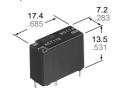
NAIS

ULTRA SMALL AUTOMOTIVE RELAY

CT-RELAYS



Twin type (8 terminals)



mm inch Slim 1c type

FEATURES

• Ultra small size

Twin type: 17.4(L)×14.0(W)×13.5(H)mm

.685(L)×.551(W)×.531(H)inch

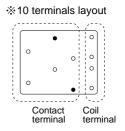
Slim 1c type: $17.4(L)\times7.2(W)\times13.5(H)$ mm

 $.685(L)\times.283(W)\times.531(H) inch$

• Twin (1 Form C × 2)

Forward/reverse motor control is possible with a single relay.

Simple footprint enables ease of PC board layout



∘ = 8 terminals

SPECIFICATIONS

Contact

Arrangement		1 Form C×2 (H bridge), 1 Form C			
Contact material		Silver alloy			
Initial contact res (By voltage drop	,	100mΩ			
Initial contact vol	tage drop, i	0.2 V (at 10 A switching)			
Rating	Nominal s capacity	witching	N.O.: 20 A 14 V DC N.C.: 10 A 14 V DC		
	Max. carry	ring current	35 A for 2 minutes, 25 A for 1 hour (14 V, at 20°C 68°F)		
Expected life (min. operation)	Mechanica	al (at 120 cpm)	Min. 10 ⁷		
	Electrical	Resistive load	Min. 10 ^{5*1}		
		Motor load	Min. 2×105*2		
		WIOLOT IOAU	Min. 10 ^{5*3}		
Coil					
Nominal operating power			800 mW		

Remarks

- * Specifications will vary with foreigh standards certification ratings.
- *1 At nominal switching capacity, operating frequency: 1s ON, 9s OFF
- *2 N.O.: at 5 A (steady), 25 A (inrush)/N.C.: at 20 A (brake) 14 V DC, operating frequency: 0.5s ON, 9.5s OFF
- 3 At 25A 14 V DC (Motor lock), operating frequency: 0.5s ON, 9.5s OFF
- 4 Measurement at same location as "Initial breakdown voltage " section
- 5 Detection current: 10mA
- *6 Excluding contact bounce time
- 7 Half-wave pulse of sine wave: 11ms; detection: 10μs
- *8 Half-wave pulse of sine wave: 6ms
- *9 Detection time: 10μs

Characteristics

Citalacteris	olics					
Max. operating speed (at nominal switching capacity)				6 cpm		
Initial insulation resistance*4				Min. 100 MΩ (at 500 V DC)		
Initial breakdown voltage*5	Between open contacts			500 Vrms for 1 min.		
	Between contacts and coil			500 Vrms for 1 min.		
Operate time*6 (at nominal voltage) (at 20°C 68° F)			0°C 68° F)	Max. 10ms (Initial)		
Release time (without diode)*6 (at nominal voltage) (at 20°C 68° F)				Max. 10ms (Initial)		
Shock resistance		Functional*7		Min. 100 m/s ² {10G}		
		Destructive*8		Min. 1,000 m/s ² {100G}		
Vibration resistance		Functional*9		10 to 100 Hz, Min. 44.1m/s² {4.5G}		
		Destructive*10		10 to 500 Hz, Min. 44.1m/s² {4.5G}		
Conditions for operation, transport and storage*11 (Not freezing and condensing at low temperature)		Ambient temp	-40°C to +85°C -40°F to +185°F			
			Humidity	5 to 85% R.H.		
Unit weight				Approx. 8.0g .28oz (Twin type) Approx. 4.0g .14oz (Slim 1c type		
*10Time of vib	ration f		مرد المراد المراد			

^{*10}Time of vibration for each direction;



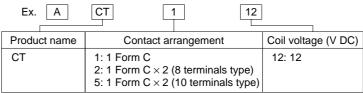
X, Y, direction: 2 hours Z direction: 4 hours

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

TYPICAL APPLICATIONS

- Power windows
- Auto door lock
- Power sunroof
- Electrically powered mirrors

ORDERING INFORMATION



Standard packing; 1 Form C: Carton(tube package) 30pcs. Case 1,500pcs. 1 Form C × 2: Carton(tube package) 30pcs. Case 900pcs.

TYPES AND COIL DATA (at 20°C 68°F)

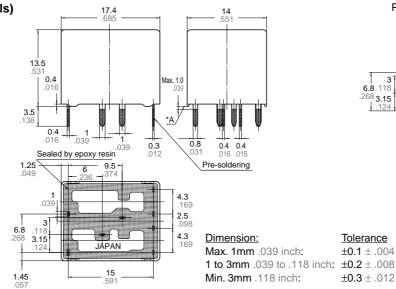
Contact arrangement	Part No.	Nominal voltage, V DC	Pick-up voltage, V DC (max.)	Drop-out voltage, V DC (min.)	Coil resistance, Ω (±10%)	Nominal operating current, mA (±10%)	Nominal operating power, mW	Usable voltage range, V DC
1c	ACT112	12	(Initial) 7.2	(Initial) 1.0	180	53.3	800	10 to 16
1c × 2 (8 terminals type)	ACT212	12	(Initial) 7.2	(Initial) 1.0	180	53.3	800	10 to 16
1c × 2 (10 terminals type)	ACT512	12	(Initial) 7.2	(Initial) 1.0	180	53.3	800	10 to 16

DIMENSIONS

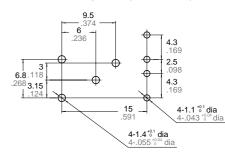
mm inch

1. Twin type (8 terminals)



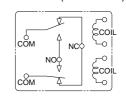


PC board pattern (Bottom view)



Tolerance: ±0.1±.004

Schematic (Bottom view)



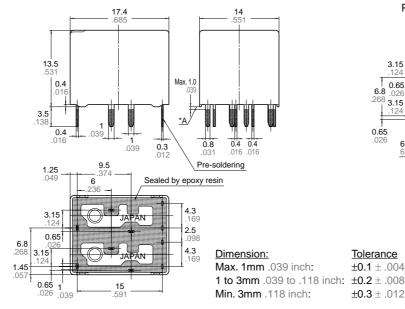
Tolerance

±0.1 ± .004

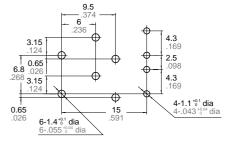
±0.3 ± .012

2. Twin type (10 terminals)



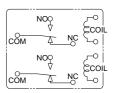


PC board pattern (Bottom view)



Tolerance: ±0.1±.004

Schematic (Bottom view)

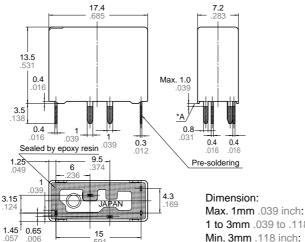


^{*} Dimensions (thickness and width) of terminal specified in this catalog is measured before pre-soldering. Intervals between terminals is measured at A surface level.

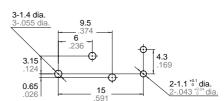
^{*} Dimensions (thickness and width) of terminal specified in this catalog is measured before pre-soldering. Intervals between terminals is measured at A surface level.

3. Slim 1c type mm inch





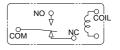
PC board pattern (Bottom view)



Tolerance: ±0.1±.004

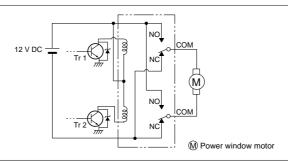
Schematic (Bottom view)

Tolerance ±0.1 ± .004 1 to 3mm .039 to .118 inch: $\pm 0.2 \pm .008$ ±0.3 ± .012



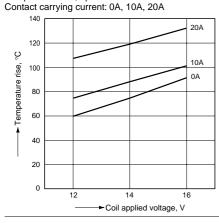
EXAMPLE OF CIRCUIT

Forward/reverse control circuits of DC motor for power windows

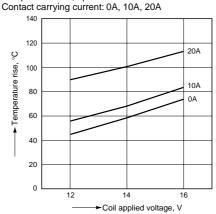


REFERENCE DATA

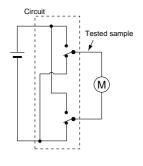
1-(1). Coil temperature rise (at 20°C 68°F) Sample: ACT212, 3pcs

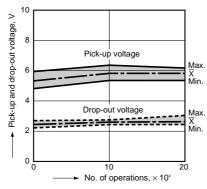


1-(2). Coil temperature rise (at 85°C 185°F) Sample: ACT212, 3pcs

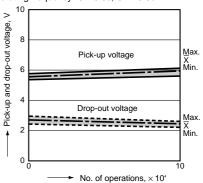


2-(1). Electrical life test (Motor load) Tested sample: ACT212, 3pcs. Load: 5A steady, Inrush 25A, 14V DC Operating frequency: ON 0.5s, OFF 9.5s





2-(2). Electrical life test (Motor lock) Tested sample: ACT212, 3pcs. Load: 25A, 14V DC Operating frequency: ON 0.5s, OFF 9.5s



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

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