



»» Features

- Heavy duty 100A 830VAC (for 511H), 140A 690VAC(for 511E), 200A 830VAC (for 511Z),160A 690VAC(for 511X) power type.
- SPDM contact configuration with large contact gap 3.0mm, (for 511H&511E),4.0mm(for511ZP),6.0mm (for 511X)version.
- Conforms to European photovoltaic standard IEC 62109-1.
- Coil holding voltage can be reduced to 50~55% of the nominal coil voltage for saving energy.
- High performance PCB power relay for photovoltaic power generation systems (solar inverter).
- RoHS Compliant.

»» Type List

Terminal style	Contact form	Contact gap	Designation (provided with)
			Flux tight
PCB terminal	1A (SPDM)	3.0mm	511HP1-1AH-F-C
		4.0mm	511EP-1AH-F-C
		6.0mm	511ZP-1AD-F-C
			511XP-1AD-F-C

»» Ordering Information

511 X P - 1A H - F - C
 1 2 3 4 5 6 7 8

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

»» Contact Rating

◆ High power type (for 511H Type)

Rated load (Resistive)	Making 40A, Carrying 100A, Breaking 40A / 240VAC, On 1s/ Off 9s, at 85°C, 30K ops.
	Making 30A, Carrying 100A, Breaking 30A / 800VAC, On 1s/ Off 9s, at 85°C, 30K ops.
	Making 20A, Carrying 100A, Breaking 20A / 830VAC, On 1s/ Off 9s, at 85°C, 30K ops.
Max. switching current	100A
Max. switching voltage	830VAC

◆ Extreme type (for 511E Type)

Rated load (Resistive)	Making 40A, Carrying 120A, Breaking 40A / 240VAC, On 1s/ Off 9s, at 85°C, 30K ops
	Making 30A, Carrying 120A, Breaking 30A / 690VAC, On 1s/ Off 9s, at 85°C, 30K ops.
Max. switching current	140A
Max. switching voltage	690VAC

◆ Super extreme type (for 511X Type)

Rated load (Resistive)	Making 40A, Carrying 150A, Breaking 40A / 240VAC, On 1s/ Off 9s, at 85°C, 30K ops
	Making 30A, Carrying 150A, Breaking 30A / 690VAC, On 1s/ Off 9s, at 85°C, 30K ops.
Max. switching current	160A
Max. switching voltage	690VAC

◆ Ultimate extreme type (for 511Z Type)

Rated load (Resistive)	Making 30A, Carrying 180A, Breaking 30A / 800VAC, On 1s/ Off 9s, at 85°C, 30K ops
	Making 30A, Carrying 200A, Breaking 30A / 800VAC, On 1s/ Off 9s, at 70°C, 30K ops.
Max. switching current	200A
Max. switching voltage	800VAC

»» Coil Rating (DC)

◆ High power type / Extreme type

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±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				

◆ Super extreme type / Ultimate extreme type

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±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	352.9	34	85 % of rated voltage	5 % of rated voltage	50~55 % of rated voltage	approx. 4.2W / 1.05W ⁽²⁾
24	175.2	137				

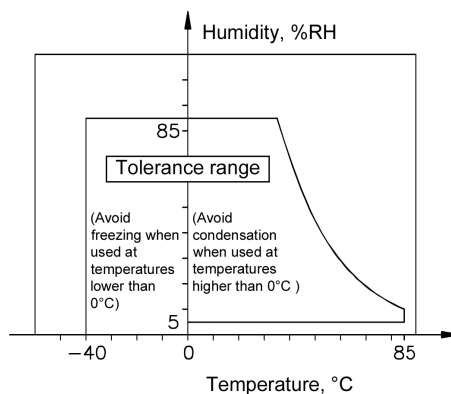
Notes : (1) To energize relay properly apply 100%~120% nominal coil voltage for 200ms.

(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. 4.0mm Min. (for 511Z) 6.0 mm Min. (for 511X)	
Contact resistance ⁽¹⁾	100mΩ Max. (at 1A/6VDC by 4-wire resistance measurement) 6 mΩ Max. (By voltage drop 20A)	
Operate time ⁽¹⁾	30ms Max. (for 511H and 511E) 50ms Max. (for 511X and 511Z)	
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) -40~+70°C(no freezing) for 511Z, 200A	
Weight	Approx. 170 g (for 511H,511E,511X) Approx. 180 g (for 511Z)	

- 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) Do not use the relay exceeding the coil rating, contact rating and life expectancy, or this may cause the risk of overheating.
 (5) To assure optimum performance, avoid the relay from dropping, hitting, or other unnecessary shocks.
 (6) All loads are based on 95 mm² harnesses and bus bars.
 (7) Please pay attention to the phenomenon of freezing in the low temperature environment below 0°C. Please evaluate the actual use of the environment.
 (8) Usage, transport and storage conditions
- 1. Temperature: -40 ~ +85°C
 - 2. Humidity: 5 to 85% R.H
 - 3. Pressure: 86 to 106 kPa
 - Furthermore, the humidity range varies with the temperature. So, use relays within the range indicated in the graph below



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

»» Insulation Data

Insulation resistance ⁽¹⁾	1000MΩ Min. (DC 500V)	
Dielectric strength ⁽¹⁾	Between coil and contact	: AC 4000V, 50/60Hz 1 min.
	Between open contacts	: AC 2000V, 50/60Hz 1 min.
Insulation of IEC 61810-1 / IEC 61810-1		
Clearance / creepage distances	Between coil to contact	: Reinforce, ≥ 17.5mm / ≥ 17.5mm
	Between open contacts	: Basic, ≥ 3.0mm / ≥ 7.5mm
Rated voltage	830V	
Rated impulse withstand voltage	2500V	
Pollution degree	2	
Overvoltage category	II	
Compliant with European photovoltaic standard		
Contact gap	3.0mm (IEC 62109-1 and VDE 0126)	
	4.0mm (IEC 62109-1 and VDE 0126)	
	6.0mm (IEC 62109-1 and VDE 0126)	

Notes : (1) Initial value.

»» Safety Approval

Certified	UL / CUL	TUV
File No.	E88991	R50367170

»» Safety Approval Rating

◆ 511H type

UL / CUL	TUV
60A 277VAC, Resistive, Carrying current 100A ⁽¹⁾	Making 60A, Carrying 100A, Breaking 60A /250VAC ; T85 ⁽¹⁾
30A 400VAC, Resistive, Carrying current 100A ⁽¹⁾	Making 30A, Carrying 100A, Breaking 30A /400VAC ; T85 ⁽¹⁾
30A 690VAC, Resistive, Carrying current 100A ⁽¹⁾	Making 30A, Carrying 100A, Breaking 30A /690VAC ; T85 ⁽¹⁾
30A 830VAC, Resistive, Carrying current 100A ⁽¹⁾	Making 30A, Carrying 100A, Breaking 30A /830VAC ; T85 ⁽¹⁾

◆ 511E type

UL / CUL	TUV
60A 277VAC, Resistive, Carrying current 140A ⁽¹⁾	Making 60A, Carrying 120A, Breaking 60A /250VAC ; T85 ⁽¹⁾
60A 400VAC, Resistive, Carrying current 140A ⁽¹⁾	Making 60A, Carrying 120A, Breaking 60A /400VAC ; T85 ⁽¹⁾
40A 690VAC, Resistive, Carrying current 140A ⁽¹⁾	Making 40A, Carrying 120A, Breaking 40A /690VAC ; T85 ⁽¹⁾

◆ 511X type

UL / CUL	TUV
40A 690VAC, Resistive, Carrying current 160A ⁽¹⁾	Making 40A, Carrying 160A, Breaking 40A /690VAC ; T85 ⁽¹⁾

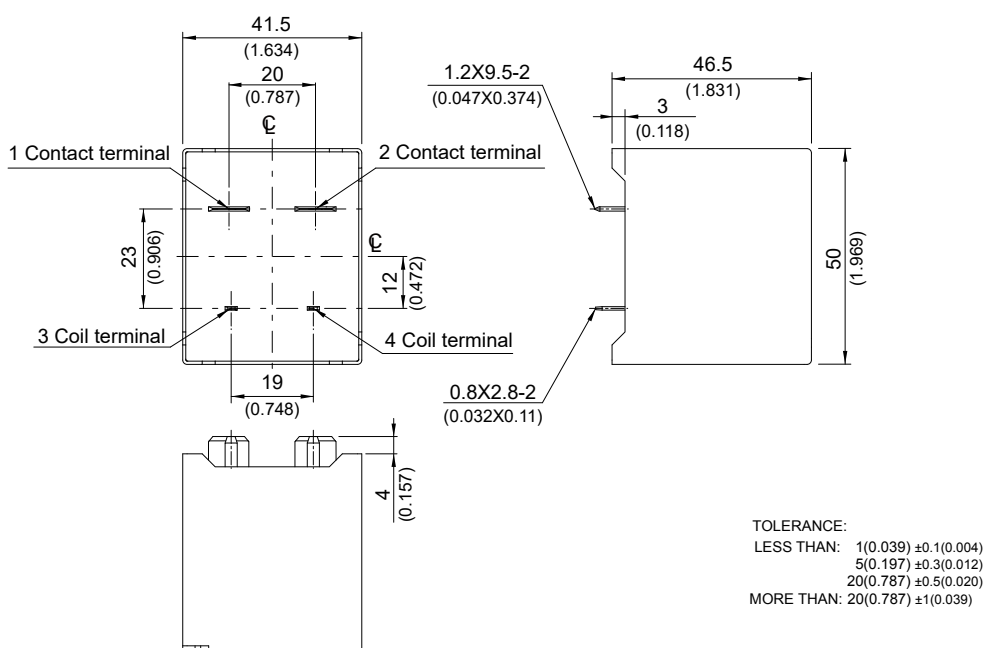
◆ 511Z type

UL / CUL	TUV
30A 830VAC, Resistive, Carrying current 200A ⁽¹⁾	Making 30A, Carrying 180A, Breaking 30A /830VAC ; T85 ⁽¹⁾ Making 30A, Carrying 200A, Breaking 30A /830VAC ; T70 ⁽¹⁾

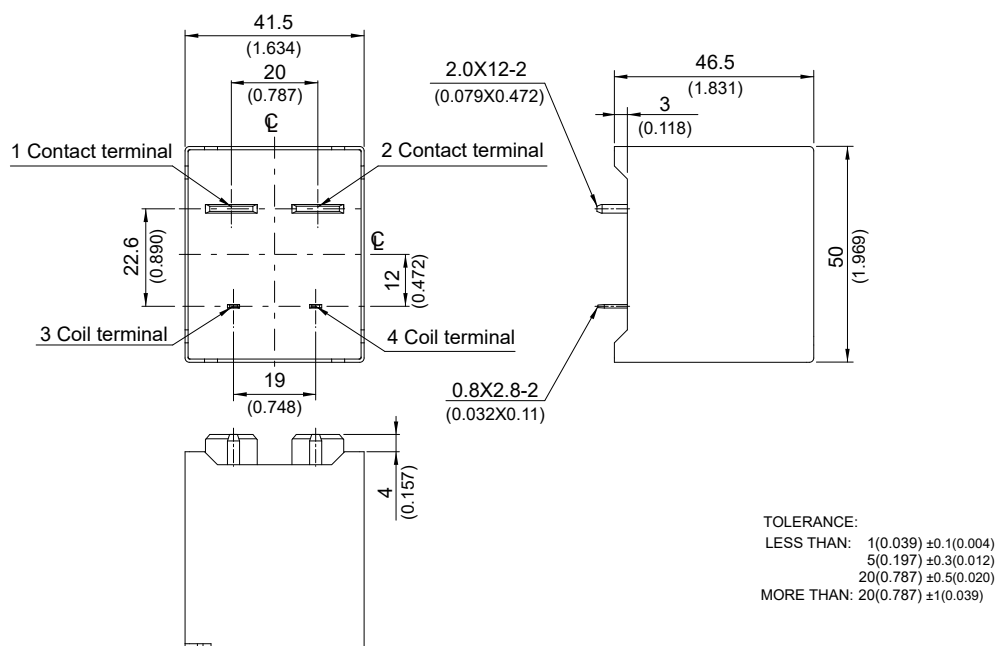
Notes : (1) With 50%~55% modulation of nominal coil voltage.

»» Outline Dimensions

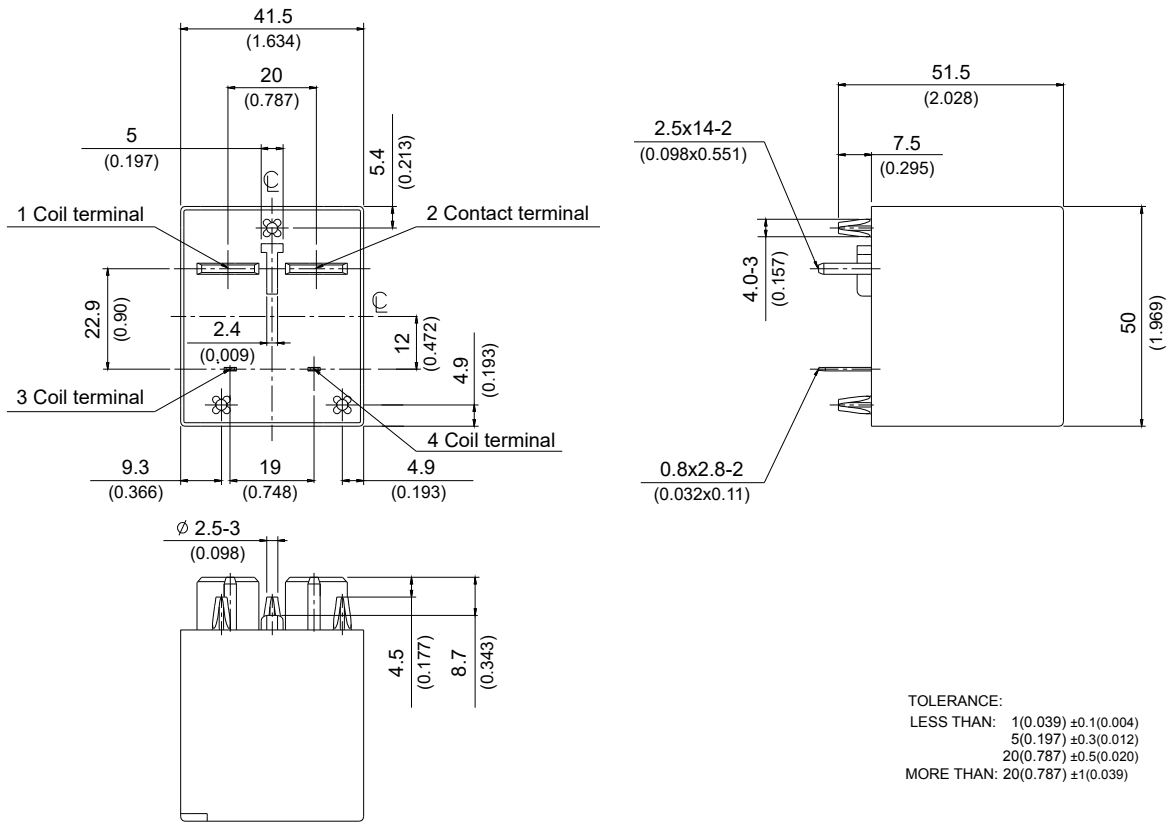
◆ 511HP1



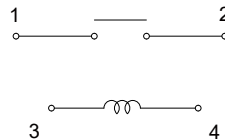
◆ 511EP/ 511XP



◆ 511Z

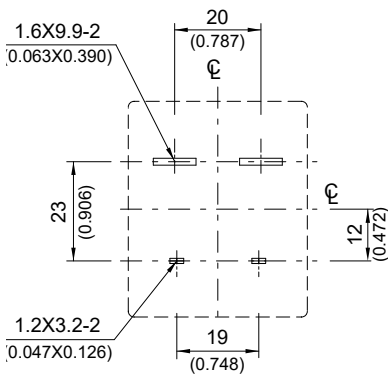


»» Wiring Diagram
(Bottom view)

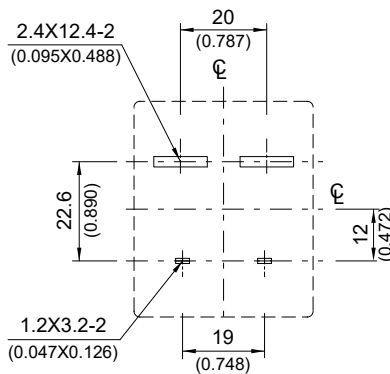


»» PC Board Layout
(Bottom view)

◆ 511HP1



◆ 511EP/ 511XP



◆ 511Z

