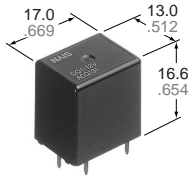


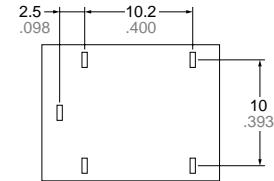
### FEATURES

- **Quiet**  
Noise has been reduced by approximately 20 dB, using our own silencing design.
- **Less space required**  
Measuring only 17(L)×13(W)mm (.669(L)×.512(W) inches), this product ranks first among automotive quiet relays in terms of saving space.
- **Sealed construction**

- **Next-generation standard terminal pitch employed**  
The terminal array used is identical to that used in JJM relays.



mm inch



### SPECIFICATIONS

#### Contact

Arrangement	1 Form C	
Contact material	Silver alloy	
Initial contact resistance, max. (By voltage drop 6 V DC 1A)	100 mΩ	
Contact voltage drop, max.	0.2V (at 10 A switching)	
Rating	Nominal switching capacity	N.O.: 20 A 14 V DC N.C.: 10 A 14 V DC
	Max. carrying current	35 A for 2 minutes, 25 A for 1 hour (12 V, at 20°C 68°F) 30 A for 2 minutes, 20 A for 1 hour (12 V, at 85°C 185°F)
Expected life (min. operations)	Mechanical (at 120 cpm)	Min. 10 <sup>7</sup>
	Electrical	Resistive load: Min. 10 <sup>5</sup> *1 Motor load: Min. 3×10 <sup>5</sup> *2

#### Coil

Nominal operating power	640 mW
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#### Remarks

- \* Specifications will vary with foreign standards certification ratings.
- \*1 At nominal switching capacity, operating frequency: 1s ON, 9s OFF
- \*2 N.O.: at 5 A (steady), 30 A (inrush)/N.C.: at 20 A (brake) 14 V DC, operating frequency: 1s ON, 2s OFF
- \*3 Measurement at same location as "Initial breakdown voltage" section
- \*4 Detection current: 10mA
- \*5 Excluding contact bounce time
- \*6 Half-wave pulse of sine wave: 11ms; detection: 10μs
- \*7 Half-wave pulse of sine wave: 6ms
- \*8 Detection time: 10μs

#### Characteristics

Max. operating speed (at nominal switching capacity)	6 cpm	
Initial insulation resistance*3	Min. 100 MΩ (at 500 V DC)	
Initial breakdown voltage*4	Between open contacts	500 Vrms for 1 min.
	Between contacts and coil	500 Vrms for 1 min.
Operate time*5 (at nominal voltage)(at 20°C68°F)	Max. 10 ms (initial)	
Release time (without diode)*5 (at nominal voltage)(at 20°C68°F)	Max. 10 ms (initial)	
Shock resistance	Functional*6	Min. 100 m/s <sup>2</sup> {10G}
	Destructive*7	Min. 1,000 m/s <sup>2</sup> {100G}
Vibration resistance	Functional*8	10 to 100 Hz, Min. 44.1 m/s <sup>2</sup> {4.5G}
	Destructive*9	10 to 500 Hz, Min. 44.1 m/s <sup>2</sup> {4.5G}
Conditions for operation, transport and storage*10 (Not freezing and condensing at low temperature)	Ambient temperature	-40 to +85°C -40 to +185°F
	Humidity	5 to 85% R.H.
Unit weight	Approx. 6.5g .23 oz	

- \*9 Time of vibration for each direction;  
X, Y direction: 2 hours  
Z direction: 4 hours



- \*10 Refer to 5. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT (Page 61)

### TYPICAL APPLICATIONS

- Intermittent wiper
- Cruise control
- Power windows
- Auto door lock
- Car stereo
- Car air-conditioner

### ORDERING INFORMATION

Ex. CQ 1 - 12 V

Contact arrangement	Coil voltage(DC)
1 Form C	12 V

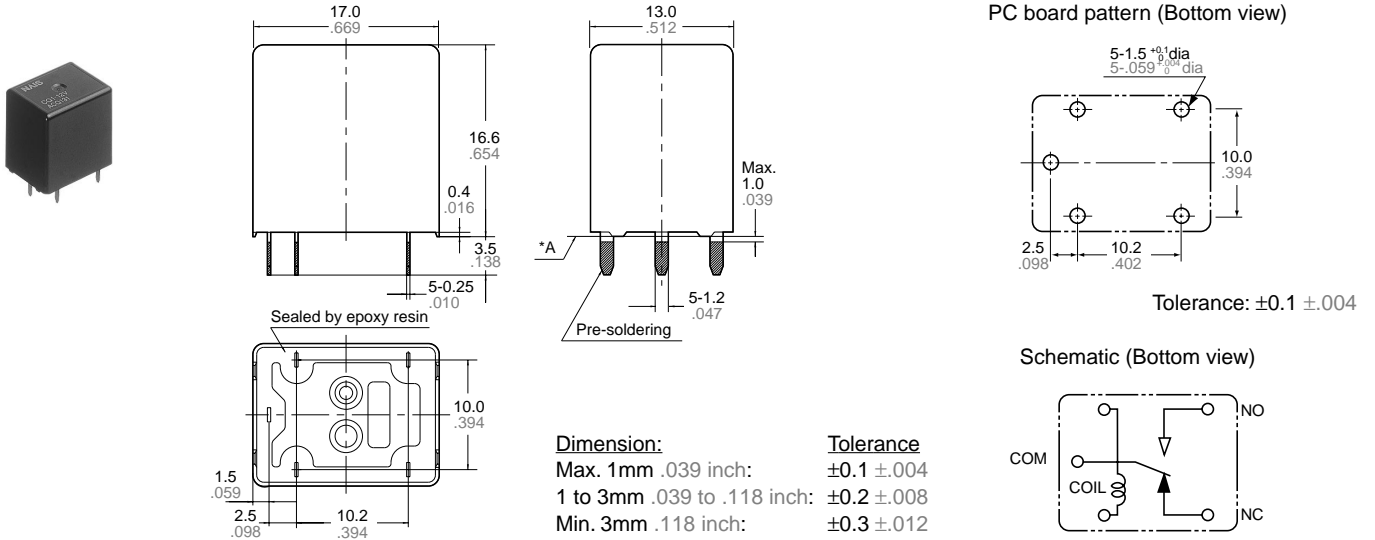
Standard packing: Carton(tube package) 40pcs. Case: 800pcs.

## TYPES AND COIL DATA (at 20°C 68°F)

Part No.	Nominal voltage, V DC	Pick-up voltage, V DC (max.)	Drop-out voltage, V DC (min.)	Coil resistance, Ω (±10%)	Nominal operating current, mA (±10%)	Nominal operating power, mW	Usable voltage range, V DC
CQ1-12V	12	(Initial) 7.2	(Initial) 1.0	225	53.3	640	10 to 16

## DIMENSIONS

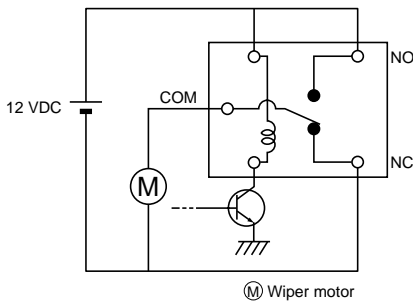
mm inch



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

## EXAMPLE OF CIRCUIT

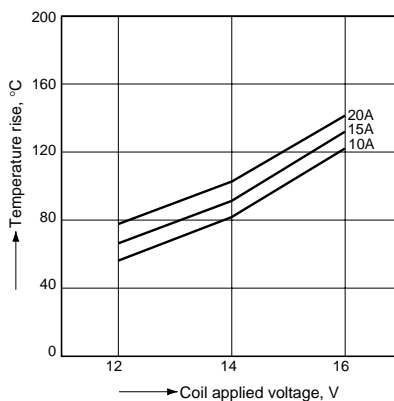
Control circuit for intermittent wiper motor



## REFERENCE DATA

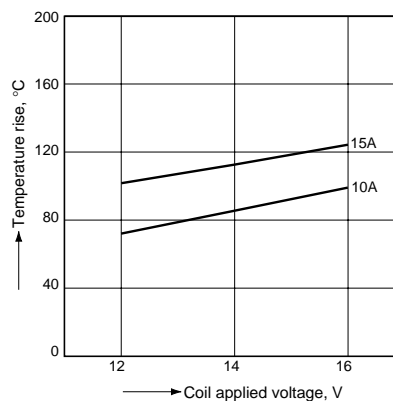
1-(1). Coil temperature rise (at 20°C 68°F)

Sample: CQ1-12V, 5pcs  
 Contact carrying current: 10A, 15A, 20A



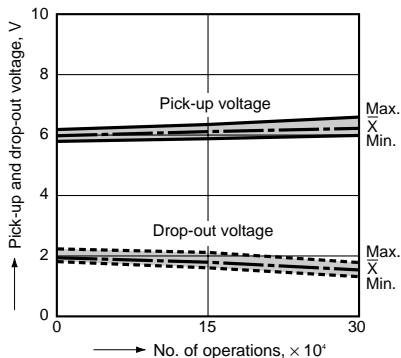
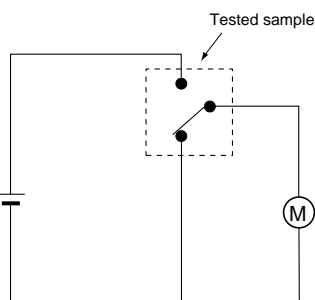
1-(2). Coil temperature rise (at 85°C 185°F)

Sample: CQ1-12V, 5pcs  
 Contact carrying current: 10A, 15A



2. Electrical life test (Motor load)

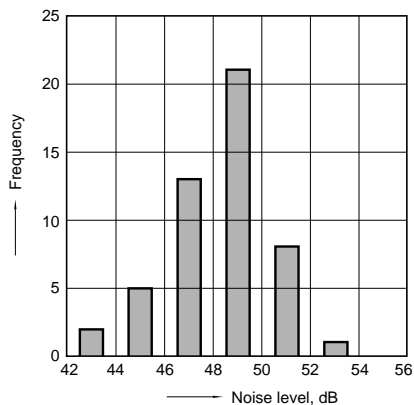
Tested sample: CQ1-12 V, 3pcs.  
 Load: 5A steady, Inrush 30A, 14V DC  
 Operating frequency: ON 1s, OFF 2s



Contact welding: 0 time  
 Miscontact: 0 time

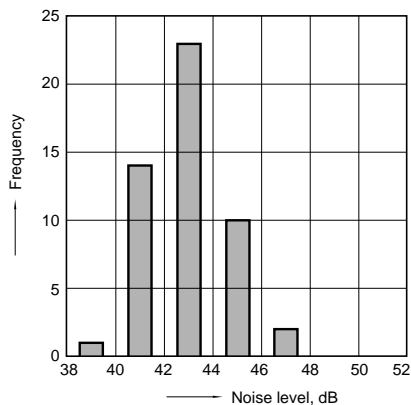
3-(1). Operation noise distribution

When operate



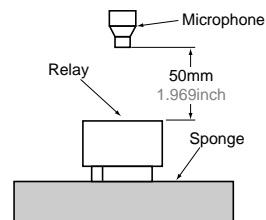
3-(2). Operation noise distribution

When release



Measuring conditions

Tested sample: CQ1-12 V, 50 pcs.  
 Equipment setting: "A" weighted, Fast, Max. hold  
 Coil voltage: 12V DC  
 Coil connection device: Diode  
 Background noise: Approx. 20dB



**For Cautions for use, see Relay Technical Information (Page 48 to 76).**