

MINIATURE SURFACE MOUNT RELAY

1 POLE - 25A (For Automotive Applications)

FTR-P6 Series

■ FEATURES

- Surface mount relays for automotive applications
- Miniature size (67% of the volume of FTR-P3 relays)
- High contact capacity with proven contact material (100,000 operations, 14V, 25A)
- Low coil power dissipation (800mW nominal achieved with state-of-the-art magnetic design)
- Semi low noise (average acoustic noise level: 60dB distance 5cm)
- Application examples:
Power window, door lock, power seat, sunroof, wiper
- RoHS compliant
Please see page 6 for more information



■ PARTNUMBER INFORMATION

[Example] FTR-P6 G N 012 WA **
 (a) (b) (c) (d) (e) (f)

(a)	Relay type	FTR-P6 : FTR-P6 Series
(b)	Contact configuration	G : 1 form C
(c)	Contact gap	N : 0.25 mm gap
(d)	Coil rated voltage	012 : 10.....12VDC Coil rating table at page 2
(e)	Contact material	WA : Silver-tin oxide alloy
(f)	Special type	To be assigned custom specification

Actual marking does not carry the type name: "FTR"
 E.g.: Ordering code: FTR-P6GN012WA Actual marking: P6GN012WA

FTR-P6 SERIES

■ SPECIFICATION

Item	FTR-P6		
Contact Data	Configuration	1 form C	
	Material	Silver-tin oxide alloy	
	Voltage drop (resistance)	Max. 100mV at 1A, 12VDC	
	Contact rating	25A, 14VDC (motor locked)	
	Max. carrying current	25A / 1 hour (20 °C, nominal voltage applied to coil)	
	Max. inrush current	35A	
	Min. switching load (reference) *	1A, 6VDC	
Life	Mechanical	Min. 10 x 10 ⁶ operations (with load for contact)	
	Electrical	Min. 100 x 10 ³ operations (14VDC, 25A locked motor)	
Coil Data	Coil power consumption	Approximately 0.8W (at rated coil voltage)	
	Operating temperature range	-40 °C to +85 °C (no frost)	
	Storage temperature range	-40 °C to +100 °C (no frost)	
	Operating humidity	45 to 85% RH	
Timing Data	Operate (at nominal voltage)	Max. 10 ms	
	Release (at nominal voltage)	Max. 5 ms	
Insulation	Initial resistance	Max. 100MΩ, 500VDC	
	Dielectric withstanding voltage	500VAC, 1min.	
Other	Vibration resistance	Misoperation	10 to 55Hz double amplitude 1.5mm , 10 to 100Hz (45m/s ²)
		Endurance	10 to 100Hz (45m/s ²)
	Shock	Operational	100m/s ² (11±1ms)
		No damage	1,000m/s ² (11±1ms)
	Weight	Approximately 3.3 g	

* 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 RATING

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Must Operate Voltage (VDC) *	Must Release Voltage (VDC) *	Coil Power at Nominal Voltage (W)
010	10	125	6.5 (at 20 °C)	0.8 (at 20 °C)	0.8
			8.2 (at 85 °C)	1.0 (at 85 °C)	
012	12	180	7.3 (at 20 °C)	1.0 (at 20 °C)	
			9.2 (at 85 °C)	1.3 (at 85 °C)	

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

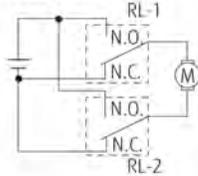
* Specified operate values are valid for pulse wave voltage.

CHARACTERISTIC DATA

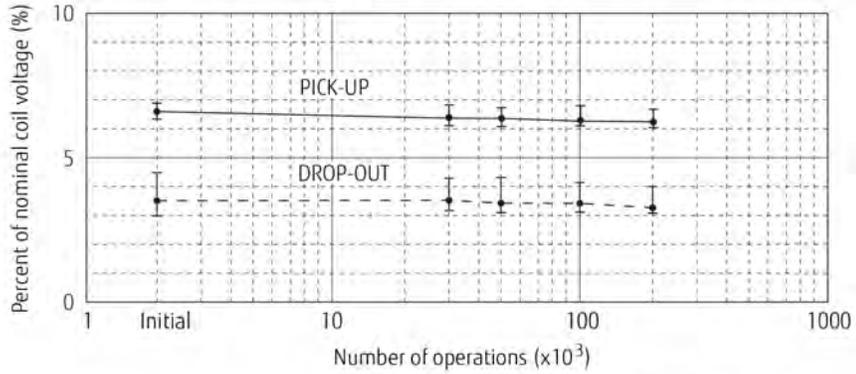
Life test (examples)

- Test condition
25A, 16VDC
motor lock
100,000 operations min.
0.5 sec. ON, 5.5 sec. OFF

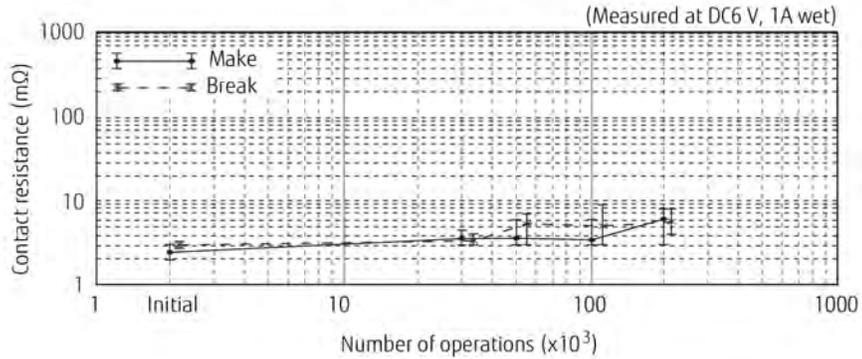
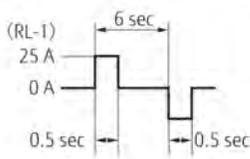
- Test circuit



- Shift of pick-up drop-out voltage

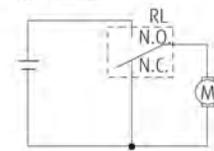


- Current wave form

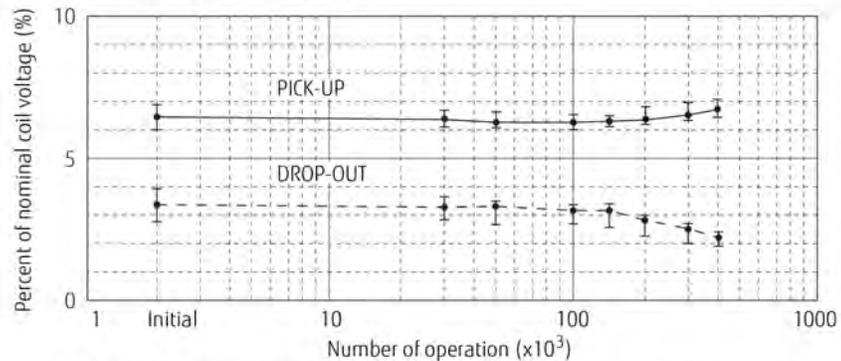


- Test condition
Inrush current 20A, 16VDC
motor free
400,000 operations min.
1.5 sec. ON, 2.0 sec. OFF

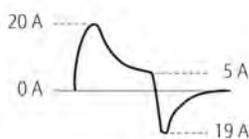
- Test circuit



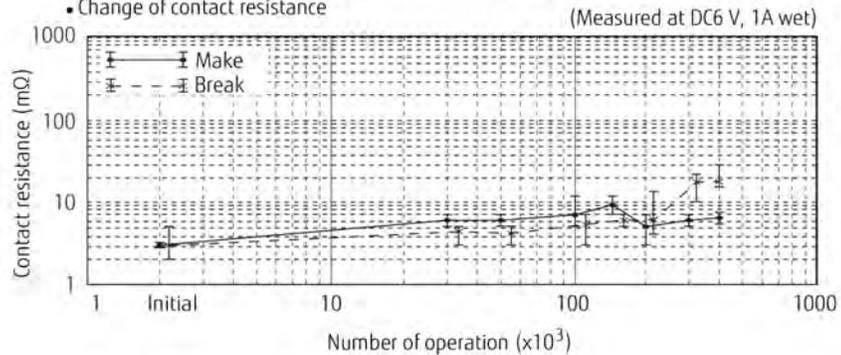
- Shift of pick-up drop-out voltage



- Current wave form

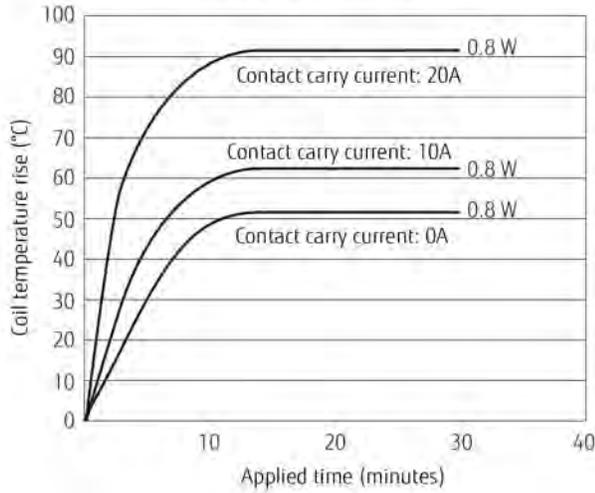


- Change of contact resistance

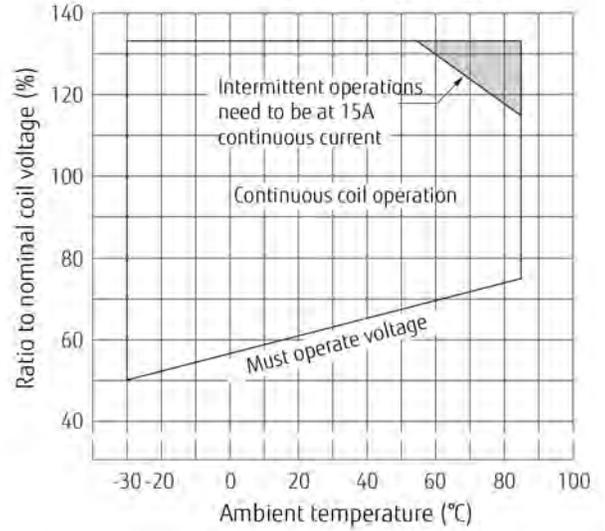


FTR-P6 SERIES

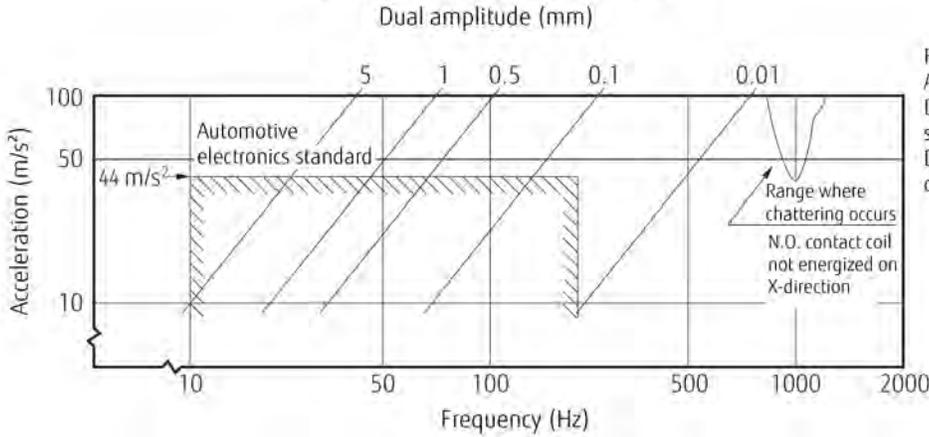
Coil temperature rise



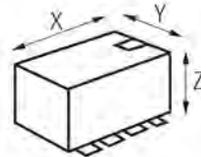
Operating coil voltage range



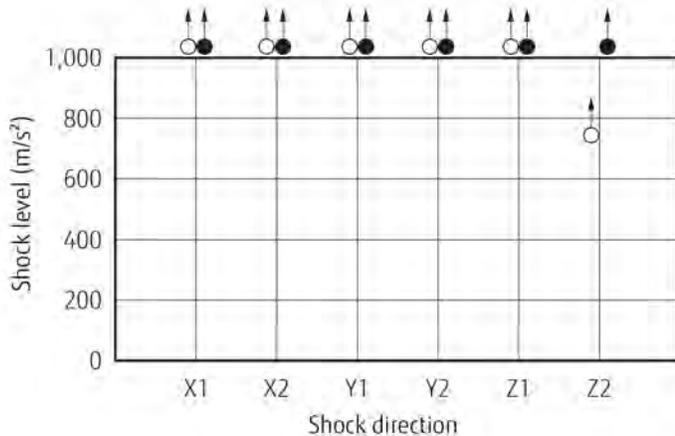
Vibration resistance characteristics



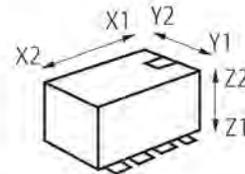
Frequency: 10~2000 Hz
 Acceleration: 100 m/s² max.
 Direction of vibration; see diagram below
 Detection level: chatter > 1ms



Shock resistance characteristics

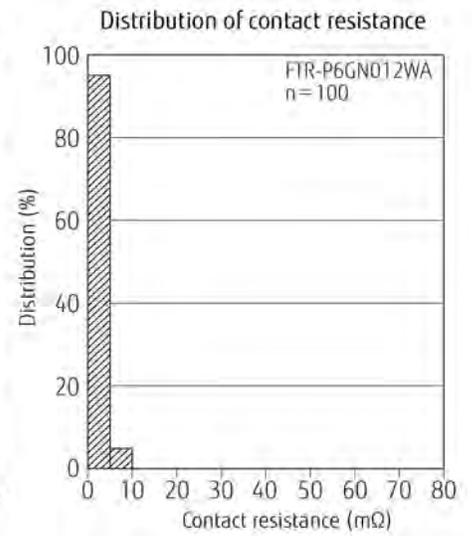
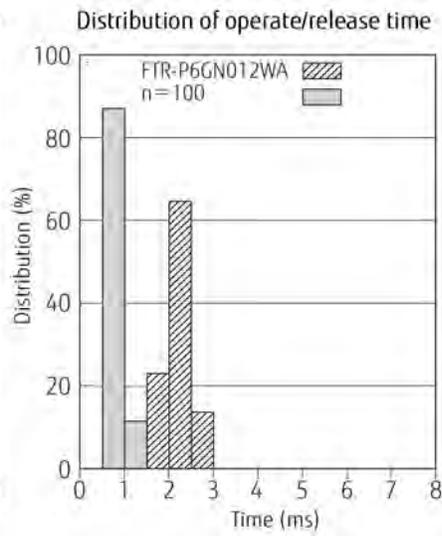
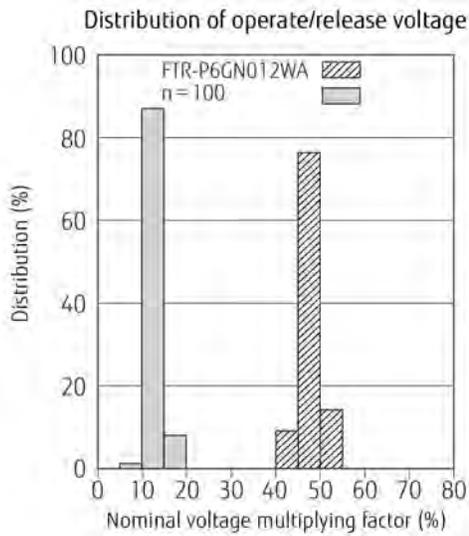


Shock application time: 11ms, half-sine wave
 Test condition: coil energized and de-energized
 Shock direction: see diagram below
 Detection level: chatter > 1ms



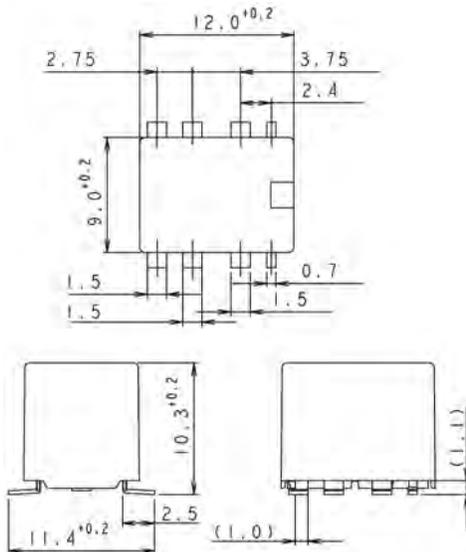
○ : break contact (coil de-energized)
 ● : make contact (coil energized)

FTR-P6 SERIES

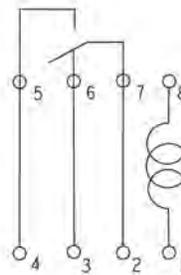


■ DIMENSIONS Unit: mm

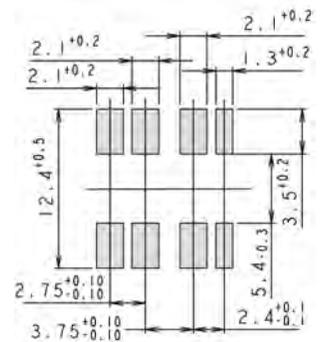
● Dimensions



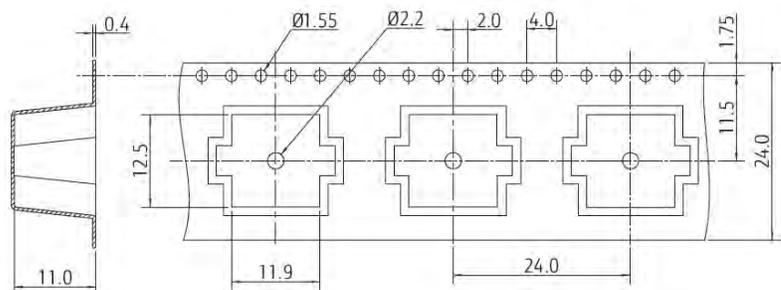
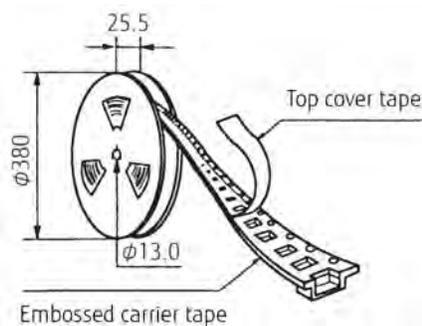
● Schematics (TOP VIEW)



● PC board mounting hole layout (TOP VIEW)



■ PACKAGING



RoHS Compliance and Lead Free Information

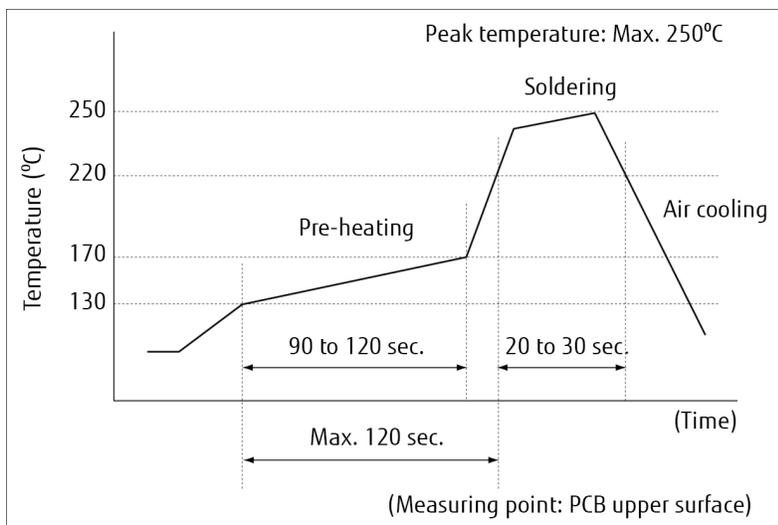
1. General Information

- 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



Solder by Soldering Iron:

Soldering Iron	30-60W
Temperature:	maximum 350-360°C
Duration:	maximum 3 sec.

We highly recommend that you confirm your actual solder conditions

3. Moisture Sensitivity

- FTR-P6 relays have MSL 2.5. Relays are packed in moisture barrier bags.

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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