

POWER RELAY

2 POLES-2A High insulation/wide gap

FTR-C1 Series

■ FEATURES

- 2 Poles, 2 form C
- Contact gap: more than 0.6mm
- High surge voltage: 2,500V between open contacts
5,000V between coil & contact
Complies with Telcordia (former Bellcore) 2nd level surge
- Dielectric strength: 1,500VAC between open contacts
3,000VAC between coil and contact
- Dimensions of large contact gap relay
Height: 9.3mm maximum (THT)
9.65mm maximum (SMT)
Length: 15mm maximum
Width: 7.5mm maximum
- Conforms to IEC60950/ EN60950/UL1950/CSA C 22.2
No. 950 working voltage 250V (supplementary)
- High insulation: Clearance: min 2.0mm (coil and contacts)
Creepage: min 2.5mm (coil and contacts)
- Low power consumption 280mW (latching type 140mW)
- RoHS compliant. Please see page 9 for more information
- Plastic sealed



■ PARTNUMBER INFORMATION

[Example] $\frac{\text{FTR-C1}}{\text{(a)}}$ $\frac{\text{C}}{\text{(b)}}$ $\frac{\text{A}}{\text{(c)}}$ $\frac{\text{012}}{\text{(d)}}$ $\frac{\text{G}}{\text{(e)}}$ - $\frac{\text{B05}}{\text{(f)}}$

(a)	Relay type	FTR-C1	: FTR-C1-Series
(b)	Contact configuration	C G S	: Through hole type : Surface mount type : Surface mount type reduced mounting area
(c)	Coil type / enclosure	A B	: Standard type : Single coil latching type
(d)	Coil rated voltage	012	: 3.....24 VDC Coil rating table at page 3
(e)	Contact material	G	: Gold plated silver palladium
(f)	Tape / reel version	Nil B05	: Standard packaging (tube) : Tape / reel package, only available for SMT type

Actual marking does not carry the type name : "FTR"

E.g.: Ordering code: FTR-C1CA012G

Actual marking: C1CA012G

FTR-C1 SERIES

■ SPECIFICATION

Item		Non-latching FTR-C1 () A	Latching FTR-C1 () B	
Contact Data	Configuration	2 form C		
	Construction	Bifurcated		
	Material	Gold plated silver palladium		
	Resistance (Initial)	Max. 150mΩ at 1A, 6VDC		
	Contact rating resistive	1A, 30VDC / 0.3A, 125VAC / 0.3A, 110VDC		
	Max. Switching Voltage	250VAC / 220VDC		
	Max. Switching Power	62.5VA / 30W		
	Max. Carry Current	2A		
	Min. Switching Load *	0.01mA, 10mVDC		
Life	Mechanical	Min. 10 x 10 ⁶ operations		
	Electrical (resistive)	Min. 100 x 10 ³ operations at 0.3A, 125VAC / 1A, 30VD		
Coil Data	Rated Power	280 to 300mW	140 to 180mW	
	Operate Power	158 to 162mW	158 to 162mW	
	Operating temp range	-40 to +85C (no frost)		
Timing Data	Operate (at nominal voltage)	Max. 6ms (without bounce)		
	Release (at nominal voltage)	Max. 6ms (without bounce)		
Insulation	Resistance (Initial)	Min. 1,000MΩ at 500VDC		
	Dielectric strength	Open contacts	1,500VAC (50/60Hz) 1min	
		Adjacent contacts	1,500VAC (50/60Hz) 1min	
		Contacts to coil	3,000VAC (50/60Hz) 1min	
	Surge strength	Contacts to coil	5,000V, 2 x 10μs	
	Clearance	Open contacts	0.6mm	
		Adjacent contacts	1.0mm	
		Contacts to coil	2.0mm	
	Creepage	Open contacts	0.6mm	
		Adjacent contacts	1.0mm	
Contacts to coil		2.5mm		
Other	Vibration Resistance	Misoperation>1us	10 to 55Hz double amplitude 3.3mm	
		Endurance	10 to 55Hz double amplitude 5mm	
	Shock	Misoperation>1us	Min. 500m/s ²	
		Endurance	Min. 1,000m/s ²	
	Weight	Approximately 2g		
	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.

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■ COIL RATING

Standard type

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Must Operate Voltage (VDC) *	Must Release Voltage (VDC) *	Nominal Coil Power (mW)
003	3	32.1	2.25	0.3	280
4.5	4.5	72.3	3.38	0.45	
005	5	89.3	3.75	0.5	
012	12	514	9	1.2	
024	24	1,920	18	2.4	300

Latching type

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Set Voltage (VDC) *	Reset Voltage (VDC) *	Nominal Coil Power (mW)
003	3	64.0	+2.25	- 2.25	140
4.5	4.5	145	+3.38	- 3.38	
005	5	179	+3.75	- 3.75	
012	12	1,029	+9	- 9	
024	24	3,200	+18	- 18	180

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

* Specified operate values are valid for pulse wave voltage.

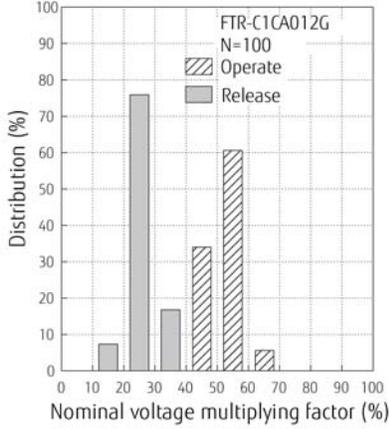
■ SAFETY STANDARDS

Type	Compliance	Contact rating
UL	UL 508	Flammability: UL 94-V0 (plastics)
	E63615	0.3A, 125 VAC (general use) 1A, 30VDC (resistive)
CSA	C22.2 No. 14 LR 40304	2A, 30VDC (resistive) 0.3A, 110VDC (resistive)

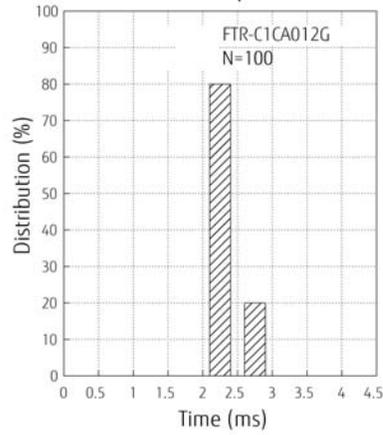
Comply with Telcordia specifications and meet BSI
Marking only for UL, CSA

CHARACTERISTIC DATA

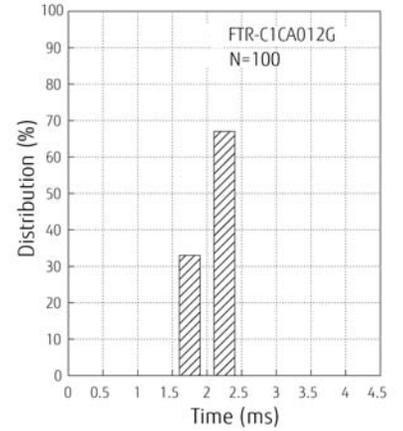
Distribution of operate/release voltage



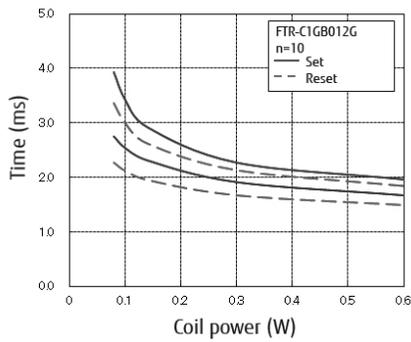
Distribution of operate time



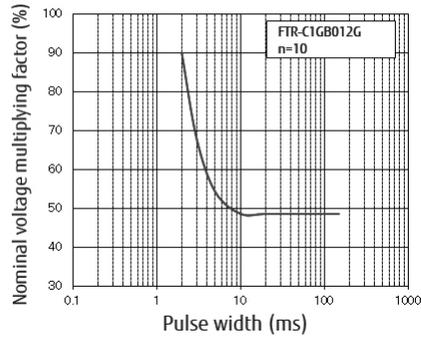
Distribution of release time



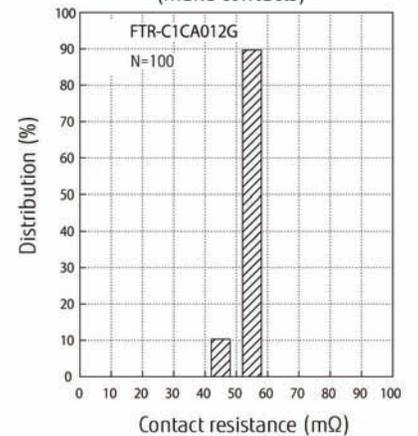
Set/Reset time characteristics



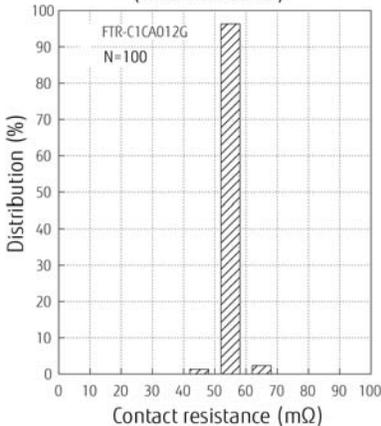
Pulse characteristics



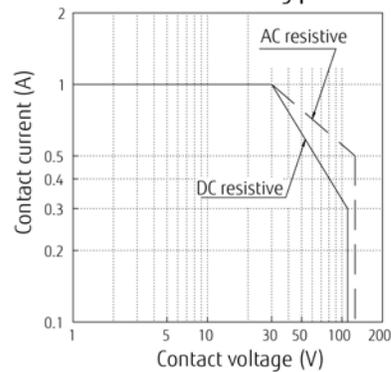
Distribution of contact resistance (Make contacts)



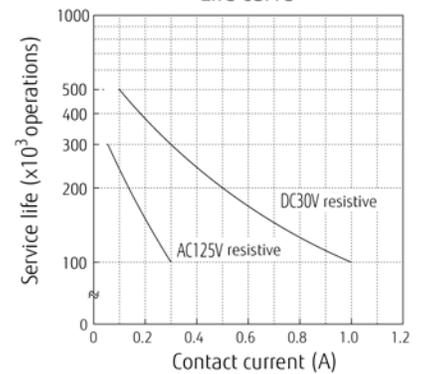
Distribution of contact resistance (Break contacts)



Maximum switching power



Life curve

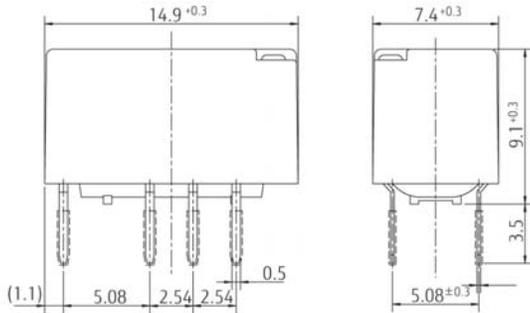


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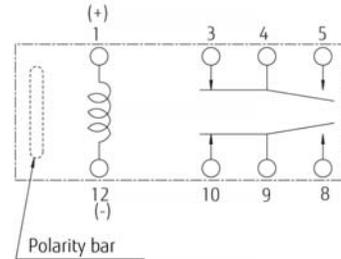
■ DIMENSIONS Unit: mm

Through hole type

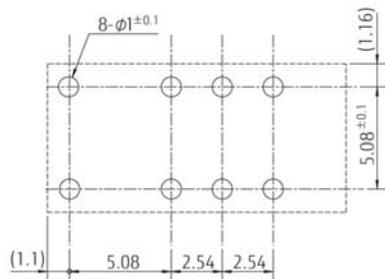
● Dimensions



● Terminal designations (BOTTOM VIEW) (de-energized position)



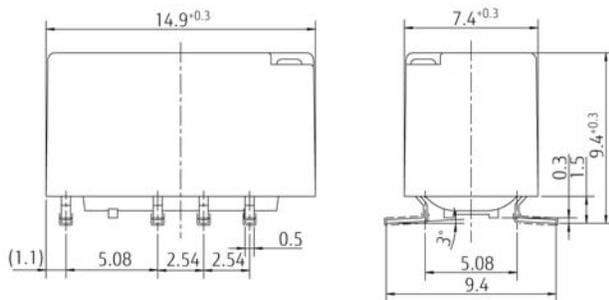
● Recommended mounting pad (BOTTOM VIEW)



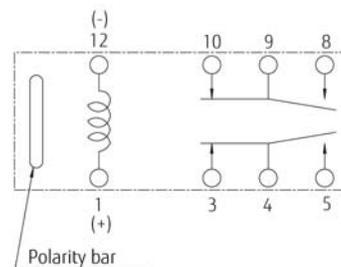
dimension tolerance ± 0.1 mm

Surface mount type

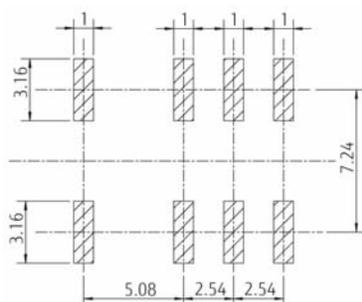
● Dimensions



● Terminal designations (TOP VIEW) (de-energized position)



● Recommended mounting pad (TOP VIEW)



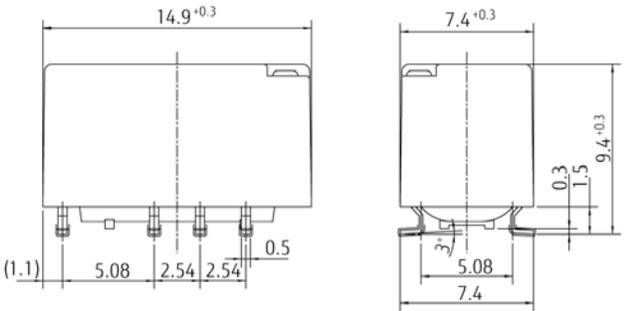
dimension tolerance ± 0.1 mm

Note:
(...) : dimensions are reference

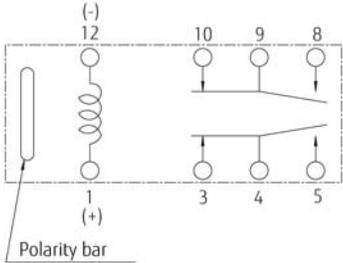
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Space saving type

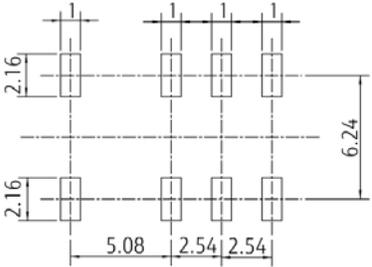
- **Dimensions**



- **Terminal designations (TOP VIEW)**
(de-energized position)



- **Recommended mounting pad (TOP VIEW)**



dimension tolerance ± 0.1 mm

Note:
(...) : dimensions are reference

RECOMMENDED SOLDERING CONDITIONS SMT

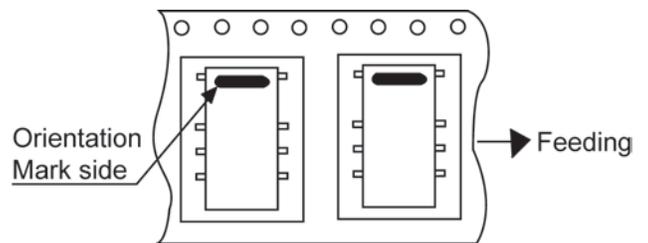
(TEMPERATURE PROFILE, please see page 9)

- Note:
1. Temperature profiles show the temperature of PC board surface.
 2. Please perform soldering test with your actual PC board before mass production, since the temperatures of PC board surfaces vary according to the size of PC board, status of parts mounting and heating method.

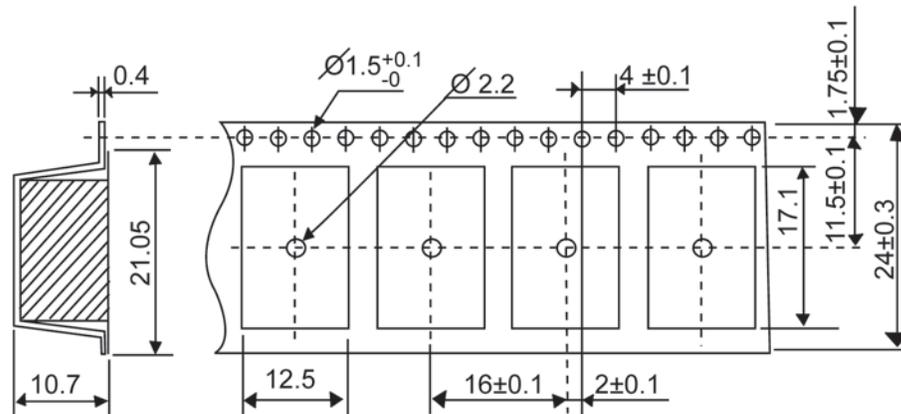
PACKAGING

Packaging method (only tape packaging is available)

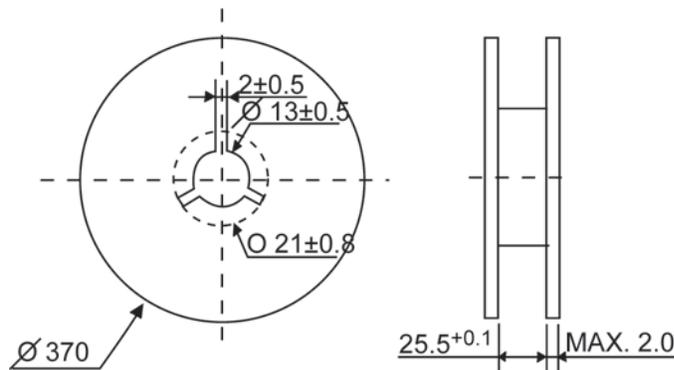
1. Taping standards: JIS C 0806 and RC-10092B (EIAJ)
2. Tape type: TB2416 or TE2416
3. Reel type: RD24D
4. Quantity of 1 reel: 500 pieces



Tape Dimensions:



Reel Dimensions:



Unit: mm

RoHS Compliance and Lead Free Information

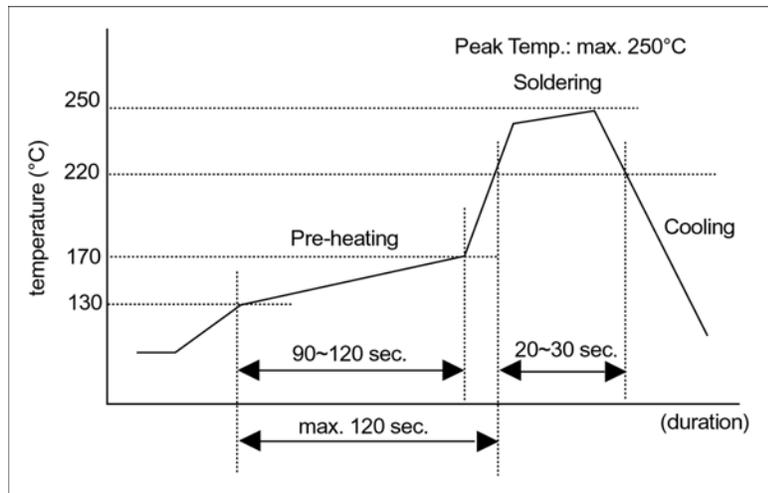
1. General Information

- All relays produced by Fujitsu Components are compliant with RoHS directive 2011/65/EU including amendments.
- Cadmium as used in electrical contacts is exempted from the RoHS directives.
As per Annex III of directive 2011/65/EU.
- All relays are lead-free. Please refer to Lead-Free Status Info for older date codes at:
<http://www.fujitsu.com/downloads/MICRO/fcai/relays/lead-free-letter.pdf>
- 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.

2. Recommended Lead Free Solder Condition

- Recommended solder Sn-3.0Ag-0.5Cu.

Reflow Solder condition for SMT



Flow Solder Condition:

Pre-heating: maximum 120°C
within 9 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

Note:

1. Temperature profiles show the temperature of PC board surface.
2. Please perform soldering test with your actual PC board before mass production, since the temperatures of PC board surfaces can vary, depending on the size of PC board, status of parts mounting and heating method.

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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