Panasonic
ideas for life

AUTOMOTIVE RELAY FOR FAILSAFE CIRCUITS IN HIGH OUTPUT MOTORS (EPS)

CW RELAYS (ACW)

Compliance with RoHS Directive

FEATURES

• Ideal relay for high output 3-phase motors (EPS)
2-path cutoff (2 Form A) using single coil for 3-phase motors
• High current cutoff
High current cutoff performance (12V) using 2-point cutoff configuration
• High carrying current performance
High capacity achieved through use of high conductivity material
• Highly heat resistance properties
High heat resistance (at 125°C 257°F) through use of high heat resistance plastic

TYPICAL APPLICATIONS

• To 3-phase motor EPS unit (for failsafe circuit)

ORDERING INFORMATION

ACW [2] [ ]

Contact arrangement
2: 2 Form A

Coil voltage (DC)
12: 12 V

TYPES

Contact arrangement	Coil voltage	Part No.
2 Form A	12 V DC	ACW212

Standard packing; Carton: 40 pcs.; Case: 160 pcs.

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. 6.2 V DC (Initial)	Min. 0.5 V DC (Initial)	117 mA	103Ω	1.4 W	10 to 16V DC

CW (ACW)

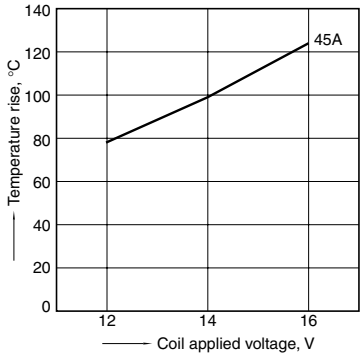
2. Specifications

Characteristics	Item		Specifications
Contact	Arrangement		2 Form A
	Contact resistance (Initial)		Max. 50 mΩ (By voltage drop 6V DC 1A)
	Contact material		Ag alloy (Cadmium free)
Rating	Nominal switching capacity (at currying current)		120 A 14V DC for 5 seconds (at 20°C 68°F)
			70 A 14V DC for 1 minute (at 85°C 185°F)
			45 A 14V DC for continuous (at 85°C 185°F)
	Nominal operating power		1.4 W
	Min. switching capacity (resistive load)		1 A 14V DC (at 20°C 68°F)
Electrical characteristics	Insulation resistance (Initial)		Min. 100 MΩ (at 500V DC)
	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. 20ms (at 20°C 68°F, excluding contact bounce time) (Initial)
	Release time (at nominal voltage)		Max. 20ms (at 20°C 68°F) (Initial) (without protective element)
Mechanical characteristics	Shock resistance	Functional	Min. 200 m/s² {approx. 20G} (Half-wave pulse of sine wave: 11ms; detection time: 10μs) (12 V DC applied to the coil, at 20°C 68°F)
		Destructive	Min. 1,000 m/s² {approx. 100G} (Half-wave pulse of sine wave: 6ms)
	Vibration resistance	Functional	10 Hz to 500 Hz, Min. 44.1 m/s² {approx. 4.5G} (Detection time: 10μs) (12 V DC applied to the coil, at 20°C 68°F)
		Destructive	10 Hz to 500 Hz, Min. 44.1 m/s² {approx. 4.5G}, Time of vibration for each direction; X, Y, Z direction: 4 hours
Expected life	Mechanical		Min. 2×10^5 (at 60 cpm)
	Electrical (at cut off only)		200 A 14V DC (resistive load), Min. 3 times (without diode)
Conditions	Conditions for operation, transport and storage*		Ambient temp: –40°C to +125°C –40°F to +257°F, Humidity: 5% R.H. to 85% R.H. (Not freezing and condensing at low temperature)
Mass			Approx. 26 g .92 oz

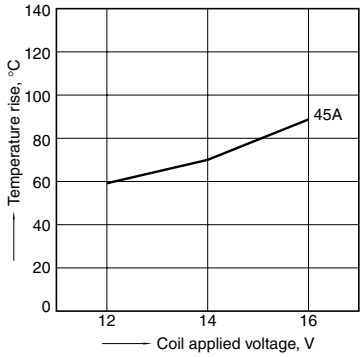
Note: * The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value. Refer to Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT.

REFERENCE DATA

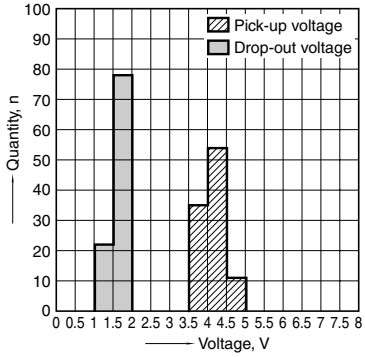
1.-(1) Coil temperature rise (25°C 77°F)
Sample: ACW212, 3pcs
Point measured: Inside the coil
Contact carrying current: 45A
Ambient temperature: 25°C 77°F



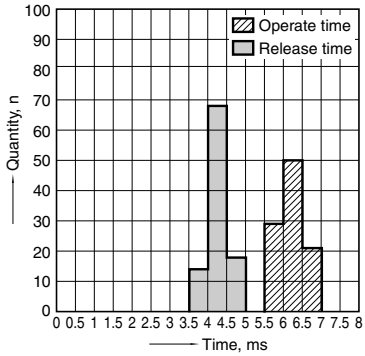
1.-(1) Coil temperature rise (85°C 185°F)
Sample: ACW212, 3pcs
Point measured: Inside the coil
Contact carrying current: 45A
Ambient temperature: 85°C 185°F



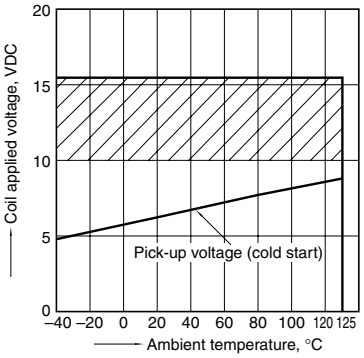
2. Distribution of pick-up and drop-out voltage
Sample: ACW212, 100pcs



3. Distribution of operate and release time
Sample: ACW212, 100pcs.



4. Ambient temperature and operating voltage range

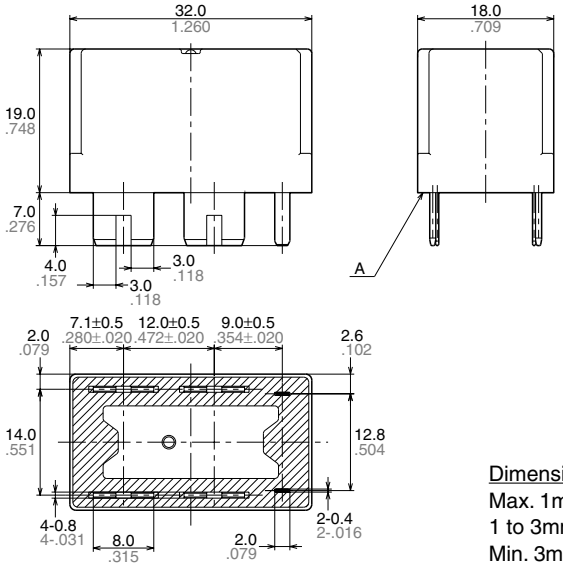


DIMENSIONS (mm inch)

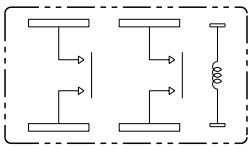
The CAD data of the products with a **CAD Data** mark can be downloaded from: http://panasonic-electric-works.net/ac

CAD Data

External dimensions



Schematic (Bottom view)



Dimension:	Tolerance
Max. 1mm .039 inch:	±0.1 ±.004
1 to 3mm .039 to .118 inch:	±0.2 ±.008
Min. 3mm .118 inch:	±0.3 ±.012

* Intervals between terminals is measured at A surface level.

For Cautions for Use, see Relay Technical Information.