

---

# 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 <sup>6</sup> operations (with load for contact)
	Electrical		Min. 100 x 10 <sup>3</sup> 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 <sup>2</sup> (4.5G), constant acceleration **
		Endurance	10 to 100Hz 43m/s <sup>2</sup> (4.5G), constant acceleration **
	Shock resistance	Misoperation	98m/s <sup>2</sup> (11 ± 1ms)
		Endurance	980m/s <sup>2</sup> (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.

# FTR-P7 Series

## ■ COIL DATA

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance $\pm 10\%$ ( $\Omega$ )	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

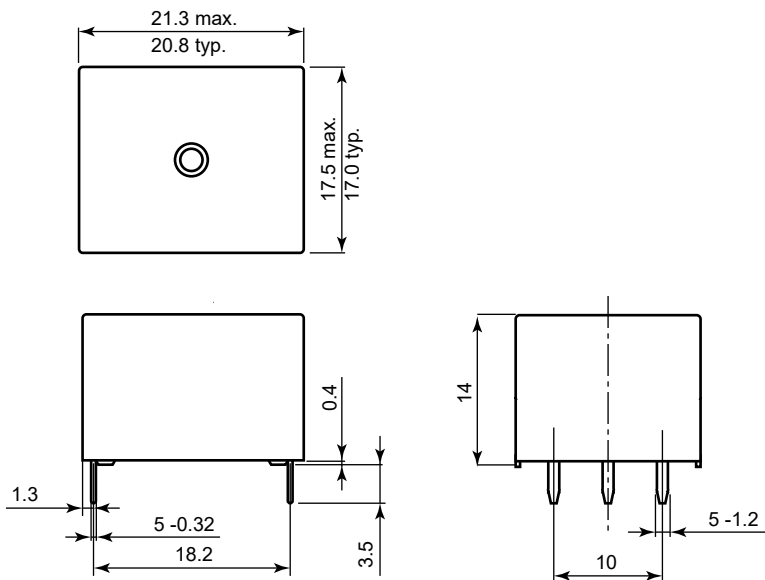
Note: All values in the table are valid for 20°C and zero contact current, unless otherwise stated.

\* Specified operate values are valid for pulse wave voltage.

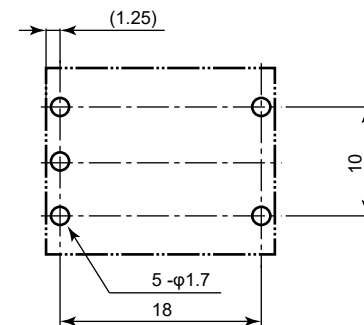
Note: Please apply rated coil voltage. In case of applying different coil voltage, please refer to reference data "operating coil voltage range" and apply adequate coil voltage.

## ■ DIMENSIONS

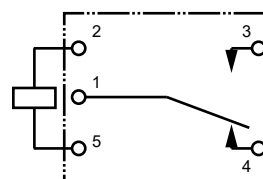
### ● Dimensions



### ● 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 :  $\pm 0.1$  unless otherwise specified.
- \* Dimensions do not include tolerances. Please ask specification in case you need tolerances.

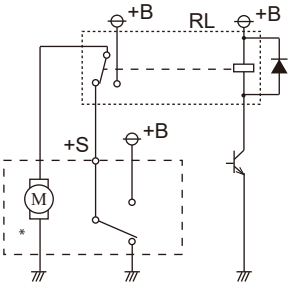
Unit:mm  
( ): Reference

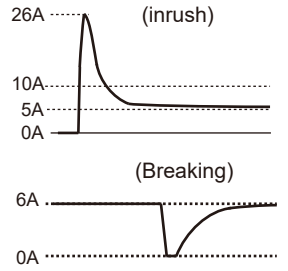
# FTR-P7 Series

## CHARACTERISTIC DATA

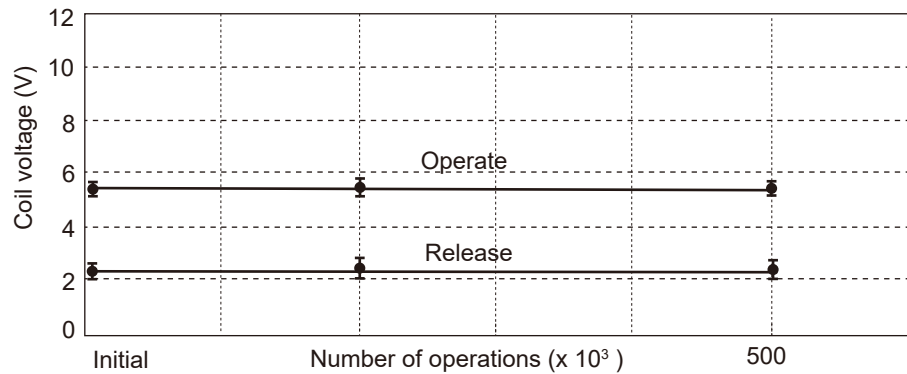
(Characteristic data is not guaranteed value but measured values of samples from production line)

### Life test (example)

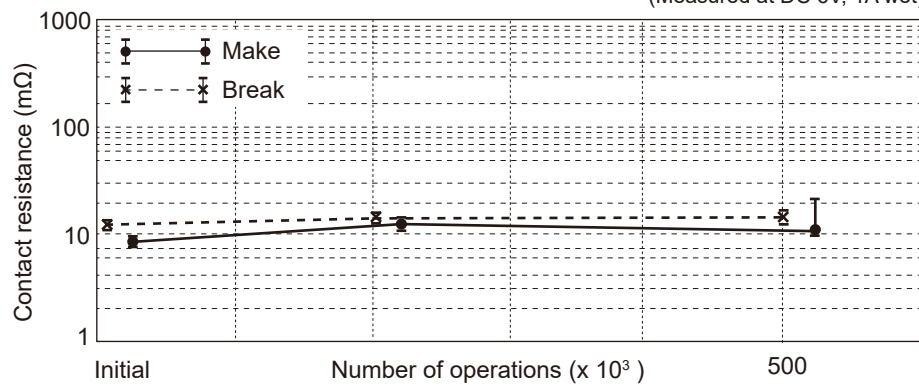
- Test condition
  - 25A 14VDC
  - Wiper motor free load (motor off)
  - 500,000 operations min.
  - 0.5 seconds ON,
  - 3.5 seconds OFF
- Test circuit
 

\* Motor embeds inner switch
- Current wave form
 

### Operate / release voltage

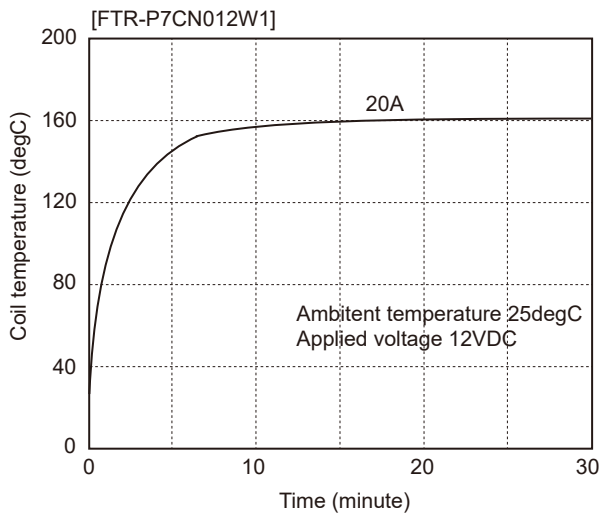


(Measured at DC 6V, 1A wet)

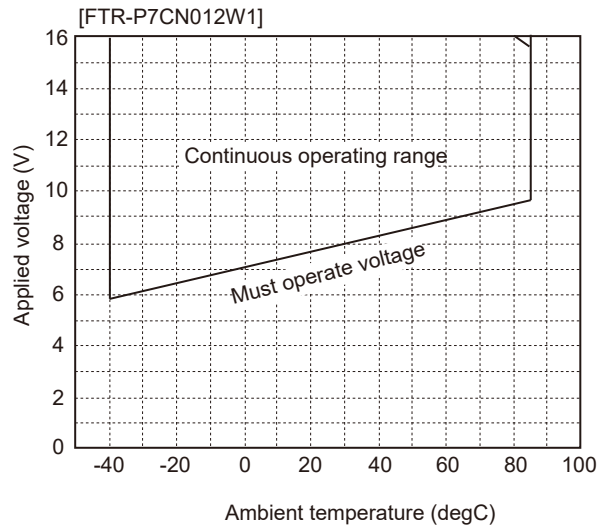


# FTR-P7 Series

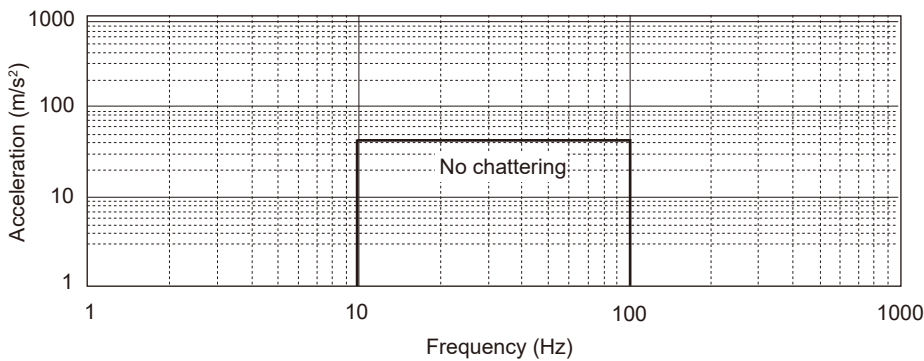
Coil temperature rise



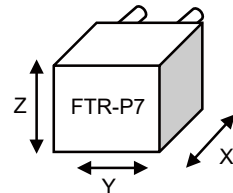
Operating coil voltage range



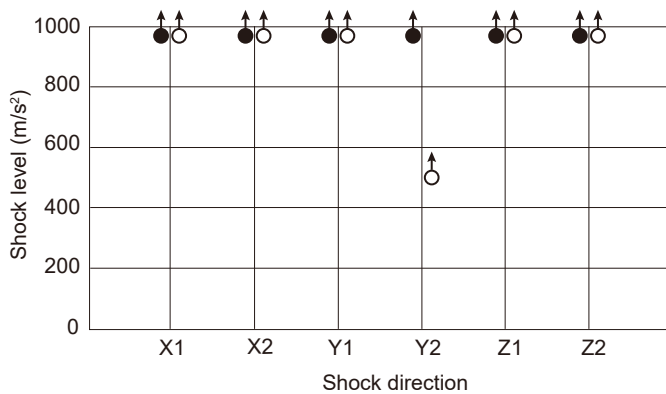
Vibration resistance characteristics



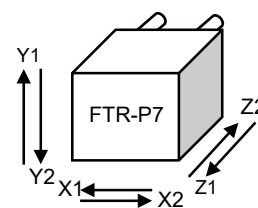
Frequency: 10 to 100Hz  
Acceleration: 44.1m/s<sup>2</sup> max.  
Direction of vibraton: see diagram below  
Detection level: chatter >1ms



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)

# FTR-P7 Series

## 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.

---

## Contact

### Japan

FCL COMPONENTS LIMITED  
Shinagawa Seaside Park Tower  
12-4, Higashi-shinagawa 4-chome,  
Tokyo 140 0002, Japan  
Tel: +81-3-3450-1682  
Email: fcl-contact@cs.fcl-components.com

### North and South America

FCL COMPONENTS AMERICA, INC.  
2055 Gateway Place Suite 480,  
San Jose, CA 95110 USA  
Tel: +1-408-745-4900  
Email: fcai.components@fcl-components.com

### Europe

FCL COMPONENTS EUROPE B.V.  
Diamantlaan 25  
2132 WV Hoofddorp, Netherlands  
Tel: +31-23-556-0910  
Email: info.fceu@cs.fcl-components.com

### Asia Pacific

FCL COMPONENTS ASIA PTE LTD.  
No. 20 Harbour Drive, #07-01B  
Singapore 117612  
Tel: +65-6375-8560  
Email: fcal@fcl-components.com

### China

FCL COMPONENTS (SHANGHAI) CO., LTD.  
Unit 1105, Central Park - Jing An,  
No.329 Heng Feng Road, Shanghai 200070,  
China  
Tel: +86-21-3253 0998  
Email: fcsh@fcl-components.com

**Web:** [www.fcl-components.com/en/](http://www.fcl-components.com/en/)

---

© 2024 FCL Components Limited. All rights reserved. All trademarks or registered trademarks are the property of their respective owners.

FCL Products are intended for general use, including without limitation, in personal, household and office environments, in buildings and for ordinary use in the industry. FCL Products are not intended to be used in applications where extremely high safety is required ("High Safety Required Applications"), such as, but not limited to, applications in nuclear facilities, in aircraft automatic flight control, in air traffic control, in mass transit system control, in missile launch system, in weapon systems, in medical equipment for life support or any application involving a direct serious risk of physical injury or death.

Please do not use FCL Products without securing the sufficient safety and reliability required for the High Safety Required Applications. In addition, FCL shall not be liable against the customer and/or any third party for any claims or damages arising in connection with the use of FCL Products in the High Safety Required Applications.

FCL warrants that its Products, if properly used and services, will conform to their specification and will be free from defects in material and workmanship for twelve months from delivery.

The implied warranties of merchantability and fitness for a particular purpose and all other warranties, representations and conditions, express or implied by statute, trade usage or otherwise, except as set forth in this warranty, are excluded and shall not apply to the Products delivered.

The contents, data and information in this datasheet are provided by FCL Components Limited as a service only to its user and only for general information purposes. The use of the contents, data and information provided in this datasheet is at the users' own risk.

FCL has assembled this datasheet with care and will endeavor to keep the contents, data and information correct, accurate, comprehensive, complete and up to date.

FCL Components Limited and affiliated companies do however not accept any responsibility or liability on their behalf, nor on behalf of its employees, for any loss or damage, direct, indirect or consequential, with respect to this datasheet, its contents, data, and information and related graphics and the correctness, reliability, accuracy, comprehensiveness, usefulness, availability and completeness thereof.

Nor do FCL Components Limited and affiliated companies accept on their behalf, nor on behalf of its employees, any responsibility or liability with respect to these datasheets, its contents, data, information and related graphics and the correctness, reliability, accuracy, comprehensiveness, usefulness, availability and completeness thereof. Rev. February 1, 2024.

---