

mm inch

FEATURES

- Miniature package with universal terminal footprint
- High dielectric withstanding for transient protection:
10,000 V surge in μs between coil and contact
- Sealed construction
- Class B coil insulation types available
- TV rated (TV-5) types available (only for 1 Form A type)
- VDE, TÜV, SEMKO, SEV, FIMKO, TV-5 also approved

About Cd-free contacts

We have introduced Cadmium free type products to reduce Environmental Hazardous Substances. (The suffix "F" should be added to the part number) (Note : The Suffix "F" is required only for 1 Form A contact type. The 1 Form C and 2 Form A and 2 Form C contact type is originally Cadmium free, the suffix "F" is not required.) Please replace parts containing Cadmium with Cadmium-free products and evaluate them with your actual application before use because the life of a relay depends on the contact material and load.

Compliance with RoHS Directive

SPECIFICATIONS

Contact

| | | Standard type | High capacity type |
|--|--|--|--------------------------------|
| Arrangement | | 1 Form A, 1 Form C, 2 Form A, 2 Form C | 1 Form A, 1 Form C |
| Initial contact resistance, max. (By voltage drop 6 V DC 1 A) | | 100 m Ω | |
| Contact material | | 1a: AgSnO ₂ type 1c, 2a, 2c: AgNi type | |
| Rating (resistive load) | Nominal switching capacity | 5 A 250 V AC, 5 A 30 V DC | 10 A 250 V AC, 10 A 30 V DC |
| | Max. switching power | 1,250 VA, 150 W | 2,500 VA, 300 W |
| | Max. switching voltage | 250 V AC, 30 V DC | |
| | Max. switching current | 5 A | 10 A |
| | Min. switching capacity* ¹ (Reference value) | 100 mA, 5 V DC | |
| Expected life (min. ope.) | Mechanical (at 180 cpm) | 5 \times 10 ⁶ | |
| | Electrical (at 6 cpm) (Resistive load) | 10 ⁵ | |

Coil

| | |
|-------------------------|--------|
| Nominal operating power | 530 mW |
|-------------------------|--------|

#1 This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

Remarks

- * Specifications will vary with foreign standards certification ratings.
- *¹ Detection current: 10mA
- *² Wave is standard shock voltage of $\pm 1.2 \times 50\mu\text{s}$ according to JEC-212-1981
- *³ Excluding contact bounce time
- *⁴ Half-wave pulse of sine wave: 11ms; detection time: 10 μs
- *⁵ Half-wave pulse of sine wave: 6ms
- *⁶ Detection time: 10 μs
- *⁷ Refer to 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT.
- *⁸ The pick-up and drop out voltages rise approximately 0.4% for every 1°C 33.8°F given a standard ambient temperature of 20°C 68°F. Therefore, when using relays where the ambient temperature is high, please take into consideration the rise in pick-up and drop out voltages and keep the coil applied voltage within the maximum allowable voltage.

Characteristics

| | | Standard type | High capacity type |
|--|---------------------------|---|---|
| Max. operating speed (at rated load) | | 6 cpm | |
| Initial insulation resistance | | Min. 1,000 M Ω at 500 V DC | |
| Initial breakdown voltage* ¹ | Between open contacts | 1,000 Vrms for 1 min. | |
| | Between contacts and coil | 5,000 Vrms for 1 min. | |
| | Between contact sets | 3,000 Vrms for 1 min. (2 Form A, 2 Form C) | |
| Initial surge voltage between contacts and coil* ² | | 10,000 V | |
| Operate time* ³ (at nominal voltage) | | Max. 15 ms | |
| Release time (without diode)* ³ (at nominal voltage) | | Max. 5 ms | |
| Temperature rise (at 20°C) (at nominal voltage) (with nominal coil voltage and at nominal switching capacity) | | 1a: max. 45°C 1c, 2a, 2c: max. 55°C (resistance method) | 1a: max. 45°C 1c: max. 55°C (resistance method) |
| Shock resistance | Functional* ⁴ | 98 m/s ² {10 G} | |
| | Destructive* ⁵ | 980 m/s ² {100 G} | |
| Vibration resistance | Functional* ⁶ | 10 to 55 Hz at double amplitude of 1.6 mm | |
| | Destructive | 10 to 55 Hz at double amplitude of 2.0 mm | |
| Conditions for operation, transport and storage* ⁷ (Not freezing and condensing at low temperature) | | Ambient temp.* ⁸ | -40°C to +60°C -40°F to 140°F (Class E), (Class B: -40°C to +85°C -40°F to 185°F) |
| | | Humidity | 5 to 85% R.H. |
| Unit weight | | Approx. 13 g .46 oz | |

TYPICAL APPLICATIONS

- Home appliances
TV sets, VCR, Microwave ovens
- Office machines
Photocopiers, Vending machines
- Industrial equipment
NC machines, Robots, Temperature controllers

ORDERING INFORMATION

Ex. JW 1 F S N - B - DC5V -

| Contact arrangement | Contact capacity | Protective construction | Pick-up voltage | Coil insulation class | Coil voltage | Contact material |
|--|---|-------------------------|---------------------------|--|------------------------------|--|
| 1: 1 Form C 1a: 1 Form A 2: 2 Form C 2a: 2 Form A | Nil: Standard (5 A) F: High capacity (10 A)* | S: Sealed type | N: 70% of nominal voltage | Nil: Class E insulation B: Class B insulation | DC 5, 6, 9, 12, 18, 24, 48 V | F: AgSnO ₂ type (1a) Nil: AgNi type (1c, 2a, 2c) |

*Only for 1 Form A and 1 Form C type

UL/CSA, VDE, SEMKO, FIMKO, SEV approved type is standard.

Notes: 1. When ordering TV rated (TV-5) types, add suffix-TV (available only for 1 Form A type).

2. Standard packing: Carton: 100 pcs. Case: 500 pcs.

3. Please inquire about the previous products (Cadmium containing parts).

TYPES

Standard (5A) types

| Contact arrangement | Coil voltage, V DC | Part No. | Contact arrangement | Coil voltage, V DC | Part No. |
|---------------------|--------------------|----------------|---------------------|--------------------|--------------|
| 1 Form A | 5 | JW1aSN-DC5V-F | 2 Form A | 5 | JW2aSN-DC5V |
| | 6 | JW1aSN-DC6V-F | | 6 | JW2aSN-DC6V |
| | 9 | JW1aSN-DC9V-F | | 9 | JW2aSN-DC9V |
| | 12 | JW1aSN-DC12V-F | | 12 | JW2aSN-DC12V |
| | 18 | JW1aSN-DC18V-F | | 18 | JW2aSN-DC18V |
| | 24 | JW1aSN-DC24V-F | | 24 | JW2aSN-DC24V |
| 1 Form C | 48 | JW1aSN-DC48V-F | 48 | JW2aSN-DC48V | |
| | 5 | JW1SN-DC5V | 2 Form C | 5 | JW2SN-DC5V |
| | 6 | JW1SN-DC6V | | 6 | JW2SN-DC6V |
| | 9 | JW1SN-DC9V | | 9 | JW2SN-DC9V |
| | 12 | JW1SN-DC12V | | 12 | JW2SN-DC12V |
| | 18 | JW1SN-DC18V | | 18 | JW2SN-DC18V |
| 24 | JW1SN-DC24V | 24 | | JW2SN-DC24V | |
| | 48 | JW1SN-DC48V | 48 | JW2SN-DC48V | |

High capacity (10 A) types

| Contact arrangement | Coil voltage, V DC | Part No. | Contact arrangement | Coil voltage, V DC | Part No. |
|---------------------|--------------------|-----------------|---------------------|--------------------|--------------|
| 1 Form A | 5 | JW1aFSN-DC5V-F | 1 Form C | 5 | JW1FSN-DC5V |
| | 6 | JW1aFSN-DC6V-F | | 6 | JW1FSN-DC6V |
| | 9 | JW1aFSN-DC9V-F | | 9 | JW1FSN-DC9V |
| | 12 | JW1aFSN-DC12V-F | | 12 | JW1FSN-DC12V |
| | 18 | JW1aFSN-DC18V-F | | 18 | JW1FSN-DC18V |
| | 24 | JW1aFSN-DC24V-F | | 24 | JW1FSN-DC24V |
| | 48 | JW1aFSN-DC48V-F | 48 | JW1FSN-DC48V | |

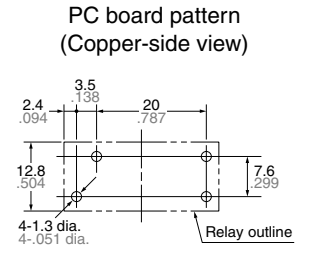
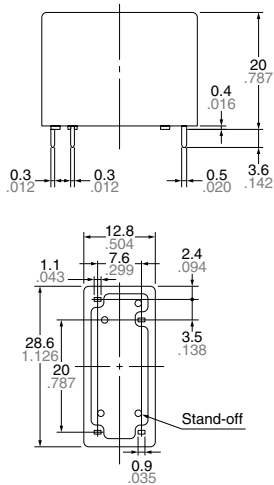
COIL DATA (at 20°C 68°F)

| Nominal voltage, V DC | Pick-up voltage, V DC (max.) (Initial) | Drop-out voltage, V DC (min.) (Initial) | Nominal operating current, mA (±10%) | Coil resistance, W (±10%) | Nominal operating power, mW | Max. allowable voltage |
|-----------------------|--|---|--------------------------------------|---------------------------|-----------------------------|--|
| 5 | 3.5 | 0.5 | 106 | 47 | 530 | 130% V of Nominal Voltage (at 60°C 140°F) 120% V of Nominal Voltage (at 85°C 185°F)* ^s |
| 6 | 4.2 | 0.6 | 88 | 68 | | |
| 9 | 6.3 | 0.9 | 58 | 155 | | |
| 12 | 8.4 | 1.2 | 44 | 270 | | |
| 18 | 12.6 | 1.8 | 29 | 611 | | |
| 24 | 16.8 | 2.4 | 22 | 1,100 | | |
| 48 | 33.6 | 4.8 | 11 | 4,400 | | |

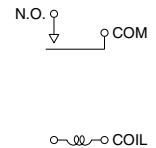
DIMENSIONS

mm inch

1 Form A



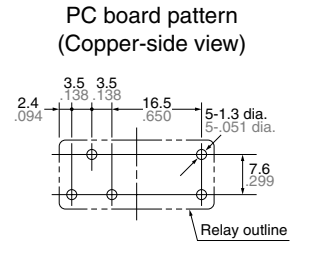
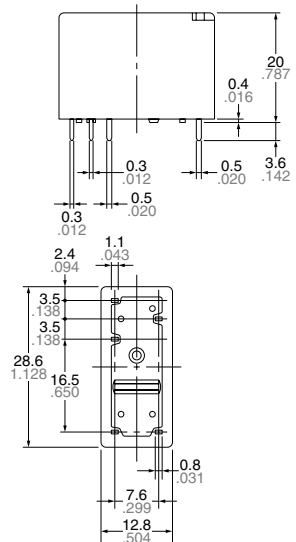
Tolerance: $\pm 0.1 \pm 0.004$
Wiring diagram (Bottom view)



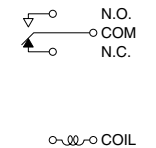
Dimension :
 Max. 1mm .039 inch
 1 to 3mm .039 to .118 inch
 Min. 3mm .118 inch

General tolerance
 $\pm 0.1 \pm 0.004$
 $\pm 0.2 \pm 0.008$
 $\pm 0.3 \pm 0.012$

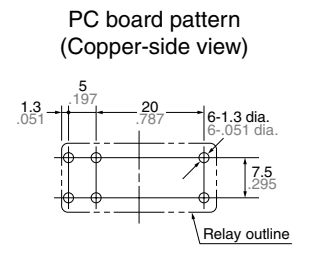
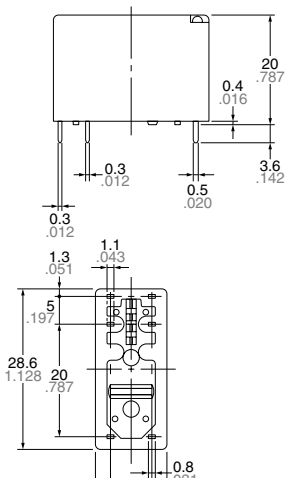
1 Form C



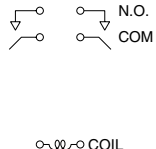
Tolerance: $\pm 0.1 \pm 0.004$
Wiring diagram (Bottom view)



2 Form A



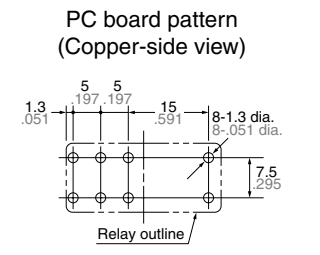
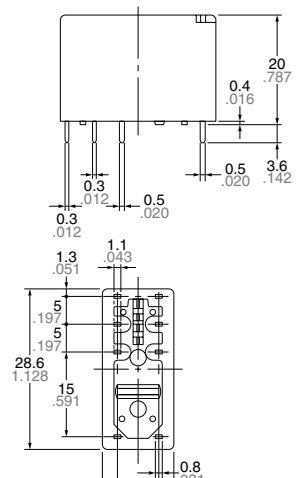
Tolerance: $\pm 0.1 \pm 0.004$
Wiring diagram (Bottom view)



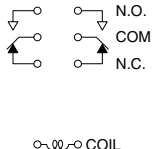
Dimension :
 Max. 1mm .039 inch
 1 to 3mm .039 to .118 inch
 Min. 3mm .118 inch

General tolerance
 $\pm 0.1 \pm 0.004$
 $\pm 0.2 \pm 0.008$
 $\pm 0.3 \pm 0.012$

2 Form C

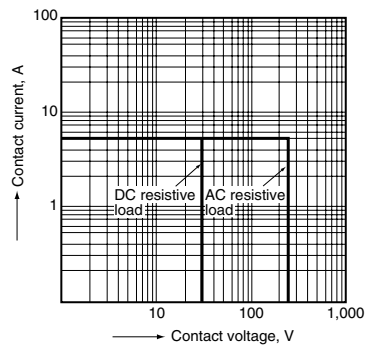


Tolerance: $\pm 0.1 \pm 0.004$
Wiring diagram (Bottom view)

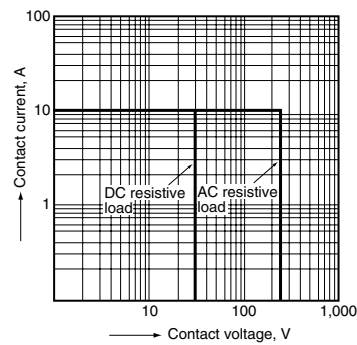


REFERENCE DATA

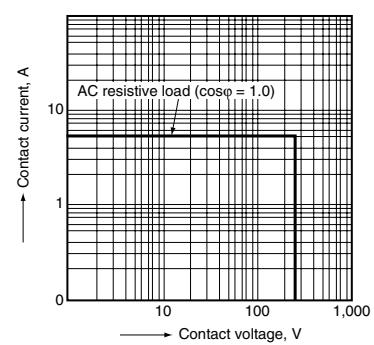
1-(1). Maximum operating power
 1 Form A Standard (5 A) type



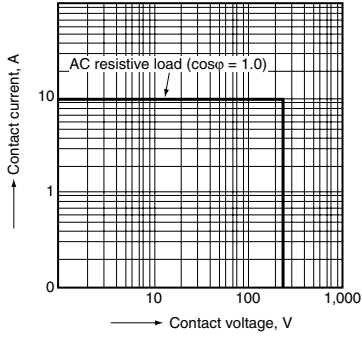
1-(2). Maximum operating power
 1 Form A High Capacity (10 A) type



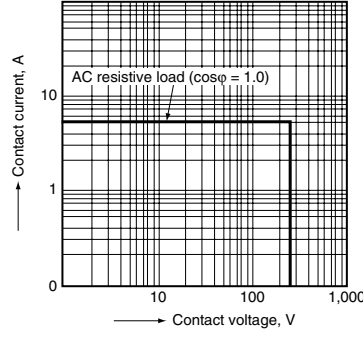
1-(3). Maximum operating power
 1 Form C Standard (5 A) type



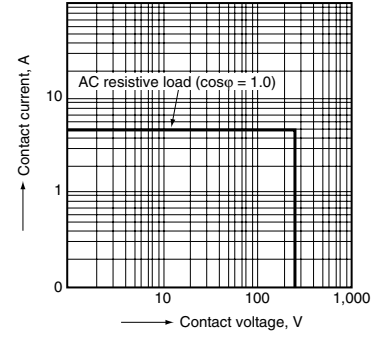
1-(4). Maximum operating power
1 Form C High Capacity (10 A) type



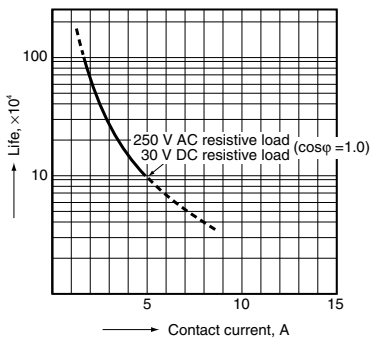
1-(5). Maximum operating power
2 Form A Standard (5 A) type



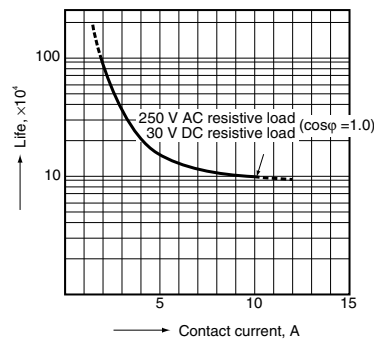
1-(6). Maximum operating power
2 Form C Standard (5 A) type



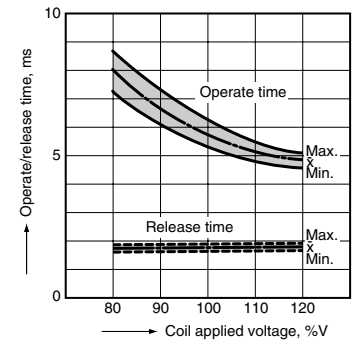
2-(1). Life curve
1 Form A Standard (5 A) type



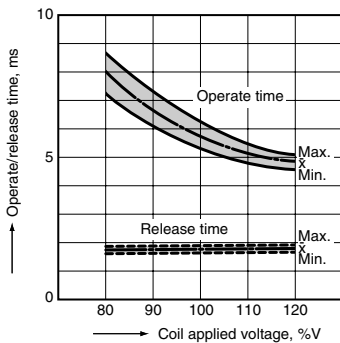
2-(2). Life curve
1 Form A High Capacity (10 A) type



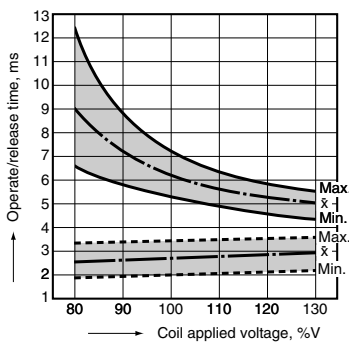
3-(1). Operate/release time
Sample: JW1aSN-DC12V-F, 10 pcs.
Ambient temperature: 20°C 68°F



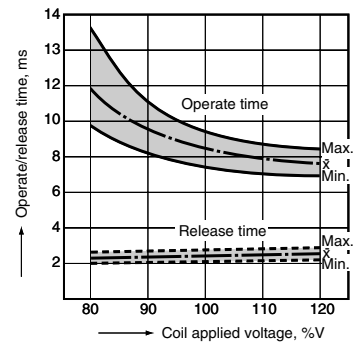
3-(2). Operate/release time
Sample: JW1aFSN-DC12V, 10 pcs.
Ambient temperature: 20°C 68°F



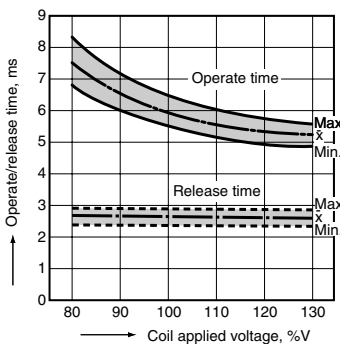
3-(3). Operate/release time
Sample: JW1SN-DC12V-F, 6 pcs.
Ambient temperature: 20°C 68°F



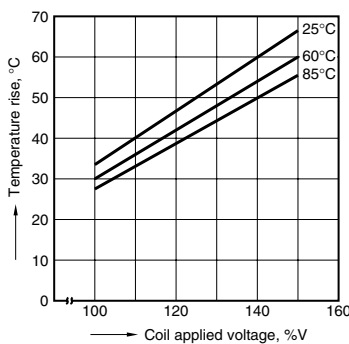
3-(4). Operate/release time
Sample: JW2aSN-DC24V-F, 6 pcs.
Ambient temperature: 20°C 68°F



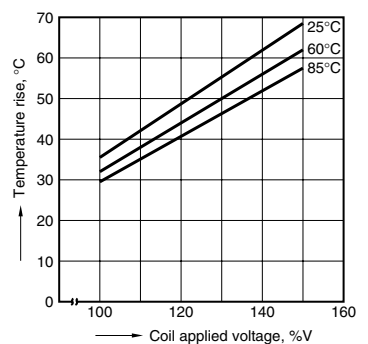
3-(5). Operate/release time
Sample: JW2SN-DC12V-F, 6 pcs.
Ambient temperature: 20°C 68°F



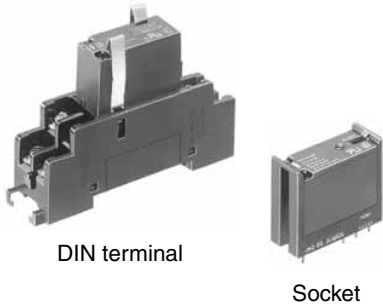
4-(1). Coil temperature rise
(Contact carrying current: 5A)
Sample: JW1aFSN-DC12V-F, 6 pcs.
Point measured: Inside the coil



4-(2). Coil temperature rise
(Contact carrying current: 10 A)
Sample: JW1aFSN-DC12V-F, 6 pcs.
Point measured: Inside the coil

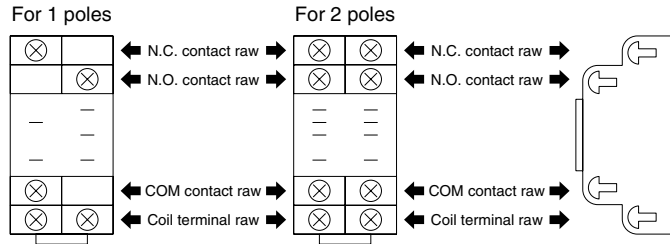


ACCESSORIES



FEATURES

- 1. Space saving design
- 2. Wiring can be done with ease (DIN terminal)



TYPES

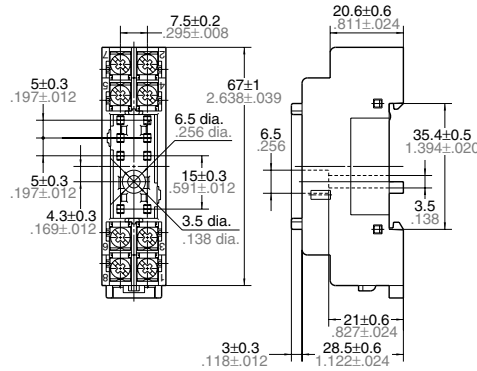
| Product name | Number of poles | Part No. | Applicable relay type | | | | Standard packing | |
|---------------------|-----------------|----------|-----------------------|----------|----------|----------|------------------|------------|
| | | | 1 Form A | 1 Form C | 2 Form A | 2 Form C | Inner carton | Outer case |
| JW1 PC board socket | 1 | JW1-PS | • | • | | | 10 pcs. | 100 pcs. |
| JW2 PC board socket | 2 | JW2-PS | | | • | • | | |

SPECIFICATIONS

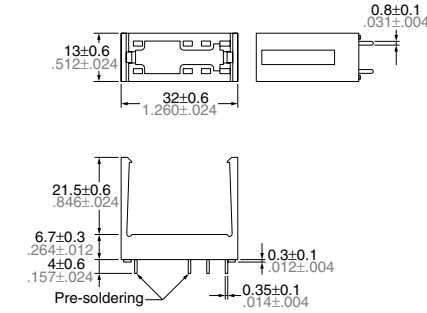
| Item | Type | PC board socket/Plug-in socket | | DIN terminal socket | |
|-----------------------|------|--------------------------------|---------|-------------------------|-------------------------|
| | | 1 pole | 2 poles | 1 pole | 2 poles |
| Breakdown voltage | | 1,500 vrms for 1 minute | | 1,500 Vrms for 1 minute | 1,000 Vrms for 1 minute |
| Insulation resistance | | Min. 100 MΩ | | Min. 100 MΩ | |

DIMENSIONS

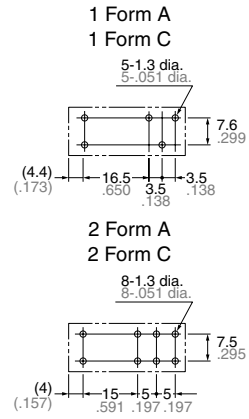
1. DIN terminal socket



2. PC board socket

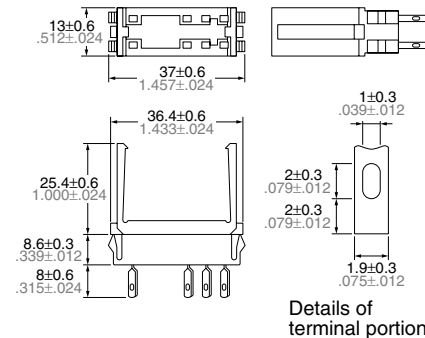


PC board pattern (Bottom view)

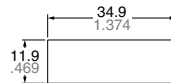


Tolerance: ±0.1 ±.004

3. Plug-in socket



Panel cut-out
(Thickness: 1.0 to 2.0 .039 to .079)



Tolerance: ±0.1 ±.004

For Cautions for Use, see Relay Technical Information.