

Automotive Relays

TA RELAYS

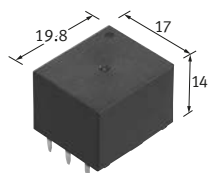
Product Catalog

**IN Your
Future**

TA RELAYS

1 Form C Automotive Quiet Relay

[Protective construction] Sealed



(Unit: mm)

FEATURES

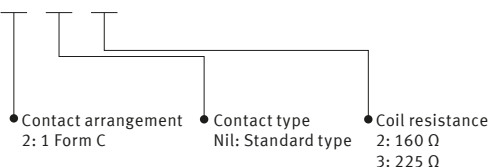
- Designed for low operation noise when mounted on PC board.
- Flat type

TYPICAL APPLICATIONS

- Intermittent wiper, Cruise control, Powered windows, Automatic door locks, Power supply of car stereo and car air-conditioner, Powered seats and Powered sunroof, etc.

ORDERING INFORMATION (PART NO.)

ACTA



TYPES

Contact arrangement	Contact type	Rated coil voltage	Coil resistance	Part No.	Packing	
					Carton (1-tube)	Case
1 Form C	Standard type	12 V DC	160 Ω	ACTA22	25 pcs.	1,000 pcs.
			225 Ω	ACTA23		

RATING

Coil data

Rated coil voltage	Operate voltage (at 20 °C) (Initial)	Release voltage (at 20 °C) (Initial)	Rated operating current [±10 %] (at 20 °C)	Coil resistance [±10 %] (at 20 °C)	Rated operating power (at 20 °C)	Usable voltage range
12 V DC	Max. 6.5 V DC	Min. 0.8 V DC	75 mA	160 Ω	900 mW	10 to 16 V DC
	Max. 7.7 V DC		53.3 mA	225 Ω	640 mW	

Automotive Relays TA RELAYS

Specifications

Item	Specifications	
Contact data	Contact arrangement	1 Form C
	Contact resistance (initial)	Max. 50 mΩ (N.O. side: typ. 5 mΩ, N.C. side: typ. 6 mΩ) (By voltage drop 1 A 6 V DC)
	Contact material	Ag alloy
	Rated switching capacity (resistive)	N.O. side: 20 A 14 V DC, N.C. side: 10 A 14 V DC
	Max. carrying current* ¹	25 A/3 min (Coil applied voltage 12 V DC, at 20 °C)
	Min. switching load (resistive) * ²	1 A 14 V DC (at 20 °C)
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 °C, without contact bounce time)
	Release time (at rated voltage)	Max. 10 ms (at 20 °C, 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 100 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* ⁴	<Resistive load> Min. 10 ⁵ at rated switching capacity operating frequency: 1 s ON, 9 s OFF <Motor load> Min. 10 ⁵ at 25 A 14 V DC at motor lock condition, operating frequency: 0.5 s ON, 9.5 s OFF
Conditions	Conditions for usage, transport and storage* ³	Ambient temperature: -40 to +85 °C, Humidity: 5 to 85 % RH (Avoid icing and condensation)
Weight		Approx. 8 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 ".

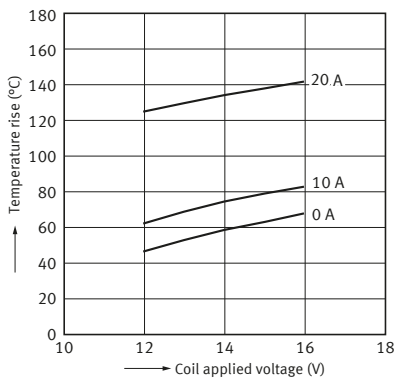
Please inquire our sales representative if you will be using the relay in a high temperature atmosphere (110 °C).

*4: Do not use for lamp loads, electric discharge lamp loads, any other lamp loads and capacitor loads. Please inquire our sales representative for details.

REFERENCE DATA

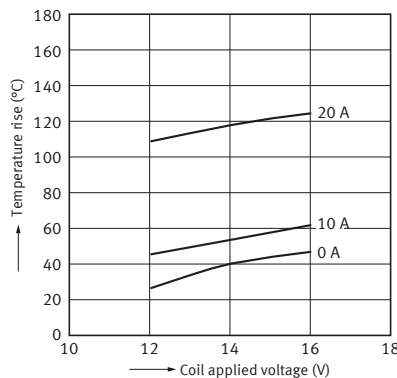
1-1. Coil temperature rise (at room temperature)

Sample: ACTA23, 3 pcs.
Carrying current: 0 A, 10 A, 20 A
Ambient temperature: Room temperature



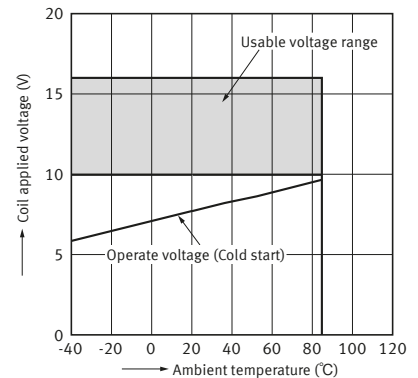
1-2. Coil temperature rise (at 85 °C)

Sample: ACTA23, 3 pcs.
Carrying current: 0 A, 10 A, 20 A
Ambient temperature: 85°C



2. Ambient temperature and usable voltage range

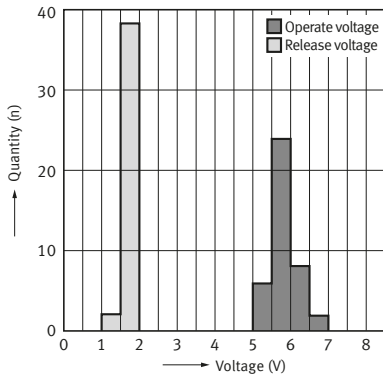
Sample: ACTA23



Automotive Relays TA RELAYS

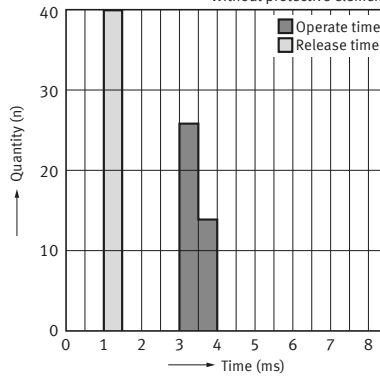
3. Distribution of operate and release voltage

Sample: ACTA23, 40 pcs.



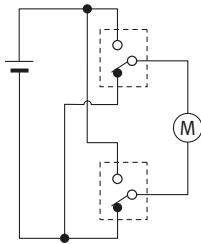
4. Distribution of operate and release time

Sample: ACTA23, 40 pcs. * Without protective element

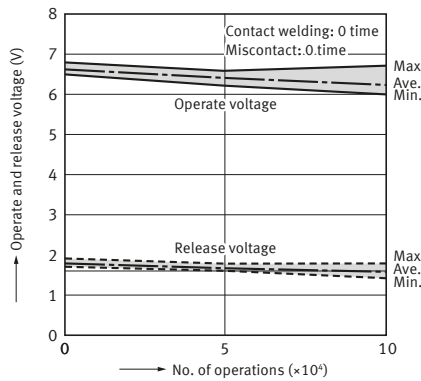


5. Electrical life test (Motor lock)

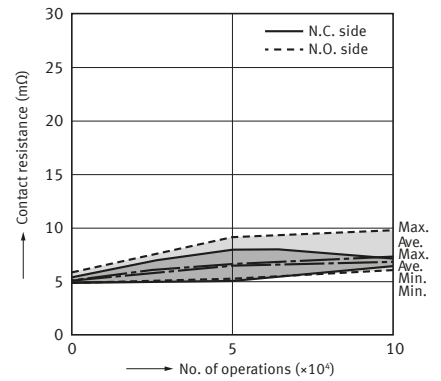
Sample: ACTA23, 3 pcs.
 Load: 25 A 14 V DC
 Power window motor actual load (lock condition)
 Operating frequency: ON 0.5 s, OFF 9.5 s
 Ambient temperature: Room temperature
 Circuit:



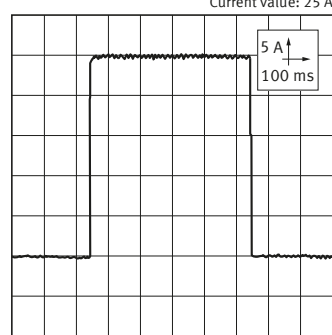
Change of operate and release voltage



Change of contact resistance

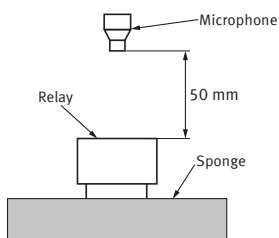


Load current waveform

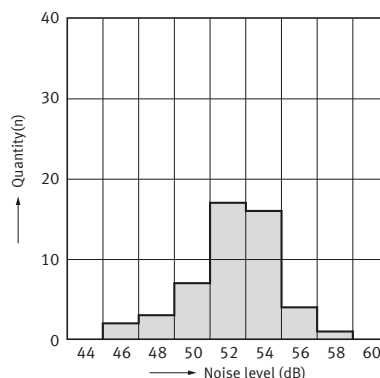


6. Noise pressure characteristics

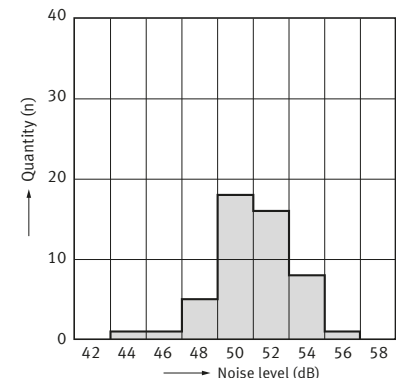
Measuring conditions
 Sample: ACTA23, 50 pcs.
 Equipment setting: "A" weighted, Fast, Max. hold
 Coil voltage: 12 V DC
 Coil connection device: Diode
 Background noise: approx. 35 dB



Operate noise



Release noise



GUIDELINES FOR USAGE

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

■ Precautions when using TA relays

● Usage, transport and storage conditions

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

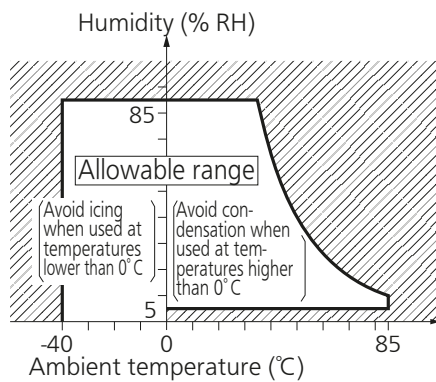
(1) Temperature: -40 to $+85$ °C

(2) Humidity: 5 to 85 % RH (Avoid icing and condensation)

(3) Air pressure: 86 to 106 kPa

Note) 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 Co., Ltd. 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 °C. 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 Co., Ltd. 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>

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

Panasonic
INDUSTRY

Panasonic Industry Co., Ltd.

Electromechanical Control Business Division

■ 1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8506, Japan
industry.panasonic.com