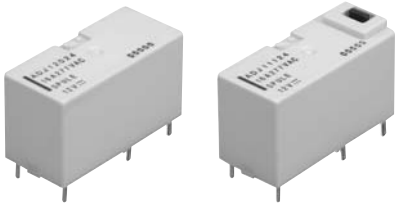
Panasonic
ideas for life

1-pole/2-pole 16A polarized power relays

DJ RELAYS (ADJ)



Without test button With test button

FEATURES

1. **Variety of contact arrangements**
   Wide lineup of 1 Form C, 1 Form A, 1 Form B, 2 Form C, 2 Form A, 2 Form B, 1 Form A 1 Form B.
2. **Latching operation**
   Latching via a polarized magnetic circuit structure allows remote operation and lower energy consumption
3. **Compact with high capacity**
   16A (1-pole type) contact rating in a compact 29×13×16.5 mm (L×W×H) size.
4. **Low power consumption**
   1 coil latching: 150mW
   2 coil latching, single side stable: 250mW
5. **High insulation**
   Both clearance and creepage distance between coil and contact are at 8 mm min.
6. **With operation verification function**
   A test button (manual lever) type to facilitate circuit checks is also available (1 Form C, 1 Form A, 1 Form B types only).

TYPICAL APPLICATIONS

1. **FA equipment (brake circuits of industrial machine and robots, etc.)**
2. **Electric power devices (remote surveillance devices, etc.)**
3. **Household appliance networks (Motor control and lighting control, etc.)**
4. **Time switches**

ORDERING INFORMATION

ADJ ☐ ☐ ☐ ☐ ☐

Contact arrangement
1: 1 Form C
2: 1 Form A
3: 1 Form B
4: 1 Form A 1 Form B
5: 2 Form C
6: 2 Form A
7: 2 Form B

Operating function and protective construction
1: 1 coil latching, Flux-resistant type
2: 1 coil latching, Sealed type
3: 2 coil latching, Flux-resistant type
4: 2 coil latching, Sealed type
5: Single side stable, Flux-resistant type
6: Single side stable, Sealed type

Auxiliary function
0: Without a test button
1: With a test button

Coil voltage (DC)
05: 5 V, 06: 6 V, 12: 12 V, 24: 24 V, 48: 48 V

TYPES

1. Without a test button

1) Flux-resistant type

Contact arrangement	Nominal coil voltage	Part No.		
		Single side stable type	1 coil latching type	2 coil latching type
1 Form C	5V DC	ADJ15005	ADJ11005	ADJ13005
	6V DC	ADJ15006	ADJ11006	ADJ13006
	12V DC	ADJ15012	ADJ11012	ADJ13012
	24V DC	ADJ15024	ADJ11024	ADJ13024
	48V DC	ADJ15048	ADJ11048	ADJ13048
1 Form A	5V DC	ADJ25005	ADJ21005	ADJ23005
	6V DC	ADJ25006	ADJ21006	ADJ23006
	12V DC	ADJ25012	ADJ21012	ADJ23012
	24V DC	ADJ25024	ADJ21024	ADJ23024
	48V DC	ADJ25048	ADJ21048	ADJ23048
1 Form B	5V DC	ADJ35005	Please use 1 Form A.	Please use 1 Form A.
	6V DC	ADJ35006		
	12V DC	ADJ35012		
	24V DC	ADJ35024		
	48V DC	ADJ35048		
1 Form A 1 Form B	5V DC	ADJ45005	ADJ41005	ADJ43005
	6V DC	ADJ45006	ADJ41006	ADJ43006
	12V DC	ADJ45012	ADJ41012	ADJ43012
	24V DC	ADJ45024	ADJ41024	ADJ43024
	48V DC	ADJ45048	ADJ41048	ADJ43048
2 Form C	5V DC	ADJ55005	ADJ51005	ADJ53005
	6V DC	ADJ55006	ADJ51006	ADJ53006
	12V DC	ADJ55012	ADJ51012	ADJ53012
	24V DC	ADJ55024	ADJ51024	ADJ53024
	48V DC	ADJ55048	ADJ51048	ADJ53048
2 Form A	5V DC	ADJ65005	ADJ61005	ADJ63005
	6V DC	ADJ65006	ADJ61006	ADJ63006
	12V DC	ADJ65012	ADJ61012	ADJ63012
	24V DC	ADJ65024	ADJ61024	ADJ63024
	48V DC	ADJ65048	ADJ61048	ADJ63048
2 Form B	5V DC	ADJ75005	Please use 2 Form A.	Please use 2 Form A.
	6V DC	ADJ75006		
	12V DC	ADJ75012		
	24V DC	ADJ75024		
	48V DC	ADJ75048		

Standard packing: Carton: 100 pcs.; Case: 500 pcs.

2) Sealed type

Contact arrangement	Nominal coil voltage	Part No.		
		Single side stable type	1 coil latching type	2 coil latching type
1 Form C	5V DC	ADJ16005	ADJ12005	ADJ14005
	6V DC	ADJ16006	ADJ12006	ADJ14006
	12V DC	ADJ16012	ADJ12012	ADJ14012
	24V DC	ADJ16024	ADJ12024	ADJ14024
	48V DC	ADJ16048	ADJ12048	ADJ14048
1 Form A	5V DC	ADJ26005	ADJ22005	ADJ24005
	6V DC	ADJ26006	ADJ22006	ADJ24006
	12V DC	ADJ26012	ADJ22012	ADJ24012
	24V DC	ADJ26024	ADJ22024	ADJ24024
	48V DC	ADJ26048	ADJ22048	ADJ24048
1 Form B	5V DC	ADJ36005	Please use 1 Form A.	Please use 1 Form A.
	6V DC	ADJ36006		
	12V DC	ADJ36012		
	24V DC	ADJ36024		
	48V DC	ADJ36048		
1 Form A 1 Form B	5V DC	ADJ46005	ADJ42005	ADJ44005
	6V DC	ADJ46006	ADJ42006	ADJ44006
	12V DC	ADJ46012	ADJ42012	ADJ44012
	24V DC	ADJ46024	ADJ42024	ADJ44024
	48V DC	ADJ46048	ADJ42048	ADJ44048
2 Form C	5V DC	ADJ56005	ADJ52005	ADJ54005
	6V DC	ADJ56006	ADJ52006	ADJ54006
	12V DC	ADJ56012	ADJ52012	ADJ54012
	24V DC	ADJ56024	ADJ52024	ADJ54024
	48V DC	ADJ56048	ADJ52048	ADJ54048
2 Form A	5V DC	ADJ66005	ADJ62005	ADJ64005
	6V DC	ADJ66006	ADJ62006	ADJ64006
	12V DC	ADJ66012	ADJ62012	ADJ64012
	24V DC	ADJ66024	ADJ62024	ADJ64024
	48V DC	ADJ66048	ADJ62048	ADJ64048
2 Form B	5V DC	ADJ76005	Please use 2 Form A.	Please use 2 Form A.
	6V DC	ADJ76006		
	12V DC	ADJ76012		
	24V DC	ADJ76024		
	48V DC	ADJ76048		

Standard packing: Carton: 100 pcs.; Case: 500 pcs.

2. With a test button

Flux-resistant type

Contact arrangement	Nominal coil voltage	Part No.		
		Single side stable type	1 coil latching type	2 coil latching type
1 Form C	5V DC	ADJ15105	ADJ11105	ADJ13105
	6V DC	ADJ15106	ADJ11106	ADJ13106
	12V DC	ADJ15112	ADJ11112	ADJ13112
	24V DC	ADJ15124	ADJ11124	ADJ13124
	48V DC	ADJ15148	ADJ11148	ADJ13148
1 Form A	5V DC	ADJ25105	ADJ21105	ADJ23105
	6V DC	ADJ25106	ADJ21106	ADJ23106
	12V DC	ADJ25112	ADJ21112	ADJ23112
	24V DC	ADJ25124	ADJ21124	ADJ23124
	48V DC	ADJ25148	ADJ21148	ADJ23148
1 Form B	5V DC	ADJ35105	Please use 1 Form A.	Please use 1 Form A.
	6V DC	ADJ35106		
	12V DC	ADJ35112		
	24V DC	ADJ35124		
	48V DC	ADJ35148		

Standard packing: Carton: 100 pcs.; Case: 500 pcs.

RATING

1. Coil data

1) Single side stable

Nominal coil voltage	Pick-up voltage (at 20°C 68°F)	Drop-out voltage (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Nominal operating power	Max. applied voltage (at 20°C 68°F)
5V DC	75%V or less of nominal voltage (Initial)	10%V or more of nominal voltage (Initial)	100Ω	250mW	130%V of nominal voltage
6V DC			144Ω		
12V DC			576Ω		
24V DC			2,304Ω		
48V DC			9,216Ω		

2) 1 coil latching

Nominal coil voltage	Set voltage (at 20°C 68°F)	Reset voltage (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Nominal operating power	Max. applied voltage (at 20°C 68°F)
5V DC	70%V or less of nominal voltage (Initial)	70%V or less of nominal voltage (Initial)	167Ω	150mW	130%V of nominal voltage
6V DC			240Ω		
12V DC			960Ω		
24V DC			3,840Ω		
48V DC			15,360Ω		

3) 2 coil latching

Nominal coil voltage	Set voltage (at 20°C 68°F)	Reset voltage (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Nominal operating power	Max. applied voltage (at 20°C 68°F)
5V DC	70%V or less of nominal voltage (Initial)	70%V or less of nominal voltage (Initial)	100Ω	250mW	130%V of nominal voltage
6V DC			144Ω		
12V DC			576Ω		
24V DC			2,304Ω		
48V DC			9,216Ω		

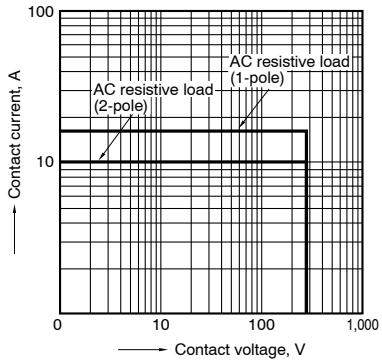
2. Specifications

Characteristics	Item		Specifications
Contact	Arrangement		1 Form C, 1 Form A, 1 Form B, 1 Form A 1 Form B, 2 Form C, 2 Form A, 2 Form B
	Contact resistance (Initial)		Max. 100 mΩ (By voltage drop 6 V DC 1A)
	Contact material		$AgSnO_2$ type (1 Form C, 1 Form A, 1 Form B), Au-flashed $AgSnO_2$ type (1 Form A 1 Form B, 2 Form C, 2 Form A, 2 Form B)
Rating	Nominal switching capacity (resistive load)		16 A 250V AC (1 Form C, 1 Form A, 1 Form B), 10 A 250V AC (2 Form C, 2 Form A, 2 Form B, 1 Form A 1 Form B)
	Max. switching power (resistive load)		4,000 V A
	Max. switching voltage		250V AC
	Max. switching current		16 A (1 Form C, 1 Form A, 1 Form B), 10 A (1 Form A 1 Form B, 2 Form C, 2 Form A, 2 Form B)
	Nominal operating power		150mW (1 coil latching), 250mW (Single side stable, 2 coil latching)
	Min. switching capacity (Reference value)*1		100mA 5 V DC
Electrical characteristics	Insulation resistance (Initial)		Min. 1,000MΩ (at 500V DC) Measurement at same location as “Breakdown voltage” section.
	Breakdown voltage (Initial)	Between open contacts	1,000 Vrms for 1min. (Detection current: 10mA.)
		Between contact and coil	4,000 Vrms for 1min. (Detection current: 10mA.)
	Surge breakdown voltage*2 (Initial)	Between contact and coil	Min. 10,000 V
	Temperature rise (coil) (at 70°C 158°F)		Max. 55°C (By resistive method, nominal voltage applied to the coil, max. switching current.)
	Operate time [Set time] (at 20°C 68°F)		Max. 20 ms [20 ms] (Nominal voltage applied to the coil, excluding contact bounce time.)
	Release time [Reset time] (at 20°C 68°F)		Max. 20 ms [20 ms] (Nominal voltage applied to the coil, excluding contact bounce time.)
Mechanical characteristics	Shock resistance	Functional	Min. 200 m/s² (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.)
		Destructive	Min. 1,000 m/s² (Half-wave pulse of sine wave: 6 ms.)
	Vibration resistance	Functional	10 to 55 Hz at double amplitude of 2 mm (Detection time: 10μs.)
		Destructive	10 to 55 Hz at double amplitude of 3 mm
Expected life	Mechanical		Min. 5×10^6 (at 180 times/min.)
	Electrical (Resistive load)*3 (at 20 times/min.)		Min. 10^5 (at 16A 250V AC): 1 Form C, 1 Form A, 1 Form B Min. 10^5 (at 10A 250V AC): 2 Form C, 2 Form A, 2 Form B, 1 Form A 1 Form B
Conditions	Conditions for operation, transport and storage*4		Ambient temperature: –40°C to +70°C –40°F to +158°F Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)
Unit weight			Approx. 14 g .49 oz

Notes:*1.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.
*2.Wave is standard shock voltage of ±1.2×50μs according to JEC-212-1981
*3.In order to obtain the full rated life cycles, the relay should be properly vented by removing the vent nib. For more details, please look at caution for NOTES on page 9.
*4.The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to “6. Usage, Storage and Transport Conditions“ in AMBIENT ENVIRONMENT section in Relay Technical Information.

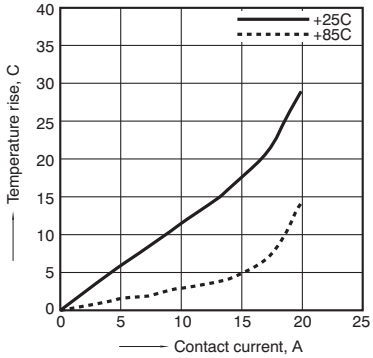
REFERENCE DATA

1. Max. switching capacity



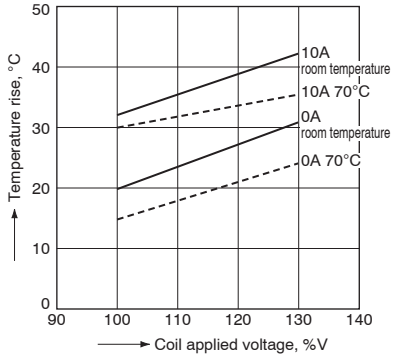
2. Temperature rise

Tested sample: ADJ12024, 6 pcs.
Coil applied voltage: 0%V, Contact current: 16 A, 20 A
Measured portion: Contact, Ambient temperature: 25°C 77°F, 85°C 185°F



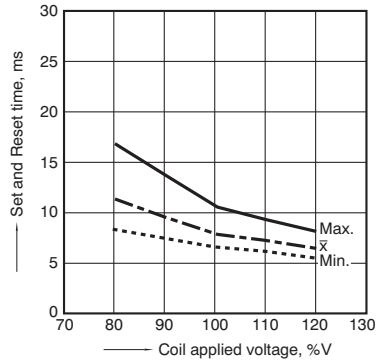
3. Coil temperature rise

Tested sample: ADJ56024, 6 pcs.
Coil applied voltage: 100%V, 130%V of rating
Contact current: 0 A, 10 A
Measured portion: Inside the coil, Ambient temperature: Room temperature, 70°C 158°F



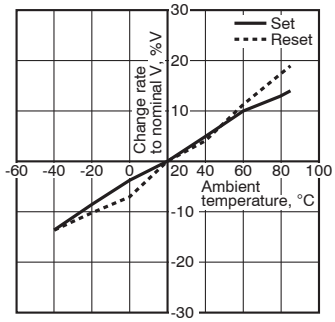
4. Set and Reset time

Tested sample: ADJ12024, 10 pcs
Coil applied voltage: 80%V, 100%V, 120%V of rating



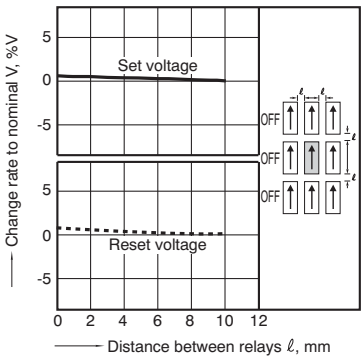
5. Ambient temperature characteristics

Tested sample: ADJ12024, 6pcs
Ambient temperature: –40°C to 85°C –40°F to 185°F



6. Influence of adjacent mounting

Tested sample: ADJ12024, 6pcs
Ambient temperature: Room temperature

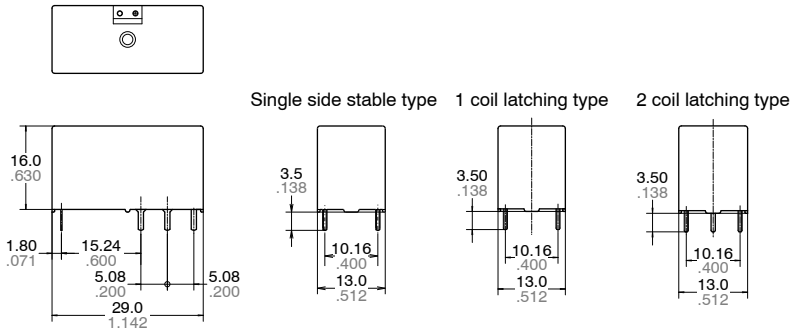


DIMENSIONS (mm inch)

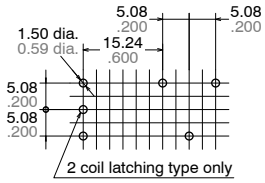
Download **CAD Data** from our Web site.

1. 1 Form C, without a test button

CAD Data External dimensions



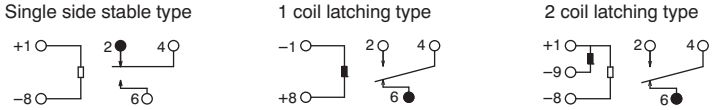
PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

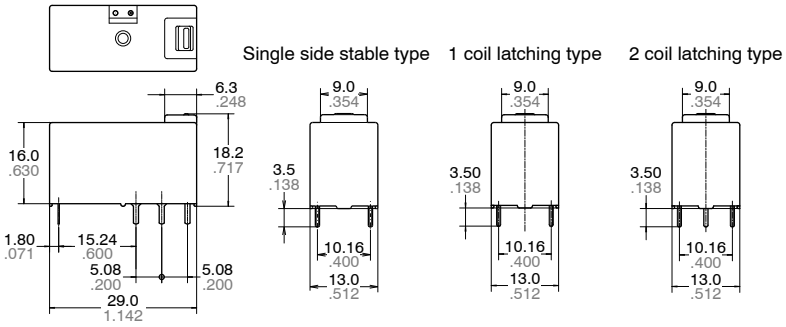
General tolerance: ±0.3 ±.012

Schematic (Bottom view)



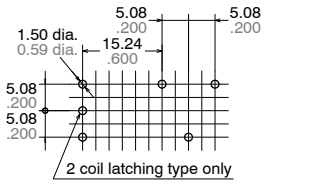
2. 1 Form C, with a test button

CAD Data External dimensions



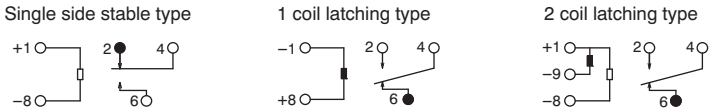
General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



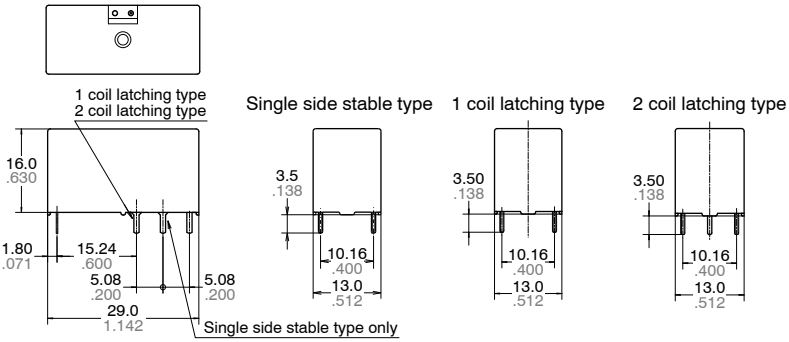
Tolerance: ±0.1 ±.004

Schematic (Bottom view)



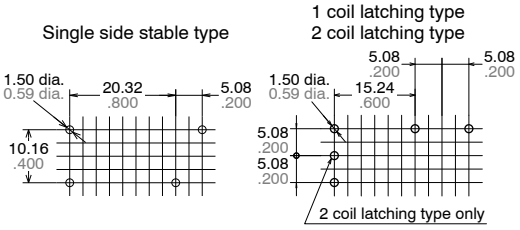
3. 1 Form A, without a test button

CAD Data External dimensions



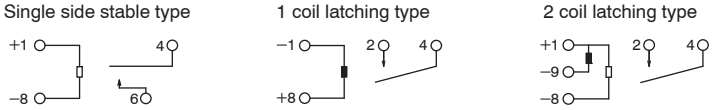
General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



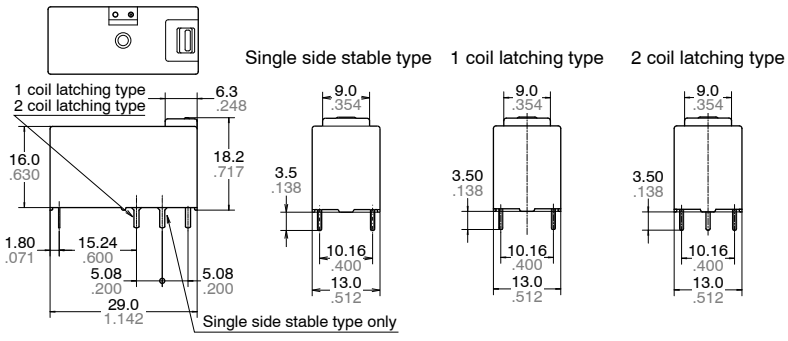
Tolerance: ±0.1 ±.004

Schematic (Bottom view)



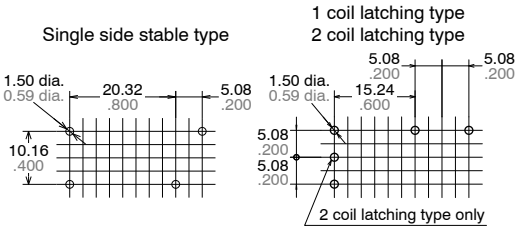
4. 1 Form A, with a test button

CAD Data External dimensions



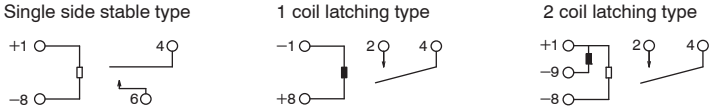
General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



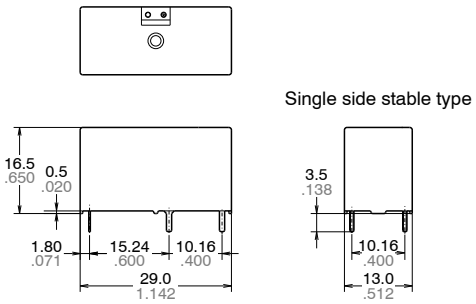
Tolerance: ±0.1 ±.004

Schematic (Bottom view)



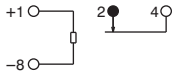
5. 1 Form B, without a test button

CAD Data External dimensions

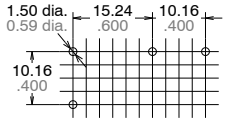


General tolerance: ±0.3 ±.012

Schematic (Bottom view)



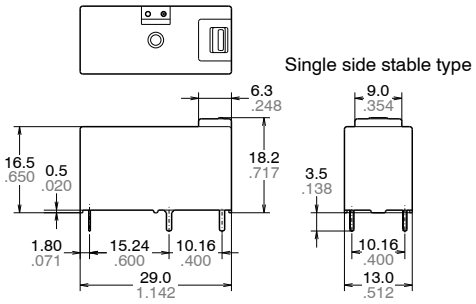
PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

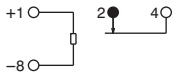
6. 1 Form B, with a test button

CAD Data External dimensions

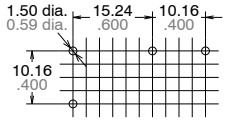


General tolerance: ±0.3 ±.012

Schematic (Bottom view)



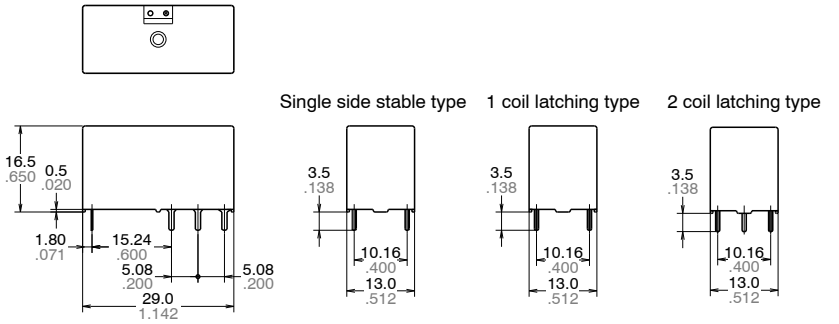
PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

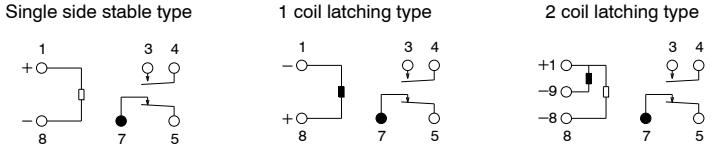
7. 1 Form A 1 Form B, without a test button

CAD Data External dimensions

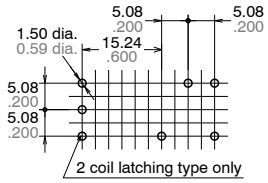


General tolerance: ±0.3 ±.012

Schematic (Bottom view)



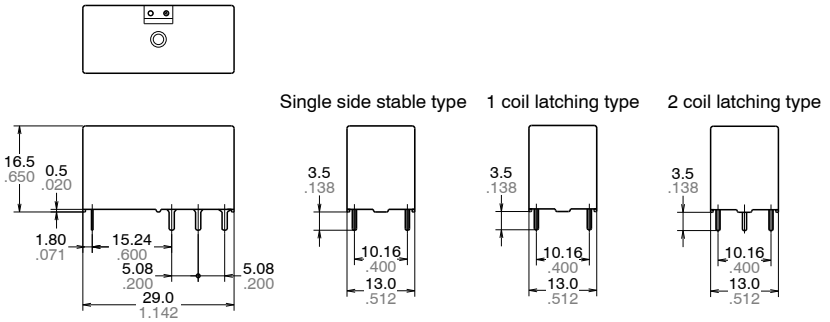
PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

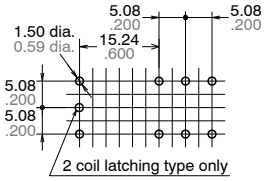
8. 2 Form C, without a test button

CAD Data External dimensions



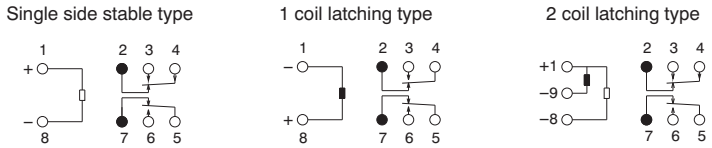
General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



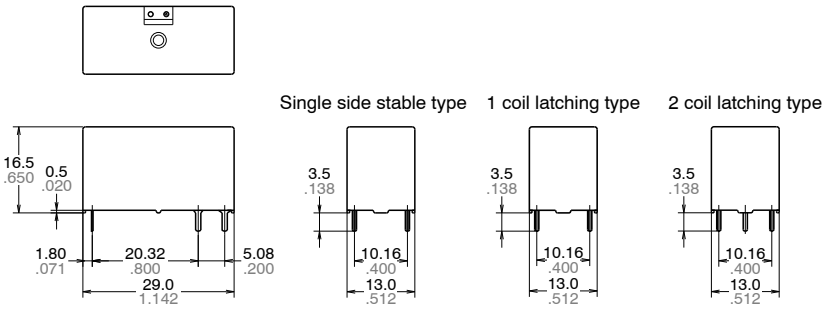
Tolerance: ±0.1 ±.004

Schematic (Bottom view)



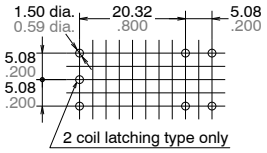
9. 2 Form A, without a test button

CAD Data External dimensions



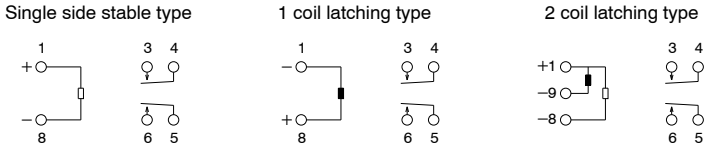
General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



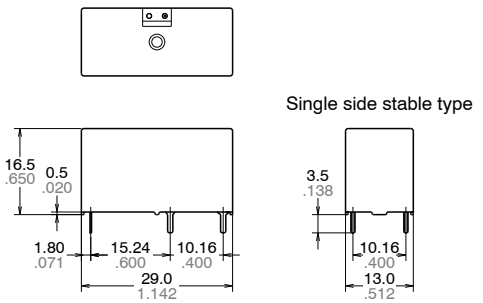
Tolerance: ±0.1 ±.004

Schematic (Bottom view)



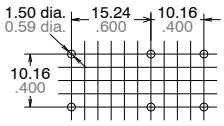
10. 2 Form B, without a test button

CAD Data External dimensions



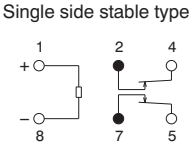
General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Schematic (Bottom view)



SAFETY STANDARDS

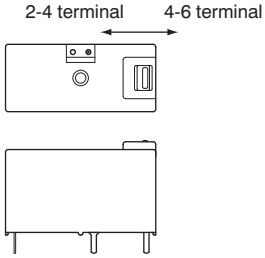
UL/C-UL (Recognized)		VDE (Certified)	
File No.	Contact rating	File No.	Contact rating
E43149	16A 277V AC (1 pole), 10A 277V AC (2 poles)	40009736	AC 250V 16A (cosϕ=1) (1 pole), AC 250V 10A (cosϕ=1) (2 poles)

* CSA standard: Certified by C-UL

NOTES

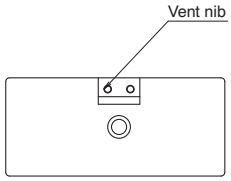
1. Test button (manual lever) operation

The relay contacts switch over as follows:



2. Electrical life (Sealed type)

In order to obtain the full rated life cycles, the relay should be properly vented by removing the vent nib after the soldering/ washing process.



For Cautions for Use, see Relay Technical Information.