

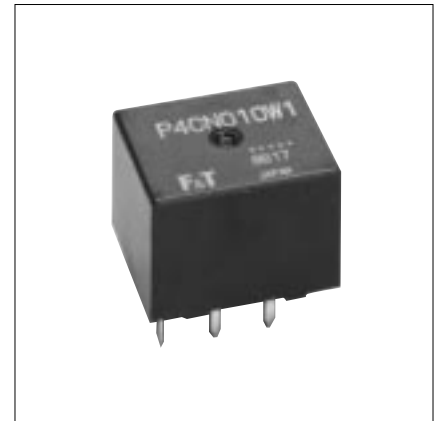
COMPACT POWER TWIN RELAY

1POLE X 2, H-BRIDGE—25 A FOR AUTOMOTIVE APPLICATIONS

FTR-P4 Series

■ FEATURES

- Compact for high density packaging.
(60% volume of previous generation FBR512).
- High contact capacity with proven contact material.
(100,000 operations, 14 V, 25 A achieved, even with reduced size).
- Coil power savings
(600mW nominal achieved with state-of-the-art magnetic analysis/design).
- 125°C version is available.
- Ease of PCB layout
(all terminals on perimeter, coil and contact terminals separated).
- Pin compatible with low acoustic noise relay, FTR-P2.
- Optional over-voltage circuit breaking capability
(0.6mm gap, contact our representative).
- Packaging for auto-insertion
(tube packing, 30 relays/tube).



■ ORDERING INFORMATION

[Example] FTR-P4 C N 012 W1 ***
 (a) (b) (c) (d) (e) (f)

(a)	Series Name	FTR-P4 Series
(b)	Contact Arrangement	C : 1 Form C x 2 (H-Bridge)
(c)	Contact Gap	N : 0.3mm gap P : 0.6mm gap
(d)	Nominal Coil Voltage	009 : 9VDC 010 : 10VDC 012 : 12VDC
(e)	Contact Material	W1 : Silver-tin oxide-indium
(f)	Custom Designation	Nil : Standard (85°C) -01 : High temperature (125°C)

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

Example: Ordering part number: FTR-P4CN012W1

Stamped on part number: P4CN012W1

■ TYPICAL APPLICATIONS

Power window Door lock	Power seat Sun roof	Tilt steering Retractable antenna
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■ SPECIFICATIONS

Item			Specification	
			Standard	High Temperature version
Contact	Arrangement		1 form C x 2 (H-Bridge)	
	Material		Silver-tin oxide-indium	
	Voltage Drop (Resistance)		Maximum 100 m (at 2 A 12 VDC)	
	Rating		25 A at 14 VDC (locked motor load)	
	Maximum Carrying Current		25 A / 1 hour (20° C, 100% rated coil voltage)	
	Maximum Inrush Current (Reference)		35 A	
	Maximum Switching Current (Reference)		35 A at 16 VDC	
	Minimum Switching Load ^{*1} (Reference)		1 A, 6 VDC	
Coil	Operating Temperature Range		-40° C to +85° C (no frost)	-40° C to +125° C (no frost)
	Storage Temperature Range		-40° C to +100° C (no frost)	-40° C to +125° C (no frost)
Timing Values	Operate (at nominal voltage)		Maximum 10ms (not including bounce)	
	Release (at nominal voltage)		Maximum 5ms (not including bounce, no diode) Maximum 15ms (not including bounce, with diode)	
Life	Mechanical		10 x 10 ⁶ operations minimum	
	Electrical		100 x 10 ³ operations minimum 14 VDC, 25 A (locked motor load) (1 operation = 1 forward, 1 reverse)	
Other	Vibration Resistance	Operational	10-55Hz, 1.5mm double amplitude (=9.13G @ 55Hz) 55-100Hz, 45m/sec ² (4.6G)	
	Shock Resistance	Operational	100 m/s ² minimum (10G)	
		Endurance	1, 000 m/s ² minimum (100G)	
	Insulation Resistance (initial)		100M ohms @500 VAC	
	Dielectric Withstanding Voltage (initial)		500 VAC	
	Weight		Approximately 9.0g	

*1 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.

FTR-P4 SERIES

■ COIL DATA CHART

FTR-P4 Series

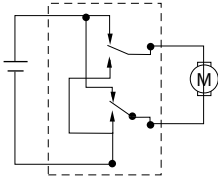
Model	Nominal Coil Voltage	Coil Resistance ($\pm 10\%$ at 20° C)	Must Operate Voltage	Must Release Voltage (at 20° C)	Coil Power at Nominal Voltage	Thermal Resistance (approx.)
FTR-P4CN009W1 ()	9VDC	135 Ω	5.5VDC (at 20° C) 6.9VDC (at 85° C)	0.75VDC	0.6W	73° C/W
FTR-P4CN010W1 ()	10VDC	167 Ω	6.3VDC (at 20° C) 7.9VDC (at 85° C)	0.9VDC	0.6W	73° C/W
FTR-P4CN012W1 ()	12VDC	240 Ω	7.3VDC (at 20° C) 9.2VDC (at 85° C)	1.0VDC	0.6W	73° C/W

Note: () is "Nil" or "-01"

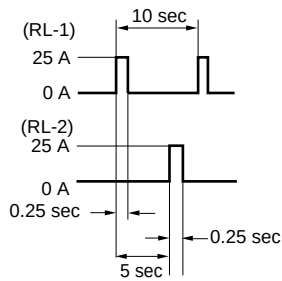
■ CHARACTERISTIC DATA

1. LIFE TEST (EXAMPLES)

- Test item
14 V DC-25 A
locked motor
100K operations* minimim
0.25 seconds ON,
9.75 seconds OFF

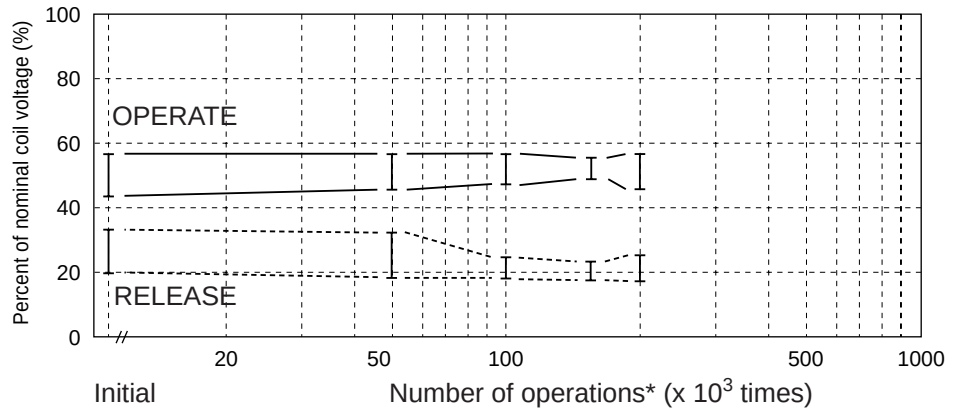


- Current wave form



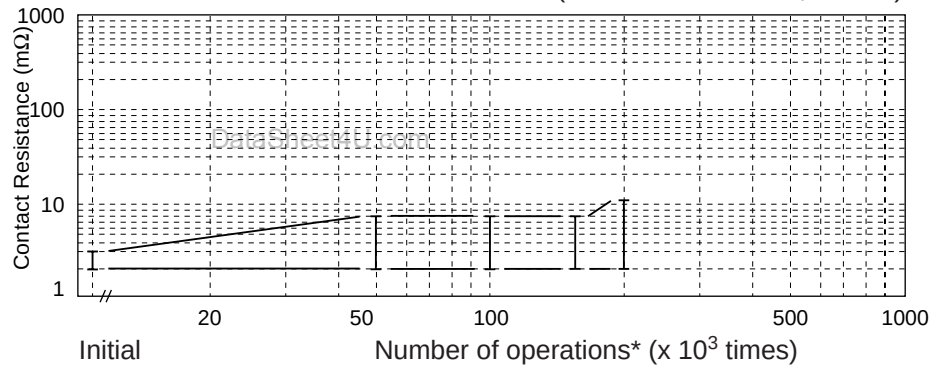
* 1 operation = 1 forward
and 1 reverse

- Change of operate and release voltage

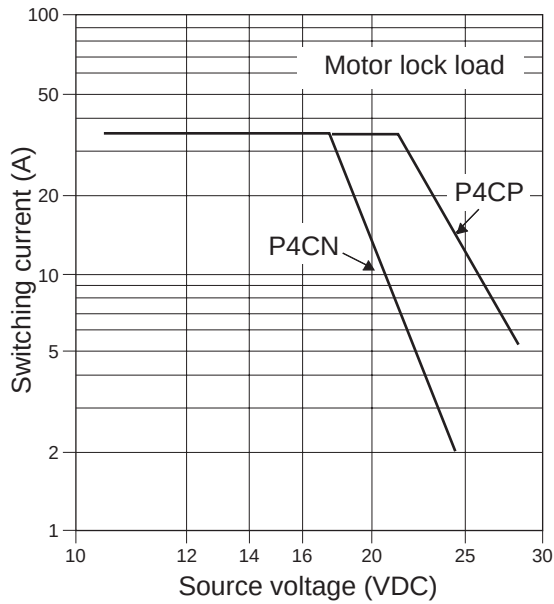


- Change in contact resistance

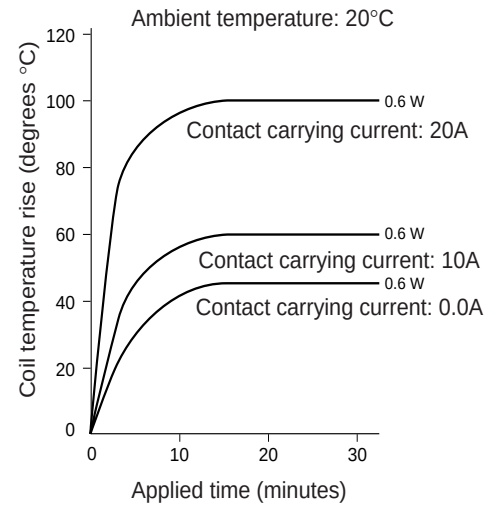
(Measured at 6 VDC, 1A wet)



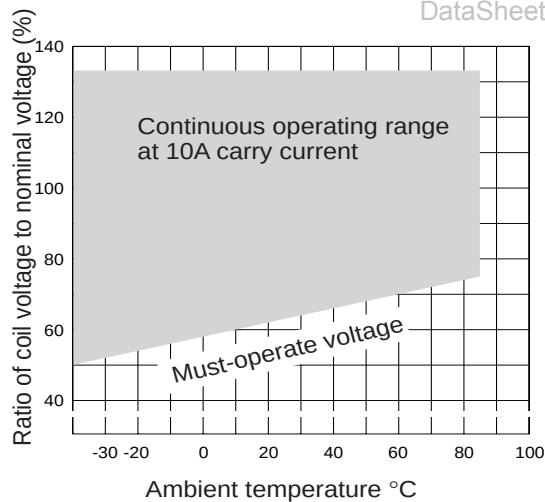
2. MAXIMUM BREAK CAPACITY



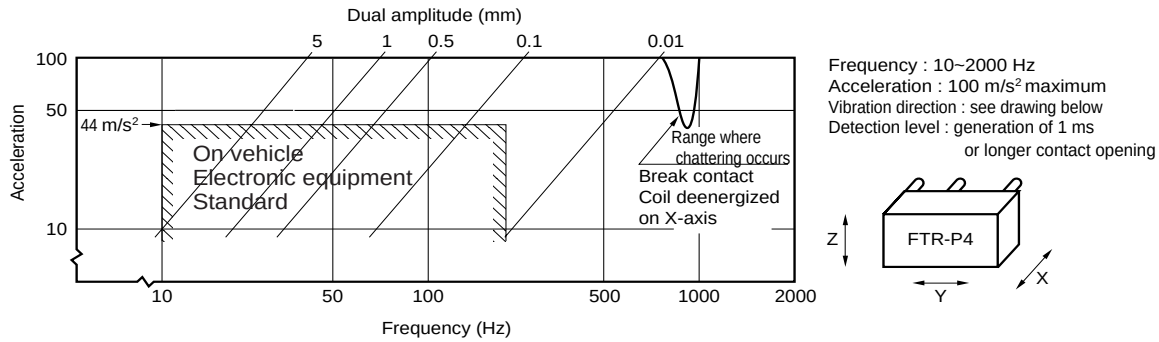
3. COIL TEMPERATURE RISE



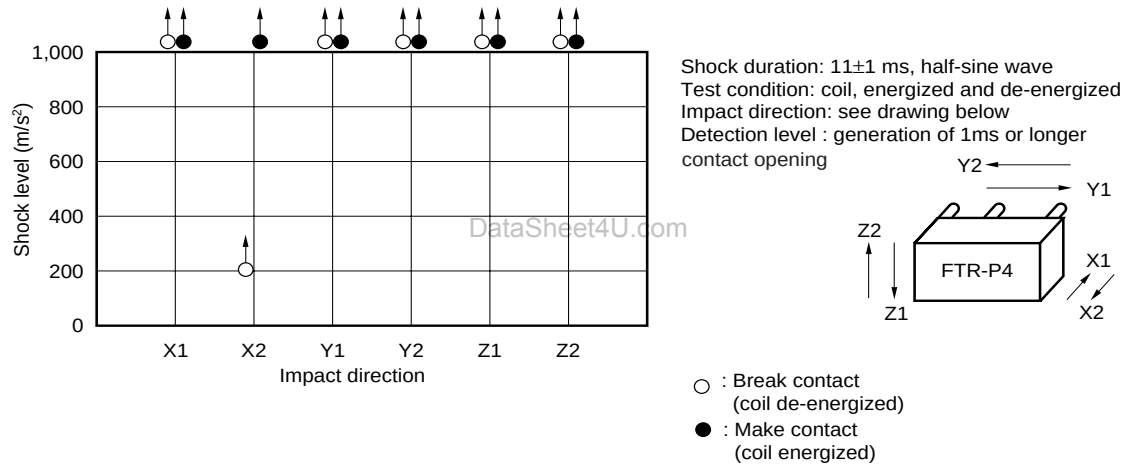
4. OPERATING COIL VOLTAGE RANGE



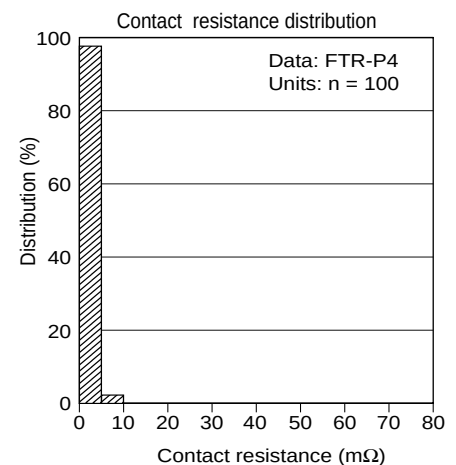
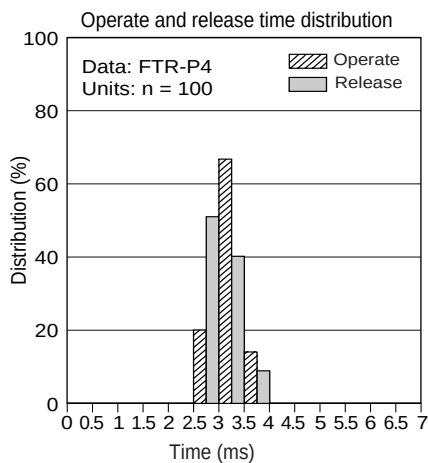
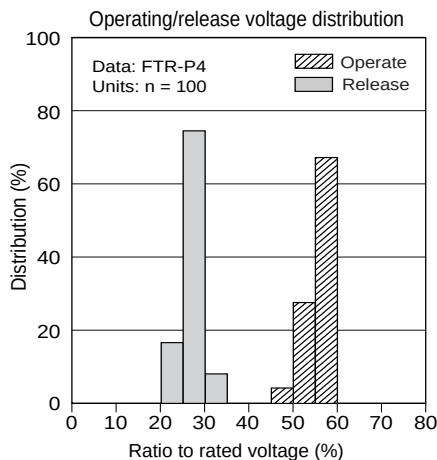
5. VIBRATION RESISTANCE CHARACTERISTIC



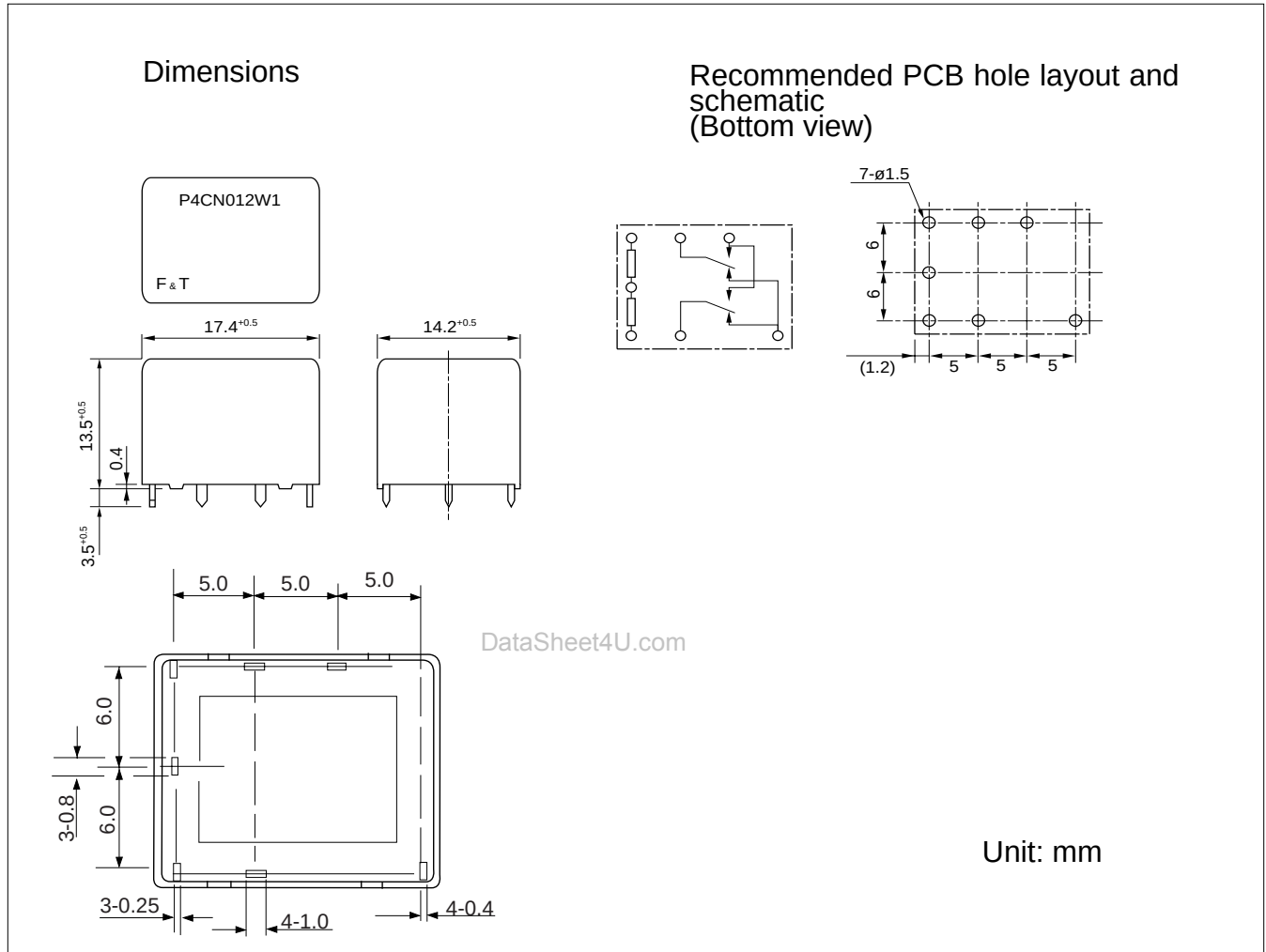
6. SHOCK RESISTANCE CHARACTERISTIC



REFERENCE DATA



■ DIMENSIONS AND SCHEMATICS



■ PRECAUTIONS

Please refer to the Engineering Reference in our relay databook for general precautions.

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