Panasonic
INDUSTRY

Automotive Relays

TG RELAYS

Product Catalog

IN Your Future

2024.7

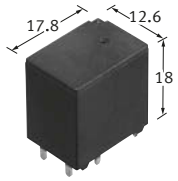
Automotive Relays

RoHS

TG RELAYS

High Load Relay for Smart J/B

‹ Protective construction ›
High heat-resistant type: Sealed



(Unit: mm)

FEATURES

- Large capacity switching despite small size. Can replace micro ISO terminal type relays.
- Low operating power type

TYPICAL APPLICATIONS

- Head lamp, Fog lamp, Fan motor, Defogger and Seat heater, etc.

ORDERING INFORMATION (PART NO.)

ACTG ☐ ☐ ☐ ☐

- Contact arrangement
  1: 1 Form A
  2: 1 Form C
- Contact type
  Nil: Standard type
  C: Standard type (Ag alloy / Cu clad)
- Heat resistance / Protective construction
  H: High heat-resistant type / Sealed
- Coil resistance
  3: 225 Ω
  4: 320 Ω

TYPES

Contact arrangement	Contact type	Rated coil voltage	Coil resistance	Part No. (Heat resistance / High heat-resistant type)	Packing (Carton (1-tube) / Case)
1 Form A	Standard type	12 V DC	225 Ω	ACTG1H3	40 pcs. / 800 pcs.
			320 Ω	ACTG1H4	
	Standard type (Ag alloy / Cu clad)		225 Ω	ACTG1CH3	
			320 Ω	ACTG1CH4	
1 Form C	Standard type		225 Ω	ACTG2H3	
			320 Ω	ACTG2H4	
	Standard type (Ag alloy / Cu clad)		225 Ω	ACTG2CH3	
			320 Ω	ACTG2CH4	

Note) Please inquire our sales representative for details about products other than those above.

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RATING

■ Coil data

Rated coil voltage	Operate voltage (at 20 ℃) (Initial)	Release voltage (at 20 ℃) (Initial)	Rated operating current [±10 %] (at 20 ℃)	Coil resistance [±10 %] (at 20 ℃)	Rated operating power (at 20 ℃)	Usable voltage range
12 V DC	Max. 6.5 V DC	Min. 0.8 V DC	53.3 mA	225 Ω	640 mW	10 to 16 V DC
	Max. 7.0 V DC		37.5 mA	320 Ω	450 mW	

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

■ Specifications

Item		Specifications	
Contact data	Contact arrangement	1 Form A, 1 Form C	
	Contact resistance (initial)	Max. 50 mΩ (N.O. side: typ. 3 mΩ, N.C. side: typ. 4 mΩ) (By voltage drop 1 A 6 V DC)	
	Contact material	Ag alloy	
	Rated switching capacity (resistive)	N.O. side: 30 A 14 V DC, N.C. side: 15 A 14 V DC	
	Max. carrying current*1	35 A/1 hour (Coil applied voltage 12 V DC, at 20 ℃)	
	Min. switching load (resistive) *2	1 A 14 V DC (at 20 ℃)	
Insulated resistance (initial)		Min. 100 MΩ (at 500 V DC, Measurement at same location as " Dielectric strength " section.)	
Dielectric strength (initial)	Between open contacts	500 Vrms for 1 min (Detection current: 10 mA)	
	Between contacts and coil	500 Vrms for 1 min (Detection current: 10 mA)	
Time characteristics (initial)	Operate time (at rated voltage)	Max. 10 ms (at 20 ℃, without contact bounce time)	
	Release time (at rated voltage)	Max. 10 ms (at 20 ℃, without contact bounce time) (without protective element)	
Shock resistance	Functional	Min. 100 m/s^2 (Half-wave pulse of sine wave: 11 ms, detection time: 10 μs)	
	Destructive	Min. 1,000 m/s^2 (Half-wave pulse of sine wave: 6 ms, number of shocks for each direction: X, Y and Z direction: 3 times)	
Vibration resistance	Functional	10 to 100 Hz, Min. 44.1 m/s^2 (Detection time: 10 μs)	
	Destructive	10 to 500 Hz, Min. 44.1 m/s^2 Time of vibration for each direction; X, Y direction: 2 hours, Z direction: 4 hours	
Expected life	Mechanical	Min. 10^7 (at 120 times/min)	
	Electrical	Resistive load	Min. 10^5 at rated switching capacity operating frequency: 1 s ON, 9 s OFF
		Motor load	Min. 10^5 at 30 A 14 V DC motor lock operating frequency: 0.5 s ON, 9.5 s OFF
		Lamp load	Min. 18 × 10^4 at inrush 84 A, steady 12 A 14 V DC operating frequency: 1 s ON, 14 s OFF
Conditions	Conditions for usage, transport and storage*3	Ambient temperature: −40 to +110 ℃, Humidity: 2 to 85 % RH (Avoid icing and condensation)	
Weight		Approx. 12 g	

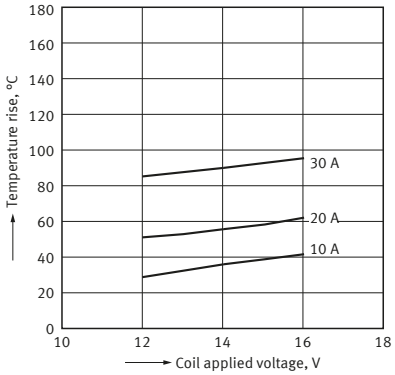
*1: Depends on connection conditions. Also, this does not guarantee repeated switching. We recommend that you confirm operation under actual conditions.
2: This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check 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 ℃) .

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REFERENCE DATA

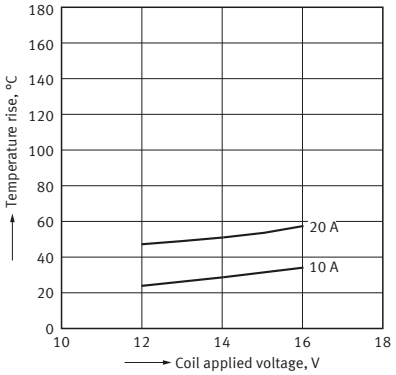
1-1. Coil temperature rise (at room temperature)

Sample: ACTG1H4, 3 pcs.
Carrying current: 10 A, 20 A, 30 A
Ambient temperature: Room temperature



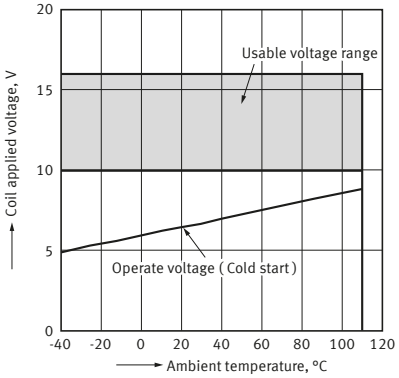
1-2. Coil temperature rise (at 110 ℃)

Sample: ACTG1H4, 3 pcs.
Carrying current: 10 A, 20 A
Ambient temperature: 110°C



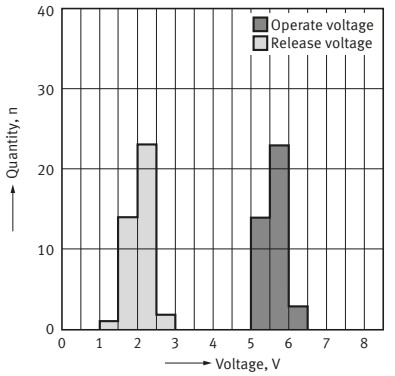
2. Ambient temperature and usable voltage range

Sample: ACTG1H4



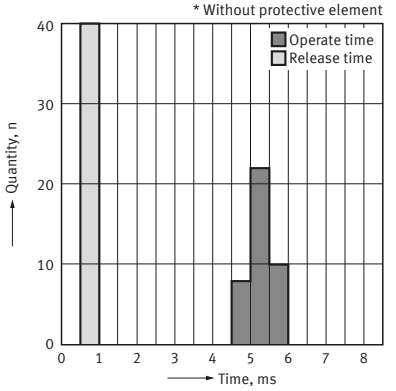
3. Distribution of operate and release voltage

Sample: ACTG1H4, 40 pcs.



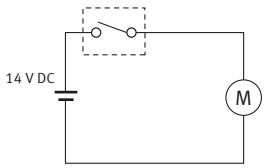
4. Distribution of operate and release time

Sample: ACTG1H4, 40 pcs.

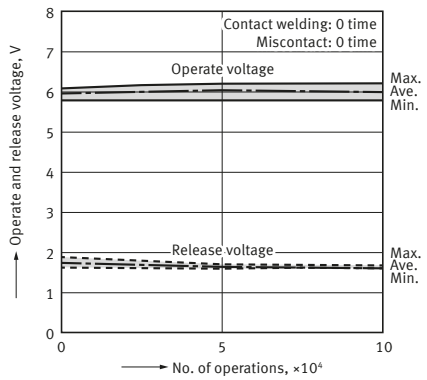


5-1. Electrical life test (Motor lock)

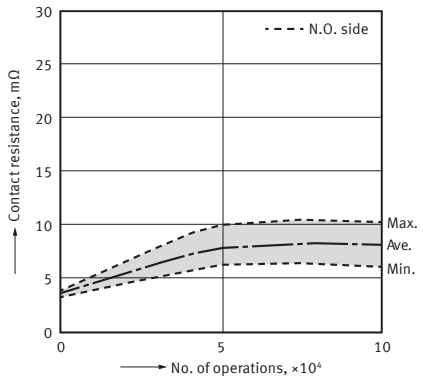
Sample: ACTG1H4, 6 pcs.
Load: 30 A 14 V DC
Motor load (lock condition)
Operating frequency: ON 0.5 s, OFF 9.5 s
Ambient temperature: Room temperature
Circuit:



Change of operate and release voltage



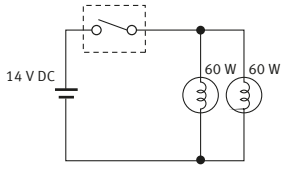
Change of contact resistance



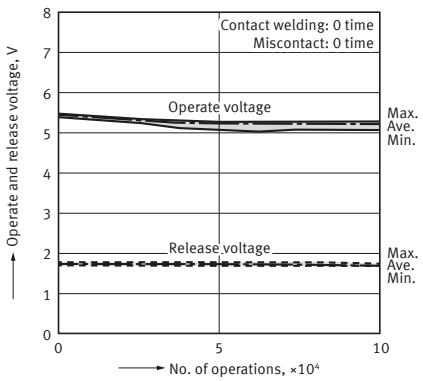
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5-2. Electrical life test (Lamp load)

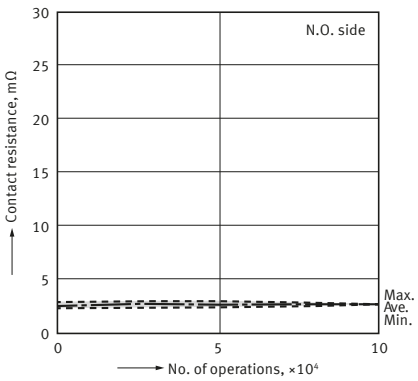
Sample: ACTG1H4, 6 pcs.
Load: inrush: 84 A, steady: 12 A 14 V DC
Operating frequency: ON 1 s, OFF 14 s
Ambient temperature: Room temperature
Circuit:



Change of operate and release voltage



Change of contact resistance



DIMENSIONS (Unit: mm)

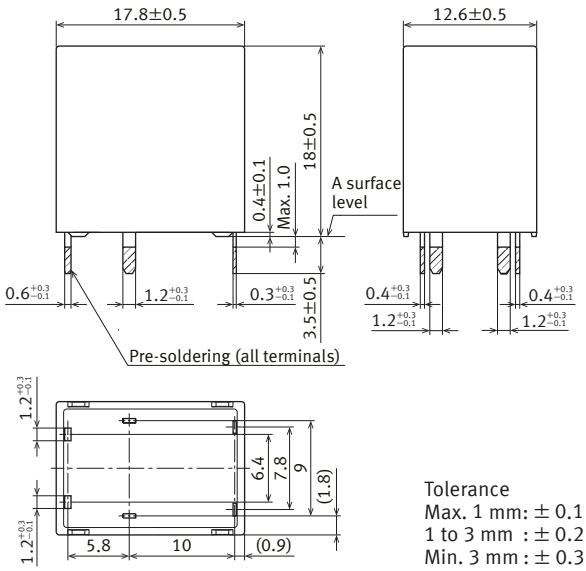
CAD The CAD data of the products with a " CAD " mark can be downloaded from our Website.

■ 1 Form A type

CAD



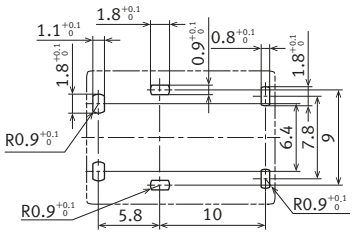
External dimensions



Tolerance
Max. 1 mm: ± 0.1
1 to 3 mm : ± 0.2
Min. 3 mm : ± 0.3

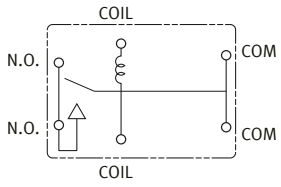
* Dimensions (thickness and width) of terminal is measured after pre-soldering.
Intervals between terminals is measured at A surface level.

PC board pattern
(BOTTOM VIEW)



Tolerance: ± 0.1

Schematic
(BOTTOM VIEW)

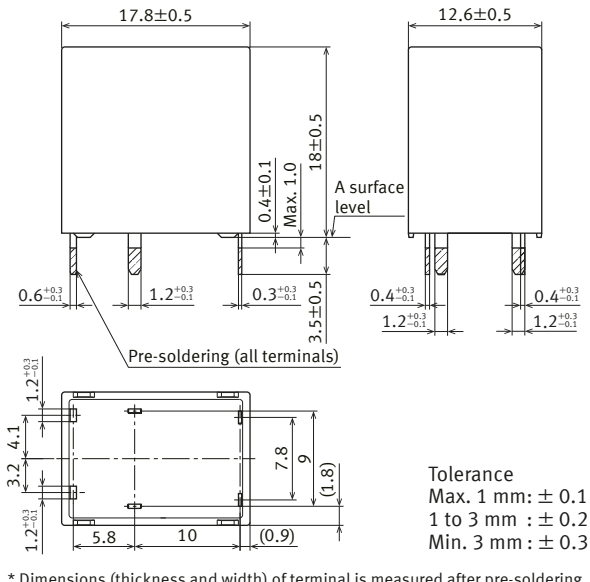


■ 1 Form C type

CAD



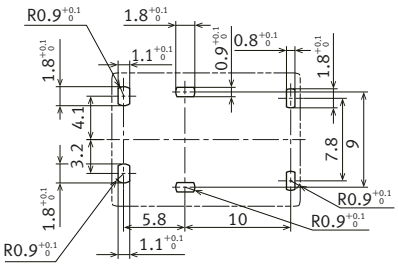
External dimensions



Tolerance
Max. 1 mm: ± 0.1
1 to 3 mm : ± 0.2
Min. 3 mm : ± 0.3

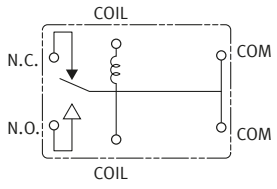
* Dimensions (thickness and width) of terminal is measured after pre-soldering.
Intervals between terminals is measured at A surface level.

PC board pattern
(BOTTOM VIEW)



Tolerance: ± 0.1

Schematic
(BOTTOM VIEW)



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GUIDELINES FOR USAGE

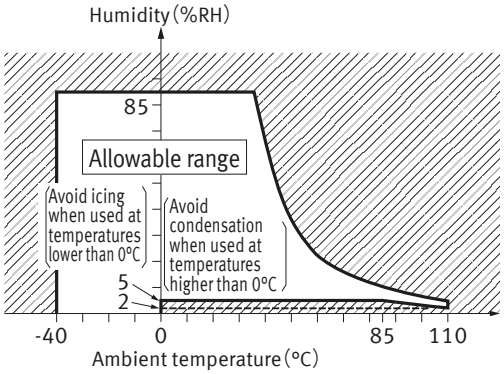
■ For general cautions for use, please refer to the " Automotive Relay Users Guide " .

■ Precautions when using TG relays

● Usage, transport and storage conditions

1) Ambient temperature, humidity, and air pressure during usage, transport of the relay:
   (1) Temperature: −40 to +110 ℃
   (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.

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



2) Water condensation
Water condensation occurs when the ambient temperature drops suddenly from a high temperature and humidity, or the relay is suddenly transferred from a low ambient temperature to a high temperature and humidity. Condensation causes the failures like insulation deterioration, wire disconnection and rust etc. Panasonic Industry does not guarantee the failures caused by condensation. The heat conduction by the equipment may accelerate the cooling of relay itself, and the condensation may occur. Please confirm no condensation in the worst condition of the actual usage. (Special attention should be paid when high temperature heating parts are close to the relay. Also, please consider the condensation may occur inside of the relay.)

3) Icing
Please check the icing when an ambient temperature is lower than 0 ℃. Icing means, the moisture contained in the surrounding environment and inside the relay freezes when the ambient temperature falls below the freezing point. The icing causes the sticking of movable portion, the operation delay and the contact conduction failure etc. Panasonic Industry does not guarantee the failures caused by the icing. The heat conduction by the equipment may accelerate the cooling of relay itself and the icing may occur. Icing condition is changed by ambient environment, please make sure to confirm no icing in the worst condition of the actual usage.

4) Low-temperature, low-humidity atmosphere
The plastic becomes brittle if the relay is exposed to a low temperature, low humidity environment for long periods of time.

Please refer to **" the latest product specifications "** when designing your product.
• Requests to customers:
https://industry.panasonic.com/global/en/salespolicies

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■ Global Sales Network Information: industry.panasonic.com/global/en/salesnetwork/globalnetwork

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