



»» Features

- Heavy duty 140A 400VAC(for 511E), 100A 400VAC (for 511H) power type.
- SPDM contact configuration with large contact gap 3.0mm version.
- Conforms to European photovoltaic standard IEC 62109-1.
- Coil holding voltage can be reduced to 50~55% V of the nominal coil voltage for saving energy.
- High performance PCB power relay for photovoltaic power generation systems (solar inverter).
- Complies with RoHS-Directive 2011/65/EU.



»» Type List

Terminal style	Contact form	Designation (provided with)
		Flux tight
PCB terminal	1A (SPDM)	511EP-1AH-F-C
		511HP1-1AH-F-C

»» Ordering Information

511	E	P	-	1A	H	-	F	-	C	<input type="checkbox"/>
1	2	3		4	5		6		7	8
1. 511	-- Basic series designation				5. H	-- Contact material Ag alloy				
2. H	-- High power type				6. F	-- Class F				
E	-- Extreme type				7. C	-- Flux tight				
3. P	-- PCB terminal (only for 511E)				8. <input type="checkbox"/>	-- Coil voltage (please refer to the coil rating data for the availability)				
P1	-- PCB terminal (only for 511H)									
4. 1A	-- Form A, single-pole, double-make (SPDM)									

»» Contact Rating

◆ High power type

Rated load (Resistive)	Making 40A, Carrying 100A, Breaking 40A / 240VAC, On 1s/Off 9s, at 85°C, 10K ops.
	Making 30A, Carrying 100A, Breaking 30A / 400VAC, On 1s/Off 9s, at 85°C, 10K ops.
Max. switching current	100A
Max. switching voltage	400VAC

◆ Extreme type

Rated load (Resistive)	Making 40A, Carrying 120A, Breaking 40A / 240VAC, On 1s/Off 9s, at 85°C, 10K ops.
	Making 30A, Carrying 120A, Breaking 30A / 400VAC, On 1s/Off 9s, at 85°C, 10K ops.
Max. switching current	140A
Max. switching voltage	400VAC

»» Coil Rating (DC)

Rated voltage (V)	Rated current $\pm 10\%$ at 23°C (mA)	Coil resistance $\pm 10\%$ at 23°C (Ω)	Pick up voltage (Max.) at 23°C ⁽¹⁾	Drop out voltage (Min.) at 23°C	Continuous voltage at 85°C ⁽²⁾	Power consumption at rated / holding voltage
12	266.7	45	75 % of rated voltage	5 % of rated voltage	50~55 % of rated voltage	approx. 3.2W / 0.8W ⁽²⁾
24	133.3	180				

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.

»» Specification

Contact material	Ag alloy	
Contact gap	3.0 mm Min	
Contact resistance ⁽¹⁾	100m Ω Max. (at 1A/6VDC by 4-wire resistance measurement) 6 m Ω Max. (By voltage drop 10A)	
Operate time ⁽¹⁾	30ms Max.	
Release time ⁽¹⁾	30ms Max.	
Vibration resistance	Operating extremes	10~50Hz , amplitude 1.5 mm
	Damage limits	10~50Hz , amplitude 1.5 mm
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	1,000,000 ops. (frequency 9,000 ops./hr)
Operating ambient temperature	-40~+85°C (no freezing)	
Weight	Approx.170 g	

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

(2) Unless otherwise specified, all tests are under room temperature and 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 ⁽¹⁾	1000M Ω Min. (DC 500V)	
Dielectric strength ⁽¹⁾	Between open contact	: AC 2000V, 50/60Hz 1 min.
	Between contact and coil	: AC 4000V, 50/60Hz 1 min.
Insulation of IEC 61810-1		
Clearance / creepage distances	Between coil to contact	: Double /Reinforce, $\geq 3.0\text{mm}$ / $\geq 5.0\text{ mm}$ (for 250VAC) $\geq 3.0\text{mm}$ / $\geq 8.0\text{ mm}$ (for 400VAC)
	Between open contact	: Basic, $\geq 1.5\text{ mm}$ / $\geq 2.5\text{ mm}$ (for 250VAC) $\geq 3.0\text{ mm}$ / $\geq 4.0\text{ mm}$ (for 400VAC)
Rated insulation voltage	250 / 400V	
Rated impulse withstand voltage	2500V	
Pollution degree	2	

Rated voltage	230 / 400V
Overvoltage category	II
Compliant with European photovoltaic standard	
Contact gap	3.0mm (IEC 62109-1 and VDE 0126)

Notes : (1) Initial value.

»» Safety Approval

Certified	UL / CUL	TUV
File No.	E88991	R50267102

»» Safety Approval Rating

◆ 511H type

UL / CUL	TUV
60A 277VAC, Resistive, Carrying current 100A 30A 400VAC, Resistive, Carrying current 100A	Making 60A, Carrying 100A, Breaking 60A /250VAC ⁽¹⁾ Making 30A, Carrying 100A, Breaking 30A /400VAC ⁽¹⁾

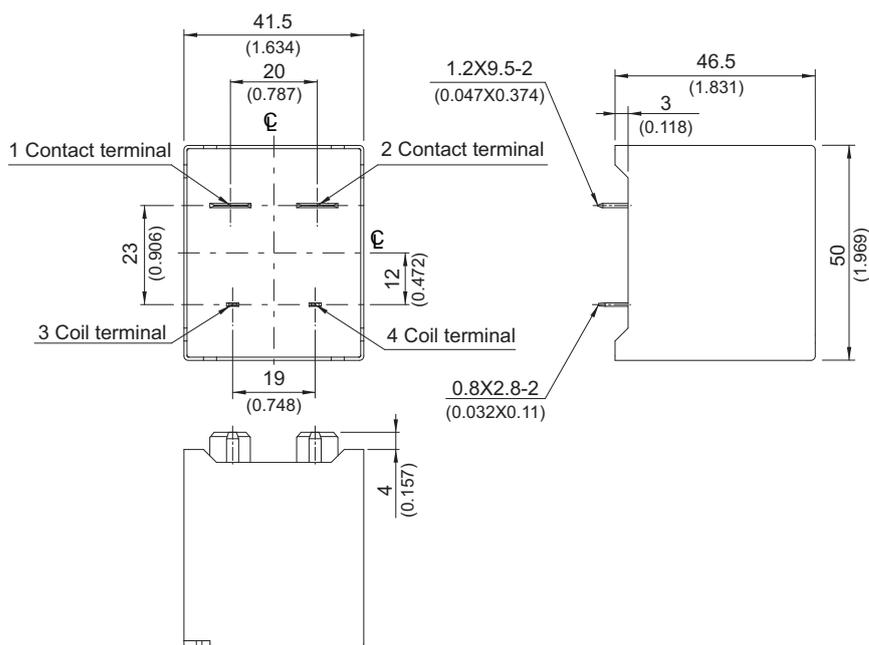
◆ 511E type

UL / CUL	TUV
60A 277VAC, Resistive, Carrying current 140A 60A 400VAC, Resistive, Carrying current 140A	Making 60A, Carrying 120A, Breaking 60A /250VAC ⁽¹⁾ Making 60A, Carrying 120A, Breaking 60A /400VAC ⁽¹⁾

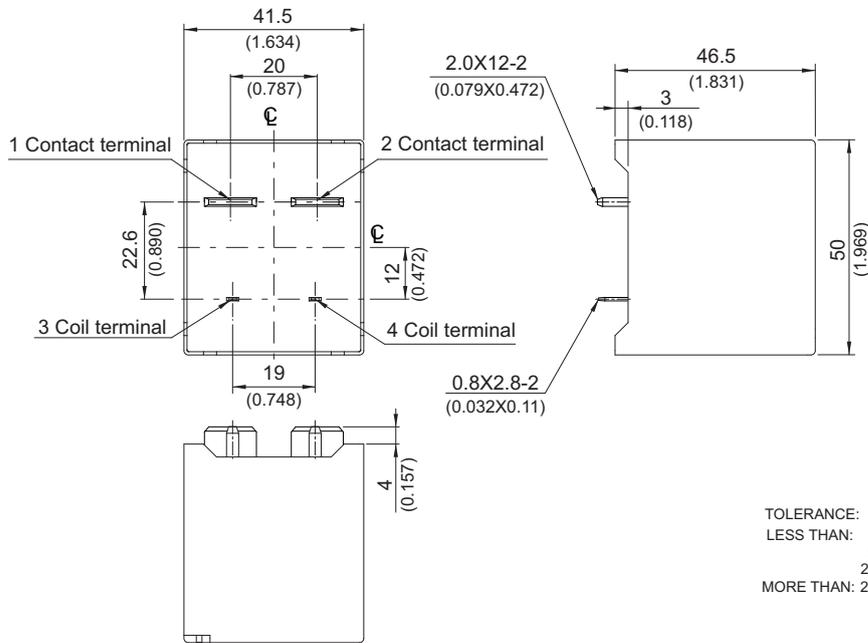
Notes : (1) With 50%~55% modulation of nominal coil voltage.

»» Outline Dimensions

◆ 511HP1

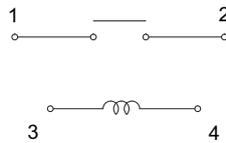


◆ 511EP



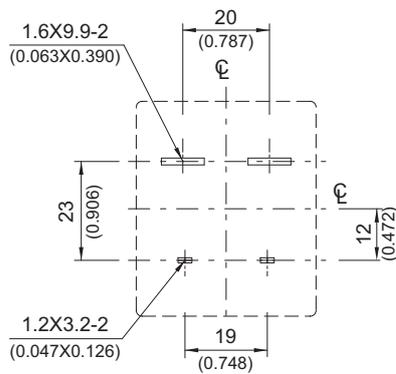
TOLERANCE:
 LESS THAN: 1(0.039) ±0.1(0.004)
 5(0.197) ±0.3(0.012)
 20(0.787) ±0.5(0.020)
 MORE THAN: 20(0.787) ±1(0.039)

»» Wiring Diagram (Bottom view)



»» PC Board Layout (Bottom view)

◆ 511HP1



◆ 511EP

