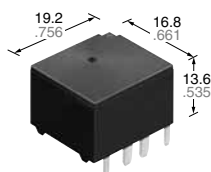


High Capacity Relay for Smart Junction Box

TM RELAYS

<Protective construction>
Sealed

New



(Unit: mm inch)

RoHS compliant

FEATURES

- Flat type and ideal height (13.6 mm .535 inch) for smart junction box
- High capacity and 35A type

TYPICAL APPLICATIONS

- Fan motor, Defogger, etc.

ORDERING INFORMATION

ACTM

Contact arrangement

1: 1 Form A

2: 1 Form C

Contact type

C: Standard type (Ag alloy / Cu clad)

Heat resistance/Protective construction

H: High heat-resistant type/Sealed

Coil resistance

4: 320Ω

8: 400Ω

TYPES

Contact arrangement	Contact type	Rated coil voltage	Coil resistance	Part No.		Packing	
				High heat-resistant type		Carton	Case
1 Form A	Standard type (Ag alloy / Cu clad)	12V DC	320Ω	ACTM1CH4	50 pcs.	2,000 pcs.	
			400Ω	ACTM1CH8			
1 Form C			320Ω	ACTM2CH4			

RATING

1. Coil data

Rated coil voltage	Operate (Set) voltage (at 20°C 68°F) (Initial)	Release (Reset) voltage (at 20°C 68°F) (Initial)	Rated operating current [±10%] (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Rated operating power (at 20°C 68°F)	Usable voltage range
12 V DC	Max. 7.0 V DC	Min. 0.5 V DC	37.5 mA	320Ω	450 mW	10 to 16 V DC
	Max. 7.0 V DC	Min. 0.5 V DC	30 mA	400Ω	360 mW	

Note: Other operate (set) voltage types are also available. Please inquire our sales representative for details.

2. Specifications

Item		Specifications
Contact data	Contact arrangement	1 Form A, 1 Form C
	Contact resistance (initial)	Max. 50mΩ (N.O. side: typ. 1.5mΩ, N.C. side: typ. 3mΩ) (By voltage drop 1A 6V DC)
	Contact material	Ag alloy
	Rated switching capacity (resistive)	N.O. side: 35A 14V DC, N.C. side: 15A 14V DC
	Max. carrying current (initial)*1	40A/1 hour (12V DC, at 20°C 68°F)
	Min. switching load (resistive)*2	1A 14V DC (at 20°C 68°F)
Insulated resistance (initial)		Min. 100 MΩ (at 500V DC, Measurement at same location as "Dielectric strength" section.)
Dielectric strength (initial)	Between open contacts	500 Vrms for 1 min. (Detection current: 10mA)
	Between contacts and coil	500 Vrms for 1 min. (Detection current: 10mA)
Time characteristics (initial)	Operate (Set) time (at rated voltage)	Max. 10ms (at 20°C 68°F, without contact bounce time)
	Release (Reset) time (at rated voltage)	Max. 10ms (at 20°C 68°F, without contact bounce time) (Without diode)
Shock resistance	Functional	Min. 100 m/s ² {approx. 10G} (Half-wave pulse of sine wave: 11ms; detection time: 10μs)
	Destructive	Min. 1,000 m/s ² {approx. 100G} (Half-wave pulse of sine wave: 6ms)
Vibration resistance	Functional	10 to 100 Hz, Min. 44.1m/s ² {approx. 4.5G} (Detection time: 10μs)
	Destructive	10 to 500 Hz, Min. 44.1m/s ² {approx. 4.5G} Time of vibration for each direction; X, Y direction: 2 hours, Z direction: 4 hours
Expected life	Mechanical	Min. 5×10 ⁶ (at 120 cpm)
	Electrical	<Resistive load> Min. 10 ⁵ at rated switching capacity, operating frequency: ON 1s, OFF 9s <Resistive and capacitor loads> Min. 10 ⁵ at 90 A (Inrush), 20 A (Steady), 14 V DC (Operating frequency: ON 0.15s, OFF 4.85s)
Conditions	Conditions for usage, transport and storage*3	Ambient temperature: -40 to +110°C -40 to +230°F, Humidity: 2 to 85% R.H. (Please avoid icing or condensation)
Weight		Approx. 11.6 g .41 oz

Notes: *1. Depends on connection conditions. Also, this does not guarantee repeated switching. We recommend that you confirm operation under actual conditions.

*2. 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.

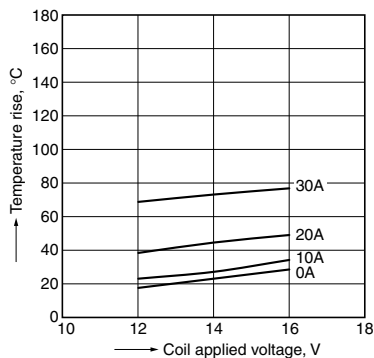
*3. The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value. For details, please refer to the "Automotive Relay Users Guide".

Please inquire our sales representative if you will be using the relay in a high temperature atmosphere (110°C 230°F).

REFERENCE DATA

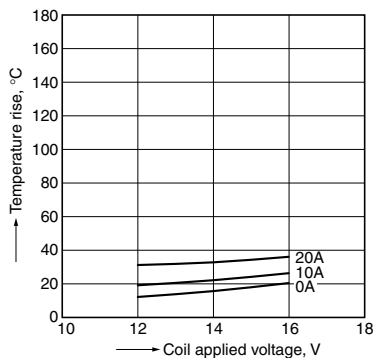
1-(1). Coil temperature rise (Room temperature)

Sample: ACTM1CH8, 6pcs
 Carrying current: 0A, 10A, 20A, 30A
 Ambient temperature: Room temperature



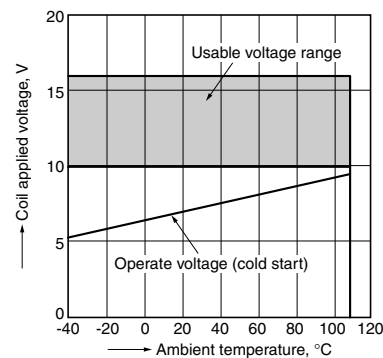
1-(2). Coil temperature rise (110°C 230°F)

Sample: ACTM1CH8, 6pcs
 Carrying current: 0A, 10A, 20A
 Ambient temperature: 110°C 230°F



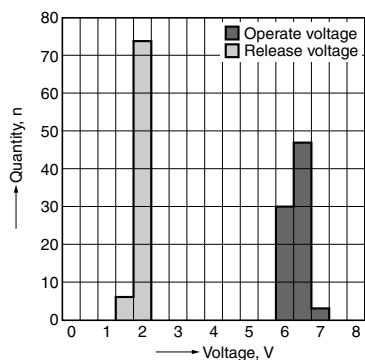
2. Ambient temperature and usable voltage range

Sample: ACTM1CH8



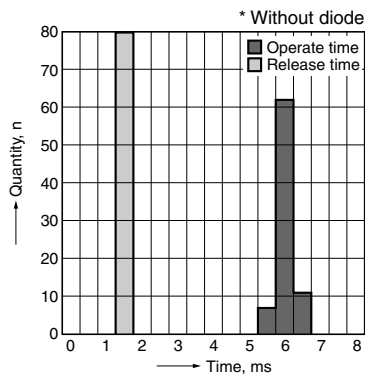
3. Distribution of operate (set) and release (reset) voltage

Sample: ACTM1CH8, 80pcs.



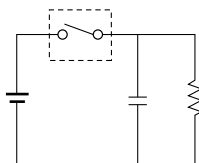
4. Distribution of operate (set) and release (reset) time

Sample: ACTM1CH8, 80pcs.

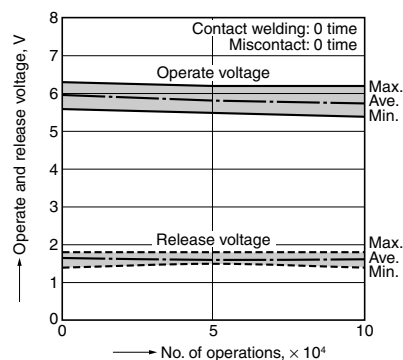


5-(1). Electrical life test (Resistive and capacitor load)

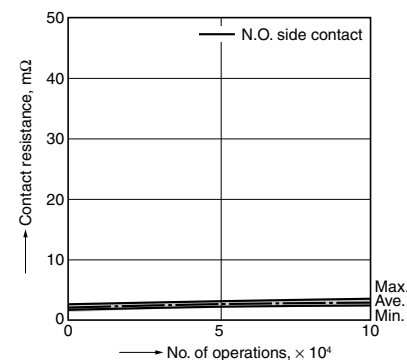
Sample: ACTM1CH8, 6pcs.
 Load: Inrush current: 90A, Steady current: 20A 14V DC
 Operating frequency: ON 0.15s, OFF 4.85s
 Ambient temperature: Room temperature
 Circuit:



Change of operate (set) and release (reset) voltage



Change of contact resistance



TM (ACTM)

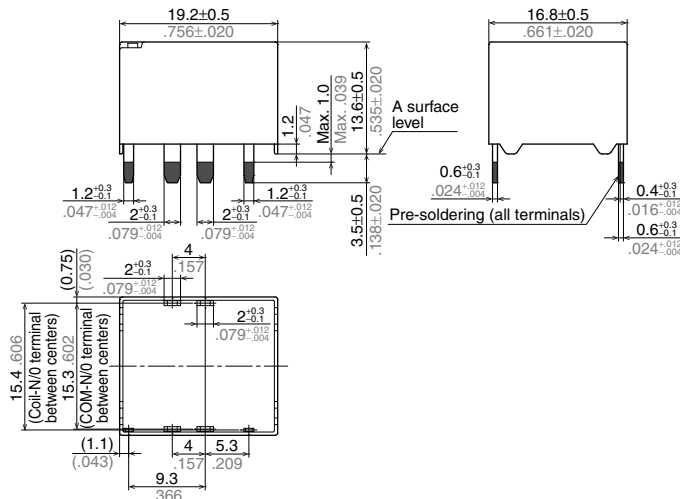
DIMENSIONS (mm inch)

The CAD data of the products with a **CAD** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

1 Form A type



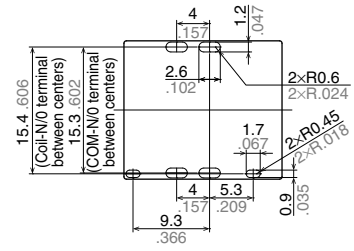
External dimensions



Dimension:	Tolerance
Max. 1mm .039 inch:	±0.1 ±.004
1 to 3mm .039 to .118 inch:	±0.2 ±.008
Min. 3mm .118 inch:	±0.3 ±.012

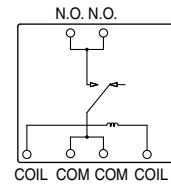
* Dimensions (thickness and width) of terminal is measured after pre-soldering. Intervals between terminals is measured at A surface level.

PC board pattern (Bottom view)



Tolerance: **±0.1 ±.004**

Schematic (Bottom view)

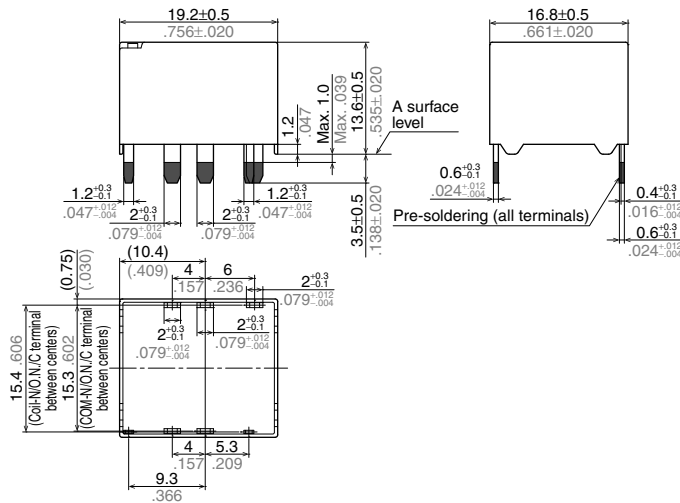


* The lamp control type has polarized contacts. Connect N.O. to the "+" (plus) side.

1 Form C type



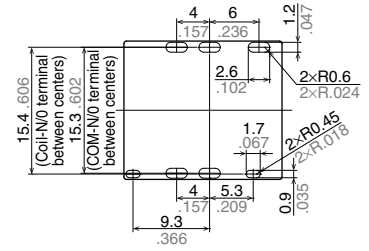
External dimensions



Dimension:	Tolerance
Max. 1mm .039 inch:	±0.1 ±.004
1 to 3mm .039 to .118 inch:	±0.2 ±.008
Min. 3mm .118 inch:	±0.3 ±.012

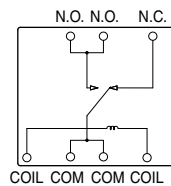
* Dimensions (thickness and width) of terminal is measured after pre-soldering. Intervals between terminals is measured at A surface level.

PC board pattern (Bottom view)



Tolerance: **±0.1 ±.004**

Schematic (Bottom view)



* The lamp control type has polarized contacts. Connect N.O. to the "+" (plus) side.

NOTES

1. Coil operating power

Pure DC current should be applied to the coil. If it includes ripple, the ripple factor should be less than 5%. However, check it with the actual circuit since the characteristics may be slightly different. Also, the power waveform should be rectangular.

2. Coil applied voltage

To ensure proper operation, the voltage applied to the coil should be the rated operating voltage of the coil. Also, be aware that the pick-up and drop-out voltages will fluctuate depending on the ambient temperature and operating conditions.

3. Expected life

Check this with the real device as it is affected by coil driving circuit, load type, activation frequency, activation phase, ambient conditions and other factors.

4. Soldering

When soldering the relays, ensure conformance with the conditions listed below.

1) Automatic soldering

Preheating soldering: 100°C 212°F, within 2 sec (surface of PC board)

Soldering: 260°C 500°F, within 5 sec

2) Manual soldering

Tip temperature: 280 to 300°C 536 to 572°F.

Soldering iron: 30 to 60W

Soldering time: within 5 sec

5. Usage, transport and storage conditions

1) Ambient temperature, humidity, and air pressure during usage, transport, and storage of the relay:

(1) Temperature:

–40 to +85°C –40 to +185°F (Standard type)

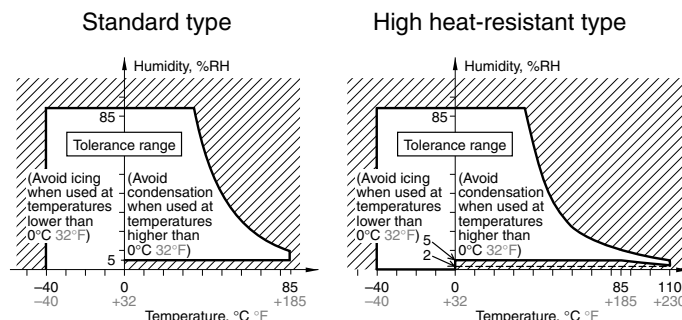
–40 to +110°C –40 to +230°F (High heat-resistant type)

(2) Humidity: 2 to 85% RH (Avoid icing and condensation.)

(3) Air pressure: 86 to 106 kPa

The humidity range varies with the temperature. Use within the range indicated in the graph below.

[Temperature and humidity range for usage, transport, and storage]



2) Water condensation

Condensation forms when there is a sudden change in temperature under high temperature and high humidity conditions. Water condensation will cause deterioration of the relay insulation.

3) Icing

Water condensation or other moisture may ice on the relay when the temperature is lower than 0°C 32°F. This causes problems such as sticking of movable parts, operational time lags or poor contact conduction.

4) Low-temperature, low-humidity atmosphere

If the relay is exposed to a low-temperature, low-humidity atmosphere for a long time, its plastic parts may become brittle and fragile.

6. Others handling precautions

Do not use relays that have been dropped, because doing so may be a cause of faulty operation.

For general cautions for use, please refer to the “Automotive Relay Users Guide”.

Please contact

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