

# AUTOMOTIVE RELAY

## 1 POLE – 30A

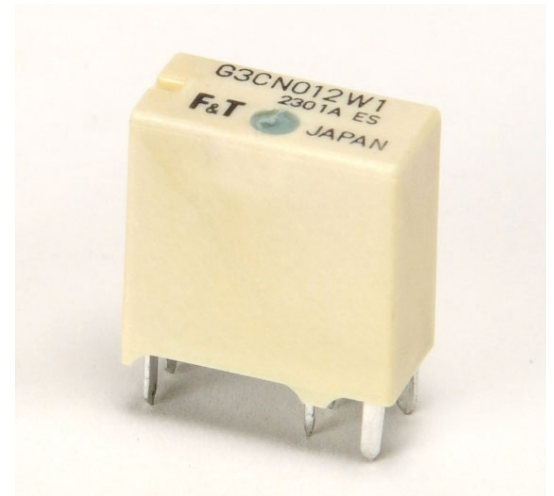
# FTR-G3 Series

RoHS Compliant

### ■ FEATURES

- Compact for high density packaging
- World smallest in 30A class relays\*
- 30A fuse rate
- Minimum 100,000 operations at 14V 30A
- Through hole reflow soldering capability. Flow soldering type is also available.
- Plastic sealed or flux proof
- No polarity on coil terminals.

\* Internal investigation as of March 2023



### ■ APPLICATIONS

Control of power window, power seat, tilt steering, door lock, wiper, sunroof etc.

### ■ PART NUMBERS

[Example] FTR-G3   C   N   012   W1 - RW  
(a)   (b)   (c)   (d)   (e)   (f)

|     |                      |  |
|-----|----------------------|--|
| (a) | Relay type           | FTR-G3 series  |
| (b) | Contact arrangement  | A : 1a (1 form A)<br>C : 1c (1 Form C)   |
| (c) | Contact gap          | N : 0.25 mm  |
| (d) | Nominal coil voltage | 012 : 12VDC  |
| (e) | Contact material     | W1 : Silver tin oxide indium   |
| (f) | Soldering            | Nil : Flow soldering (reflow is not available)<br>RW : Reflow capable (Through hole reflow, plastic sealed type)<br>VH : Reflow capable (Through hole reflow, flux proof type) |

Note: Actual marking does not carry the type name: "FTR" and option code for reflow capable type.  
E.g.: Ordering code: FTR-G3CN012W1-RW, actual marking: G3CN012W1.

# FTR-G3 Series

## ■ SPECIFICATIONS

| Item         |                                 | Specifications                        | Remarks / Conditions   |
|--------------|---------------------------------|---------------------------------------|--|
| Contact Data | Arrangement                     | 1a (1 form A), 1c (1 form C)          |  |
|              | Material                        | Silver tin oxide indium               |  |
|              | Construction                    | Single                                |  |
|              | Rating                          | 30A 14VDC                             | Locked motor load  |
|              | Max. carrying current           | 40.5A, 30 minutes                     | At 20°C, nominal coil voltage, relay shall be mounted on PCB, double layer PC board, copper foil thickness 4oz.(140μm), copper foil width 3.76 x (1 ± 5%)mm each, copper foil length 50mm ± 1m |
|              | Max. inrush current             | 35A 16VDC                             | Reference  |
|              | Min. switching load*1           | 1A 12VDC                              | Reference  |
|              | Voltage drop                    | Max. 100mV                            | At 1A 12VDC  |
| Coil         | Rated power consumption         | Approx. 640mW                         | At 20°C  |
|              | Operating temperature range     | -40°C to +125°C                       | No frost   |
| Time         | Operate                         | Max. 10ms                             | At nominal voltage, without bounce   |
|              | Release                         | Max. 5ms                              | At nominal voltage, without bounce, without diode  |
| Life         | Mechanical                      | Min. 1 x 10 <sup>6</sup> operations   |  |
|              | Electrical                      | Min. 100 x 10 <sup>3</sup> operations | At rated contact rating  |
| Insulation   | Insulation resistance           |                                       | Min. 100MΩ   |
|              | Dielectric withstanding voltage | Open contacts                         | 500VAC (50/60Hz), 1 minute   |
|              |                                 | Coil-contact                          | 500VAC (50/60Hz), 1 minute   |
| Others       | Vibration resistance            | Misoperation                          | 10 to 200Hz, acceleration 44m/s <sup>2</sup> (4.5G) constant acceleration  |
|              |                                 | Endurance                             | 10 to 200Hz, acceleration 44m/s <sup>2</sup> (4.5G) constant acceleration  |
|              | Shock resistance                | Misoperation                          | 100m/s <sup>2</sup> (11 ± 1ms)   |
|              |                                 | Endurance                             | 1,000m/s <sup>2</sup> (6 ± 1ms)  |
|              | Dimensions / Weight             |                                       | 6.6 x 13.7 x 14.0 mm / Approx. 4.0g  |

\*: 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.

❗ Care shall be taken on the heat generated on PC board when maximum carrying current exceed 10A.

# FTR-G3 Series

## COIL DATA

| Coil Code | Rated Coil Voltage (VDC) | Coil Resistance $\pm 10\%$ ( $\Omega$ ) | Must Operate Voltage* (VDC)      | Must Release Voltage* (VDC)     | Nominal Power (W) |
|-----------|--------------------------|---|----------------------------------|---------------------------------|-------------------|
| 012       | 12                       | 225                                     | 7.3 (at 20°C)<br>10.4 (at 125°C) | 1.0 (at 20°C)<br>1.5 (at 125°C) | Approx. 0.64      |

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

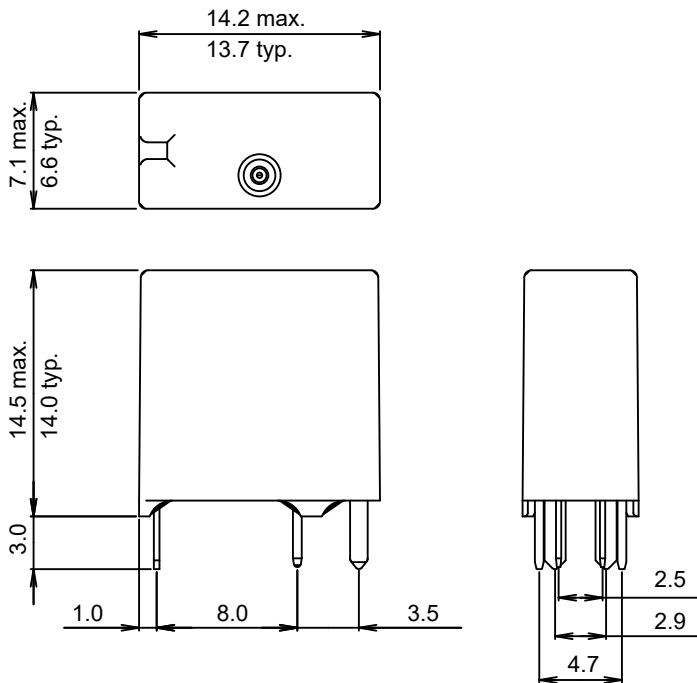
Note: Please use at rated coil voltage.

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

## Dimensions

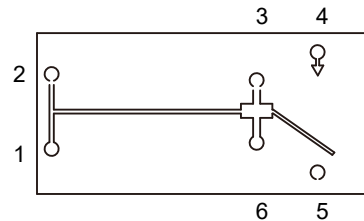
## DIMENSIONS

### Dimensions (1c, 1a)

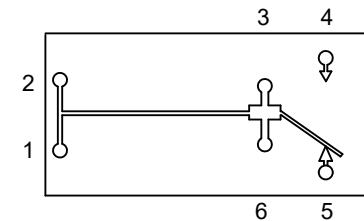


### Schematics (Bottom view)

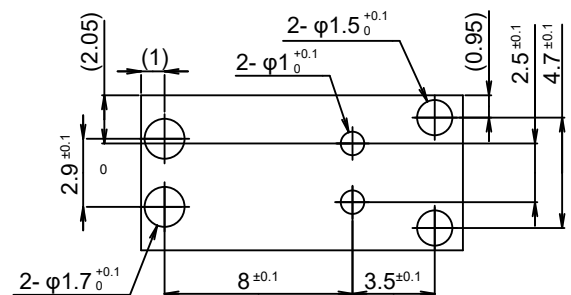
#### 1a (FTR-G3AN)



#### 1c (FTR-G3CN)



### PC Board Mounting Hle Layout (Bottom view)



- Dimensions of the terminals do not include thickness of pre-solder.
- Dimensions do not include tolerances.
- No. 5 terminal of 1a type is a dummy terminal.

Unit: mm  
( ): Reference

# FTR-G3 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 flow soldering 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.

## 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

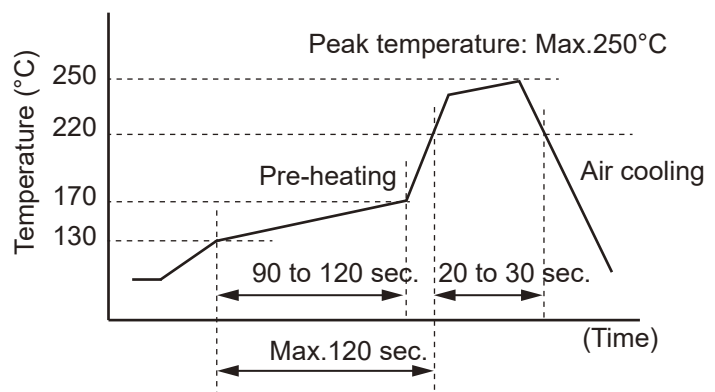
#### Solder by Soldering Iron:

Soldering Iron: 30-60W  
Temperature: maximum 340-360°C  
Duration: maximum 3 sec.

#### Reflow Solder Condition:

(Applicable only for reflow capable type)

Recommended reflow soldering profile  
IRS (infrared reflow soldering)



**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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## 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/)

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