

MINATURE RELAY

1 POLE - 1 to 2A (FOR SIGNAL SWITCHING)

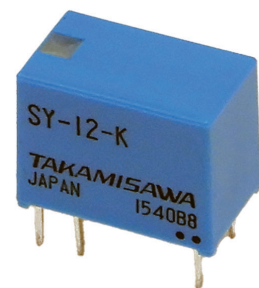
SY Series

RoHS Compliant



■ FEATURES

- Very small size and light weight
- UL, CSA recognized
- Conforms to FCC rules and regulations part 68
Dielectric strength 1,000VAC between coil and contacts
Surge strength 1,500V
- High sensitivity
- Wide ambient temperature range (-30°C to +90°C)
- Wide operating range
- DIL pitch terminals
- Plastic sealed type
- RoHS compliant



■ APPLICATIONS

Communication equipment, amusement equipment, electric remote-controlled outside mirror etc.

■ PART NUMBERS

[Example] SY - 12 W - 0H - K - UL
(a) (b) (c) (d) (e) (f)

(a)	Relay type	SY series
(b)	Coil rated voltage	12 : 5....24VDC Please refer to coil rating table
(c)	Contact construction	Nil : Single type W : Bifurcated type
(d)	Options	Nil : Standard 0H : Gold overlay on movable and stationary contacts HW : Marking on top of relay
(e)	Enclosure	K : Plastic sealed type
(f)	Safety Standards	Nil : No UL, CSA marking on relay UL : UL, CSA marking on relay

Note: For movable and stationary contact with gold overlay type, add suffix "–0H" (zeroH)

■ SPECIFICATIONS

Item			Specifications		Remarks/Conditions
			Single type SY-()-K	Bifurcated type SY-()W-K	
Contact Data	Configuration		1c (1 Form C, SPDT)		
	Construction		Single (cross bar)	Bifurcated (cross bar)	
	Material		Gold overlay silver palladium		
	Resistance		Max. 100mΩ		Initial at 1A, 6VDC
	Contact rating		0.5A, 120VAC or 1A, 24VDC		Resistive
	Max. carrying current		2A		
	Max. switching current		1A		
	Max. switching voltage		120VAC/60VDC		
	Max. switching power		60VA/24W		
	Min. switching load ^{*1}		1mA, 1VDC	0.1mA, 100mVDC	
	Capacitance (at 10MHz)		Approx. 1.4 pF (between open contacts) Approx. 5.0 pF (between coil and contacts)		
Coil	Rated power (at 20°C)		150 to 175mW		
	Operate power (at 20°C)		75 to 86mW		
	Operating temperature range		-30°C ~ +90°C (18V coil: +85°C, 24V coil: +80°C)		No frost
Time	Opearte		Max. 5ms (without bounce)		Without bounce
	Release		Max. 2ms (without bounce)		Without bounce
Life	Mechanical		Min. 5 x 10 ⁶ operations		
	Electrical		Min. 100 x 10 ³ ops.		
Insulation	Insulation resistance		Min. 1,000MΩ at 500VDC	Min. 1,000MΩ at 250VDC	Initial
	Dielectric strength	Open contacts	400VAC, 1 minute	300VAC, 1 minute	
		Coil to contacts	1,000VAC, 1 minute		
	Surge strength	Coil to contacts	1,500V / 10 x 160μs standard wave		
Others	Vibration resistance	Misoperation≥1μs	10 to 55 to 10Hz, single amplitude 0.75mm		Coil ON/OFF, 3 axis, total 6 cycles
		Endurance	10 to 55 to 10Hz, single amplitude 0.75mm		Coil OFF, 3 axis, total 6 hours
	Shock resistance	Misoperation≥1μs	Min. 300m/s ² (11 ± 1ms)		Coil ON/OFF, 3 axis, total 36 operations
		Endurance	Min. 1,000m/s ² (6 ± 1ms)		Coil OFF, 3 axis, total 18 operations
	Dimensions / Weight		7.4 x 12.5 x 9.5mm / approx. 1.7g		

*: Minimum switching loads mentioned above are reference values. Please perform the confirmation test with actual load before production since reference values may vary according to switching frequencies, environmental contions

■ COIL DATA

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance (Ω) ±10%	Must Operate Voltage*1 (VDC)	Must Release Voltage*1 (VDC)	Rated Power (mW)
1.5	1.5	15	1.05	0.08	150
3	3	60	2.1	0.15	150
4.5	4.5	135	3.2	0.23	150
5	5	167	3.5	0.25	150
6	6	240	4.2	0.3	150
9	9	540	6.3	0.45	150
12	12	960	8.4	0.6	150
18	18	1,940	12.6	0.9	170
24	24	3,290	16.8	1.2	175

Note: All values in the table are valid at 20°C and zero contact current.

*: Specified operated values are valid for pulse wave voltage.

❗ Please use at rated coil voltage. Please refer to characteristic data and set up adequate voltage in case of use at over voltage.

■ SAFETY STANDARDS

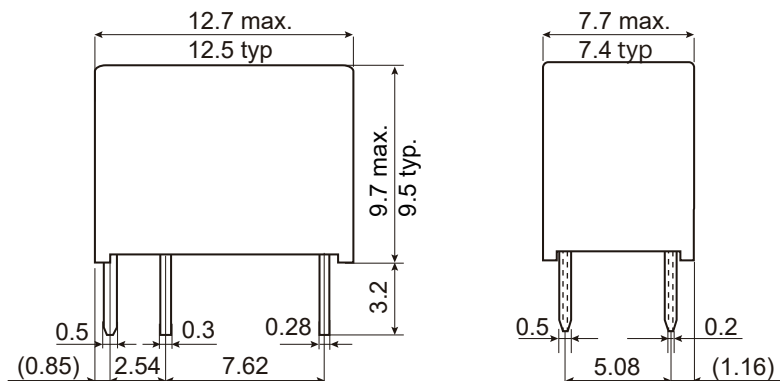
Type	Compliance	Contact Rating
UL	Flammability: UL 94-V0 (plastics)	
	UL478, UL508 (File No. E45026)	0.5A, 120VAC (resistive) 1A, 30VDC (resistive)
CSA	C22.2 No. 14 (File No. LR40304)	0.15A 48VDC (resistive)

■ PART NUMBER LIST

Part number	Contact Construction	Contact Material	Safety Standards
SY-()-K	Single	Gold overlay on one contact	-
SY-()-K-UL			UL, CSA
SY-()-0H-K		Gold overlay on both contacts	-
SY-()W-K	Bifurcated	Gold overlay on one contact	-
SY-()W-K-HW			-
SY-()W-K -UL			UL, CSA
SY-()W-0H-K		Gold overlay on both contacts	-

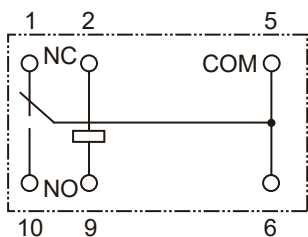
■ DIMENSIONS

- Dimensions

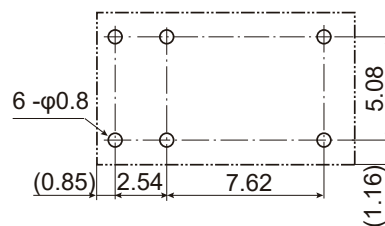


*Dimensions of the terminals do not include thickness of pre-soldering.

- Schematics
(BOTTOM VIEW)



- PC Board Mounting Hole Layout
(BOTTOM VIEW)



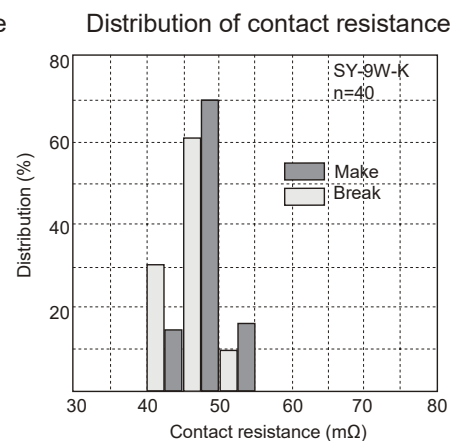
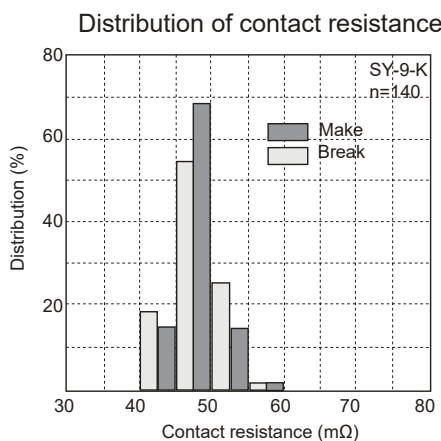
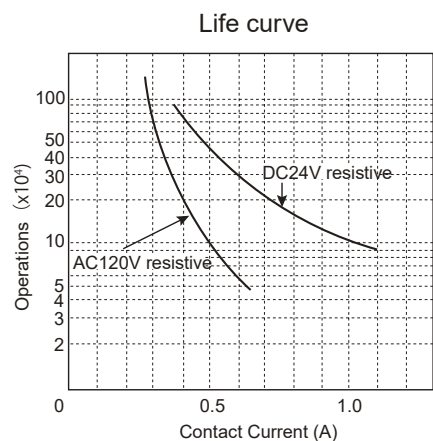
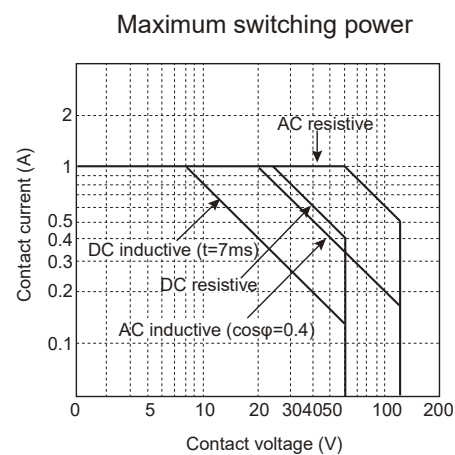
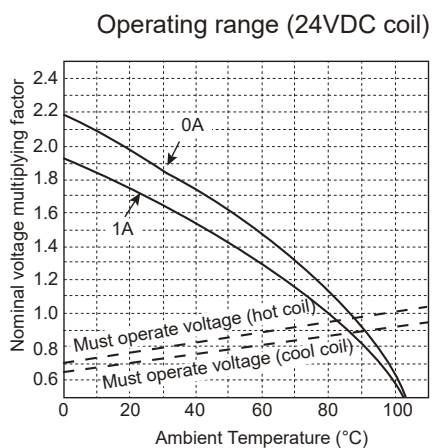
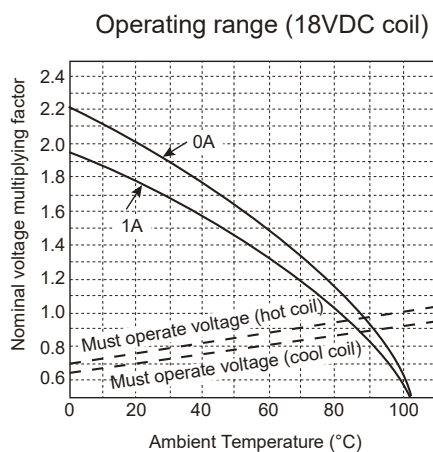
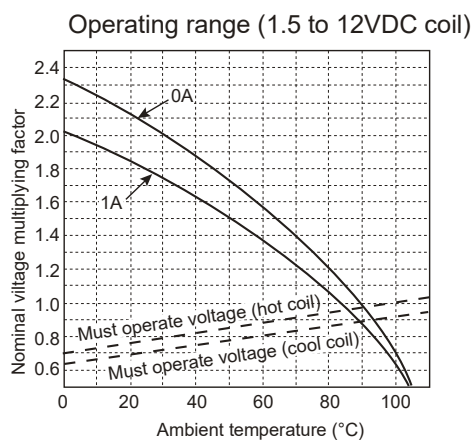
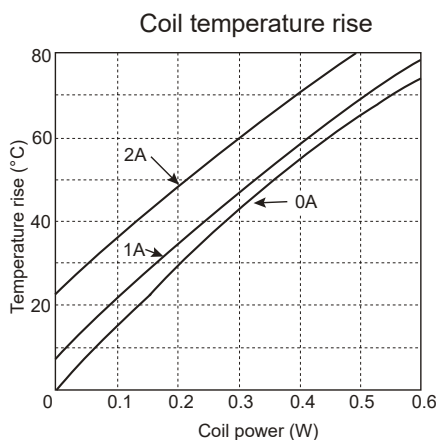
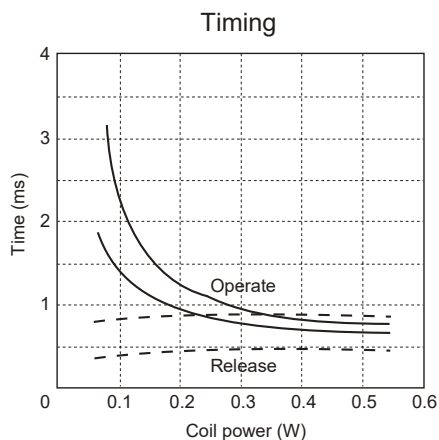
* Tolerance of PC board mounting hole layout:
 ± 0.1 unless otherwise specified.

(): Reference value

Unit: mm

CHARACTERISTIC DATA

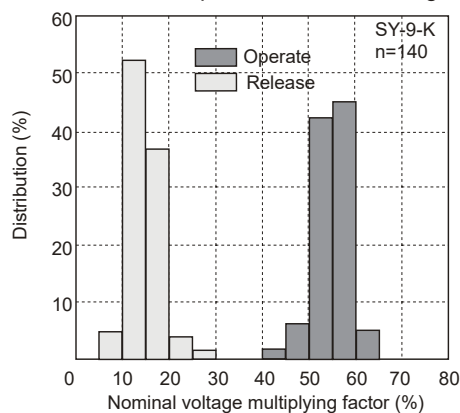
(Characteristic data is not guaranteed value but measured values of samples from production line.)



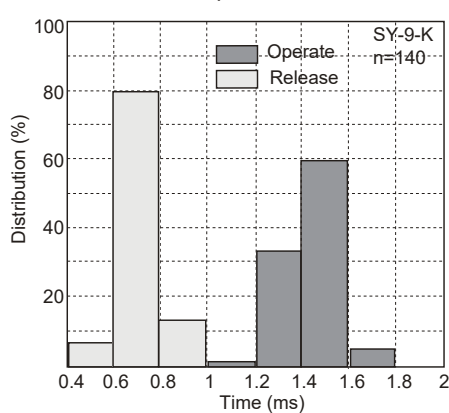
CHARACTERISTIC DATA

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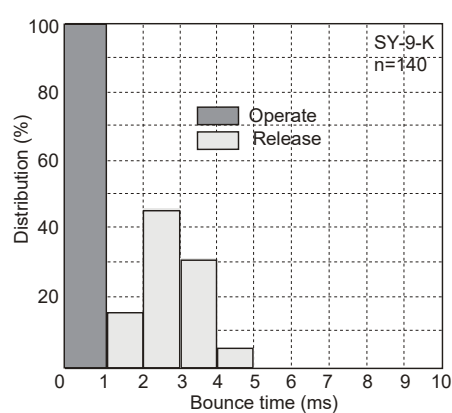
Distribution of operate & release voltage



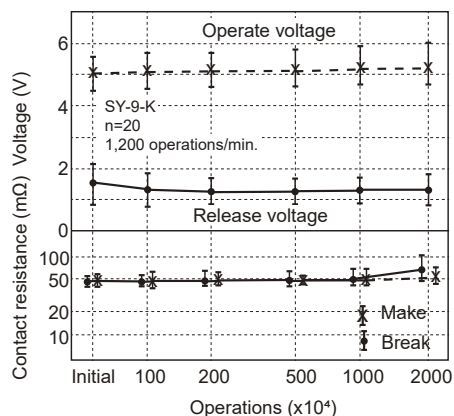
Distribution of operate & release time



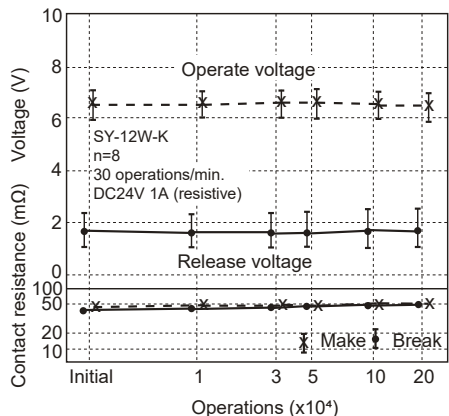
Distribution of bounce time



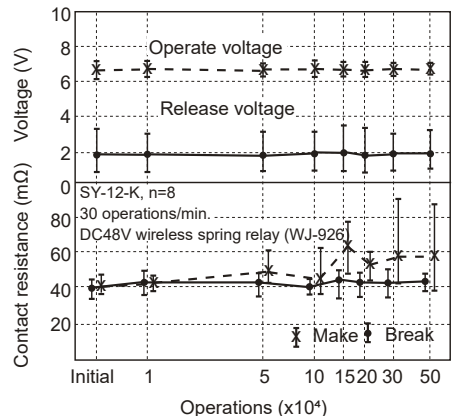
Mechanical life test



Electrical life test



Electrical life test



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.

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 340-360°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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