SOLID STATE RELAY
MAXIMUM LOAD CURRENT 1A

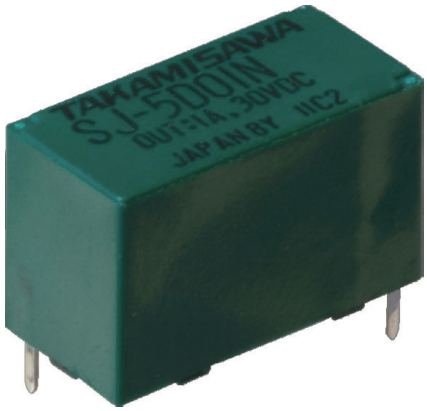
SJ Series

RoHS Compliant

■ FEATURES

- Extremely small and light weight
  - Size: 10.0 (W) × 20.2 (L) × 12.8 (H) mm
  - Weight: approximately 5.5g
- High reliability, long life and maintenance free
- High isolation (between input and output)
  - Dielectric strength: 2,500Vrms
- Compatible with JY Relay in size and terminal arrangement
- RoHS compliant

Note: The piece-parts used in this relay contains lead but they are excluded from controlled substances.



■ APPLICATIONS

FA equipment, measurement equipment etc.

■ PART NUMBERS

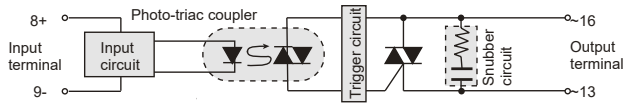
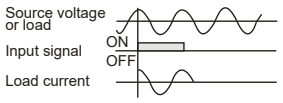
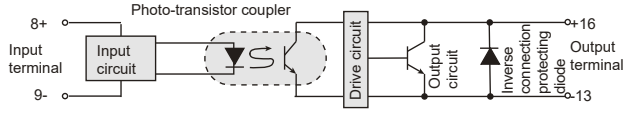
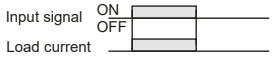
[Example] SJ - 12 D 01 HZ R N - NV
(a) (b) (c) (d) (e) (f) (g) (h)

(a)	Relay type	SJ series
(b)	Nominal voltage (input side)	3 : 3VDC (only AC type) 5 : 5VDC 12 : 12VDC 24 : 24VDC
(c)	Load voltage	A : AC type D : DC type
(d)	Load current	01 : 1A
(e)	Kind of inverse connection protecting element (only DC type)	Nil : Diode type HZ : Zener diode type
(f)	Output polarity (DC type)	Nil : Standard polarity R : Reverse polarity
(g)	Terminal classification	N : PC board mounting
(h)	Kind of inverse connection protecting element (AC type)	NV : Without varistor

■ SPECIFICATIONS

Item			Specifications		Remarks/Conditions
			AC	DC	
Input side	Nominal voltage		3, 5, 12, 24VDC	5, 12, 24VDC	
	Operate range		± 20% of nominal voltage		
	Must operate voltage		80% of nominal voltage		
	Must release voltage		Min. 1V (3VDC type: Min. 0.5V)		
	Input impedance	3VDC type	130Ω ± 10%	-	
		5VDC type	330Ω ± 10%	430Ω ± 10%	
		12VDC type	1,000Ω ± 10%	1,200Ω ± 10%	
		24VDC type	2,200Ω ± 10%	2,400Ω ± 10%	
Output side	Load voltage range		24 to 265Vrms	3 to 30VDC	
	Maximum load current		1.0Arms	1.0A	Please refer to characteristic data
	Minimum load current		10mArms	1mA	Reference
	1 cycle surge current		50A (60Hz)	3A (10ms)	
	Max. off-state leakage current		0.75mA rms max. (at 100Vrms 60Hz) 1.50mArms max. (at 200Vrms 60Hz)	0.1mA max. (at 30VDC)	
	Max. on-state voltage drop		1.2Vrms	1.2V	At max. load current
Coil data	Operating temperature range		-30°C to +85°C		
	Storage temperature range		-40°C to +100°C		
Timing data	Maximum operate time		1ms		
	Maximum release time		1/2 cycle + 1ms	1ms	
Insulation	Initial resistance		Min. 1,000MΩ (500VDC) (input-output)		
	Surge voltage		2,500Vrms 1 min. (input-output)		
Others	Case color		Black	Green	
	Dimensions / weight		10.0×20.2×12.8 mm / Approximately 5.5g		

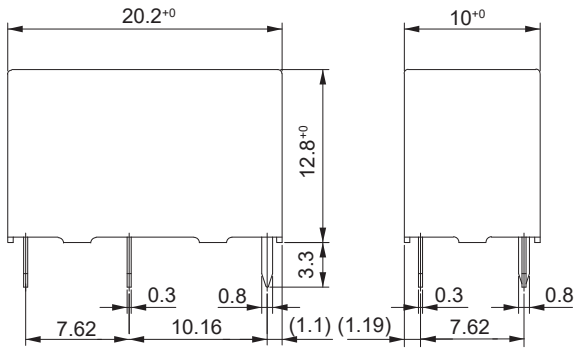
■ BLOCK DIAGRAM

Load	Insulation	Circuit	Input/Output Waveform (resistive load)
AC type	Phototriac coupler		
DC type	Photo transistor coupler		

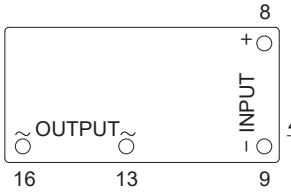
■ DIMENSIONS

SJ-( )A AC type

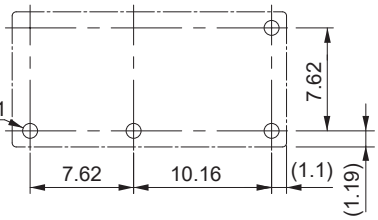
・Dimensions



・Schematics (Bottom View)

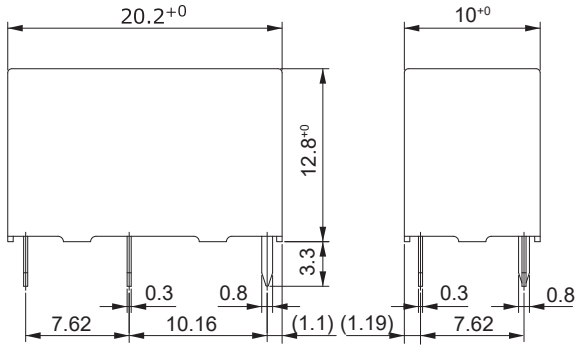


・PC board mounting hole layout (Bottom View)

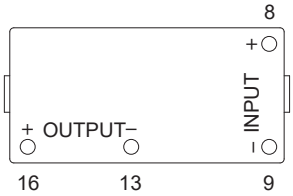


SJ-( )D DC type

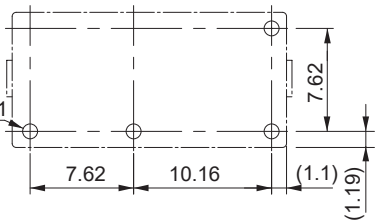
・Dimensions



・Schematics (Bottom View)



・PC board mounting hole layout (Bottom View)



* Output teminal reverse polarity type is available.

Notes:
1. Polarity of terminals are pre-determined. Please design your circuit accordingly.
2. Dimensions of the terminals do not include thickness of pre-solder.
3. Tolerance of PC board mounting hole layout is ±0.1.

( ) : Reference
Unit: mm

■ SAFETY STANDARDS

Type	Compliance	Contact Rating
UL	UL508 File No. 45026	1.0A, 265Vrms (resistive) 0.5A, 265Vrms (resistive) 1.0A, 30VDC (resistive)

■ PART NUMBER LIST

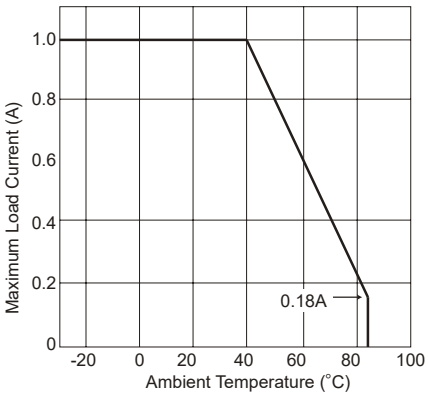
( ): Input side nominal voltage (Example: SJ-3A01N-NV)

Part Number	Load Voltage	Protecting Element	Output Polarity	Note
SJ-( )A01N-NV	AC	None	-	-
SJ-( )D01N	DC	Diode	Standard polarity	Input side 3VDC is not available
SJ-( )D01RN			Reverse polarity	
SJ-( )D01HZN		Zener diode	Standard polarity	
SJ-( )D01HZRN			Reverse polarity	

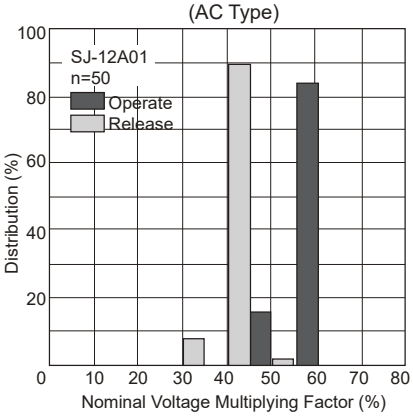
■ CHARACTERISTIC DATA

(Characteristic data is not guaranteed value but measured values of samples from production line.)

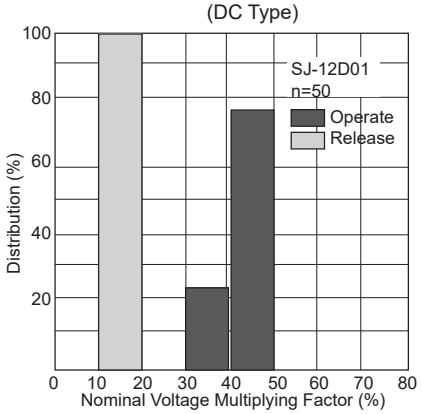
Ambient Temp. vs Max. Load Current



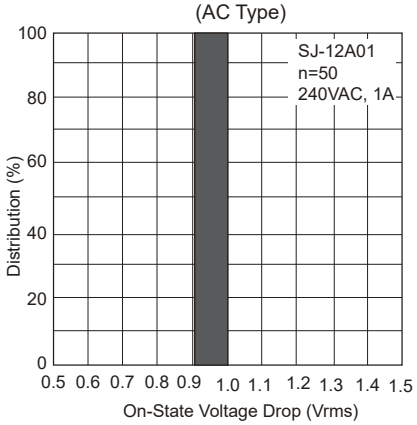
Distribution of Operate & Release Voltage (AC Type)



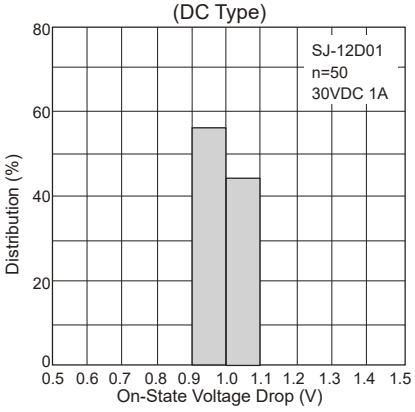
Distribution of Operate & Release Voltage (DC Type)



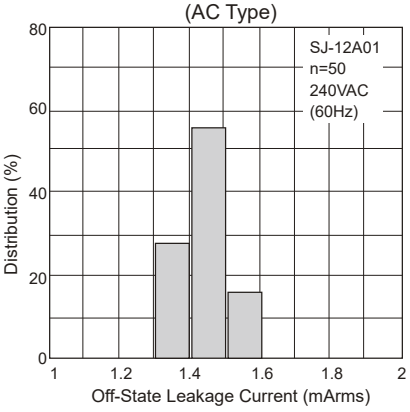
Distribution of On-State Voltage Drop (AC Type)



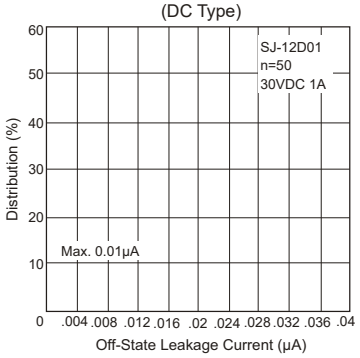
Distribution of On-State Voltage Drop (DC Type)



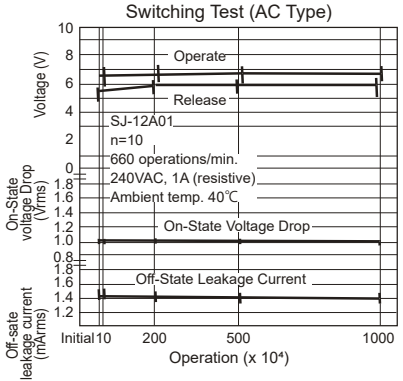
Distribution of Off-State Leakage Current (AC Type)



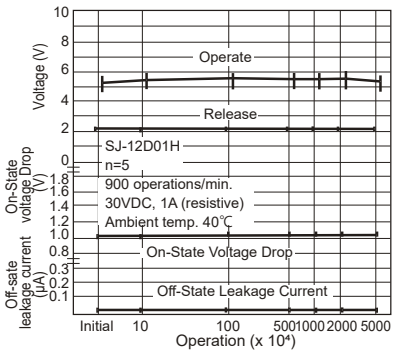
Distribution of Off-State Leakage Current (DC Type)



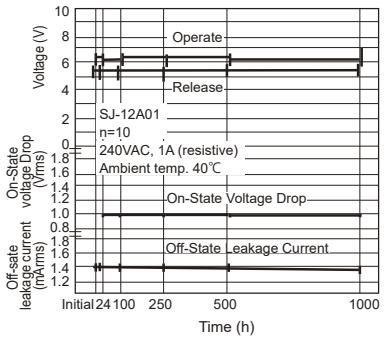
Switching Test (AC Type)



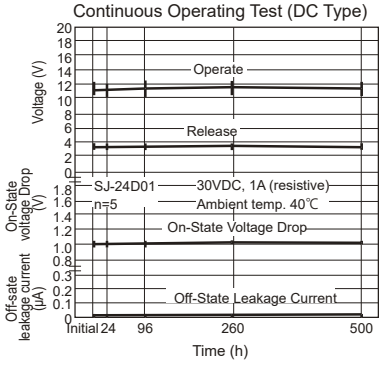
Switching Test (DC Type)



Continuous Operating Test (AC Type)



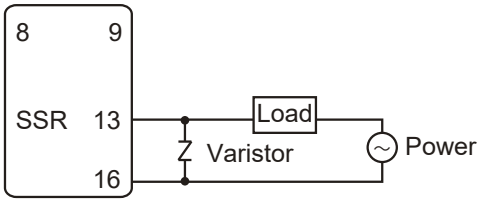
Continuous Operating Test (DC Type)



CAUTIONS

- All values mentioned in this datasheet are provided under ideal conditions. Please perform the confirmation test before actual use.
- Reflow soldering is prohibited.
- Do not use relays in the atmosphere with sulfide gas, chloride gas or nitric oxide. Contact resistance may increase.
- Do not use silicon or silicon-containing product or materials near relays. It may cause contact failure.
- Please connect a varistor as below to switch inductive load with SJ AC type without varistor relays.

Recommended varistor
Varistor voltage : 470V to 510V
Maximum energy : Minimum 4J
Maximum allowable voltage : 300VACrms



GENERAL INFORMATION

1. ROHS Compliance

- All relays produced by FCL Components are compliant with RoHS directive 2011/65/EU, including commission delegated directive 2015/863.

2. Recommended lead free solder condition

- Lead free solder plating on relay terminals is Sn-3.0Ag-0.5Cu, unless otherwise specified. This material has been verified to be compatible with PbSn assembly process.
- Recommended solder for assembly: Sn-3.0Ag-0.5Cu.

Flow Solder Condition:

Pre-Heating:	Maximum 120˚C within 90 sec.
Soldering:	Dip within 5 sec. at 255°C±5°C solder bath

Relay must be cooled by air immediately after soldering

Solder by Soldering Iron:

Soldering Iron:	30-60W
Temperature:	Maximum 350-360˚C
Duration:	Maximum 3 sec.

We highly recommend that you confirm your actual solder conditions

3. Moisture Sensitivity

- Moisture Sensitivity Level standard is not applicable to electromechanical relays, unless otherwise indicated.

4. Tin Whiskers

- Dipped SnAgCu solder is known as presenting a low risk to tin whisker development. No considerable length whisker was found by our in house test.

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