|--------------------------------|--------------------------|------------------------------|
| DC5 | 384.0 | 13.0 | 75% max. of rated voltage | 10% min. of rated voltage | 120% of rated voltage | Approx.1,920 |
| DC6 | 320.0 | 18.8 | | | | |
| DC9 | 213.3 | 42.2 | | | | |
| DC12 | 160.0 | 75.0 | | | | |
| DC18 | 106.7 | 168.8 | | | | |
| DC24 | 80.0 | 300.0 | | | | |
| Holding voltage (VDC) | | ≤45% U _N (at 25°C) ≤50% U _N (at 85°C) | | | | |

- Notes:**
1. The rated current and coil resistance are measured at a coil temperature of 23°C;
 2. The maximum allowable voltage refers to the maximum voltage that the relay coil can withstand in a short time;
 3. For products with rated voltage ≥ 24 VDC, in order to protect the coil from damage, measures must be taken to restrain the coil from overvoltage in testing and application.

■ Contact Ratings

| Classification | Resistive Load | | | |
|------------------------|--|--|---|---|
| Model | PC3-A75 | PC3-A90 | PC3-A100 | PC3-A120 |
| Contact Form | SPST-NO (A) | | | |
| Contact Material | Ag-alloy (Cd free) | | | |
| Contact Rating | 320 VAC 75 A | 320 VAC 90 A | 320 VAC 100 A | 320 VAC 120 A |
| | 1,000 VAC make 30 A (0.15 s) carry 75 A (0.7 s) break 30 A (0.15 s), at 85°C | 1,000 VAC make 30 A (0.15 s) carry 90 A (0.7 s) break 30 A (0.15 s), at 85°C | 1,000 VAC make 30 A (0.15 s) carry 100 A (0.7 s) break 30 A (0.15 s), at 85°C | 1,000 VAC make 30 A (0.15 s) carry 120 A (0.7 s) break 30 A (0.15 s), at 85°C |
| Max. Switching Voltage | 1,000 VAC | | | |
| Max. Switching Current | 75 A | 90 A | 100 A | 120 A |
| Max. Switching Power | 75 KVA | 90 KVA | 100 KVA | 120 KVA |

- Notes:** Unless otherwise specified, the above values are the initial values tested at room temperature.

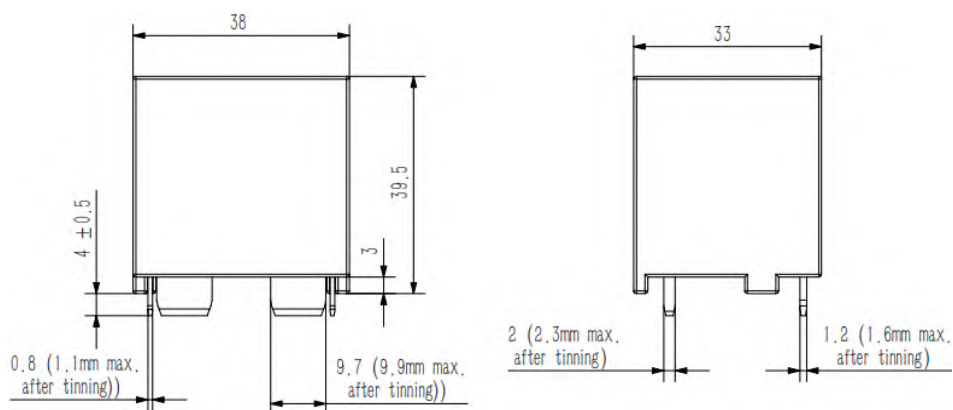
■ Characteristics

| | | |
|---|--|---|
| Contact Resistance | | 10 mΩ max. (at 20 A/ 6 VDC) |
| Operate Time | | ≤30 ms |
| Release Time | | ≤10 ms |
| Insulation Resistance | | ≥1,000 MΩ (500 VDC) |
| Coil Temperature Rise (at noml. volt.) | | 70 K max. contact load current 120 A, 50% to 60% of rated voltage excitation, at 85°C |
| Dielectric Strength | Between Coil & Contacts | 5,000 VAC, 1 mA, 50/60 Hz for 1 min |
| | Between Contacts of The Same Polarity | 2,000 VAC, 1 mA, 50/60 Hz for 1 min |
| Impulse Withstand Voltage | Between Coil & Contacts | 10 KV (1.2/50 μs) |
| Vibration Resistance | Destruction | 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude) |
| | Malfunction | 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude) |
| Shock Resistance | Destruction | 980 m/s ² (100 G) |
| | Malfunction | 98 m/s ² (10 G) |
| Durability | Mechanical | 1,000,000 OPS (at 9,000 OPS/hr) |
| | Electrical (Res. load) | 1,000 VAC, 3 x 10 ⁴ OPS, at 85°C, 1 s on 9 s off A75-type: make 30 A (0.15 s) carry 75 A (0.7 s) break 30 A (0.15 s) A90-type: make 30 A (0.15 s) carry 90 A (0.7 s) break 30 A (0.15 s) A100-type: make 30 A (0.15 s) carry 100 A (0.7 s) break 30 A (0.15 s) A120-type: make 30 A (0.15 s) carry 120 A (0.7 s) break 30 A (0.15 s) |
| Ambient Temperature | | -40°C to 85°C (with no icing or condensation) |
| Humidity | | 5~85% RH |
| Unit Weight | | Approx.100 g |

- Notes:**
1. Values in the above table are the initial values at 23°C;
 2. The release time is the value measured when the diode is connected at both ends of the coil;
 3. The outgoing circuit of relay shall be designed with sufficient current carrying section to avoid overheating.

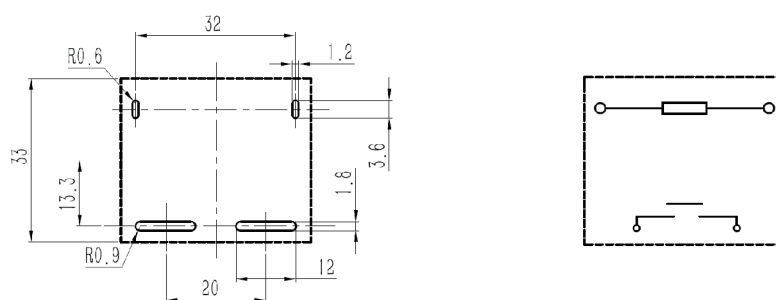
■ Dimensions

Unit: (mm)



■ Installation and Wiring (Bottom view)

Unit: (mm)



■ Precautions

Unless otherwise stated, the standard environment conditions of measurement or testing are as followings:

- The ambient temperature is 23+5°C;
- The atmospheric pressure is 96+10 kPa;
- The relative humidity is 50%+25% RH;
- When mounting the relay on the PCB, DIODE is not allowed since it will shorten the life cycle. For protection consideration, a surge absorber (ZNR) is recommended to absorb the coil pulse;
- Please avoid falling, collision, and impact on this product or the performance will be affected.

PC4 Series

120 ~ 200 A power relay

- High switching capacity
- Large contact gap
- Low heating temperature raise
- Coil protection voltage applied for low power loss
- Class-F insulation grade



■ Model Number Legend

PC4 - $\frac{\square}{1}$ $\frac{\square}{2}$ / $\frac{\square}{3}$ $\frac{\square}{4}$ - $\frac{\square}{5}$ - $\frac{\square}{6}$

1 Coil Voltage

09 : 9 VDC
12 : 12 VDC
24 : 24 VDC

3 Contact Material

1 : AgSnO₂
2 : AgNi

5 Terminal Type

Nil : Standard product
H : Exposed terminal

2 Contact Form

A : SPST-NO (a)

4 Contact Load

A120 : 120 A A140 : 140 A
A160 : 160 A A180 : 180 A
A200 : 200 A

6 Special Code

Nil : Standard product
XXX : Special requirement

■ Application

- PV inverter
- Energy storage equipment
- Industrial machinery

■ Ordering Information

| Series Name | Terminal Shape | Contact Form | Category of Protection | Model | Coil Voltage (VDC) | MPQ |
|-------------|----------------|--------------|------------------------|---------------|--------------------|-------------|
| PC4 | PCB terminals | SPST-NO (a) | Flux proofed | PC4-□A/□A120 | 9, 12, 24 | 12 pcs/Tray |
| | | | | PC4-□A/□A140 | | |
| | | | | PC4-□A/□A160 | | |
| | | | | PC4-□A/□A180 | | |
| | | | | PC4-□A/□A200 | | |
| | | | | PC4-□A/□A120H | | |
| | | | | PC4-□A/□A140H | | |
| | | | | PC4-□A/□A160H | | |
| | | | | PC4-□A/□A180H | | |
| | | | | PC4-□A/□A200H | | |

Notes: When ordering, add the rated coil voltage to the model number.

■ Coil Ratings

| Rated Voltage (V) | Rated Current (mA±10%) | Coil Resistance (Ω±10%) | Must Operate Voltage (V) | Must Release Voltage (V) | Max.Voltage (V) | Power Consumption (mW) |
|-----------------------|---------------------------|---|--------------------------------|--------------------------------|--------------------------|------------------------------|
| DC9 | 355.6 | 25.3 | 75% max. of rated voltage | 5% min. of rated voltage | 120% of rated voltage | Approx.3,200 |
| DC12 | 266.7 | 45.0 | | | | |
| DC24 | 133.3 | 180.0 | | | | |
| Holding voltage (VDC) | | 40% to 100% U _N (at 25°C) 55% to 60% U _N (at 85°C) | | | | |

- Notes:**
1. Unless specified, the above parameters are initial values tested at room temperature (23°C);
 2. Should the coil voltage be reduced to 55%~60%U_N after energizing for 100ms;
 3. The maximum allowable voltage refers to the max. voltage that the relay coil could withstand in a short period of time.

■ Contact Ratings

| Classification | Resistive Load | | | | |
|---------------------------|---|---|---|---|---|
| Model | PC4-A120 | PC4-A140 | PC4-A160 | PC4-A180 | PC4-A200 |
| Contact Form | SPST-NO (A) | | | | |
| Contact Material | Ag-alloy (Cd free) | | | | |
| Contact Rating | 1,000 VAC make 30 A (0.15 s) carry 120 A (0.7 s) break 30 A (0.15 s), at 85°C | 1,000 VAC make 30 A (0.15 s) carry 140 A (0.7 s) break 30 A (0.15 s), at 85°C | 1,000 VAC make 30 A (0.15 s) carry 160 A (0.7 s) break 30 A (0.15 s), at 85°C | 1,000 VAC make 55 A (0.15 s) carry 180 A (0.7 s) break 55 A (0.15 s), at 85°C | 1,000 VAC make 55 A (0.15 s) carry 200 A (0.7 s) break 55 A (0.15 s), at 85°C |
| Max. Switching Voltage | 1,000 VAC | | | | |
| Max. Switching Current | 120 A | 140 A | 160 A | 180 A | 200 A |
| Max. Switching Power | 120 KVA | 140 KVA | 160 KVA | 180 KVA | 200 KVA |

- Notes:** Unless otherwise specified, the above values are the initial values tested at room temperature.

■ Characteristics

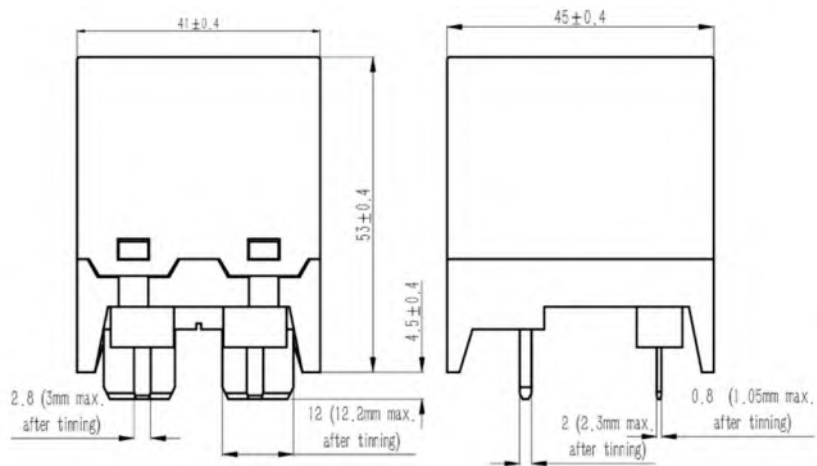
| | | |
|---|--|--|
| Contact Resistance | | 1 mΩ max. (at 20 A/ 6 VDC) |
| Operate Time | | ≤45 ms |
| Release Time | | ≤10 ms |
| Insulation Resistance | | ≥1,000 MΩ (500 VDC) |
| Coil Temperature Rise (at noml. volt.) | | 70 K max. contact load rated current, 50% to 60% of rated voltage excitation, at 85°C |
| Dielectric Strength | Between Coil & Contacts | 5,000 VAC, 1 mA, 50/60 Hz for 1 min |
| | Between Contacts of The Same Polarity | 2,000 VAC, 1 mA, 50/60 Hz for 1 min |
| Impulse Withstand Voltage | Between Coil & Contacts | 10 KV (1.2/50 μs) |
| Vibration Resistance | Destruction | 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude) |
| | Malfunction | 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude) |
| Shock Resistance | Destruction | 980 m/s ² (100 G) |
| | Malfunction | 98 m/s ² (10 G) |
| Durability | Mechanical | 1,000,000 OPS (at 9,000 OPS/hr) |
| | Electrical (Res. load) | 1,000 VAC, 3 x 10 ⁴ OPS, at 85°C, 1 s on 9 s off A120-type: make 30 A (0.15 s) carry 120 A (0.7 s) break 30 A (0.15 s) A140-type: make 30 A (0.15 s) carry 140 A (0.7 s) break 30 A (0.15 s) A160-type: make 30 A (0.15 s) carry 160 A (0.7 s) break 30 A (0.15 s) A180-type: make 55 A (0.15 s) carry 180 A (0.7 s) break 55 A (0.15 s) A200-type: make 55 A (0.15 s) carry 200 A (0.7 s) break 55 A (0.15 s) |
| Ambient Temperature | | -40°C to 85°C (with no icing or condensation) |
| Humidity | | 5~85% RH |
| Unit Weight | | Approx.215 g |

- Notes:**
1. Values in the above table are the initial values at 23°C;
 2. The release time is the value measured when the diode is connected at both ends of the coil;
 3. The outgoing circuit of relay shall be designed with sufficient current carrying section to avoid overheating.

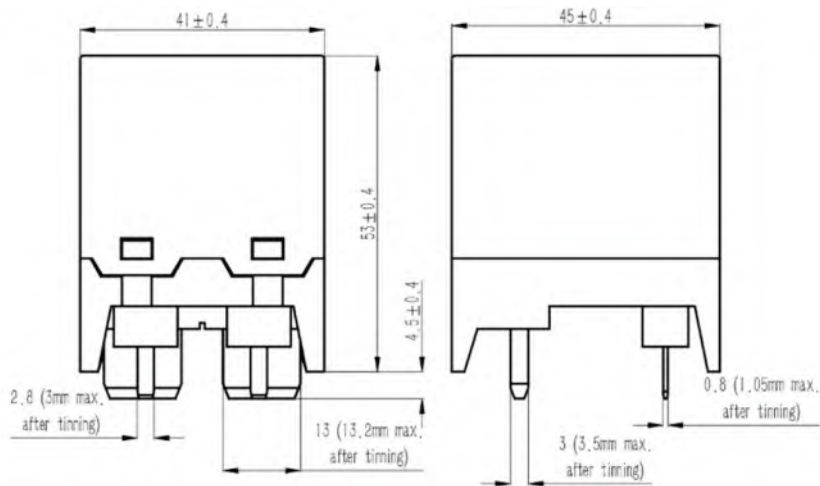
■ Dimensions

Unit: (mm)

A120 / A140 / A160



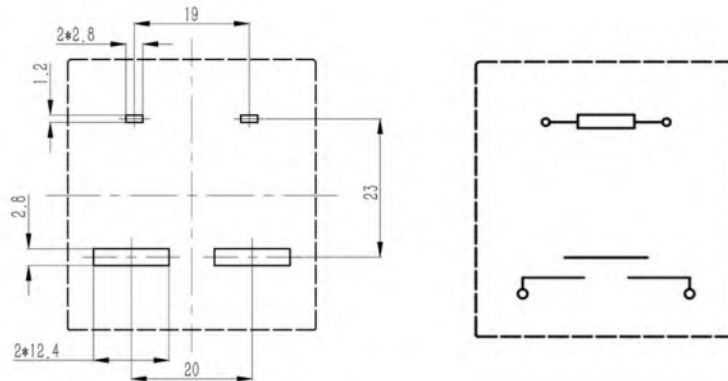
A180 / A200



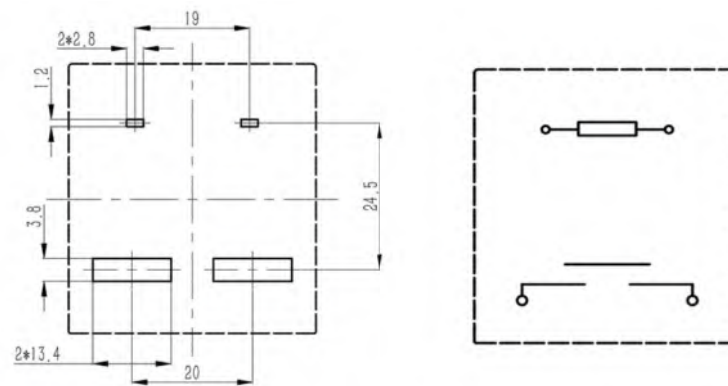
■ Installation and Wiring (Bottom view)

Unit: (mm)

A120 / A140 / A160



A180 / A200



■ Precautions

Unless otherwise stated, the standard environment conditions of measurement or testing are as followings:

- The ambient temperature is 23+5°C;
- The atmospheric pressure is 96+10 kPa;
- The relative humidity is 50%+25% RH;
- When mounting the relay on the PCB, DIODE is not allowed since it will shorten the life cycle. For protection consideration, a surge absorber (ZNR) is recommended to absorb the coil pulse;
- Please avoid falling, collision, and impact on this product or the performance will be affected.

PC6 Series

200 ~ 270 A power relay

- High switching capacity
- Large contact gap, >4 mm
- Low heating temperature raise
- Coil protection voltage applied for low power loss
- Class-F insulation grade



Model Number Legend

PC6 - $\frac{\square}{1}$ $\frac{\square}{2}$ / $\frac{\square}{3}$ $\frac{\square}{4}$ - $\frac{\square}{5}$ $\frac{\square}{6}$

1 Coil Voltage

09 : 9 VDC
12 : 12 VDC
24 : 24 VDC

3 Contact Material

1 : AgSnO₂
2 : AgNi

5 Terminal Type

Nil : Standard
D : Exposed terminal
H : Terminal with heat sink

2 Contact Form

A : SPST-NO (a)

4 Contact Load

A200 : 200 A A250 : 250 A
A270 : 270 A

6 Special Code

Nil : Standard product
XXX : Special requirement

Application

- PV inverter
- Energy storage equipment
- Industrial machinery

Ordering Information

| Series Name | Terminal Shape | Contact Form | Category of Protection | Model | Coil Voltage (VDC) | MPQ |
|-------------|----------------|--------------|------------------------|-----------------------------------|--------------------|------------|
| PC6 | PCB terminals | SPST-NO (a) | Flux proofed | PC6- \square A/ \square A200 | 9, 12, 24 | 8 pcs/Tray |
| | | | | PC6- \square A/ \square A250 | | |
| | | | | PC6- \square A/ \square A270 | | |
| | | | | PC6- \square A/ \square A200D | | |
| | | | | PC6- \square A/ \square A250D | | 6 pcs/Tray |
| | | | | PC6- \square A/ \square A270D | | |
| | | | | PC6- \square A/ \square A200H | | |
| | | | | PC6- \square A/ \square A250H | | |
| | | | | PC6- \square A/ \square A270H | | |

Notes: When ordering, add the rated coil voltage to the model number.

■ Coil Ratings

| Rated Voltage (V) | Rated Current (mA±10%) | Coil Resistance (Ω±10%) | Must Operate Voltage (V) | Must Release Voltage (V) | Max.Voltage (V) | Power Consumption (mW) |
|-----------------------|---------------------------|--------------------------------------|--------------------------------|--------------------------------|--------------------------|------------------------------|
| DC9 | 555.6 | 16.2 | 75% max. of rated voltage | 5% min. of rated voltage | 120% of rated voltage | Approx.5,000 |
| DC12 | 416.7 | 28.8 | | | | |
| DC24 | 208.3 | 115.2 | | | | |
| Holding voltage (VDC) | | 40% to 100% U _N (at 25°C) | | | | |
| | | 50% to 60% U _N (at 85°C) | | | | |

- Notes:**
1. Unless specified, the above parameters are initial values tested at room temperature (23°C);
 2. Should the coil voltage be reduced to 55%~60% U_N after energizing for 100ms;
 3. The maximum allowable voltage refers to the max. voltage that the relay coil could withstand in a short period of time.

■ Contact Ratings

| Classification | Resistive Load | | |
|------------------------|---|---|---|
| Model | PC6-A200 | PC6-A250 | PC6-A270 |
| Contact Form | SPST-NO (a) | | |
| Contact Material | Ag-alloy (Cd free) | | |
| Contact Rating | 1,000 VAC make 55 A (0.15 s) carry 200 A (0.7 s) break 55 A (0.15 s), at 85°C | 1,000 VAC make 55 A (0.15 s) carry 250 A (0.7 s) break 55 A (0.15 s), at 85°C | 1,000 VAC make 55 A (0.15 s) carry 270 A (0.7 s) break 55 A (0.15 s), at 85°C |
| Max. Switching Voltage | 1,000 VAC | | |
| Max. Switching Current | 200 A | 270 A | |
| Max. Switching Power | 200 KVA | 270 KVA | |

- Notes:** Unless otherwise specified, the above values are the initial values tested at room temperature.

■ Characteristics

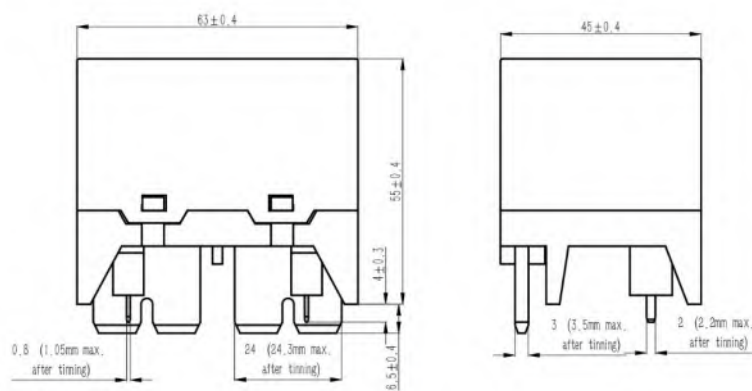
| | | |
|---|--|--|
| Contact Resistance | | 1 mΩ max. (at 20 A/ 6 VDC) |
| Operate Time | | ≤45 ms |
| Release Time | | ≤10 ms |
| Insulation Resistance | | ≥1,000 MΩ (500 VDC) |
| Coil Temperature Rise (at noml. volt.) | | 70 K max., contact load current 270 A, 50% to 60% of rated voltage excitation, at 85°C |
| Dielectric Strength | Between Coil & Contacts | 5,000 VAC, 1 mA, 50/60 Hz for 1 min |
| | Between Contacts of The Same Polarity | 2,000 VAC, 1 mA, 50/60 Hz for 1 min |
| Impulse Withstand Voltage | Between Coil & Contacts | 10 KV (1.2/50 μs) |
| Vibration Resistance | Destruction | 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude) |
| | Malfunction | 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude) |
| Shock Resistance | Destruction | 980 m/s ² (100 G) |
| | Malfunction | 98 m/s ² (10 G) |
| Durability | Mechanical | 1,000,000 OPS (at 9,000 OPS/hr) |
| | Electrical (Res. load) | 1,000 VAC, 3 x 10 ⁴ OPS, at 85°C, 1 s on 9 s off A200-type: make 55 A (0.15 s) carry 200 A (0.7 s) break 55 A (0.15 s) A250-type: make 55 A (0.15 s) carry 250 A (0.7 s) break 55 A (0.15 s) A270-type: make 55 A (0.15 s) carry 270 A (0.7 s) break 55 A (0.15 s) |
| Ambient Temperature | | -40°C to 85°C (with no icing or condensation) |
| Humidity | | 5~85% RH |
| Unit Weight | | Approx.215 g |

- Notes:**
1. Values in the above table are the initial values at 23°C;
 2. The release time is the value measured when the diode is connected at both ends of the coil;
 3. The outgoing circuit of relay shall be designed with sufficient current carrying section to avoid overheating.

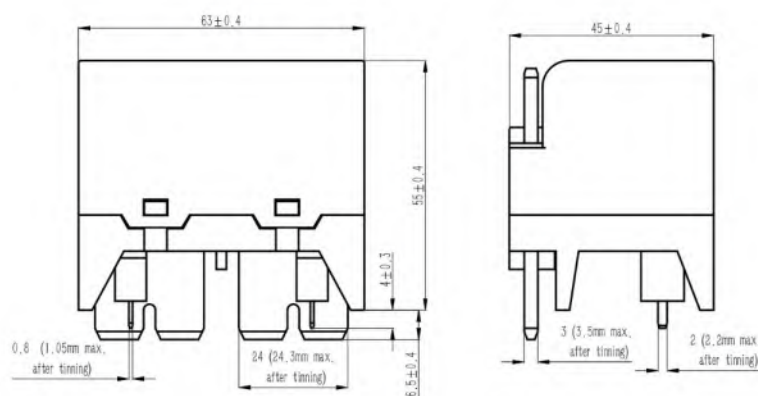
■ Dimensions

Unit: (mm)

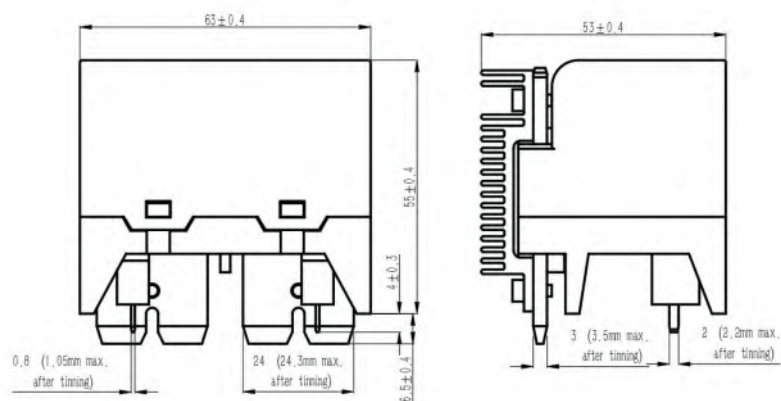
Standard type

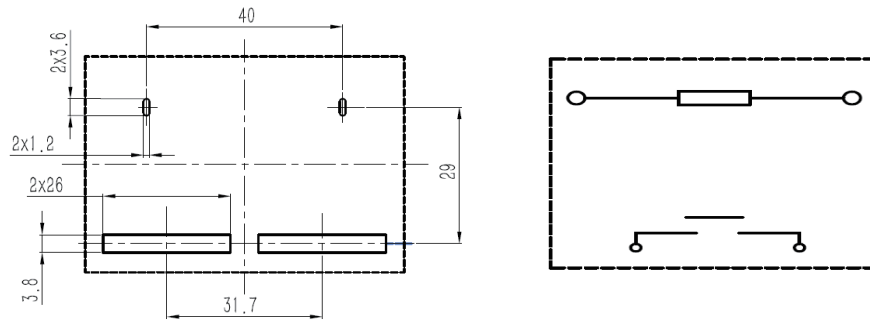


D-type



H-type





■ Precautions

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- The atmospheric pressure is 96+10 kPa;
- The relative humidity is 50%+25% RH;
- When mounting the relay on the PCB, DIODE is not allowed since it will shorten the life cycle. For protection consideration, a surge absorber (ZNR) is recommended to absorb the coil pulse;
- Please avoid falling, collision, and impact on this product or the performance will be affected.

Disclaimer

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Given the impossibility of defining all the requirements of all the relays in every application, users shall select relays accordingly and re-check through careful evaluation, or turn to PTG for technic support if necessary.



Your Partner for Safety

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