Panasonic
ideas for life

HIGH LOAD RELAY FOR SMART J/B

TG RELAYS (ACTG)

FEATURES

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

TYPICAL APPLICATIONS

Head lamp, Fog lamp, Fan motor, EPS, Defogger, Seat heater, etc.

ORDERING INFORMATION

ACTG ☐ ☐ ☐

Contact arrangement
1: 1 Form A
2: 1 Form C

Heat resistance/Protective construction
H: High heat-resistant type/Sealed type

Coil resistance
3: 225Ω
4: 320Ω

TYPES

Contact arrangement	Nominal coil voltage	Coil resistance	Part No.
			Heat resistance: High heat-resistant type
1 Form A	12V DC	225Ω	ACTG1H3
		320Ω	ACTG1H4
1 Form C		225Ω	ACTG2H3
		320Ω	ACTG2H4

Standard packing; Carton (tube): 40 pcs.; Case: 800 pcs.
Note: Please contact us for details about products other than those above.

RATING

1. Coil data

Nominal coil voltage	Pick-up voltage (at 20°C 68°F)	Drop-out voltage (at 20°C 68°F)	Nominal operating current [±10%] (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Nominal operating power (at 20°C 68°F)	Usable voltage range
12V DC	Max. 6.5V DC (Initial)	Min. 0.8V DC (Initial)	53.3 mA	225Ω	640 mW	10 to 16V DC
	Max. 7.0V DC (Initial)	Min. 0.8V DC (Initial)	37.5 mA	320Ω	450 mW	

Note: Other pick-up voltage types are also available. Please contact us for details.

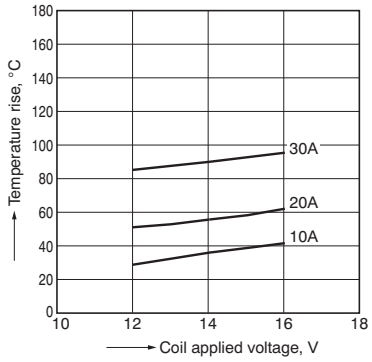
2. Specifications

Characteristics	Item		Specifications
Contact	Arrangement		1 Form A, 1 Form C
	Contact resistance (Initial)		N.O.: Typ3mΩ, N.C.: Typ4mΩ (By voltage drop 6V DC 1A)
	Contact material		Ag alloy (Cadmium free)
Rating	Nominal switching capacity (resistive load)		N.O.: 30A 14V DC, N.C.: 15A 14V DC
	Max. carrying current (12V DC initial)*3		35A for 1 hour (at 20°C 68°F)
	Nominal operating power		640 mW (Pick-up voltage 6.5V DC type)
			450 mW (Pick-up voltage 7.0V DC type)
	Min. switching capacity (resistive load)*1		1A 14V DC
Electrical characteristics	Insulation resistance (Initial)		Min. 100 MΩ (at 500V DC, Measurement at same location as “Breakdown voltage” section.)
	Breakdown voltage (Initial)	Between open contacts	500 Vrms for 1 min. (Detection current: 10mA)
		Between contacts and coil	500 Vrms for 1 min. (Detection current: 10mA)
	Operate time (at nominal voltage)		Max. 10ms (at 20°C 68°F, excluding contact bounce time) (Initial)
	Release time (at nominal voltage)		Max. 10ms (at 20°C 68°F, excluding contact bounce time) (Initial) (without protective element)
Mechanical characteristics	Shock resistance	Functional	Min. 100 m/s² {10G} (Half-wave pulse of sine wave: 11ms; detection time: 10μs)
		Destructive	Min. 1,000 m/s² {100G} (Half-wave pulse of sine wave: 6ms)
	Vibration resistance	Functional	10 Hz to 100 Hz, Min. 44.1 m/s² {4.5G} (Detection time: 10μs)
		Destructive	10 Hz to 500 Hz, Min. 44.1 m/s² {4.5G}, Time of vibration for each direction; X, Y direction: 2 hours, Z direction: 4 hours
Expected life	Mechanical		Min. 10^7 (at 120 cpm)
	Electrical		<Resistive load> Min. 10^5 (at nominal switching capacity, operating frequency: 1s ON, 9s OFF)
			<Motor load> Min. 10^5 (30 A 14V DC at motor lock condition), operating frequency: 0.5s ON, 9.5s OFF
			<Lamp load> Min. 2×10^5 (at 84 A (inrush), 12 A (steady), 14 V DC), Operating frequency: 1s ON, 14s OFF
Conditions	Conditions for operation, transport and storage*2		High heat-resistant type Ambient temperature: –40°C to +110°C –40°F to +230°F, Humidity: 2% R.H. to 85% R.H. (Not freezing and condensing at low temperature)
Mass			Approx. 12 g .42 oz

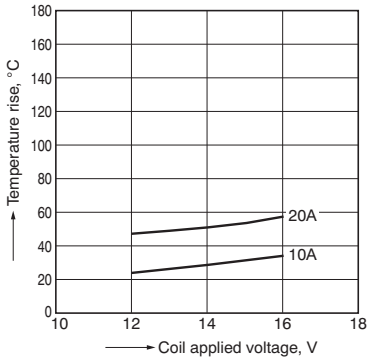
Notes:
*1.This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.
*2.The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value. Refer to “6. Usage, Storage and Transport Conditions“ in AMBIENT ENVIRONMENT section in Relay Technical Information.
Please inquire if you will be using the relay in a high temperature atmosphere (110°C 230°F).
*3.Depends on connection conditions. Also, this does not guarantee repeated switching. We recommend that you confirm operation under actual conditions.

REFERENCE DATA

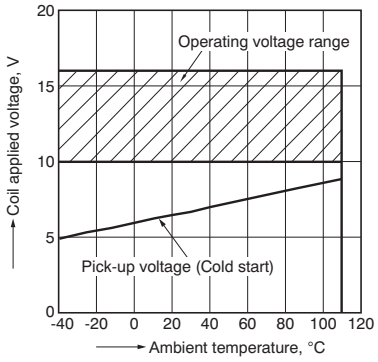
1.-(1) Coil temperature rise (at room temperature)
Sample: ACTG1H4, 3pcs.
Contact carrying current: 10A, 20A, 30A
Ambient temperature: Room temperature



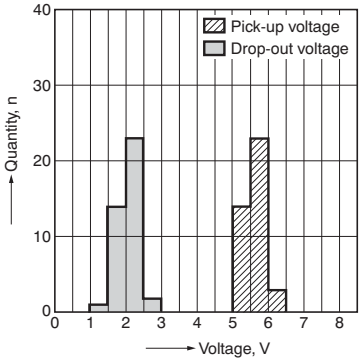
1.-(2) Coil temperature rise (at 110°C 230°F)
Sample: ACTG1H4, 3pcs.
Contact carrying current: 10A, 20A
Ambient temperature: 110°C 230°F



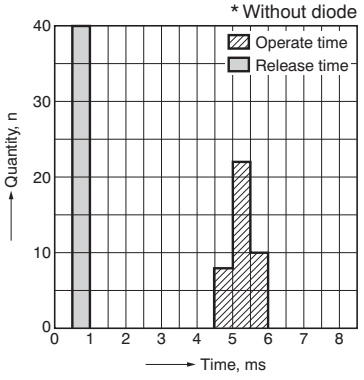
2. Ambient temperature and operating voltage range
Sample: ACTG1H4



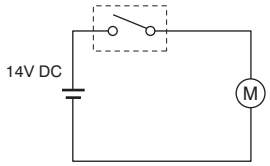
3. Distribution of pick-up and drop-out voltage
Sample: ACTG1H4, 40pcs.



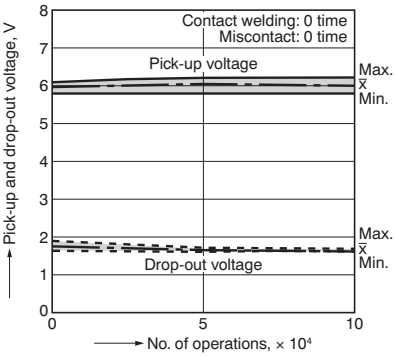
4. Distribution of operate and release time
Sample: ACTG1H4, 40pcs.



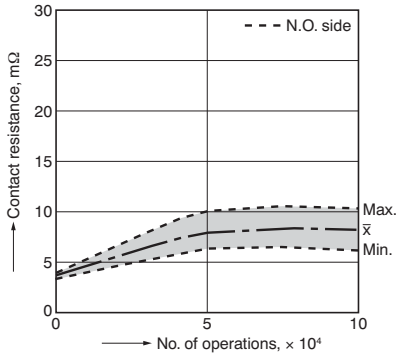
5.-(1) Electrical life test (Motor lock)
Sample: ACTG1H4, 6pcs.
Load: 30A 14V DC
Power window motor actual load (lock condition)
Operating frequency: ON 0.5s, OFF 9.5s
Ambient temperature: Room temperature
Circuit:



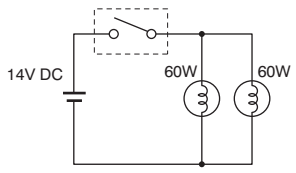
Change of pick-up and drop-out voltage



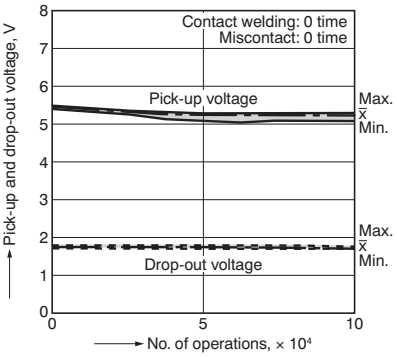
Change of contact resistance



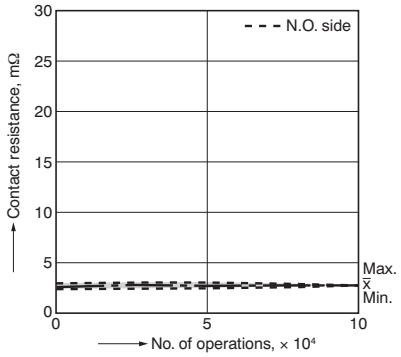
5.-(2) Electrical life test (Lamp load)
Sample: ACTG1H4, 6pcs.
Load: inrush: 84A/steady: 12A 14V DC
Operating frequency: ON 1s, OFF 14s
Ambient temperature: Room temperature
Circuit:



Change of pick-up and drop-out voltage



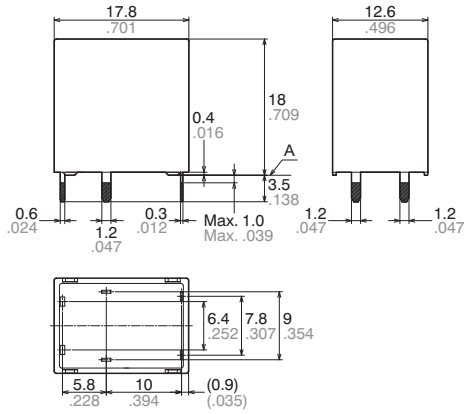
Change of contact resistance



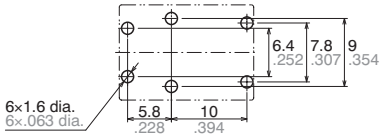
DIMENSIONS (mm inch)

1 Form A type

External dimensions

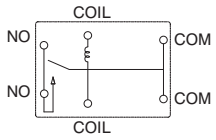


PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Schematic (Bottom view)

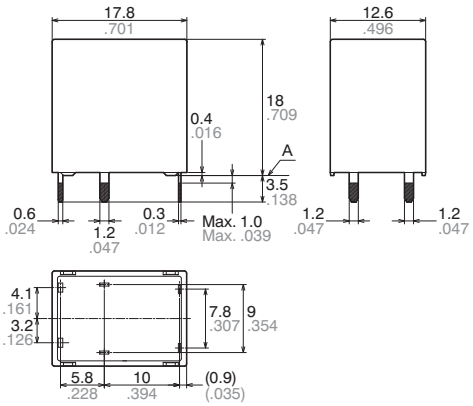


Dimension:	Tolerance
Less than 1mm .039inch:	±0.1 ±.004
Min. 1mm .039inch less than 3mm .118 inch:	±0.2 ±.008
Min. 3mm .118 inch:	±0.3 ±.012

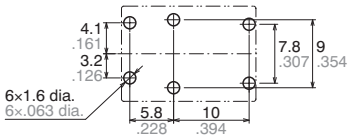
* Dimensions (thickness and width) of terminal is measured before pre-soldering. Intervals between terminals is measured at A surface level.

1 Form C type

External dimensions

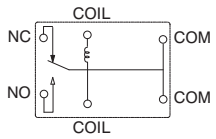


PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Schematic (Bottom view)



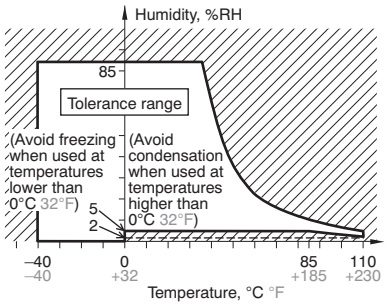
Dimension:	Tolerance
Less than 1mm .039inch:	±0.1 ±.004
Min. 1mm .039inch less than 3mm .118 inch:	±0.2 ±.008
Min. 3mm .118 inch:	±0.3 ±.012

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

NOTES

Usage, transport and storage conditions

1) Ambient temperature, humidity, and atmospheric pressure during usage, transport, and storage of the relay:
(1) Temperature: –40 to +110°C –40 to +230°F (High heat-resistant type)
(2) Humidity: 2 to 85% RH (Avoid freezing and condensation.)
(3) Atmospheric 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)



For Cautions for Use, see Relay Technical Information.