

COMPACT POWER RELAY 1 POLE—25 A FOR AUTOMOTIVE APPLICATIONS

FTR-P3 Series

RoHS compliant

■ FEATURES

- Compact for high density packaging.
 (65% volume of previous generation FBR 51/52 Series).
- High contact capacity with proven contact material.
 (100,000 operations, 14 V, 25 A achieved, even with reduced size).
- 125°C version is available.
- Surface mount compatible version (reflowable) is available.
- Coil power savings
 (600mW nominal achieved with state-of-the-art magnetic analysis/design).
- Ease of PCB layout (all terminals on perimeter, coil and contact terminals separated).
- Optional over-voltage circuit breaking capability (0.6mm gap, contact our representative).
- Packaging for auto-insertion (tube packing, 30 relays/tube).
- RoHS compliant since date code: 0630 Please see page 8 for more information

ORDERING INFORMATION

[Example] $\frac{\text{FTR-P3}}{\text{(a)}} \quad \frac{\text{C}}{\text{(b)}} \quad \frac{\text{N}}{\text{(c)}} \quad \frac{\text{012}}{\text{(d)}} \quad \frac{\text{W1}}{\text{(e)}} \quad \frac{***}{\text{(f)}}$

[⊏xan	ipiej (a) (b) (c) (d) (e	;) (1)			
(a)	Series Name	FTR-P3 Series			
(b)	Contact Arrangement	C : 1 Form C			
(c)	Contact Gap	N : 0.3mm gap P : 0.6mm gap			
(d)	Nominal Coil Voltage	009 : 09VDC 010 : 10VDC 012 : 12VDC			
(e)	Contact Material	W1 : Silver-tin oxide-indium			
(f)	Custom Designation	Nil : Standard (85°C) -01 : High temperature (125°C) -05 : High temperature (125°C) and reflowable -06 : High temperature (125°C) and reflowable Higher stand-off			

Note: The part number stamped on the relay cover does not include "FTR".

Example: Ordering part number: FTR-P3CN012W1 Stamped on part number: P3CN012W1

■ TYPICAL APPLICATIONS

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

PRONOTOW 1

1

SPECIFICATIONS

			Specification			
Item			Standard	High temperature version (-01, -05, -06)		
Contact	Arrangement		1 form C (SPDT)			
	Material		Silver-tin oxide-indium			
	Contact path	Voltage Drop (Initial)	Maximum 100 mV (at 1 A 12 VDC)			
	Rating		25 A at 14VDC (locked motor load)			
	Maximum Carry Current*1		25 A / 1hour (25° C, 100% rated coil voltage)			
	Maximum Switching Current (Reference)		35 A at 16 VDC			
	Minimum Swit	ching Load*2 (Reference)	1 A, 6 VDC			
Oail	Operating Am	bient Temperature Range	-40° C to +85° C (no frost)	-40° C to +125° C (no frost)		
Coil	Storage Temperature Range		-40° C to+100° C (no frost)	-40° C to +125° C (no frost)		
Timina	Operate (at nominal voltage)		Maximum 10ms (not including bounce)			
Timing Values	Release (at nominal voltage)		Maximum 5ms (not including bounce, no diode) Maximum 15ms (not including bounce, with diode)			
	Mechanical		10 x 10 ⁶ operations minimum			
Life	Electrical		100 x 10³ operations minimum, 14 VDC, 25 A (locked motor load) (1 operation = 1 forward and 1 reverse)			
	Vibration Resistance	Operational	10-55Hz, 1.5mm double amplitude (=9.13G @ 55Hz)			
	Shock Resistance	Operational	100 m/s² minimum (10G)			
Other		Withstand, no damage	1, 000 m/s² minimum (100G)			
-	Insulation Resistance (initial)		100M ohms @500 VAC			
	Dielectric With	nstanding Voltage (initial)	500 VAC			
	Weight		Approximately 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-P3 Series (0.25mm contact gap)

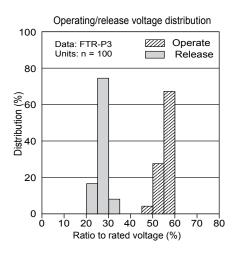
Model	Nominal Coil Voltage	Coil Resistance (±10% at 20°C)	Must Operate Voltage	Must Release Voltage (at 20°C)	Coil Power at Nominal Voltage	Thermal Resistance (approx.)
FTR-P3CN009W1()	9VDC	135Ω	5.5VDC (at 20° C) 6.9VDC (at 85° C)	0.75VDC	0.6W	73° C/W
FTR-P3CN010W1()	10VDC	167Ω	6.3VDC (at 20° C) 7.9VDC (at 85° C)	0.9VDC	0.6W	73° C/W
FTR-P3CN012W1()	12VDC	240 Ω	7.3VDC (at 20° C) 9.2VDC (at 85° C)	1.0VDC	0.6W	73° C/W

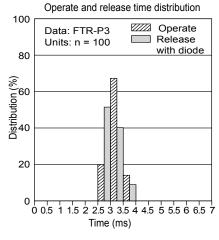
Note: () is "Nil", "-01", "05", or "-06"

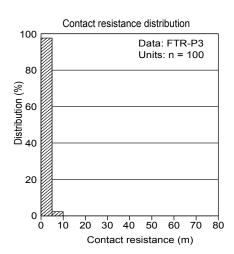
FTR-P3 Series (0.6mm contact gap)

Model	Nominal Coil Voltage	Coil Resistance (±10% at 20°C)	Must Operate Voltage	Must Release Voltage (at 20°C)	Coil Power at Nominal Voltage	Thermal Resistance (approx.)
FTR-P3-CP009W1	9VDC	100Ω	5.5VDC (at 20°C) 6.9VDC (at 85°C)	0.75VDC	0.8W	73°C/W
FTR-P3-CP010W1	10VDC	125Ω	6.3VDC (at 20°C) 7.9VDC (at 85°C)	0.9VDC	0.8W	73°C/W
FTR-P3-CP012W1	12VDC	167Ω	7.3VDC (at 20°C) 9.2VDC (at 85°C)	1.0VDC	0.8W	73°C/W

■ REFERENCE DATA

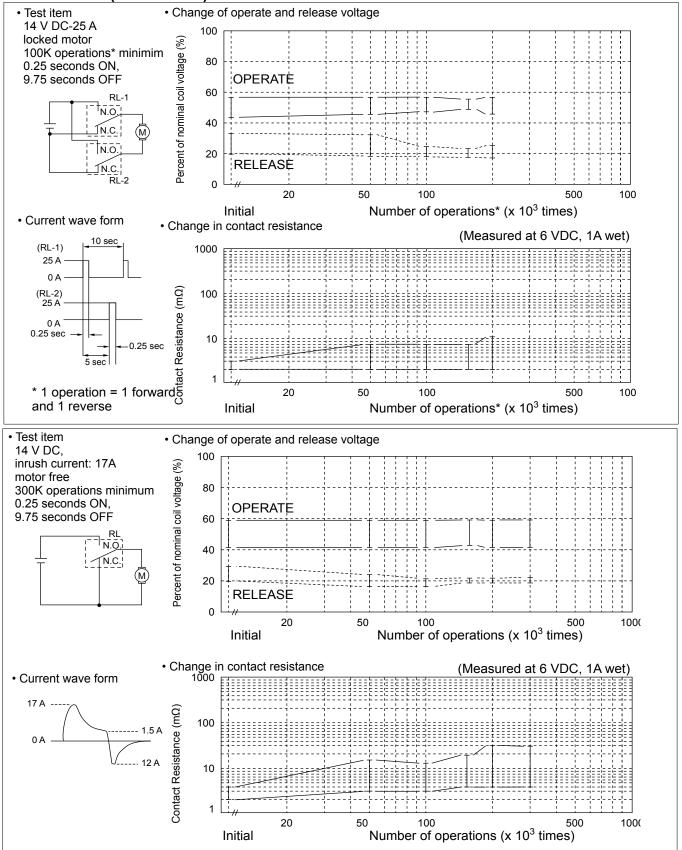




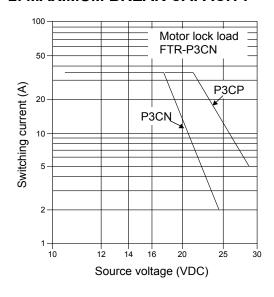


■ CHARACTERISTIC DATA

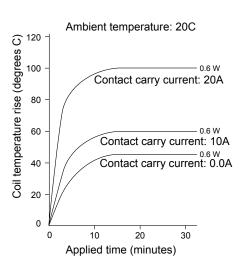
1. LIFE TEST (EXAMPLES)



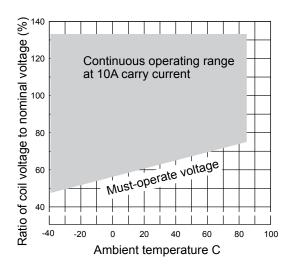
2. MAXIMUM BREAK CAPACITY



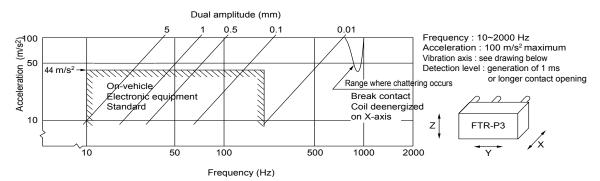
3. COIL TEMPERATURE RISE



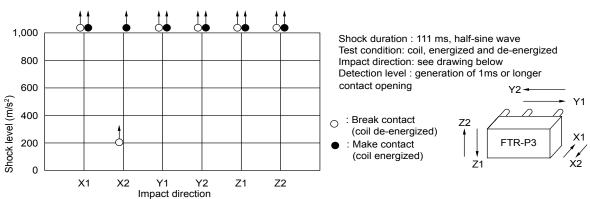
4. OPERATING COIL VOLTAGE RANGE



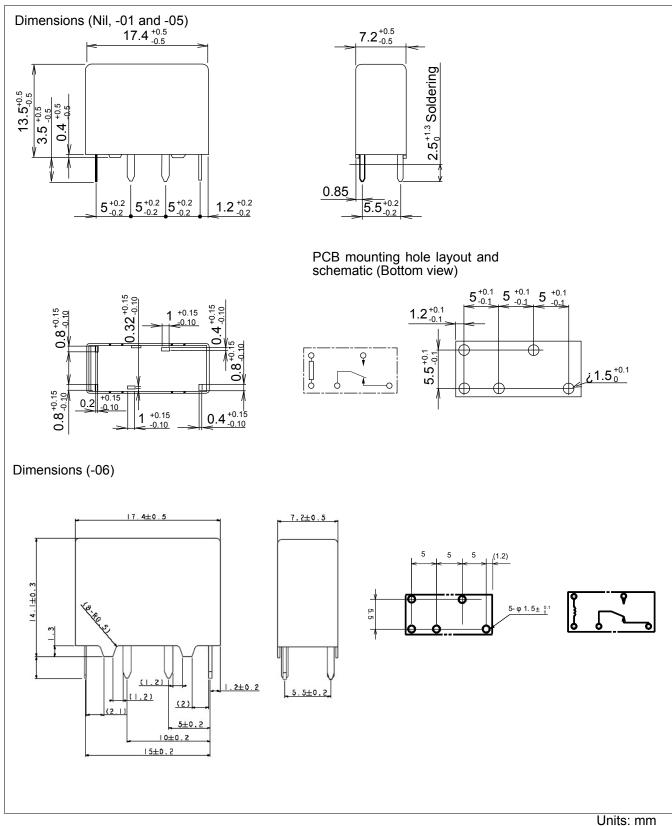
5. VIBRATION RESISTANCE CHARACTERISTIC



6. SHOCK RESISTANCE CHARACTERISTIC



DIMENSIONS AND SCHEMATICS



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 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.

Reflow Solder condition

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 realys.

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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