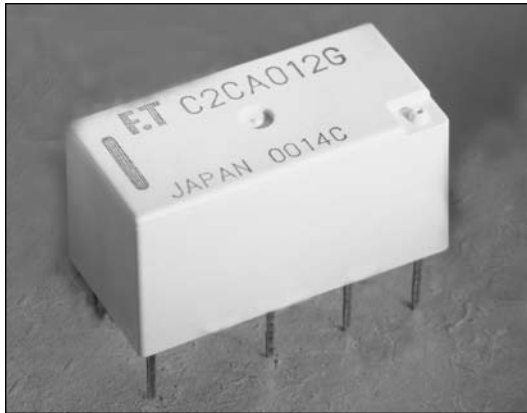


# 2.0mm Contact Gap 2 Pole 2A HIGH ISOLATION WIDE GAP SIGNAL RELAYS FTR-C2 Series

RoHS compliant

## ■ FEATURES

- DPDT 2A
- Contact gap: more than 2.0mm
- Open contacts and adjacent contacts also meet IEC 60950 isolation.
- 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
- Low power consumption 300 mV
- RoHS Compliant since production



## ■ ORDERING INFORMATION

[Example]      FTR-C2   C   A   012   G   -B   05\*  
                   (a)        (b) (c)   (d)    (e)   (f)   (g)

(a)	Series Name	FTR-C2
(b)	Terminal Appearance	C: Through hole type G: Surface mount type
(c)	Operation Function	A: Standard type B: Latching type
(d)	Coil Number	Nominal Voltage
(e)	Contact Material	G: Silver alloy
(f)	Relay enclosing direction	B: standard enclosing direction
(g)	Number of relays per reel	05: 500 (standard)

Remarks: Actual marking on relay would not carry code FTR and be as below:

Ordering code                      Actual marking  
 FTR-C2CA03G                      →            C2CA03G

\*only SMT version

# FTR-C2 Series

## ■ PART NUMBERS

Non-latch type

Ordering Part Number	Series	Terminals	Operation	Coil Voltage	Contact Material
FTR-C2CA003G	FTR-C2	C: through hole	A: non-latch	3	G: Au-Ag-Pd
FTR-C2CA005G				5	
FTR-C2CA012G				12	
FTR-C2CA024G				24	
FTR-C2GA003G		G: surface mount		3	
FTR-C2GA005G				5	
FTR-C2GA012G				12	
FTR-C2GA024G				24	

Latch type

Ordering Part Number	Series	Terminals	Operation	Coil Voltage	Contact Material
FTR-C2CB003G	FTR-C2	C: through hole	B: latch	3	G: Au-Ag-Pd
FTR-C2CB005G				5	
FTR-C2CB012G				12	
FTR-C2CB024G				24	
FTR-C2GB003G		G: surface mount		3	
FTR-C2GB005G				5	
FTR-C2GB012G				12	
FTR-C2GB024G				24	

## ■ COIL DATA CHART

Non-latch type

Coil Voltage	Nominal Voltage (VDC)	Max. Coil Voltage* <sup>1</sup>	Coil Resistance (±10%)	Must Operate Voltage* <sup>2</sup>	Must Release Voltage* <sup>2</sup>	Nominal Operating Power
003	3	7.2 VDC	30.0 Ω	2.25 VDC	0.3 VDC	300 mW
005	5	12.0 VDC	83.3 Ω	3.75 VDC	0.5 VDC	
012	12	28.8 VDC	480 Ω	9.0 VDC	1.2 VDC	
024	24	57.6 VDC	1,920 Ω	18.0 VDC	2.4 VDC	

Latch type

Coil Voltage	Nominal Voltage (VDC)	Max. Coil Voltage* <sup>1</sup>	Coil Resistance (±10%)	Must Operate Voltage* <sup>2</sup>	Must Release Voltage* <sup>2</sup>	Nominal Operating Power
003	3	7.2 VDC	60 Ω	+2.25 VDC	2.25 VDC	140 mW
005	5	12.0 VDC	167 Ω	+3.75 VDC	3.75 VDC	
012	12	28.8 VDC	960 Ω	+9.0 VDC	9.0 VDC	
024	24	57.6 VDC	3,840 Ω	+18.0 VDC	18.0 VDC	

\* Pulse driven

Note: All values in the table are measured at 20°C.

# FTR-C2 Series

## ■ SPECIFICATIONS

Item		Non-latch	Latch
		FTR-C2 ( ) A	FTR-C2 ( ) B
Contact	Arrangement	2 form C	
	Configuration	Bifurcated	
	Material	Gold overlay silver palladium (stationary contact) Silver palladium (movable contact)	
	Resistance (initial)	Maximum 150 mΩ (1 A, 6 VDC)	
	Rating (resistive)	0.3A, 125VAC / 1A 30VDC	
	Maximum Switching Power	62.5VA / 30W	
	Maximum Switching Voltage	250VAC / 220 VDC	
	Maximum Carry Current	2A	
	Min. Switching load (reference)*	0.01A, 10mVDC	
Coil	Nominal Power (20°C)	300 mW	150 mW
	Operate Power (20°C)	169 mW	85 mW
	Operating Temperature	-40°C to +85°C (no frost)	
Time Value	Operate Time	Maximum 15 ms (at nominal voltage, without bounce)	
	Release Time (without diode)	Maximum 15 ms (at nominal voltage, without bounce)	
Life	Mechanical	10 x 10 <sup>6</sup> operations minimum (at 10Hz)	
	Electrical	AC contact rating	100 x 10 <sup>3</sup> operations minimum
		DC contact Rating	100 x 10 <sup>3</sup> operations minimum
Other	Vibration Resistance	Misoperation	10 to 55 Hz, at double amplitude of 3.3 mm
		Endurance	10 to 55Hz, at double amplitude of 5 mm
	Shock Resistance	Misoperation	Min. 300m/s <sup>2</sup>
		Endurance	Min. 1,000m/s <sup>2</sup>

## ■ INSULATION

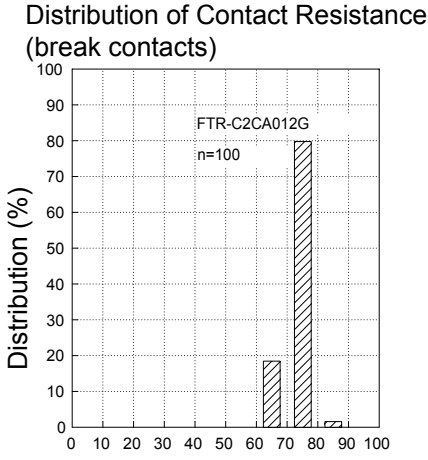
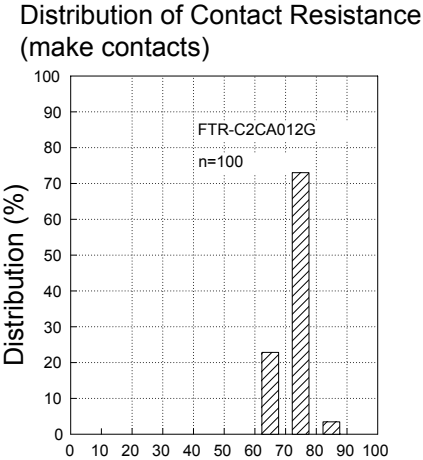
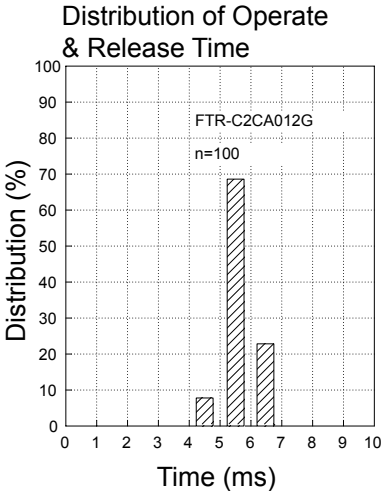
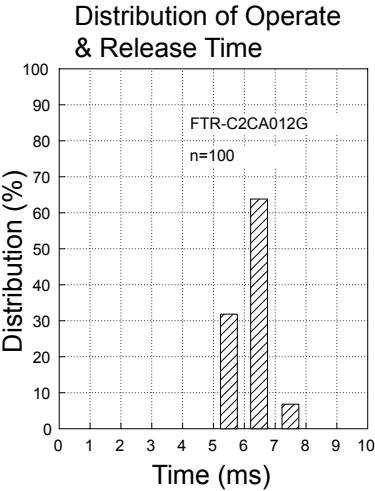
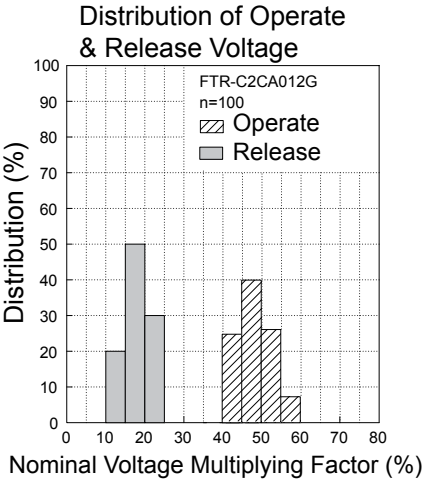
Item		FTR-C2
Resistance (initial) (500 VDC)		Minimum 1,000 MΩ 1 min.
Dielectric Strength	open contacts	1,500 VAC (50/60 Hz) 1 min.
	adjacent contacts	1,500 VAC (50/60 Hz) 1 min.
	coil and contacts	2,000 VAC (50/60 Hz) 1 min.
Surge Voltage (coil and contact)		2,500 V (2 x 10μs standard wave)
Clearance	adjacent contacts	1.0mm
	open contacts	0.28mm
	coil and contacts	1.0mm
Creepage	adjacent contacts	1.0mm
	open contacts	0.28mm
	coil and contacts	1.6mm

# FTR-C2 Series

## SAFETY STANDARDS

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

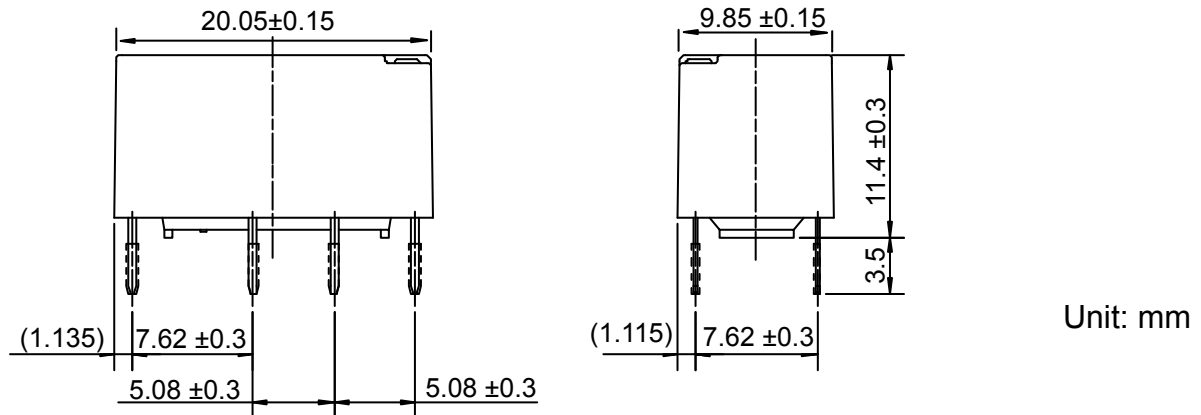
## REFERENCE DATA



# FTR-C2 Series

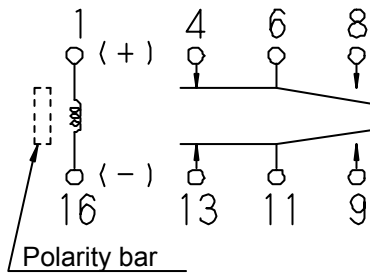
## ■ DIMENSIONS AND SCHEMATICS

Through hole type

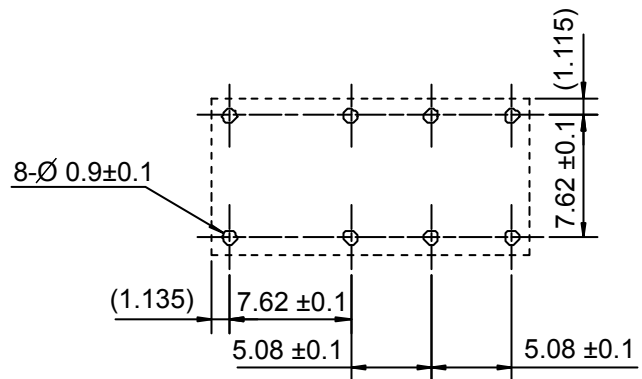


## ■ TERMINAL DESIGNATIONS

(Bottom view de-energized position)

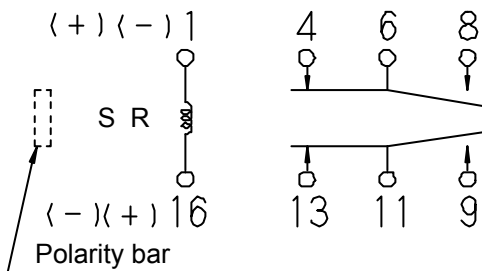


## ■ RECOMMENDED MOUNTING PAD



## Single Coil Latching Type

(Bottom view reset position)



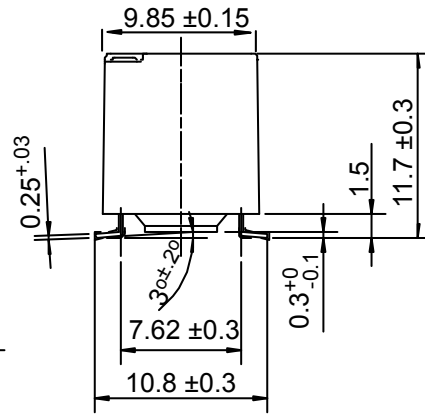
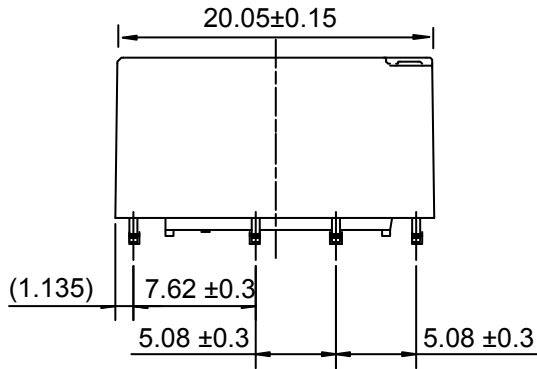
S: shows polarity of set position  
R: shows polarity of reset position

Unit: mm

# FTR-C2 Series

## ■ DIMENSIONS AND SCHEMATICS

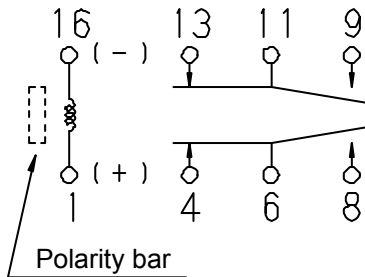
Surface mount type



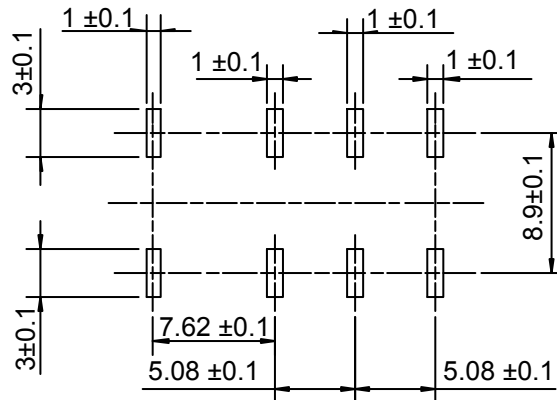
Unit: mm

## ■ TERMINAL DESIGNATIONS

(Top view de-energized position)

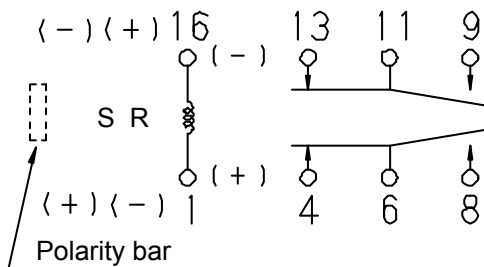


## ■ RECOMMENDED MOUNTING PAD



## Single Coil Latching Type

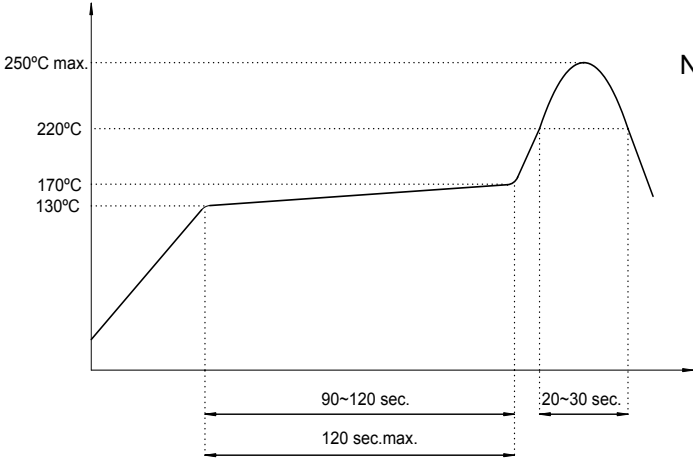
(Top view reset position)



S: shows polarity of set position  
R: shows polarity of reset position

Unit: mm

## ■ RECOMMENDED SOLDERING CONDITIONS (TEMPERATURE PROFILE)



- 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.

## RoHS Compliance and Lead Free Relay Information

### 1. General Information

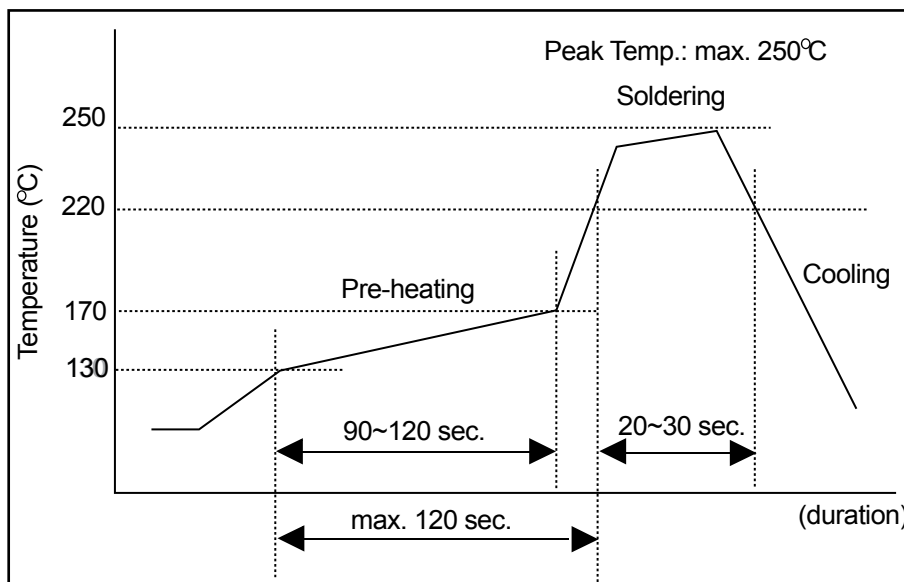
- Relays produced after the specific date code that is indicated on each data sheet are lead-free now. Most of our signal and power relays are lead-free. Please refer to Lead-Free Status Info. (<http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf>)
- Lead free solder paste currently used in relays is Sn-3.0Ag-0.5Cu.
- All signal and most power relays also comply with RoHS. Please refer to individual data sheets. Relays that are RoHS compliant do not contain the 5 hazardous materials that are restricted by RoHS directive (lead, mercury, chromium IV, PBB, PBDE).
- It has been verified that using lead-free relays in lead assembly process will not cause any problems (compatible).
- "LF" is marked on each outer and inner carton. (No marking on individual relays).
- To avoid leaded relays (for lead-free sample, etc.) please consult with area sales office.
- We will ship leaded relays as long as the leaded relay inventory exists.

Note: Cadmium was exempted from RoHS on October 21, 2005. (Amendment to Directive 2002/95/EC)

### 2. Recommended Lead Free Solder Profile

- Recommended solder paste Sn-3.0Ag-0.5Cu and Sm-3.0 Cu-Ni (only FTR-B3 and FTR-B4 from February 2005).

#### Reflow Solder condition for SMT



#### Flow Solder condition:

Pre-heating: maximum 120°C  
Soldering: dip within 5 sec. at 260°C solder bath

#### Solder by Soldering Iron:

Soldering Iron  
Temperature: maximum 360°C  
Duration: maximum 3 sec.

We highly recommend that you confirm your actual solder conditions

### 3. Moisture Sensitivity

- Moisture Sensitivity Level standard is not applicable to electromechanical relays.

### 4. Tin Whisker

- SnAgCu and SnCuNi solder is known as low risk of tin whisker. No considerable length whisker was found by our in-house test.

## Fujitsu Components International Headquarter Offices

### Japan

Fujitsu Component Limited  
Gotanda-Chuo Building  
3-5, Higashigotanda 2-chome, Shinagawa-ku  
Tokyo 141, Japan  
Tel: (81-3) 5449-7010  
Fax: (81-3) 5449-2626  
Email: [promothq@ft.ed.fujitsu.com](mailto:promothq@ft.ed.fujitsu.com)  
Web: [www.fcl.fujitsu.com](http://www.fcl.fujitsu.com)

### North and South America

Fujitsu Components America, Inc.  
250 E. Caribbean Drive  
Sunnyvale, CA 94089 U.S.A.  
Tel: (1-408) 745-4900  
Fax: (1-408) 745-4970  
Email: [components@us.fujitsu.com](mailto:components@us.fujitsu.com)  
Web: <http://www.fujitsu.com/us/services/edevices/components/>

### Europe

Fujitsu Components Europe B.V.  
Diamantlaan 25  
2132 WV Hoofddorp  
Netherlands  
Tel: (31-23) 5560910  
Fax: (31-23) 5560950  
Email: [info@fceu.fujitsu.com](mailto:info@fceu.fujitsu.com)  
Web: [emea.fujitsu.com/components/](http://emea.fujitsu.com/components/)

### Asia Pacific

Fujitsu Components Asia Ltd.  
102E Pasir Panjang Road  
#01-01 Citilink Warehouse Complex  
Singapore 118529  
Tel: (65) 6375-8560  
Fax: (65) 6273-3021  
Email: [fcsl@fcsl.fujitsu.com](mailto:fcsl@fcsl.fujitsu.com)  
Web: <http://www.fujitsu.com/sg/services/micro/components/>

©2008 Fujitsu Components America, Inc. All rights reserved. All trademarks or registered trademarks are the property of their respective owners.

Fujitsu Components America or its affiliates do not warrant that the content of datasheet is error free. In a continuing effort to improve our products Fujitsu Components America, Inc. or its affiliates reserve the right to change specifications/datasheets without prior notice.  
Rev. January 18, 2008.