

SIGNAL RELAY

2 POLES – 2A High Isolation Wide Contact Gap

FTR-C2 Series

■ FEATURES

- DPDT 2A
- Contact gap: more than 2.0mm
- Conforms to IEC60950 / EN60950 / UL1950 / CSA C22.2 No.950
Working voltage 250V
- Insulation:
Clearance 2.0 mm (between open contacts, coil and contacts, contact sets)
Creepage 2.5 mm (between open contacts, coil and contacts, contact sets)
- High reliability bifurcated contacts
- Power consumption 300 mW
- Latching types available
- RoHS compliant
- Plastic sealed



■ PARTNUMBER INFORMATION

[Example] FTR-C2 C A 012 G
 (a) (b) (c) (d) (e)

(a)	Relay type	FTR-C2	: FTR-C2 Series
(b)	Terminal type	C G	: Through hole type : Surface mount type
(c)	Coil type	A B	: Standard type : Latching type
(d)	Coil rated voltage	012	: 3...24 VDC See coil rating table
(e)	Contact material	G	: Gold plated silver alloy (stationary) / silver palladium (movable)

Remarks: Actual marking on relay would not carry code FTR and be as below:
Ordering code: FTR-C2CA012G Actual marking: C2CA012G
Note: FTR-C2 series available in tube packaging only.

FTR-C2 Series

■ SPECIFICATIONS

Item		Standard type FTR-C2 () A	Latching type FTR-C2 () B	
Contact data	Configuration	2 form C		
	Construction	Bifurcated contacts		
	Material	Gold overlay silver palladium (stationary contact) Silver palladium (movable contact)		
	Resistance (initial)	Max. 150 mΩ at 1 A, 6 VDC		
	Contact rating (resistive)	0.3A, 125 VAC / 1A, 30 VDC		
	Max. carrying current	2A		
	Max. switching voltage	250 VAC / 220 VDC		
	Max. switching power	62.5 VA / 30 W		
	Min. switching load*	0.01 A, 10 mVDC		
Life	Mechanical	Min. 10 x 10 ⁶ operations (at 10 Hz)		
	Electrical	DC contact rating	Min. 100 x 10 ³ operations	
		AC contact rating	Min. 100 x 10 ³ operations	
Coil data	Rated power	300 mW	150 mW	
	Operate power	169 mW	85 mW	
	Operate temperature range	-40°C to +85°C (no frost)		
Timing data	Operate (at nominal voltage)	Max. 15 ms (without bounce)		
	Release (at nominal voltage)	Max. 15 ms (no diode, without bounce)		
Insulation	Resistance (initial)	Min. 1,000MΩ at 500VDC		
	Dielectric strength	Open contacts	1,500 VAC (50/60Hz) 1min	
		Adjacent contacts	1,500 VAC (50/60Hz) 1min	
		Contact to coil	2,000 VAC (50/60Hz) 1min	
	Surge strength	Coil to contact	2,500 V / 2 x 10μs standard wave	
	Clearance	Open contacts	2.0 mm	
		Adjacent contacts	2.0 mm	
		Coil and contacts	2.0 mm	
	Creepage	Open contacts	2.0 mm	
		Adjacent contacts	2.0 mm	
Coil and contacts		2.5 mm		
Others	Vibration resistance	Misoperation	10 to 55 Hz double amplitude 3.3 mm	
		Endurance	10 to 55 Hz double amplitude 5.0 mm	
	Shock resistance	Misoperation	300 m/s ²	
		Endurance	1,000 m/s ²	
	Weight	Approximately 3.7 g		
Sealing	RT III (plastic sealed)			

*: 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.

FTR-C2 Series

■ COIL RATING

- Standard type

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance $\pm 10\%$ (Ω)	Must Operate Voltage (VDC) *	Must Release Voltage (VDC) *	Max. Coil Voltage (VDC)	Rated Power (mW)
003	3	30	2.25	0.3	7.2	300
005	5	83.3	3.75	0.5	12	
012	12	480	9	1.2	28.8	
024	24	1,920	18	2.4	57.6	

- Latching type (1 coil)

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance $\pm 10\%$ (Ω)	Set Voltage (VDC) *	Reset Voltage (VDC) *	Max. Coil Voltage (VDC)	Rated Power (mW)
003	3	60	+2.25	-2.25	7.2	150
005	5	167	+3.75	-3.75	12	
012	12	960	+9	-9	28.8	
024	24	3,840	+18	-18	57.6	

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

*: Specified operated values are valid for pulse voltage.

■ SAFETY STANDARDS

Type	Compliance	Contact Rating
UL	UL508 File No. E63615	Flammability: UL94-V0 (Plastics)
		0.3A, 125VAC (resistive) 1A, 30VDC 2A, 30VDC 0.3A, 110VDC
CSA	C22.2 No. 14 File No. LR40304	

Comply with Telcordia specifications and meet BSI, IEC 60950-1:2006

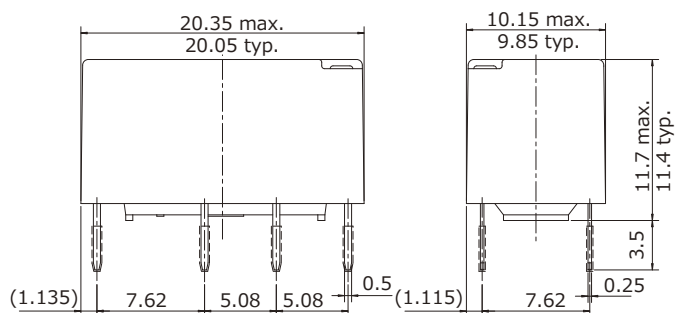
Marking only for UL, CSA

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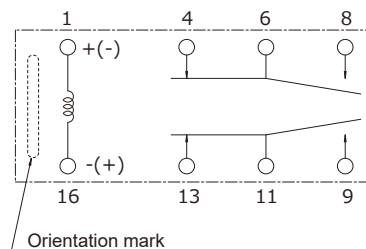
■ DIMENSIONS

■ Through Hole Type

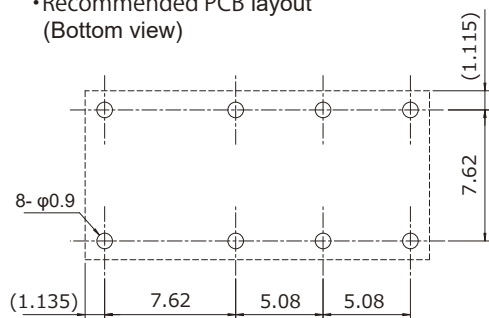
• Dimensions



• Schematics (Bottom view)

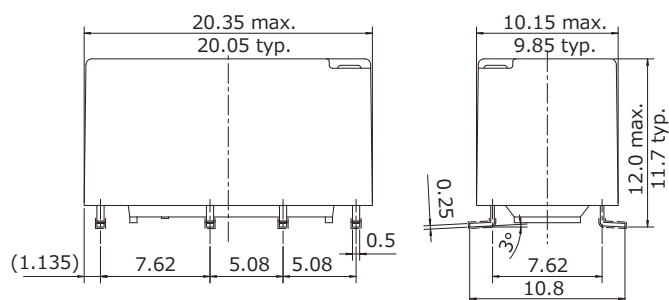


• Recommended PCB layout (Bottom view)

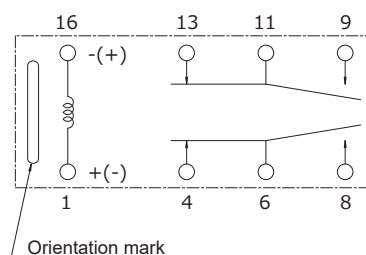


■ Surface Mount Type

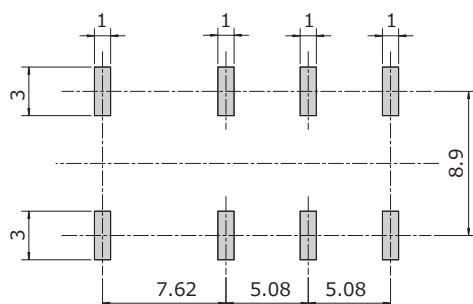
• Dimensions



• Schematics (Top view)



• Recommended PCB layout (Top view)



(): Reference Unit: mm

Notes:

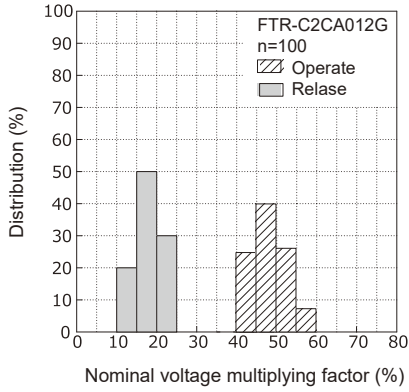
- Dimensions of the terminals do not include thickness of pre-solder
- Dimensions do not include tolerances. Please ask specification in the case you need tolerances.
- Tolerance of PCB layout: ± 0.1 unless otherwise specified.
- +/- : Polarity to apply set voltage, (+)/(-) : Polarity to apply reset voltage
- Contacts show de-energized/reset position

FTR-C2 Series

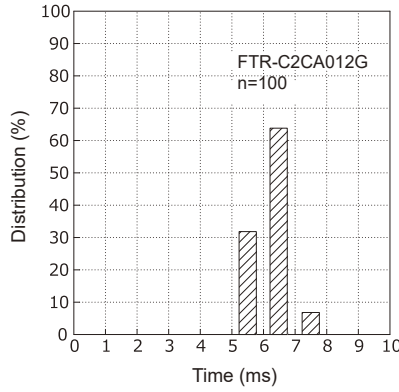
■ CHARACTERISTIC DATA (Reference)

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

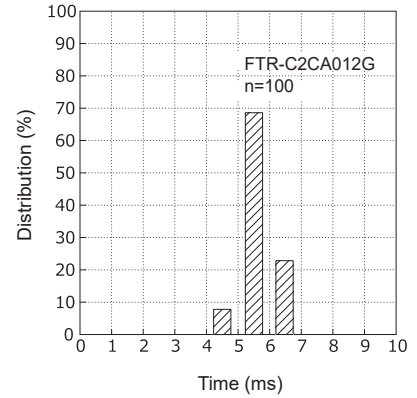
Distribution of operate/release voltage



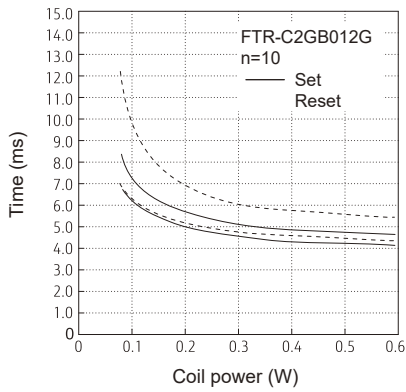
Distribution of operate time



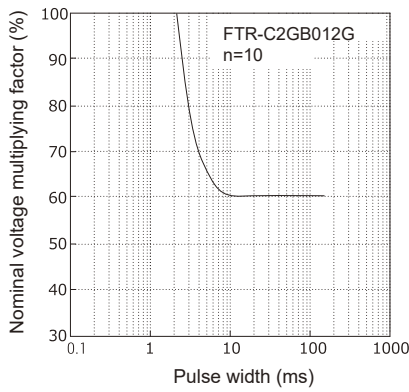
Distribution of release time



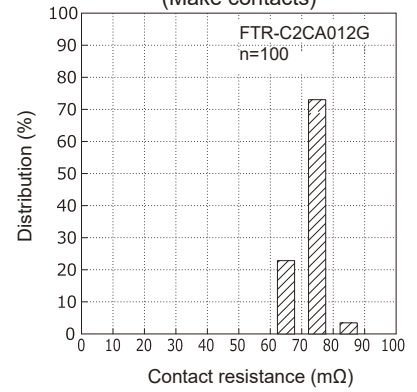
Set/reset time characteristic



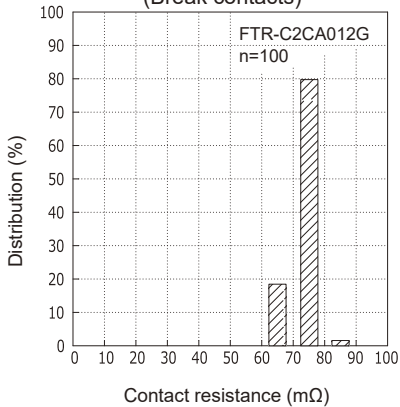
Pulse characteristic



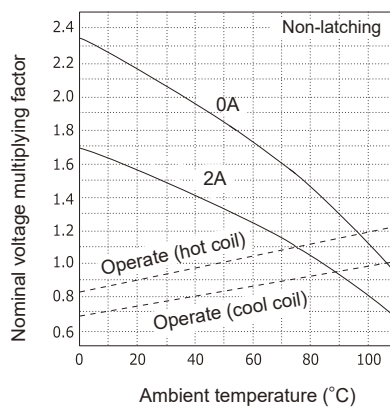
Distribution of contact resistance (Make contacts)



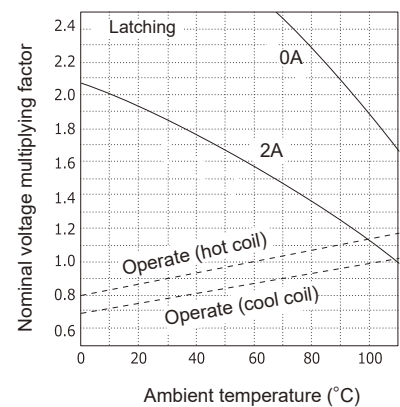
Distribution of contact resistance (Break contacts)



Operate range (non-latching)



Operate range (latching)



FTR-C2 Series

CAUTIONS

- All values mentioned in this datasheet are provided under ideal conditions. Please perform the confirmation test before actual use.
- Reflow soldering is not available with 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.

Notes for latching relays

- Latching relays are shipped in the state reset, but state may change due to shock during transportation or mounting. Before using the relays, it is advisable to bring the relays in necessary state (set or reset) and program a circuit sequence. Otherwise, it will or will not operate simultaneously with power activation.
- Please connect relay coils according to specified polarity.
- Do not apply voltage to both set coil and reset coil at a time.

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

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

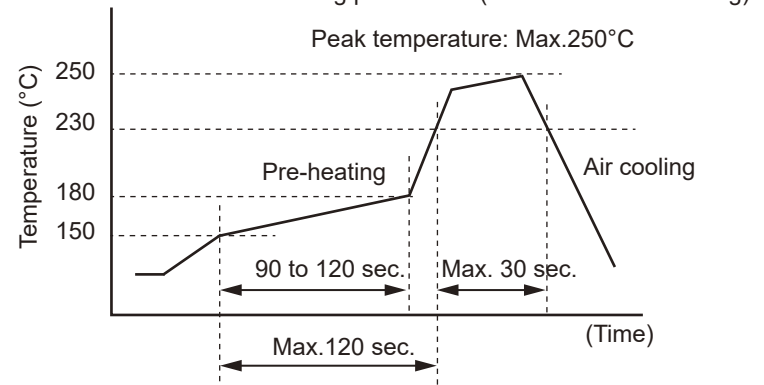
Solder by Soldering Iron:

Soldering Iron: 30-60W
Temperature: Maximum 350-360°C
Duration: Maximum 3 sec.

Reflow Solder Condition:

(Applicable only for reflow capable type)

Recommended reflow soldering profile: IRS (infrared reflow soldering)



Important notes for reflow soldering

- Temperature shall be measured at PC board upper surface.
- Temperature at PC board upper surface may be changed depending on size of PC board, components mounted on the PC board and/or heating method. Please perform the confirmation test with actual PC board.
- This reflow condition is applicable only for reflow-capable relays. Do not reflow reflow-incapable relays.
- Recommended solder for assembly: Sn-3.0 Ag -0.5 Cu.

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

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