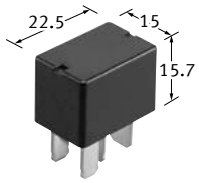
Automotive Relays

RoHS

CV-N RELAYS

Low profile Micro-ISO Automotive Relay

[Protective construction] Sealed



(Unit: mm)

FEATURES

- Low profile automotive relays for Micro-ISO terminal
- Compact and high-capacity load switching

TYPICAL APPLICATIONS

- Headlights, Magnetic clutches, Radiator fans, Blowers, Fog lamps, Tail lights, Heaters, Defoggers and Condenser fans, etc.

ORDERING INFORMATION (PART NO.)

ACVN ☐ ☐ ☐ ☐

- ☐ Contact arrangement
  5: 1 Form A
- ☐ Mounting classification
  1: Micro ISO plug-in type
- ☐ Protective element
  0: None
  2: With resistor inside
- ☐ Rated coil voltage, DC
  12: 12 V

TYPES

Contact arrangement	Rated coil voltage	Part No.	Packing	
			Carton	Case
1 Form A	12 V DC	ACVN51012	50 pcs.	200 pcs.

Note: Please use ACVN**2** to order with resistor inside type. (Asterisks "*" should be filled in from ORDERING INFORMATION.)

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. 7.0 V DC	Min. 0.5 V DC	66.7 mA 74.7 mA (with resistor inside)	180 Ω 160.7 Ω (with resistor inside)	800 mW 900 mW (with resistor inside)	10 to 16 V DC

■ Specifications

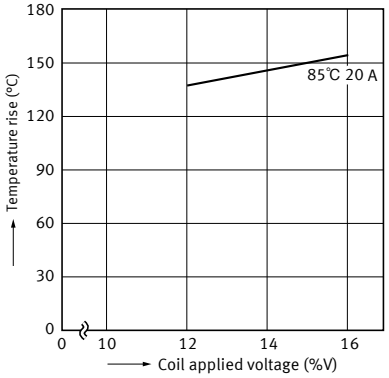
Item		Specifications
Contact data	Contact arrangement	1 Form A
	Contact resistance (initial)	Max. 15 mΩ (typ. 3 mΩ) (By voltage drop 1 A 6 V DC)
	Contact material	Ag alloy
	Rated switching capacity (resistive)	35 A 14 V DC
	Max. carrying current*1	20 A 14 V DC (at 85°C, continuous)
	Min. switching load (resistive)*2	1 A 14 V DC (at 20°C)
	Contact voltage drop (initial)	Max. 0.5 V (by voltage drop 14 V DC 35 A)
Insulated resistance (initial)		Min. 20 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 diode)
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)
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, Z direction: 4 hours
Expected life	Mechanical	Min. 10^6 (at 120 times/min)
	Electrical	<Resistive load> Min. 10^5 at rated switching capacity operating frequency: 2 s ON, 2 s OFF <Motor load> Min. 3 x 10^5 at inrush 84 A, steady 18 A 14 V DC operating frequency: 2 s ON, 5 s OFF <Lamp load> Min. 2 x 10^5 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 +85°C*4, Humidity: 5 to 85% RH (Avoid icing and condensation)
Weight		Approx. 12 g

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”.
*4.Please inquire our sales representative if you will be using the relay in a high temperature atmosphere.

REFERENCE DATA

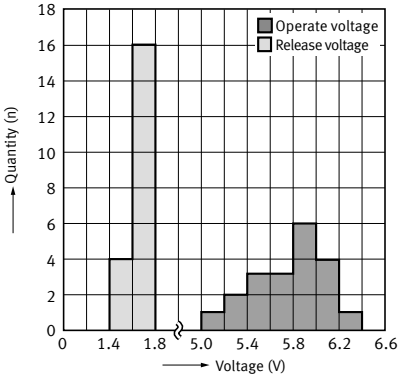
1.Coil temperature rise

Point measured: Inside the coil
Carrying current: 20 A
Coil applied voltage: 12 V, 14 V, 16 V
Ambient temperature: 85°C



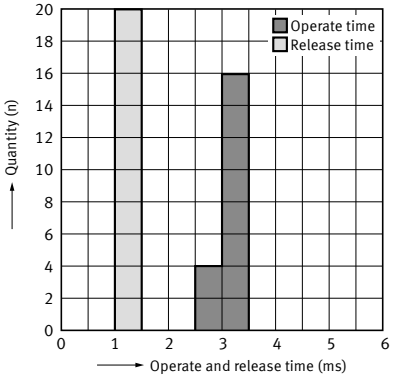
2.Distribution of operate and release voltage

Sample: ACVN51012, 20 pcs

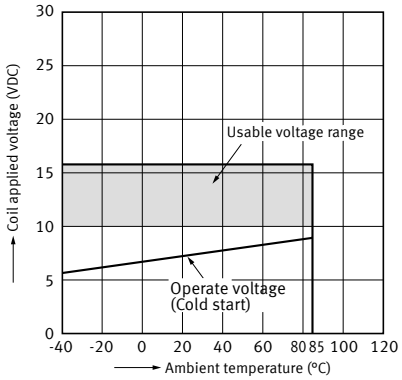


3.Distribution of operate and release time

Sample: ACVN51012, 20 pcs.

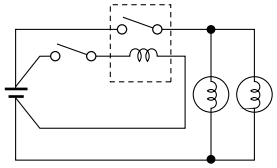


4.Ambient temperature and usable voltage range

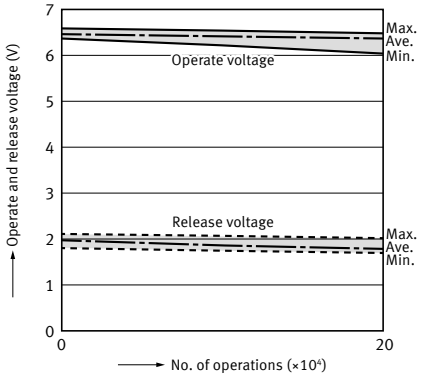


5-1. Electrical life test (Lamp load)

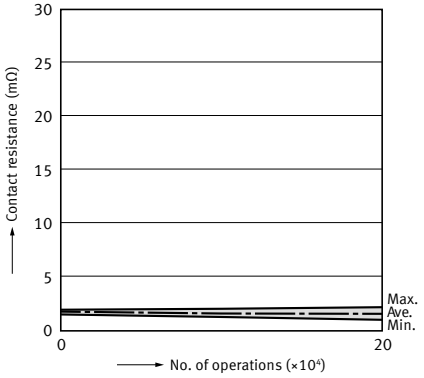
Sample: ACVN51012, 3 pcs.
Load: Inrush: 84 A, Steady: 12 A,
halogen lamp load (60W×2)
Operating frequency: ON 1 s, OFF 14 s
Ambient temperature: 85°C
Circuit:



Change of operate and release voltage

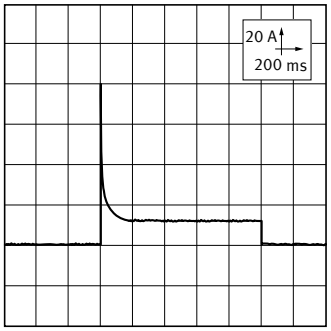


Change of contact resistance



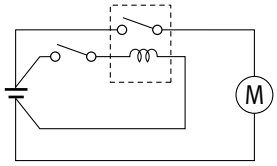
Load current waveform

Load: Inrush current: 84 A, steady current: 12 A

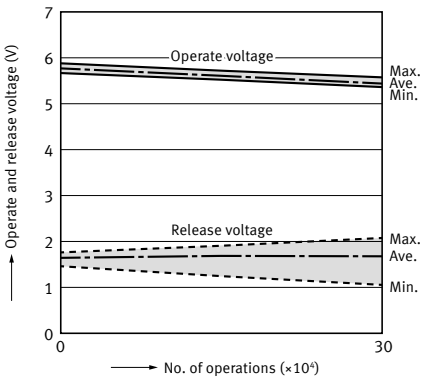


5-2. Electrical life test (Motor load)

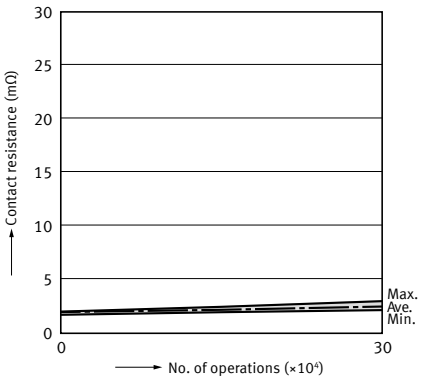
Sample: ACVN51012, 3 pcs.
Load: Inrush: 80 A, Steady: 18 A,
Radiator fan motor (motor free)
Operating frequency: ON 1 s, OFF 4 s
Ambient temperature: 85°C
Circuit:



Change of operate and release voltage

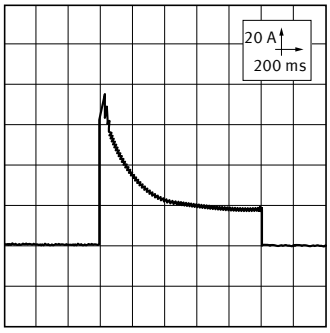


Change of contact resistance



Load current waveform

Load: Inrush current: 80 A, Steady current: 18 A



DIMENSIONS

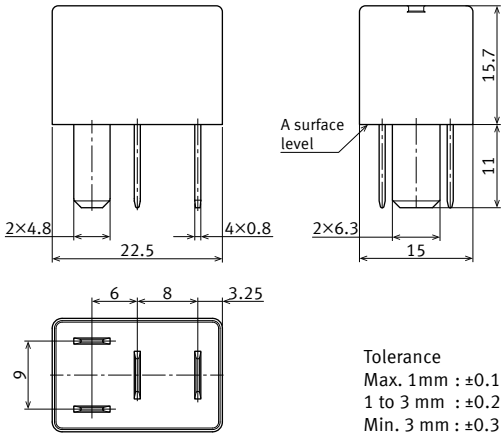
CAD The CAD data of the products with a "CAD" mark can be downloaded from our Website.

Unit: mm

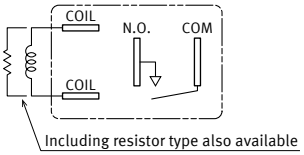
■Micro-ISO plug-in type

CAD

External dimensions



Schematic (BOTTOM VIEW)



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

Note: Intervals between terminals is measured at A surface level.

GUIDELINES FOR USAGE

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

Please refer to **"the latest product specifications"** when designing your product.
•Requests to customers:
https://industrial.panasonic.com/ac/e/salespolicies/

Please contact .....

Panasonic Corporation
Electromechanical Control Business Division
■1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8506, Japan
industral.panasonic.com/ac/e/

Panasonic®

ASCTB297E 202112