

AUTOMOTIVE RELAY

1 POLE – 30A

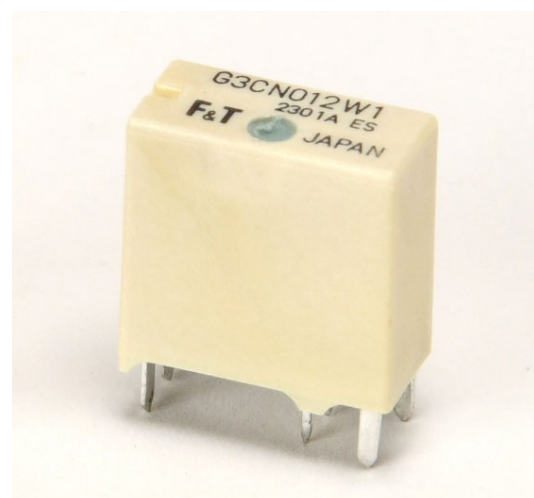
FTR-G3 Series

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) 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) RW : Reflow capable (Through hole reflow, plastic sealed type) 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 ⁶ operations	
	Electrical		Min. 100 x 10 ³ operations	At rated contact rating
Insulation	Insulation resistance		Min. 100MΩ	At 500VDC initial
	Dielectric withstanding voltage	Open contacts	500VAC (50/60Hz), 1 minute	Initial
		Coil-contact	500VAC (50/60Hz), 1 minute	Initial
Others	Vibration resistance	Misoperation	10 to 200Hz, acceleration 44m/s ² (4.5G) constant acceleration	Direction X, Y, Z, coil ON/OFF total 6 cycles
		Endurance	10 to 200Hz, acceleration 44m/s ² (4.5G) constant acceleration	Direction X, Y, Z, coil OFF total 6 hours
	Shock resistance	Misoperation	100m/s ² (11 ± 1ms)	Direction X, Y, Z, coil ON/FF total 36 times
		Endurance	1,000m/s ² (6 ± 1ms)	Direction X, Y, Z, coil OFF total 18 times
	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 $\pm 10\%$ (Ω)	Must Operate Voltage* (VDC)	Must Release Voltage* (VDC)	Nominal Power (W)
012	12	225	7.3 (at 20°C) 10.4 (at 125°C)	1.0 (at 20°C) 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.

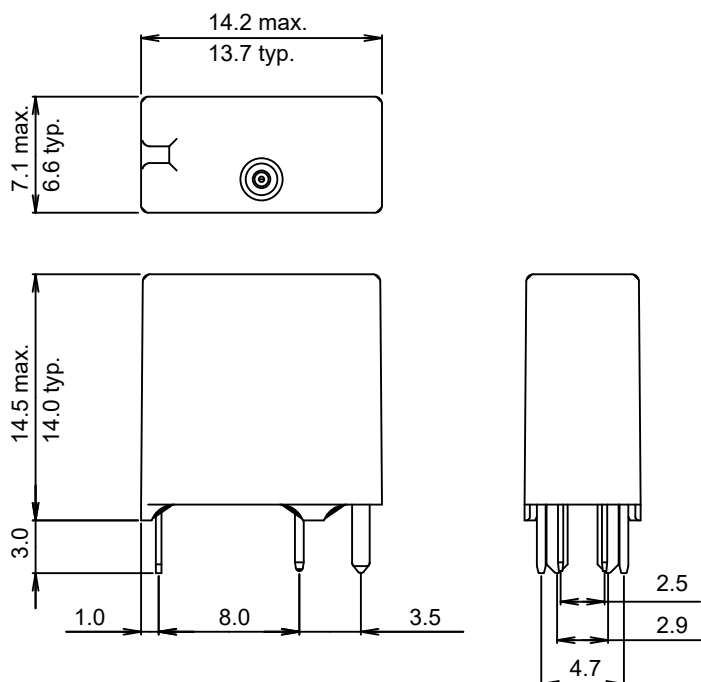
Note: Please use at rated coil voltage.

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

Dimensions

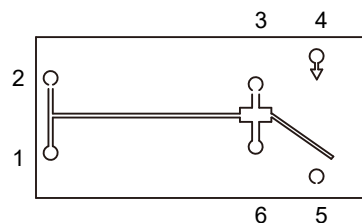
DIMENSIONS

• Dimensions (1c, 1a)

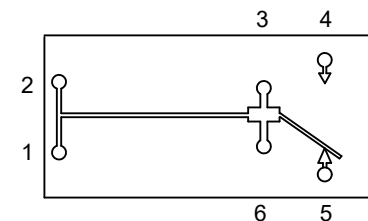


• Schematics (Bottom view)

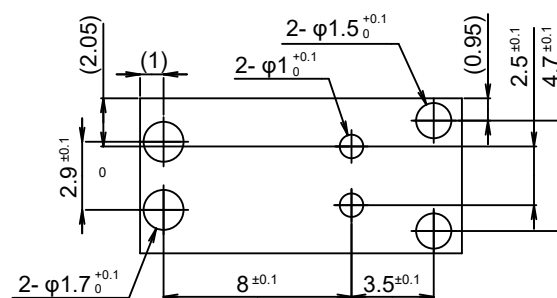
• 1a (FTR-G3AN)



• 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

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

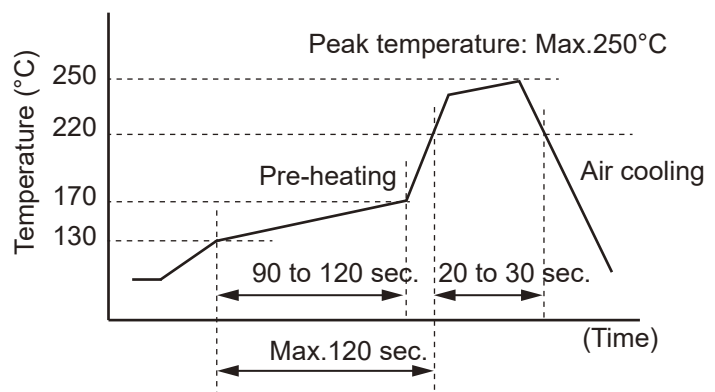
Solder by Soldering Iron:

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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