



2-pole  
(1 Form A 1 Form B)

**FEATURES**

1. Forcibly guided contact structure complies with EN 61810-1 & EN 61810-3, Type A, enables detection of contact welding and construction of safety circuit
2. All contacts qualified according to AC15, DC13 and B300, R300 @ 85°C
3. Size:

Type	L x W x H (mm inch)
1 Form A 1 Form B THT /THR	33x14.0x7.8 [including 0.5mm stand-off]

4. Very low profile: 7.8 mm
5. Insulation according to EN 60664-1: Overvoltage category III, Pollution degree 2, 250V AC
  - Reinforced insulation:  
Clearance and creepage  $\geq 5.5$  mm .217 inch  
(between NO and NC and between NO and coil)
  - Basic insulation:  
Clearance  $\geq 3$  mm .118 inch and  
creepage  $\geq 4$  mm .157 inch  
(between NC and coil)
6. Complies with IEC 61010 reinforced insulation standards

**TYPICAL APPLICATIONS**

1. Emergency stop switches
2. Machine safety engineering
3. Safety control units
4. Automation technology
5. Elevators
6. Escalators
7. Safe sensor monitoring
8. Standalone safety modules
9. Safety sensor output

**ORDERING INFORMATION**

ASFM  -  -  -

Contact type  
0: 1a1b

Nominal coil voltage DC  
3, 5, 12, 16, 18, 21, 24V

Protective construction  
2: THR [RTII]\*, reflow soldering type  
5: THT [RTIII]

Packing\*\*  
S: Tube  
X: Tape&Reel

Notes: Please consult us about other coil voltages.

\*: Breathing hole open (degree of protection RTII)

\*\* : The "S" or "X" at the end of the part number only appears on the inner and outer packaging. It does not appear on the relay itself

## TYPES

Packaging	Relay Technology Categories	Nominal coil voltage	Part No.	
Tape	RTII Reflow	3 V DC	ASFM0032X	
		5 V DC	ASFM0052X	
		12 V DC	ASFM0122X	
		16 V DC	ASFM0162X	
		18 V DC	ASFM0182X	
		21 V DC	ASFM0212X	
24 V DC		ASFM0242X		
Tube		RTII Reflow	3 V DC	ASFM0032S
			5 V DC	ASFM0052S
			12 V DC	ASFM0122S
			16 V DC	ASFM0162S
			18 V DC	ASFM0182S
	21 V DC		ASFM0212S	
	RTIII	24 V DC	ASFM0242S	
		3 V DC	ASFM0035S	
		5 V DC	ASFM0055S	
		12 V DC	ASFM0125S	
		16 V DC	ASFM0165S	
		18 V DC	ASFM0185S	
21 V DC	ASFM0215S			
24 V DC	ASFM0245S			

Standard packing: tube 20 pcs., tape&reel 250 pcs

## RATING

## 1. Coil data

Contact arrangement	Rated coil voltage	Operate voltage (at 20°C 68°F)	Release voltage (at 20°C 68°F)	Rated operating current [±10%] (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Rated operating power (at 20°C 68°F)	Max. allowable voltage (at 20°C 68°F)
1 form A 1 form B	3V DC	75%V or less of nominal voltage (Initial)	10%V or more of nominal voltage (Initial)	90 mA	33.3 Ω	270mW 100mW holding power	120%V of rated voltage
	5V DC			54 mA	93 Ω		
	12V DC			23 mA	533 Ω		
	16V DC			17 mA	948 Ω		
	18V DC			15 mA	1200 Ω		
	21V DC			13 mA	1633 Ω		
	24V DC			11 mA	2133 Ω		

## 2. Specifications

Characteristics	Item	Specifications	
		RTII	RTIII
Contact	Contact arrangement	1 Form A 1 Form B	1 Form A 1 Form B
	Forcibly guided contacts	Type A, IEC EN 61810-1, EN 61810-3	
	Contact resistance (Initial)	Max. 100 mΩ (by voltage drop 6 V DC 1A)	
	Contact material	Au-flashed AgNi	AgSnO2
Rating	Nominal switching capacity (resistive load)	6A 250V AC, 6A 30V DC	
	Max. switching power (resistive load)	1,500VA, 180W	
	Max. switching voltage	250V AC, 125V DC	
	Max. switching current	NO: 6A NC: 4A	
	Min. switching capacity (Reference value)*1	1mA 10V	
Electrical characteristics	Breakdown voltage (Initial)	Between open contacts	1,500 Vrms for 1 min. (Detection current: 10mA)
		Between contact and coil	NC: 2,500 Vrms for 1min; NO: 4,000 Vrms for 1min (Detection current: 10mA)
	Coil holding voltage*2	Min. 60%V (at 85°C 185°F, 6A)	
	Operate time (at 20°C 68°F)	Max. 15ms (Nominal coil voltage applied to the coil, excluding contact bounce time)	
	Release time (at 20°C 68°F)	Max. 10ms (Nominal coil voltage applied to the coil, excluding contact bounce time) (without diode)	
Mechanical characteristics	Shock resistance	Functional	Min. 200 m/s <sup>2</sup> {Min. 20G} (Half-wave pulse of sine wave: 11 ms; detection time: 10μs)
		Destructive	Min. 1,000 m/s <sup>2</sup> (Half-wave pulse of sine wave: 6 ms)
	Vibration resistance	Functional	10 to 55 Hz at double amplitude of 1.5 mm .059 inch (Detection time: 10μs)
		Destructive	10 to 55 Hz at double amplitude of 1.5 mm .059 inch
Expected life	Mechanical	Min. 10 <sup>7</sup> (at 180 times/min.)	
	Electrical	250 V AC 6 A resistive load: Min. 10 <sup>6</sup> (at 20 times/min.)	
Degree of protection		RT II	RT III*3
Conditions	Conditions for operation, transport and storage	Ambient temperature: -40°C to +85°C Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)	
Unit weight		6.5g	

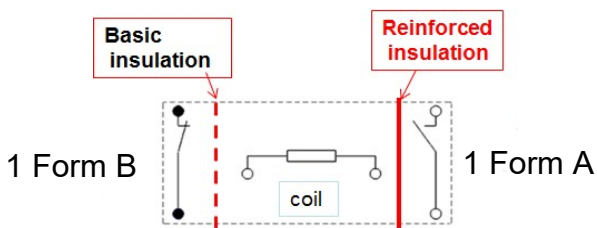
Notes:

- \*1. This value can change due to the switching frequency, environmental conditions, and desired reliability level, it is recommended to check this with the actual load
- \*2. Coil holding voltage is the coil voltage after 100ms from the applied nominal voltage.
- \*3. According to EN 61810-1:2015, table 2.

**\*Important: Relay characteristics may be influenced by:**

- strong external magnetic fields
- magnetic conductive materials near the relay
- narrow top-to-top mounting (printed surface to printed surface)

## 3. Insulation



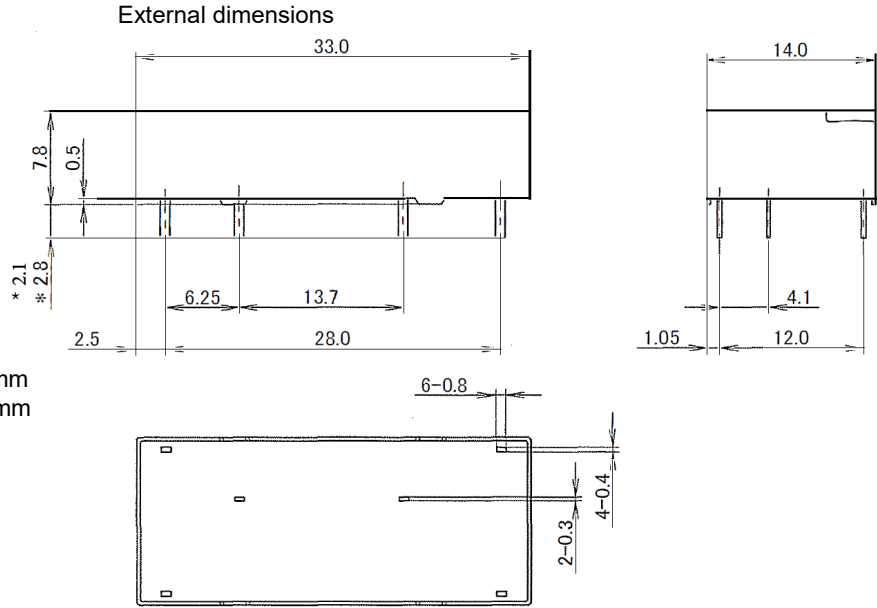
- = Reinforced insulation: overvoltage category III, pollution degree 2, 250V AC (Clearance and creepage distance is 5.5 mm .217 inch or more between all contacts)
- - - = Basic insulation: overvoltage category III, pollution degree 3, 250V AC (The clearance is 3 mm .118 inch or more between all contacts and the creepage distance is 4 mm .157 inch or more.)

**DIMENSIONS** mm inch

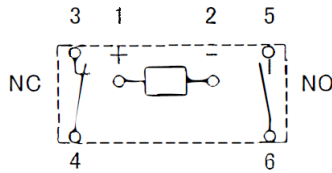
**1. 2-pole (1 Form A 1 Form B)**



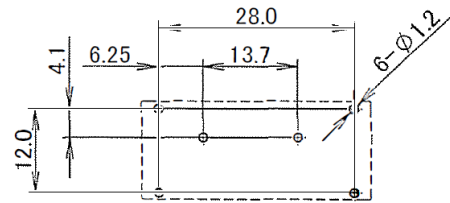
\*Pin type  
THT = 2.8mm  
THR = 2.1mm



Dimensions  
Tolerance: ±0.3



Schematic (Bottom view)  
(S=1:1)  
(Deenergized condition)



PC board pattern (Bottom view)  
(S=1:1)  
(Tolerance : ±0.1)

**SAFETY STANDARDS**

Certification authority	File No.	Rating
UL/C-UL	E43149	6A 250V AC, general use, 100Kops 6A 30V DC, general use, 100Kops, B300, R300 (pilot duty)
TÜV	Cert. no: 013461 0704	6A 250V AC (cosφ=1.0) 85°C, 6A 30V DC resistive

**NOTES**

- Coil operating power**  
Pure DC current should be applied to the coil. The wave form should be rectangular. If it includes ripple, the ripple factor should be less than 5%. However, check it with the actual circuit since the characteristics may be slightly different.
- Coil connection**  
When connecting coils, refer to the wiring diagram to prevent mis-operation or malfunction.
- Soldering**  
When using automatic soldering, the following conditions are recommended  
 1) Preheating: 120°C 248°F, within 120 sec (PC board solder surface)  
 2) Soldering: 260°C±5°C 500°F±41°F, within 6 sec

For Cautions for Use, see [Relay Technical Information](#)