FUJITSU

MINIATURE SURFACE MOUNT RELAY

For automotive applications

1 POLE - 25A

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 7 for more information

■ Part Numbers

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

(a)	Relay type	FTR-P6	: FTR-P6 series
(b)	Contact configuration	G	: 1 form C
(c)	Contact gap	N	: 0.25mm gap
(d)	Contact rated voltage	012	: 10..... 12VDC Coil rating table at page 3
(e)	Contact material	WA	: Silver-tin oxide indium
(f)	Special type	None DP Others	: Standard package : Dry package : To be assigned custom specification

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

■ Specifications

Item			FTR-P6	Remarks / conditions
Contact data	Configuration		1 form C	
	Material		Silver-tin oxide	
	Voltage drop		Max. 100 mV	At 1A, 12VDC (resistance)
	Contact rating		25A, 14VDC	Motor locked
	Max. carrying current		25A / 1h	25°C, nominal voltage applied to coil
	Max. inrush current		35A	
	Min. switching load *		1A, 6VDC	Reference
Coil	Coil power consumption		Approx. 0.8W	At rated coil voltage
	Operating temperature range		-40°C ~ +85°C	No frost
	Storage temperature range		-40°C ~ +100°C	No frost
	Operating humidity		45 to 85% RH	
Timing data	Operate		Max. 10ms	
	Release		Max. 5ms	
Life	Mechanical		Min. 1 x 10^6 operations	
	Electrical		Min. 100 x 10^3 operations	14VDC, 25A locked motor
Insulation	Insulation resistance		Min. 100MΩ at 500VDC	Initial
	Dielectric withstanding voltage	Open contacts	500VAC (50/60Hz), 1 minute	
		Coil contact	500VAC (50/60Hz), 1 minute	
Other	Vibration resistance	Misoperation	10 to 200Hz, 44m/s² (4.5G), constant acceleration	
		Endurance	10 to 200Hz, 44m/s² (4.5G), constant acceleration	
	Shock resistance	Misoperation	Min. 100m/s² (11 ± 1ms)	
		Endurance	Min. 1,000m/s² (6 ± 1ms)	
	Dimensions / weight		9.0 x 12.0 x 10.3 mm / approx. 3.3g	

*: 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.

Note: Care shall be taken on the heat generated on PC board when maximum carrying current exceeds 10A. Please perform the confirmation test with actual conditions.

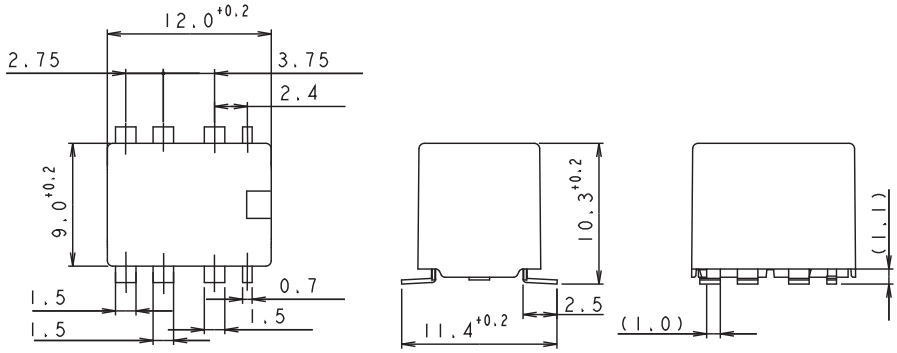
■ Coil Data

Coil code	Rated Coil Voltage (VDC)	Coil Resistance +/-10% (Ω)	Must Operate Voltage* (VDC)	Must Release Voltage* (VDC)
010	10	125	6.5 (at 20ºC) 8.2 (at 85ºC)	0.8 (at 20ºC) 1.0 (at 85ºC)
012	12	180	7.3 (at 20ºC) 9.2 (at 85ºC)	1.0 (at 20ºC) 1.3 (at 85ºC)

Note: All values in the table are valid at 20ºC and zero contact current, unless otherwise specified.
*: Specified operated values are valid for pulse wave voltage.

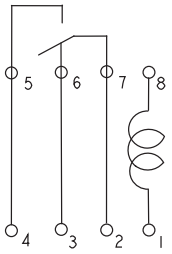
■ Dimensions

- Dimensions

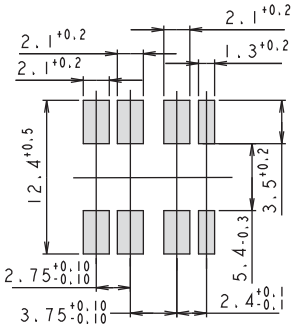


*Dimensions of the terminals do not include thickness of pre-solder.

- Schematics
(TOP VIEW)

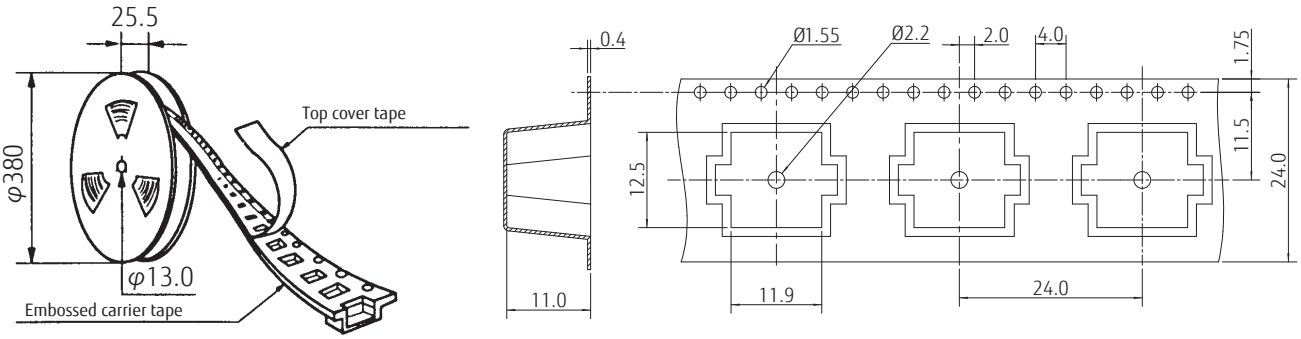


- PC Board Mouting Hole Layout
(TOP VIEW)



( ): Reference value
Unit: mm

■ Packaging

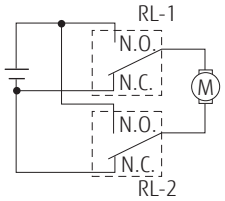


■ Characteristic Data (Reference)

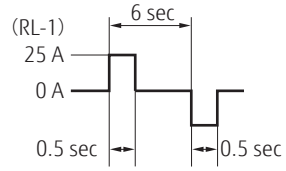
Life test (example)

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

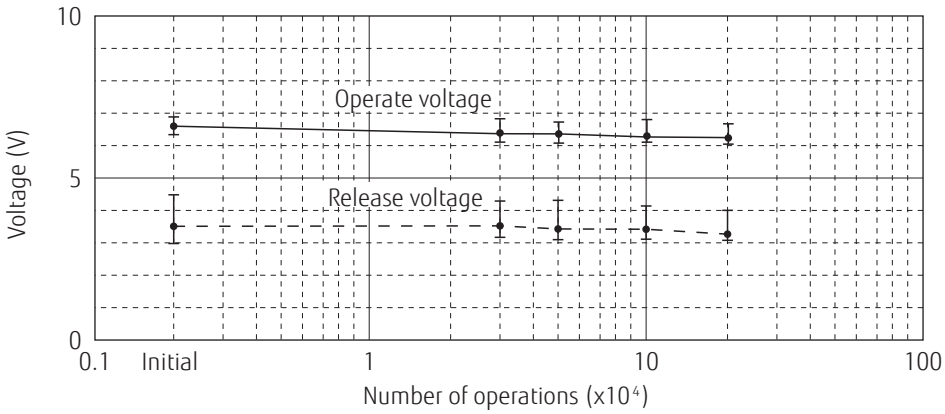
- Test circuit



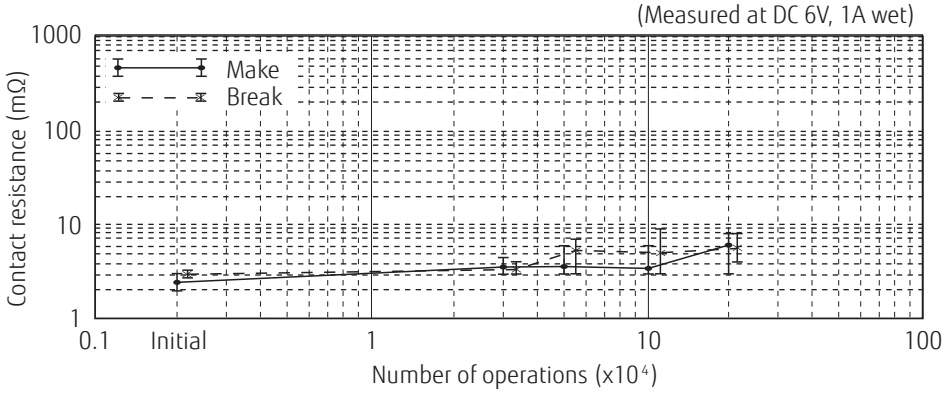
- Current wave form



- Operate / release voltage

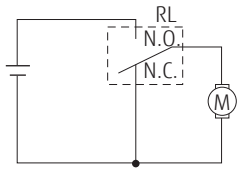


(Measured at DC 6V, 1A wet)

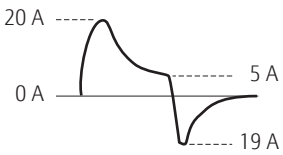


• Test condition
Inrush current 20A, 16VDC
motor free
400,000 operations min.
1.5 sec. ON, 2.0 sec. OFF

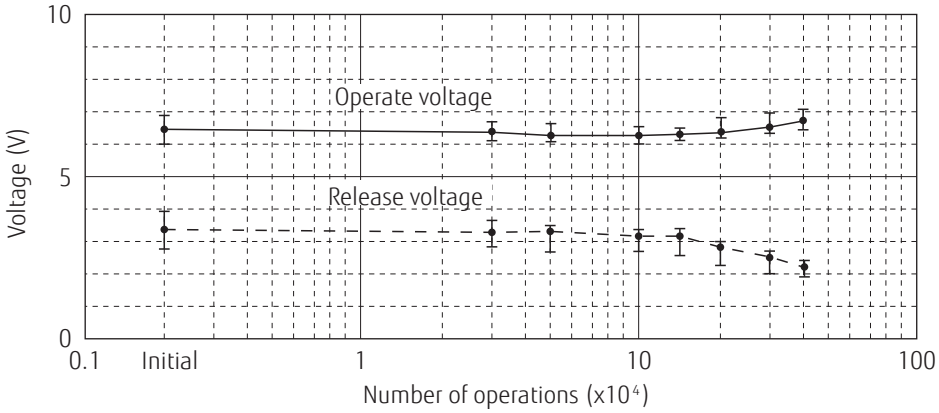
• Test circuit



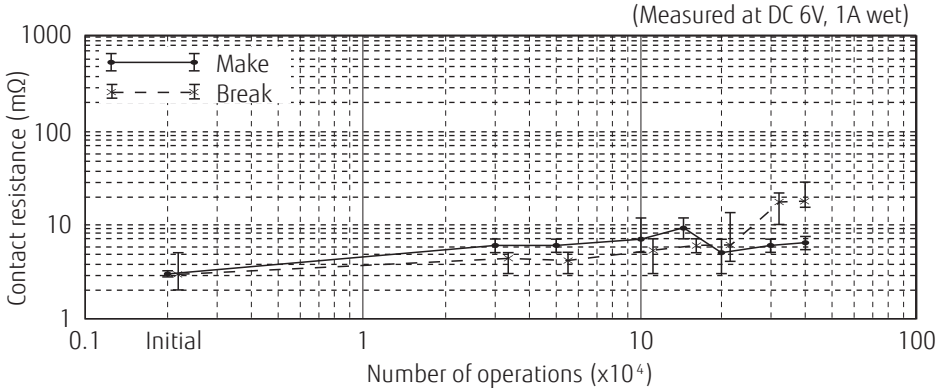
• Current wave form



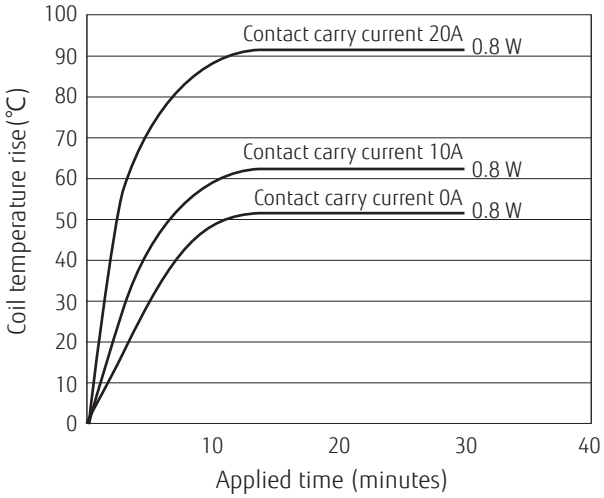
• Operate / release voltage



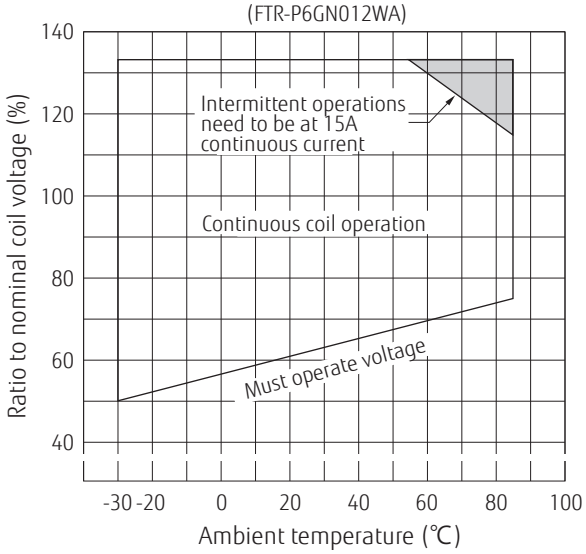
(Measured at DC 6V, 1A wet)



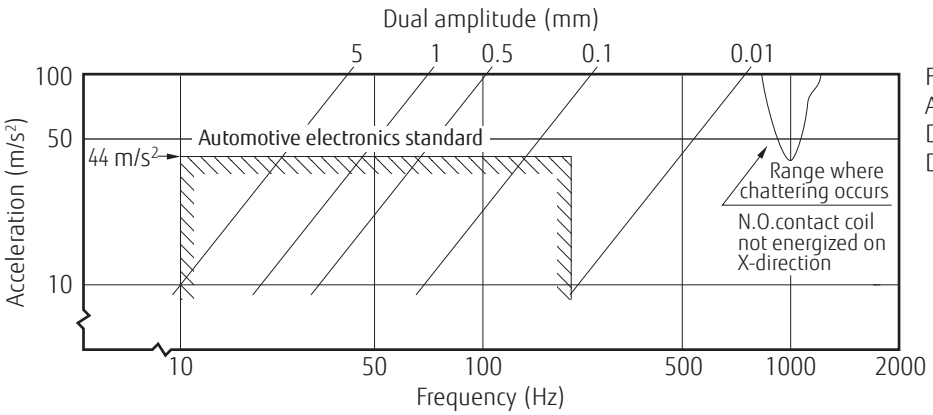
Coil temperature rise



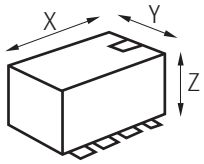
Operating coil voltage range
(FTR-P6GN012WA)



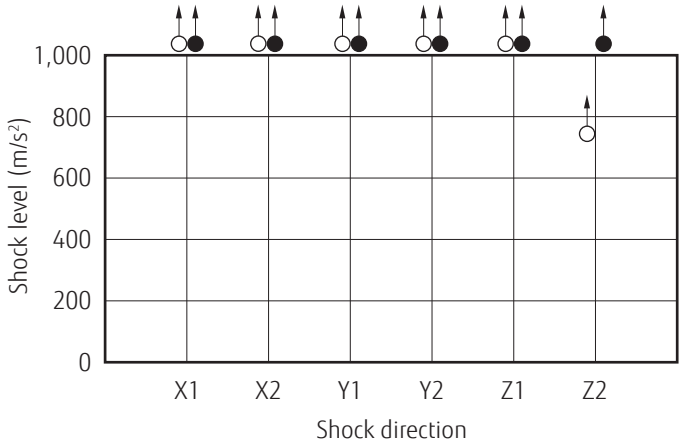
Vibration resistance characteristics



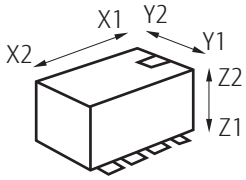
Frequency: 10 to 2000Hz
Acceleration: 100m/s² max.
Direction of vibration: See diagram below
Direction level: chatter > 1ms



Shock resistance characteristics

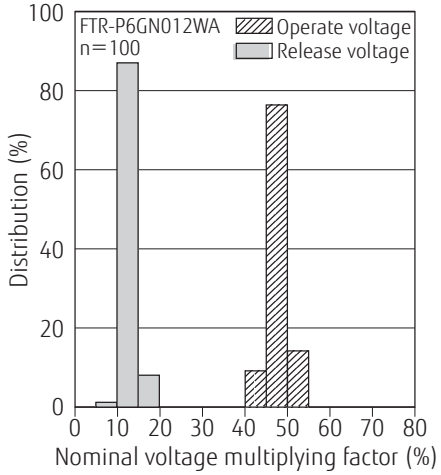


Shock application time: 6±1ms, half-sine wave
Test condition: Coil energized and de-energized
Shock direction: See diagram below
Direction level: chatter > 1ms

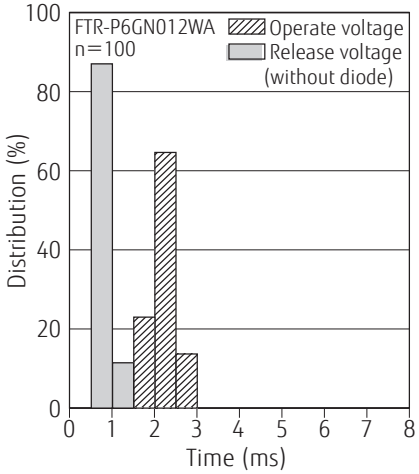


○ : Break contact (coil de-energized)
● : Make contact (coil energized)

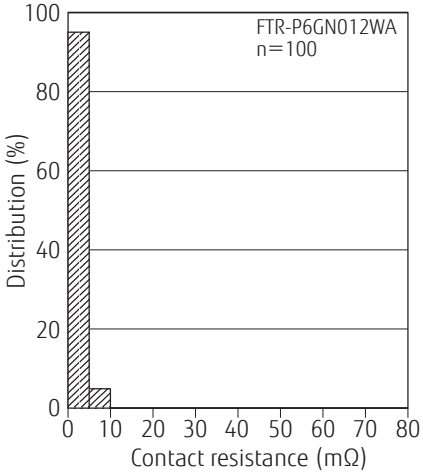
Distribution of operate/release voltage



Distribution of operate/release time



Distribution of contact resistance



GENERAL INFORMATION

1. ROHS Compliance

- All relays produced by Fujitsu Components are compliant with RoHS directive 2011/65/EU including amendments.
- Use of Cadmium in electrical contacts is exempted as per Annex III of the RoHS directive 2001/65/EU. Please consider expiry date of exemption. Relays with Cadmium containing contacts are not to be used for new designs.
- 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
- Characteristic data is not guaranteed values, but measured values of samples from production line.

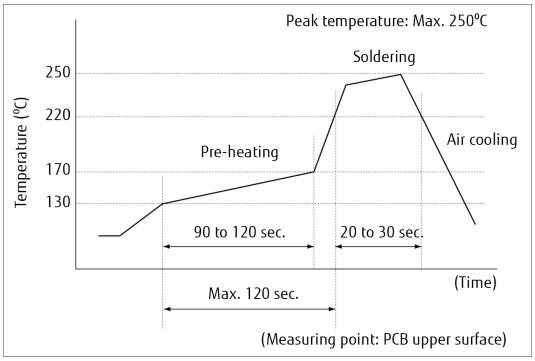
2. Recommended lead free solder condition

- 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.
- Recommended solder for assembly: Sn-3.0Ag-0.5Cu.

Solder by Soldering Iron:

Soldering Iron	30-60W
Temperature:	maximum 340-360˚C
Duration:	maximum 3 sec.

Reflow Solder Condition:



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. -DP relay will be shipped in moisture barrier bag.

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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