

Compact Power Relay

1 Pole—25A for Automotive Applications

FTR-G1 Series

RoHS compliant

■ FEATURES

- Compact for high density packaging (70% volume of previous generation FTR-P3 series)
- High contact capacity with proven contact material (min. 100,000 operations, 14V, 25A achieved, even with reduced size)
- Coil power savings (640mW nominal achieved with state-of-the-art magnetic analysis/design)
- Ease of PCB layout (all terminals on perimeter, coil and contact terminals separated)
- Lower noise (57dB average at 5cm)
- RoHS compliant since beginning of production. Please see page 7 for more information



■ ORDERING INFORMATION

[Example] FTR-G1 C N 010 W1
 (a) (b) (c) (d) (e)

(a)	Series Name	FTR-G1: FTR-G1 Series
(b)	Contact Arrangement	C : 1Form C
(c)	Contact Gap	N : 0.3mm gap
(d)	Nominal Coil Voltage	009 : 09 VDC 010 : 010 VDC 012 : 012 VDC
(e)	Contact Material	W1 : Silver-tin oxide-indium
(f)	Custom Designation	To be assigned custom designation

Note: The designation name is stamped on the top of the relay case as follows:
 Example: Ordering part number: FTR-G1CN010W1
 Stamped on part number: G1CN010W1

■ TYPICAL APPLICATIONS

- Power window
- Door lock
- Sun roof
- Power seat
- Wiper/IWW
- Tilt steering
- Retractable antenna

FTR-G1 SERIES

■ SPECIFICATIONS

Item		FTR-G1	
Contact	Arrangement	1 form C	
	Material	Silver-tin oxide-indium	
	Contact Path Voltage Drop (initial)	Maximum 100 mΩ (at 6 VDC 1A after stabilization)	
	Rating	25 A at 14VDC (locked motor load)	
	Maximum Carry Current*1	25 A / 1 hour (25°C, 100% rated coil voltage)	
	Maximum Switching Current (reference)	35A, 16VDC	
	Minimum load (reference)*2	1A, 6VDC	
Coil	Rated coil power (20°C)	640 mW	
	Operate coil power (20°C)	237 mW	
	Operating Ambient Temperature Range	-40°C to +85°C (no frost)	
Time Values	Operate (at nominal voltage)	Maximum 10 ms (not including bounce)	
	Release (at nominal voltage)	Maximum 5 ms (not including bounce, no diode)	
Life	Mechanical	1x10 ⁶ operations minimum	
	Electrical	1) 100x10 ³ operation minimum, 14VDC, 25A inrush power window motor (1 operation: 1 forward and 1 reverse) 2) 100x10 ³ ops. min. 14VDC, 20A inrush door locked motor	
Other	Vibration Resistance	Misoperation 10-55HZ, 1.5mm double amplitude	
	Shock Resistance	Misoperation	100 m/s ² minimum (10G)
		Endurance	1,000 m/s ² minimum (100G)
	Insulation Resistance (initial)	Max. 100 MΩ @500 VDC	
	Dielectric Withstanding Voltage (initial)	500 VAC	
	Weight	Approximately 3.5g	

*1 Need to consider the head from PCB when max. current is more than 10A.

*2 Values when switching a resistive load at normal room temperature and humidity and in a clean environment. The minimum switching load varies with the switching frequency and operating environment.

■ COIL DATA CHART

FTR-G1 Series

Model	Nominal Coil Voltage	Coil Resistance (±10% at 20°C)	Must Operate Voltage	Must Release Voltage (at 20°C)	Coil Power at Nominal Voltage
FTR-G1CN009W1	9VDC	126	5.4VDC (at 85°C) 6.8VDC (at 85°C)	0.75VDC	0.64W
FTR-G1CN010W1	10VDC	160	6.5VDC (at 85°C) 8.2VDC (at 85°C)	0.8VDC	0.64W
FTR-G1CN012W1	12VDC	225	7.3VDC (at 85°C) 9.2VDC (at 85°C)	1.0VDC	0.64W

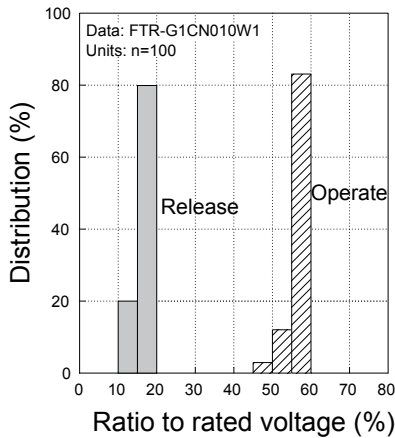
FTR-G1 SERIES

INSULATION

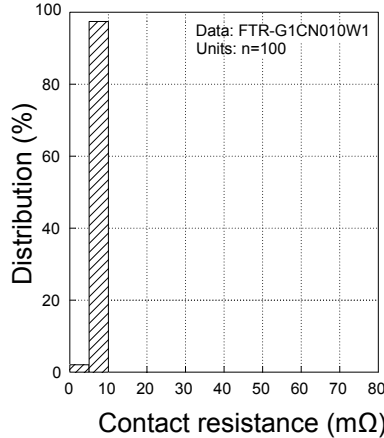
Item	Specification	
Resistance	Minimum 100 MΩ 1 min.	
Dielectric Strength	open contacts	500 VAC (50/60 Hz) 1 min.
	coil and contacts	500 VAC (50/60 Hz) 1 min.

REFERENCE DATA

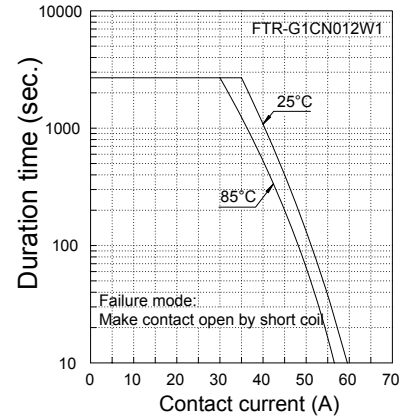
Operate/release voltage distribution



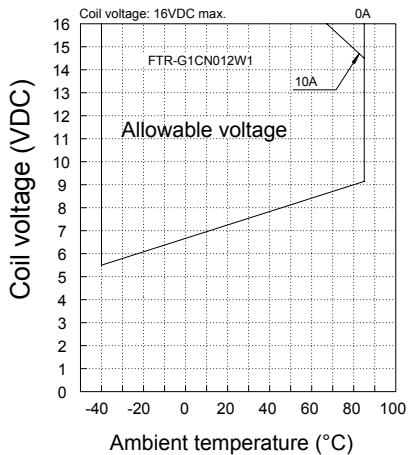
Contact resistance distribution



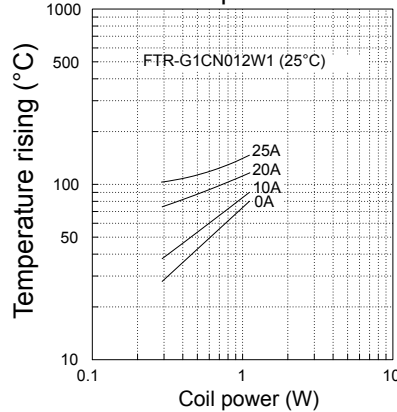
Contact current



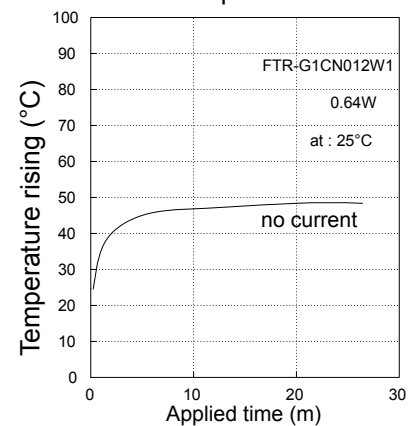
Ambient temperature vs voltage



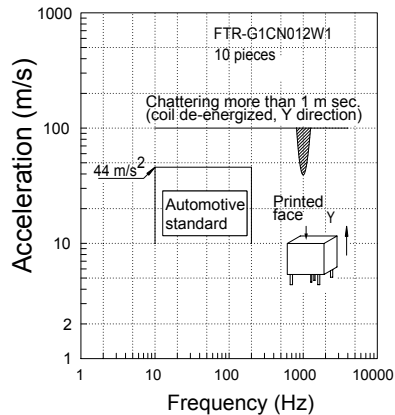
Coil temperature rise



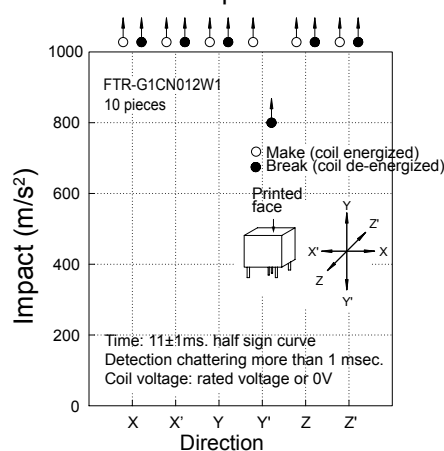
Coil temperature rise



Vibration

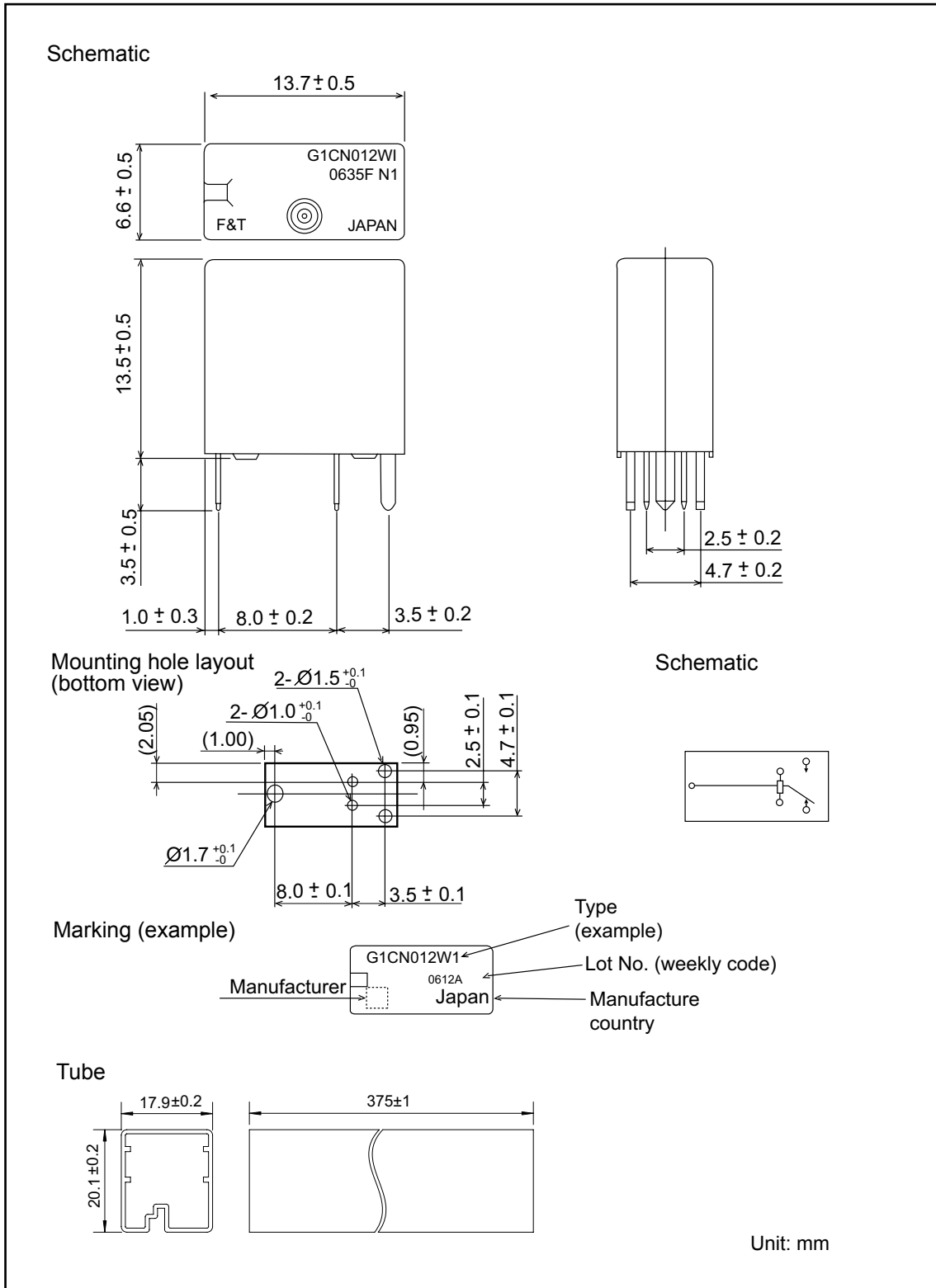


Impact



FTR-G1 SERIES

■ DIMENSIONS



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. All 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 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 leaded 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.

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

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

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