

MINIATURE LOW NOISE RELAY

1 POLE - 25A (For 12V car battery)

FTR-P7 Series

■ FEATURES

- Miniature size, 1 form C
- Low noise (average acoustic noise level: 45dB, distance 5cm)
- High contact capacity (25A, 1 hour)
- Application examples:
Wiper, Seat heater
- RoHS compliant



■ PARTNUMBER INFORMATION

[Example] FTR-P7 C N 012 W1 **
 (a) (b) (c) (d) (e) (f)

(a)	Relay type	FTR-P7	: FTR-P7 Series
(b)	Contact configuration	C	: 1 form C
(c)	Sealing	N	: Plastic sealed type
(d)	Coil rated voltage	012	: 12VDC
(e)	Contact material	W1	: Silver tin oxide alloy
(f)	Special type	To be assigned custom specification	

Actual marking does not carry the type name: "FTR"
 E.g.: Ordering code: FTR-P7CN012W1 Actual marking: P7CN012W1

FTR-P7 Series

■ SPECIFICATIONS

Item			FTR-P7
Contact data	Configuration		1 Form C
	Material		Silver tin oxide alloy
	Voltage drop (resistance)		Max. 100mV at 1A, 12VDC
	Contact rating		25A, 14VDC (motor locked)
	Max. carrying current		25A / 1 hour (25°C, nominal voltage applied to coil)
	Max. inrush current		35A
	Min. switching load (reference) *		1A, 6VDC
Coil data	Coil power consumption		Approximately 0.55W (at rated coil voltage)
	Operating temperature range		-40°C to +85°C (no frost)
	Storage temperature range		-40°C to +105°C (no frost)
Timing data	Operate (at nominal voltage)		Max. 10 ms (without bounce)
	Release (at nominal voltage)		Max. 5 ms (without bounce)
Life	Mechanical		Min. 1 x 10 ⁶ operations (with load for contact)
	Electrical		Min. 100 x 10 ³ operations (14VDC, 25A locked motor)
Insulation	Insulation resistance		Min. 100MΩ, 500VDC
	Dielectric withstanding voltage		500VAC, 1min.
Others	Vibration resistance	Misoperation	10 to 100Hz 43m/s ² (4.5G), constant acceleration **
		Endurance	10 to 100Hz 43m/s ² (4.5G), constant acceleration **
	Shock resistance	Misoperation	98m/s ² (11 ± 1ms)
		Endurance	980m/s ² (6 ± 1ms)
	Noise level		Average 45dB (5cm)

* 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 conditions and expected reliability levels.

** Double amplitude 1.5mm maximum , acceleration 44m/s maximum at each frequency level.

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■ COIL DATA

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance $\pm 10\%$ (Ω)	Must Operate Voltage* (VDC)	Must Release Voltage* (VDC)	Coil Power at Nominal Voltage (W)
012	12	260	7.7 (at 20°C)	0.9 (at 20°C)	0.55

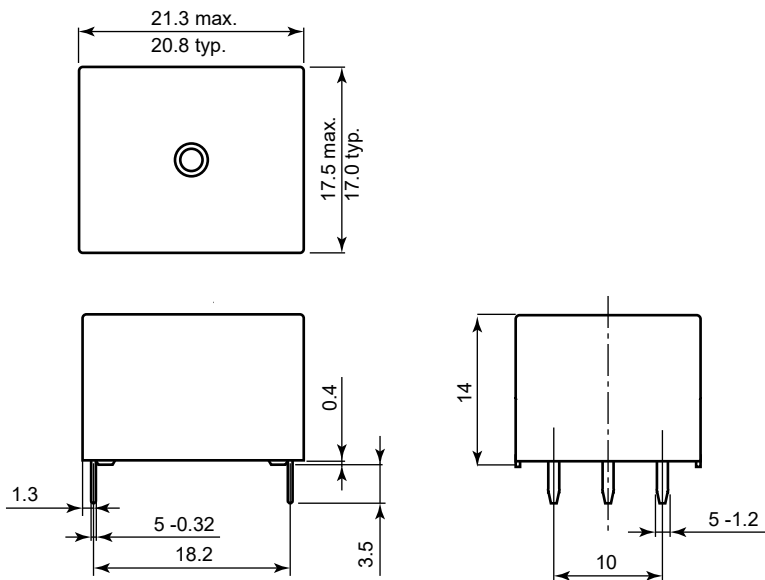
Note: All values in the table are valid for 20°C and zero contact current, unless otherwise stated.

* Specified operate values are valid for pulse wave voltage.

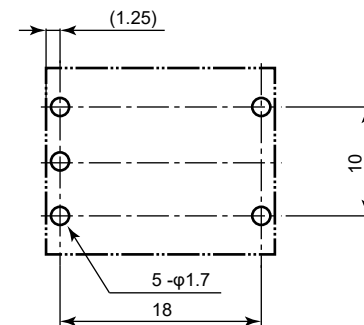
Note: Please apply rated coil voltage. In case of applying different coil voltage, please refer to reference data "operating coil voltage range" and apply adequate coil voltage.

■ DIMENSIONS

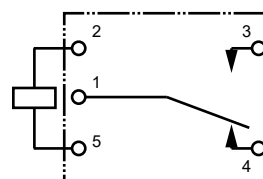
● Dimensions



● Schematics (Bottom view)



● PC board mounting hole layout (Bottom view)



- * Dimensions of the terminals do not include thickness of pre-solder.
- * Tolerance of PC board mounting hole layout : ± 0.1 unless otherwise specified.
- * Dimensions do not include tolerances. Please ask specification in case you need tolerances.

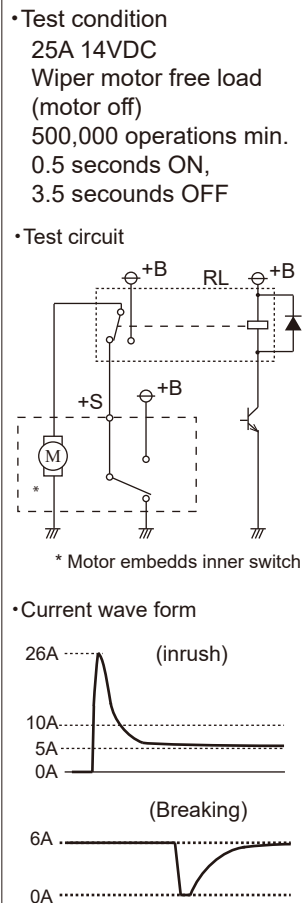
Unit:mm
(): Reference

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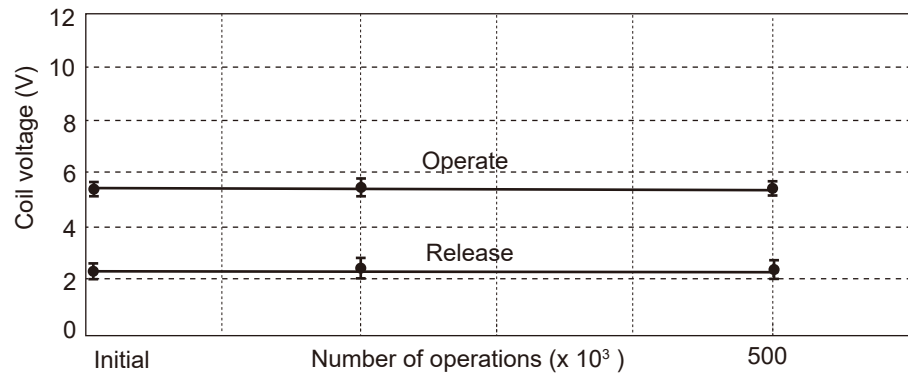
■ CHARACTERISTIC DATA

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

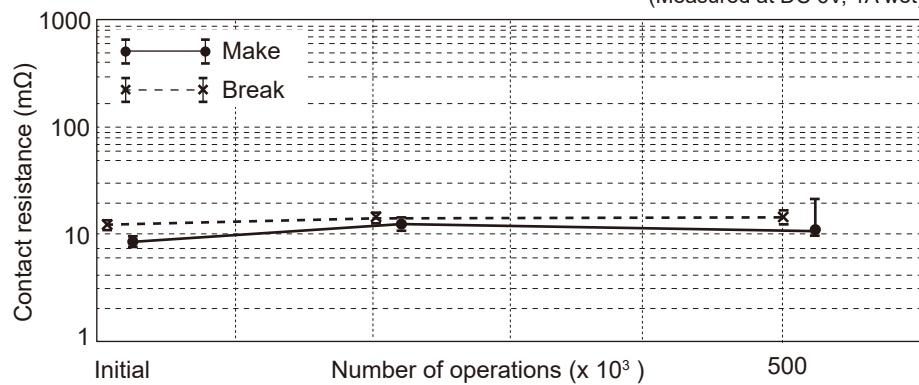
Life test (example)



Operate / release voltage

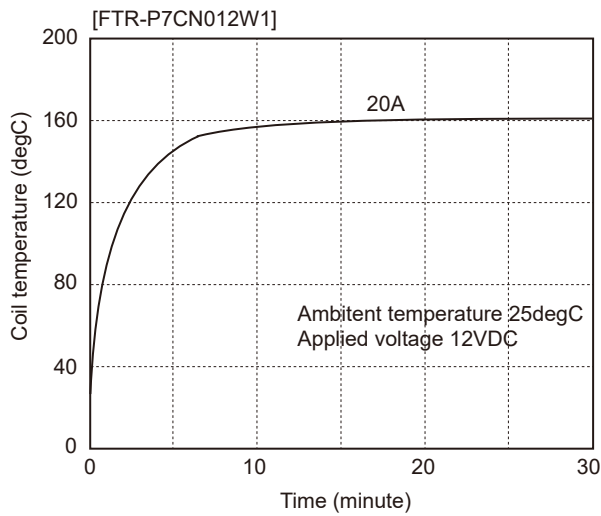


(Measured at DC 6V, 1A wet)

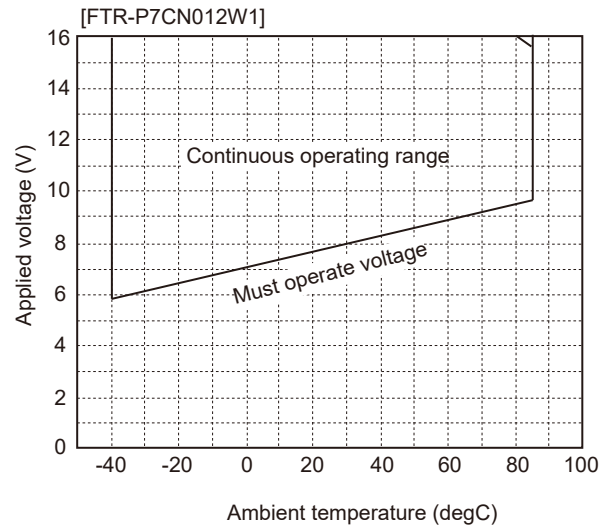


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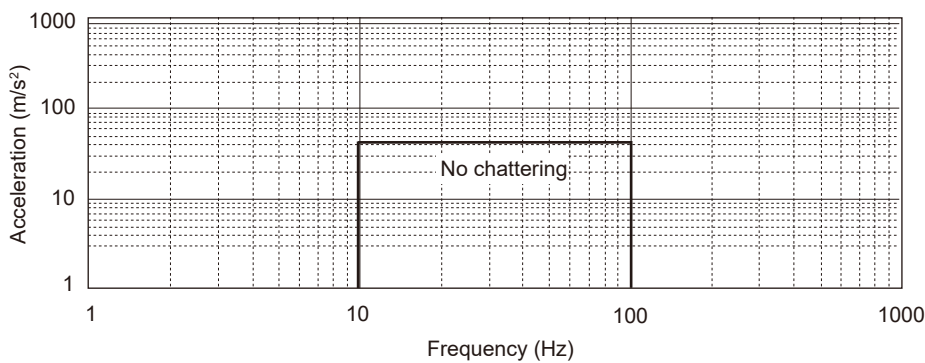
Coil temperature rise



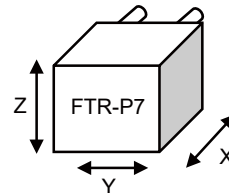
Operating coil voltage range



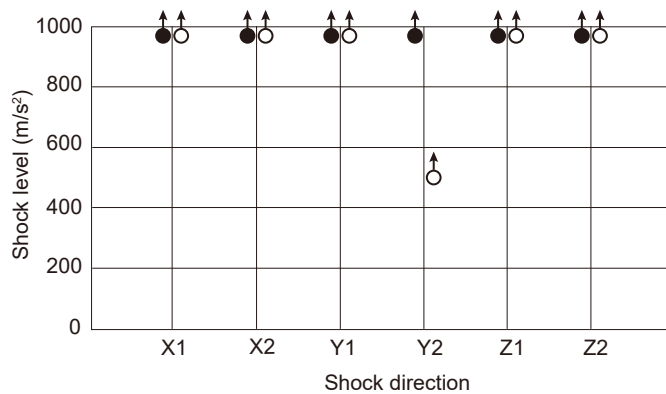
Vibration resistance characteristics



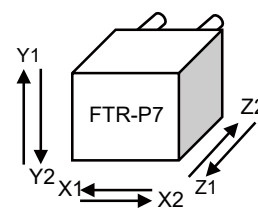
Frequency: 10 to 100Hz
Acceleration: 44.1m/s² max.
Direction of vibration: see diagram below
Detection level: chatter >1ms



Shock resistance characteristics



Shock application time: 6±1ms, half-sine wave
Test conditions: coil energized and de energized
Shock direction: see diagram below
Detection level: chatter >1ms



○ : Break contact (coil de-energized)
● : Make contact (coil energized)

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CAUTIONS

- All values mentioned in this datasheet are provided under ideal conditions. Please perform the confirmation test before actual use.
- Reflow soldering is prohibited for standard type.
- 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 relay coils according to specified polarity.

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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