



### »» Features

- ☐ High duty sugar cube relay with 26A 277VAC, 32A 277VAC.
- ☐ Contact gap can be greater than 1.5 & 2.1 mm.
- ☐ Conforms to European photovoltaic standard IEC 62109-1.
- ☐ Coil holding voltage can be reduced to 36%, 55%V of the nominal coil voltage for saving energy.
- ☐ High performance PCB power relay for photovoltaic power generation systems (solar inverter), motor control, compressor control, home appliances.
- ☐ Complies with RoHS-Directive 2011/65/EU.



### »» Type List

#### ◆ Standard type

Terminal style	Contact form	Insulation system	Contact gap	Designation (provided with)
				Flux tight
PCB terminal	1A (SPNO)	F	1.5mm	110A-1AH-F-C
				110BA-1AH-F-C
			2.1mm	110A-1AH1-F-C
				110BA-1AH1-F-C

#### ◆ High power type

PCB terminal	1A (SPNO)	F	1.5mm	110HA-1AH-F-C
				110BHA-1AH-F-C
			2.1mm	110HA-1AH1-F-C
				110BHA-1AH1-F-C

#### ◆ Extremely high capacity type

PCB terminal	1A (SPNO)	F	2.1mm	110E-1AH1-F-C
				110BE-1AH1-F-C

### »» Ordering Information

110   ☐   ☐   ☐   -   1A   H   ☐   -   ☐   -   C   ☐  
 1   2   3   4   5   6   7   8   9   10

- |          |  |                              |   |
|----------|--|------------------------------|---|
| 1. 110   | -- Basic series designation                                  | 6. H                         | -- Contact material Ag alloy  |
| 2. Blank | -- Standard type   | 7. Blank                     | -- Contact gap ≥1.5mm   |
| B        | -- With insulation barrier                                   | 1                            | -- Contact gap ≥2.1mm   |
| 3. Blank | -- Standard type   | 8. Blank                     | -- Standard type  |
| E        | -- Extremely high capacity type (Only for 2.1mm contact gap) | F                            | -- Class F  |
| H        | -- High power type   | 9. C                         | -- Flux tight   |
| 4. Blank | -- Standard type   | V                            | -- Sealed type  |
| A        | -- Double pin type (not available with 110E version)         | S                            | -- Sealed type washable   |
| 5. 1A    | -- Single pole normally open                                 | 10. <input type="checkbox"/> | -- Coil voltage (please refer to the coil rating data for the availability) |

## »» Contact Rating

### ◆ Standard type

Resistive load	26A 240VAC, On 1s /Off 9s, at 75°C, 30K ops.
	22A 240VAC, On 1s /Off 9s, at 85°C, 30K ops.
Inductive load	26A 240VAC, AC-7a, cosΦ0.8, On 0.1s /Off 10s, at 85°C, 30K ops.

### ◆ High power type

Resistive load	26A 240VAC, On 1s /Off 9s, at 85°C, 30K ops.
Inductive load	26A 240VAC, AC-7a, cosΦ0.8, On 0.1s /Off 10s, at 85°C, 30K ops.

### ◆ Extremely high capacity type

Resistive load	32A 240VAC, On 1s /Off 9s, at 85°C, 10K ops.
	Making 16A, Carrying 32A, Breaking 16A / 240VAC, On 1s /Off 9s, at 85°C, 30K ops.

## »» Coil Rating (DC)

### ◆ For contact gap ≥1.5 mm

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Pick up voltage (Max.) at 23°C <sup>(1)</sup>	Drop out voltage (Min.) at 23°C	Continuous voltage at 85°C <sup>(2)</sup>	Power consumption at rated / holding voltage
12	140	86	75 % of rated voltage	5 % of rated voltage	50~55 % of rated voltage	approx. 1.67W / 0.5W <sup>(2)</sup>
24	70	345				
48	35	1380				

Notes : (1) To energize relay properly apply 100%~120% nominal coil voltage for 200ms.

(2) Coil holding voltage is 50~55% of nominal voltage after applying nominal voltage for 200ms.

### ◆ For contact gap ≥2.1 mm

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Pick up voltage (Max.) at 23°C <sup>(1)</sup>	Drop out voltage (Min.) at 23°C	Continuous voltage at 85°C <sup>(2)</sup>	Power consumption at rated / holding voltage
12	140	86	80 % of rated voltage	5 % of rated voltage	50~55 % of rated voltage	approx. 1.67W / 0.5W <sup>(2)</sup>
24	70	345				
48	35	1380				

Notes : (1) To energize relay properly apply 100%~120% nominal coil voltage for 200ms.

(2) Coil holding voltage is 50~55% of nominal voltage after applying nominal voltage for 200ms.

### ◆ Extremely high capacity type for contact gap ≥2.1 mm

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Pick up voltage (Max.) at 23°C <sup>(1)</sup>	Drop out voltage (Min.) at 23°C	Continuous voltage at 85°C <sup>(2)</sup>	Power consumption at rated / holding voltage
12	233	51	80 % of rated voltage	5 % of rated voltage	32~36 % of rated voltage	approx. 2.8W / 0.29W <sup>(2)</sup>
24	117	206				

Notes : (1) To energize relay properly apply 100%~120% nominal coil voltage for 200ms.

(2) Coil holding voltage is 32~36% of nominal voltage after applying nominal voltage for 200ms.

## »» Specification

Contact material	Ag alloy	
Contact resistance <sup>(1)</sup>	100mΩ Max. (at 1A/6VDC by 4-wire resistance measurement) 6 mΩ Max. (By voltage drop 10A)	
Operate time <sup>(1)</sup>	15ms Max.	
Release time <sup>(1)</sup>	10ms Max.	
Vibration resistance	Operating extremes	10~50Hz , amplitude 1.0 mm
	Damage limits	10~50Hz , amplitude 1.0 mm
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	500,000 ops. 100,000 ops. (for 110E Type) (frequency 9,000 ops./hr)
Operating ambient temperature	-40~+85°C (no freezing)	
Weight	Approx.15 g	

Notes : (1) Initial value. Operate and release time excluding contact bounce.

(2) All tests are conducted under room temperature and room humidity.

(3) Consider the heat of PCB is necessary, please check the actual condition of PCB.

(4) Applying no diode to this relay. The life expectancy will be lower when a diode is used. To use a varistor (ZNR) could absorb the coil surge of relay that is recommended.

(5) Do not use the relay exceeding the coil rating, contact rating and life expectancy, or this may cause the risk of overheating.

(6) To assure optimum performance, avoid the relay from dropping, hitting, or other unnecessary shocks.

(7) Do not switch the contacts without any load as the contact resistance may become increased rapidly.

(8) Please contact Song Chuan for the detailed information.

## »» Insulation Data

Insulation resistance <sup>(1)</sup>	100MΩ Min. (DC 500V)	
Dielectric strength <sup>(1)</sup>	Between open contact	: AC 1000V, 50/60Hz 1 min.
	Between contact and coil	: AC 2500V, 50/60Hz 1 min. : AC 4000V, 50/60Hz 1 min. (for 110B series)
Insulation of IEC 61810-1		
Clearance / creepage distances	Between coil to contact	: Basic, ≥1.5mm / ≥2.5mm : Double, Reinforce ≥3 mm / ≥5 mm (for 110B series)
	Between open contact	: Basic, ≥1.5mm / ≥2.5mm
Rated insulation voltage	250V	
Rated impulse withstand voltage	2500V	
Pollution degree	2	
Rated voltage	230 / 400V	
Overvoltage category	II	
Compliant with European photovoltaic standard		
Contact gap	1.5mm (VDE 0126)	
	2.1mm (IEC 62109-1 and VDE 0126)	

Notes : (1) Initial value.

## »» Safety Approval

Certified	UL / CUL	VDE
File No.	E88991	40025801

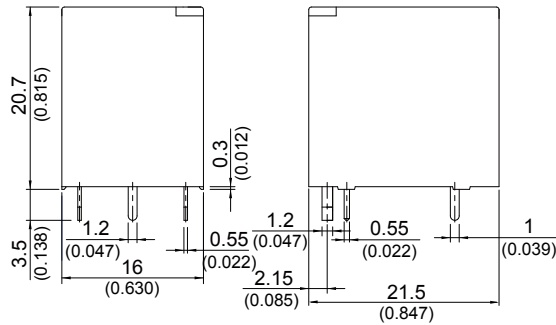
## »» Safety Approval Rating

UL / CUL			VDE		
110	110H	110E	110	110H	110E
22A 277VAC 26A 277VAC	26A 277VAC	32A 277 VAC	22A 250VAC T85 26A 250VAC T75	26A 250VAC T85	32A 250VAC T85

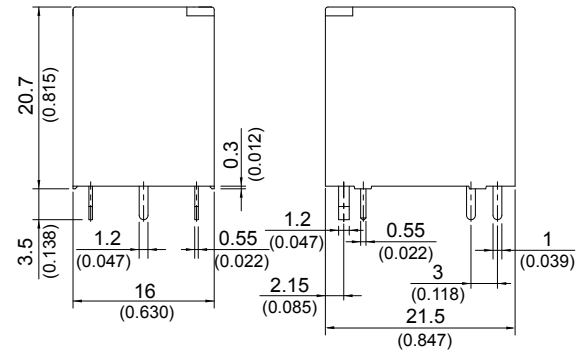
Notes : Flux tight version is recommended in high temperature. If production includes a cleaning process and sealed type is selected, the vent-nib should be removed after the process is completed.

## »» Outline Dimensions

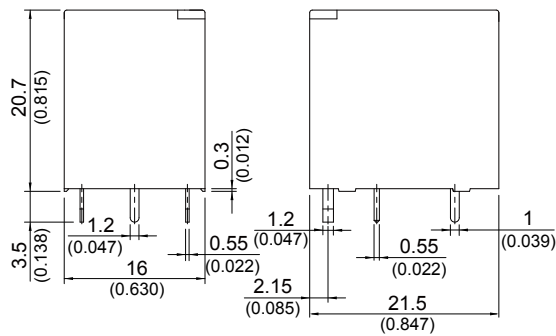
### ◆ 110, 110H



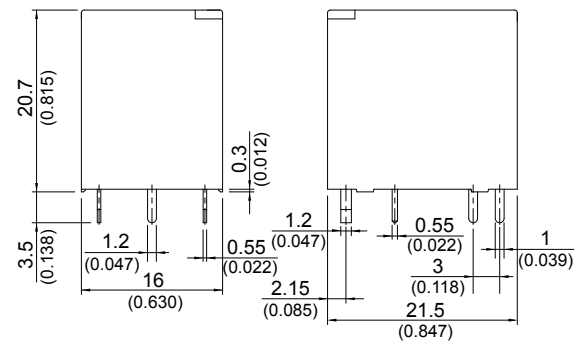
### ◆ 110A, 110HA



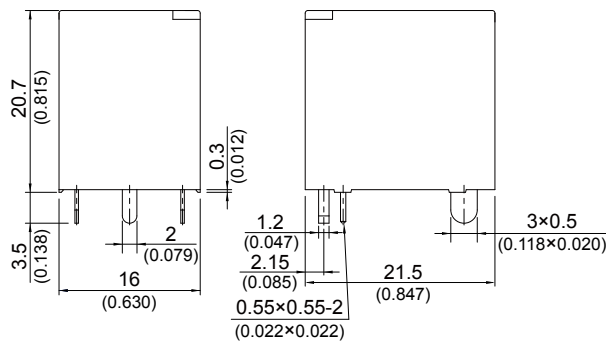
### ◆ 110B, 110BH



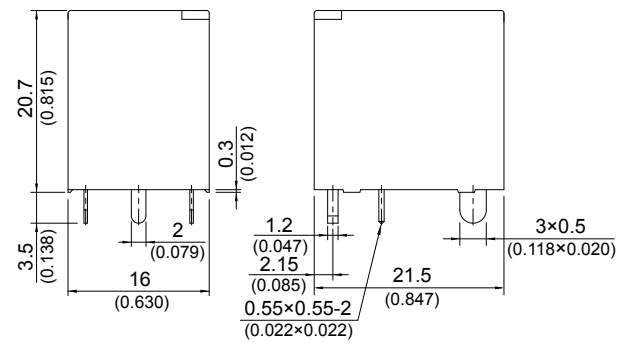
### ◆ 110BA, 110BHA



### ◆ 110E



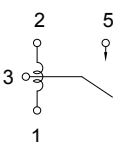
### ◆ 110BE



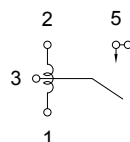
TOLERANCE:  
 LESS THAN: 1(0.039) ±0.1(0.004)  
 5(0.197) ±0.3(0.012)  
 20(0.787) ±0.5(0.020)  
 MORE THAN: 20(0.787) ±1(0.039)

## »» Wiring Diagram (Bottom view)

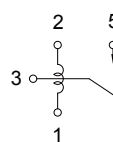
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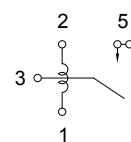
### ◆ 110A, 110HA



### ◆ 110B, 110BH, 110BE

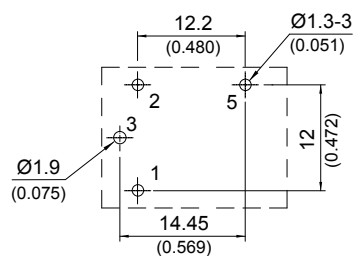


### ◆ 110BA, 110BHA

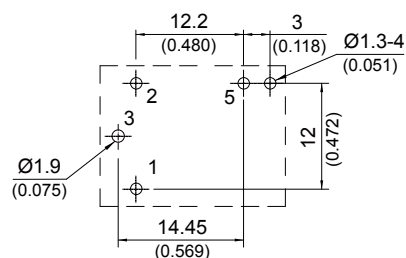


## >>> PC Board Layout (Bottom view)

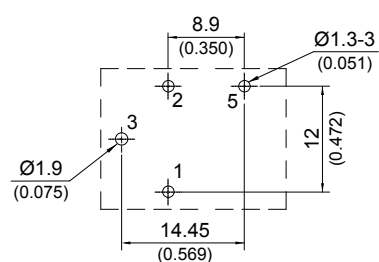
### ◆ 110,110H



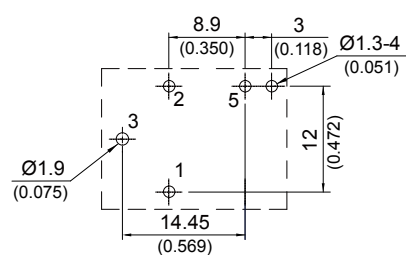
### ◆ 110A,110HA



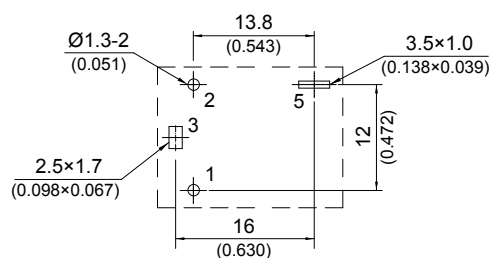
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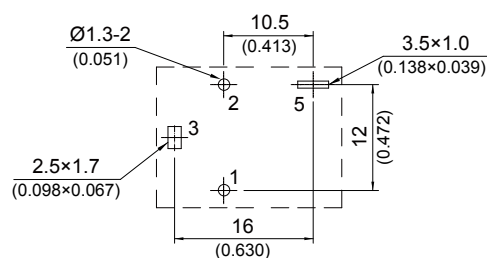
### ◆ 110BA,110BHA



### ◆ 110E

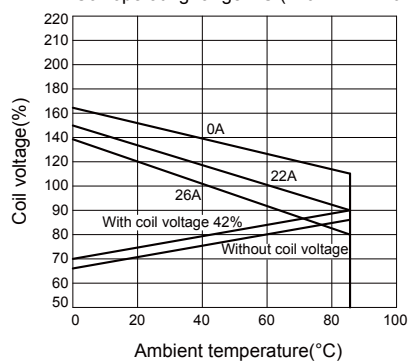


### ◆ 110BE



## >>> Engineering Data

Coil operating range DC (110A-1A : 1.67W)



# Mouser Electronics

Authorized Distributor

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[110A-1AH-F-C](#)