SIGNAL RELAY
2 POLES - 2A HIGH ISOLATION WIDE CONTACT GAP

FTR-C2 Series

RoHS Compliant

■ FEATURES

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

■ APPLICATIONS

VoIP, modems, STB, interlock switches etc.

■ PART NUMBERS

[Example] FTR-C2 G A 005 G
(a) (b) (c) (d) (e)

(a)	Relay type	FTR-C2 series
(b)	Contact configuration	C : Through hole type G : Surface mount type
(c)	Coil type	A : Standard type B : Latching type
(d)	Coil rated voltage	005 : 3....24VDC Please refer to coil rating table
(e)	Contact material	G : Gold plated silver palladium (stationary contact) Silver palladium (movable contact)

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.

■ SPECIFICATIONS

Item			Specifications		Remarks/Conditions
			Non-latching FTR-C2( )A	Latching FTR-C2( )B	
Contact Data	Configuration		2c (2 Form C)		
	Construction		Bifurcated		
	Material		Gold plated silver palladium (stationary contact) Silver palladium (movable contact)		
	Resistance (initial)		Max. 150mΩ		At 1A, 6VDC
	Contact rating		0.3A, 125VAC/1A, 30VDC		Resistive
	Max. switching voltage		250VAC/220VDC		
	Max. switching power		62.5VA/30W		
	Max. carrying current		2A		
	Min. switching load *1		0.01mA, 10mVDC		Reference
Coil	Rated power		300mW	150mW	
	Operate power		169mW	85mW	
	Pulse width		-	Min. 20ms	
	Operating temperature range		-40°C to +85°C		No frost
Time	Operate (at nominal voltage)		Max. 15ms		Without bounce
	Release (at nominal voltage)		Max. 15ms		Without bounce
Life	Mechanical		Min. 10 x 10^6 operations		
	Electrical (resistive)		Min. 100 x 10^3 operations at 0.3A, 125VAC/1A, 30VDC		
Insulation	Insulation resistance		Min. 1,000MΩ		At 500VDC
	Dielectric strength	Open contacts	1,500VAC (50/60Hz) 1min.		
		Adjacent contacts	1,500VAC (50/60Hz) 1min.		
		Contacts to coil	2,000VAC (50/60Hz) 1min.		
	Surge strength	Contacts to coil	2,500V, 2 x 10μs standard wave		
	Clearance	Open contacts	2.0mm		
		Adjacent contacts	2.0mm		
		Contacts to coil	2.0mm		
	Creepage	Open contacts	2.0mm		
		Adjacent contacts	2.0mm		
		Contacts to coil	2.5mm		
Other	Vibration resistance	Misoperation>1μs	10 to 55 to 10Hz single amplitude 1.65mm		Coil ON/OFF, 3 axis, total 6 cycles
		Endurance	10 to 55 to 10Hz single amplitude 2.5mm		Coil OFF, 3 axis, total 6 hours
	Sock resistance	Misoperation>1μs	Min. 300m/s^2 (11±1ms)		Coil ON/OFF, 3 axis, total 36 operations
		Endurance	Min. 1,000m/s^2 (6±1ms)		Coil OFF, 3 axis, total 18 operations
	Dimensions / Weight		9.85 x 20.05 x 11.4mm / Approximately 3.7g		
	Sealing		RT III (plastic sealed)		

*1: 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.

■ COIL DATA

● Standard (non-latching) type

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance (Ω) ±10%	Must Operate Voltage* (VDC)	Must Release Voltage* (VDC)	Nominal Coil Power (mW)
003	3	30	2.25	0.3	300
005	5	83.3	3.75	0.5	
012	12	480	9.0	1.2	
024	24	1,920	18.0	2.4	

● Latching type

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance (Ω) ±10%	Set Voltage* (VDC)	Reset Voltage* (VDC)	Nominal Coil Power (mW)
003	3	60	+2.25	-2.25	150
005	5	167	+3.75	-3.75	
012	12	960	+9.0	-9.0	
024	24	3,840	+18.0	-18.0	

Note: All values in the table are valid for 20°C and zero contact current unless otherwise specified.
* Specified operate values are valid for pulse wave voltage.

■ SAFETY STANDARDS

Type	Compliance	Contact Rating
UL	Flammability: UL 94-V-0 (plastics)	
	UL 508 File No. E63615	0.3A, 125VAC (resistive) 1A, 30VDC 2A, 30VDC 0.3A, 110VDC
CSA	C22.2 No.14 File No. LR 40304	

Comply with Telcordia specifications and meet BSI, IEC 60950-1:2006
Marking only for UL, CSA

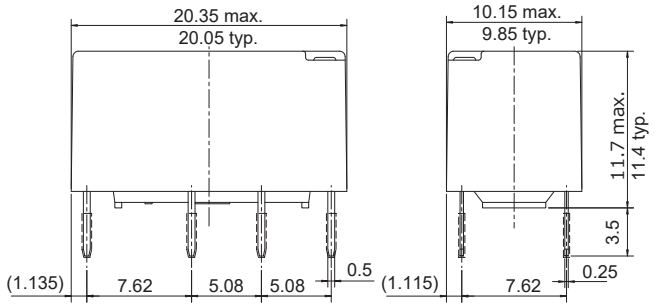
■ PART NUMBER LIST

Part Number	Contact configuration	Coil Type	Contact Material
FTR-C2CA( )G	Through hole	Standard	Gold plated silver palladium (stationary contact) Silver palladium (movable contact)
FTR-C2CB( )G		Latching	
FTR-C2GA( )G	Surface mount	Standard	
FTR-C2GB( )G		Latching	

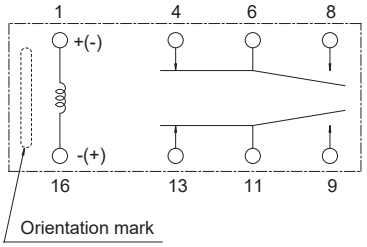
■ DIMENSIONS

Through Hole Type

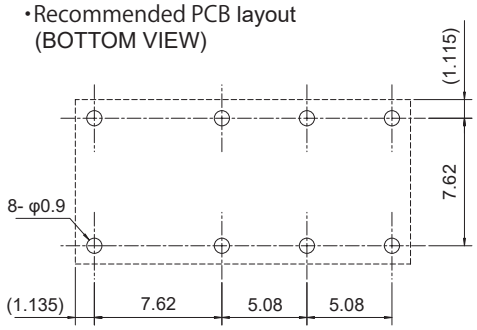
・Dimensions



・Schematics (BOTTOM VIEW)

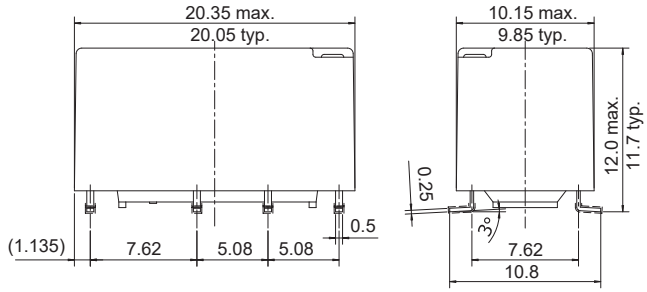


・Recommended PCB layout
(BOTTOM VIEW)

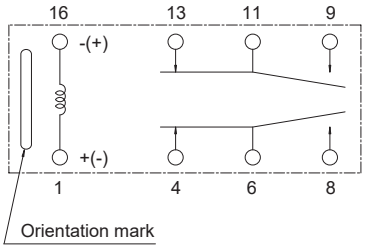


Surface Mount Type

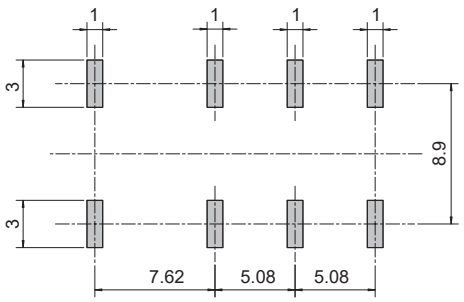
・Dimensions



・Schematics (TOP VIEW)



・Recommended PCB layout (TOP VIEW)



( ): Reference
Unit: mm

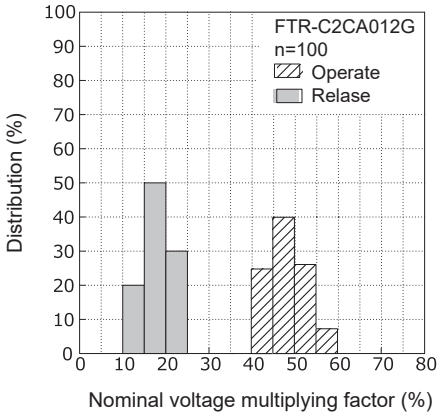
Notes:

- Dimensions of the terminals do not include thickness of pre-soldering.
- 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

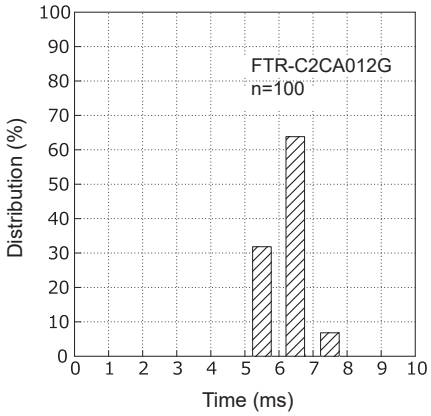
■ CHARACTERISTIC DATA

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

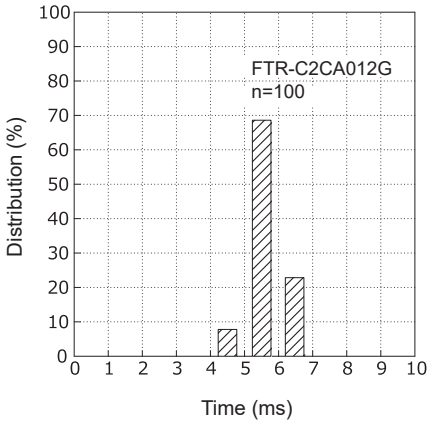
Distribution of operate/release voltage



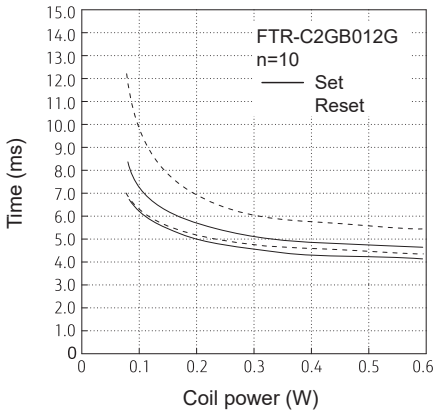
Distribution of operate time



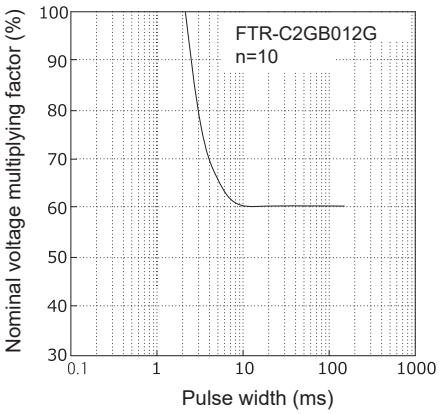
Distribution of release time



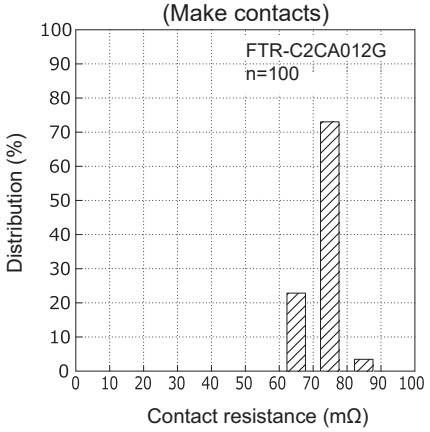
Set/reset time characteristic



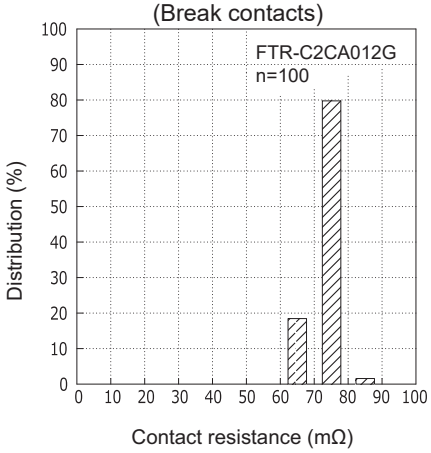
Pulse characteristic



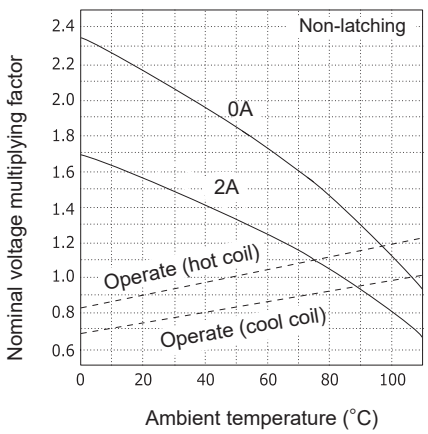
Distribution of contact resistance (Make contacts)



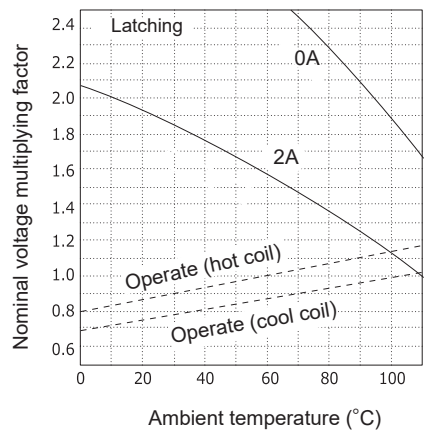
Distribution of contact resistance (Break contacts)



Operate range (non-latching)



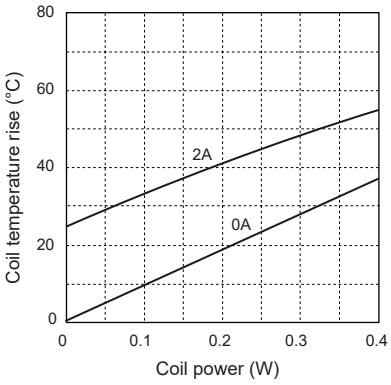
Operate range (latching)



■ CHARACTERISTIC DATA

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

Coil temperature rise



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

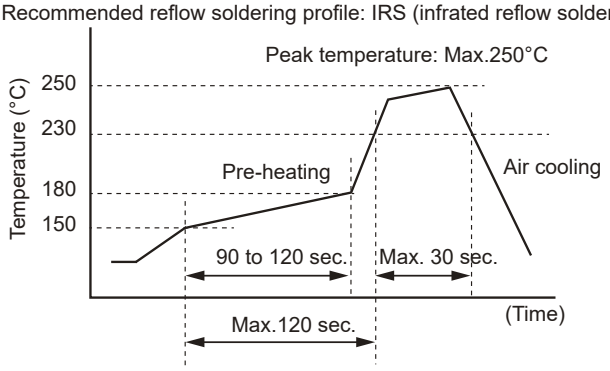
Relay must be cooled by air immediately after soldering

Solder by Soldering Iron:

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

Refow Solder Condition:
(Applicable only for reflow capable type)

Recommended reflow soldering profile: IRS (infrated 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 wtih actual PC board.
- This reflow condition is applicable only for reflow-capable relays. Do not reflow reflow-incapable relays.
- Recommended solder for assembley: 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.

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