Panasonic

.**71**... bsi.

2, 000 V AC breakdown voltage, 2 Form C and 2 A relays

TX RELAYS



RoHS compliant

FEATURES

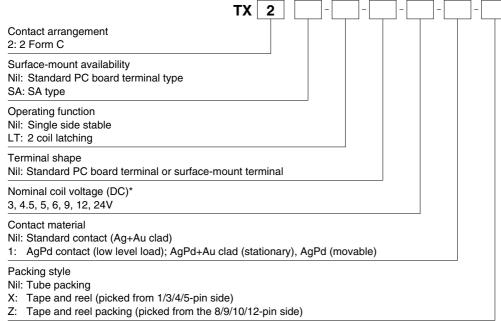
- 1. 2,000 V breakdown voltage between contact and coil
- 2. Outstanding surge resistance.
 1,500 V 10×160μ sec. (FCC part 68)
 (open contacts)
 2,500 V 2×10μ sec. (Telcordia)
 (contact and coil)
- 3. Nominal operating power: High sensitivity of 140mW
- 4. High contact capacity: 2 A 30 V DC
- 5. Compact size 15.0 (L) × 7.4 (W) × 8.2 (H) mm .591 (L) × .291 (W) × .323 (H) inch
- 6. High contact reliability
 High contact reliability is achieved by
 the use of gold-clad twin crossbar
 contacts, low-gas formation materials,
 mold sealing the coil section, and by
 controlling organic gas in the coil.
 *We also offer a range of products
 with AgPd contacts suitable for use
 in low level load analog circuits
 (Max. 10V DC 10 mA).

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TYPICAL APPLICATIONS

- 1. Communications (xDSL, Transmission)
- 2. Measurement
- 3. Security
- 4. Home appliances, and audio/visual equipment
- 5. Medical equipment

ORDERING INFORMATION



Note: In case of 5 V transistor drive circuit, it is recommended to use 4.5 V type relay.

TYPES

1. Standard PC board terminal

Contact Nominal coil		Single side stable	2 coil latching		
arrangement	voltage	Part No.	Part No.		
	3 V DC TX2-3V		TX2-LT-3V		
	4.5 V DC	TX2-4.5V	TX2-LT-4.5V		
	5 V DC	TX2-5V	TX2-LT-5V		
2 Form C	6 V DC	TX2-6V	TX2-LT-6V		
	9 V DC	TX2-9V	TX2-LT-9V		
	12 V DC	TX2-12V	TX2-LT-12V		
	24 V DC	TX2-24V	TX2-LT-24V		

Standard packing: Tube: 40 pcs.; Case: 1,000 pcs.

Note: Please add "-1" to the end of the part number for AgPd contacts (low level load).

2. Surface-mount terminal

1) Tube packing

Contact	Nominal coil	Single side stable	2 coil latching		
arrangement	voltage	Part No.	Part No.		
	3 V DC	TX2SA-3V	TX2SA-LT-3V		
	4.5 V DC	TX2SA-4.5V	TX2SA-LT-4.5V		
	5 V DC	TX2SA-5V	TX2SA-LT-5V		
2 Form C	6 V DC	TX2SA-6V	TX2SA-LT-6V		
	9 V DC	TX2SA-9V	TX2SA-LT-9V		
	12 V DC	TX2SA-12V	TX2SA-LT-12V		
	24 V DC	TX2SA-24V	TX2SA-LT-24V		

Standard packing: Tube: 40 pcs.; Case: 1,000 pcs.

Note: Please add "-1" to the end of the part number for AgPd contacts (low level load).

2) Tape and reel packing

Contact	Nominal coil	Single side stable	2 coil latching		
arrangement	voltage	Part No.	Part No.		
	3 V DC TX2SA-3V-Z		TX2SA-LT-3V-Z		
	4.5 V DC	TX2SA-4.5V-Z	TX2SA-LT-4.5V-Z		
2 Form C	5 V DC	TX2SA-5V-Z	TX2SA-LT-5V-Z		
	6 V DC	TX2SA-6V-Z	TX2SA-LT-6V-Z		
	9 V DC	TX2SA-9V-Z	TX2SA-LT-9V-Z		
	12 V DC	TX2SA-12V-Z	TX2SA-LT-12V-Z		
	24 V DC	TX2SA-24V-Z	TX2SA-LT-24V-Z		

Standard packing: Tape and reel: 500 pcs.; Case: 1,000 pcs.

Notes: 1. Tape and reel packing symbol "-Z" is not marked on the relay. "X" type tape and reel packing (picked from 1/2/3/4-pin side) is also available.

2. Please add "-1" to the end of the part number for AgPd contacts (low level load).

RATING

1. Coil data

1) Single side stable

Nominal coil voltage	Pick-up voltage (at 20°C 68°F)	Drop-out voltage (at 20°C 68°F)	Nominal operating current [±10%] (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Nominal operating power	Max. applied voltage (at 20°C 68°F)
3 V DC	75%V or less of nominal voltage* (Initial)	10%V or more of nominal voltage* (Initial)	46.7 mA	64.3 Ω		150%V of nominal voltage
4.5 V DC			31 mA	145 Ω		
5 V DC			28.1 mA	178 Ω	140 mW	
6 V DC			23.3 mA	257 Ω		
9 V DC			15.5 mA	579 Ω		
12 V DC			11.7 mA	1,028 Ω		
24 V DC			5.8 mA	4,114 Ω		

2) 2 coil latching

Nominal coil Set voltage (at 20°C 68°F)		Reset voltage (at 20°C 68°F)	Nominal operating current [±10%] (at 20°C 68°F)		Coil resistance [±10%] (at 20°C 68°F)		Nominal operating power		Max. applied voltage (at 20°C 68°F
			Set coil	Reset coil	Set coil	Reset coil	Set coil	Reset coil	
3 V DC			66.7 mA	66.7 mA	45 Ω	45 Ω			
4.5 V DC	75%V or less of nominal voltage* (Initial)	75%V or less of nominal voltage* (Initial)	44.5 mA	44.5 mA	101.2 Ω	101.2 Ω	200 mW 2	200 mW	150%V of nominal voltage
5 V DC			40 mA	40 mA	125 Ω	125 Ω			
6 V DC			33.3 mA	33.3 mA	180 Ω	180 Ω			
9 V DC			22.2 mA	22.2 mA	405 Ω	405 Ω			
12 V DC			16.7 mA	16.7 mA	720 Ω	720 Ω			
24 V DC			8.3 mA	8.3 mA	2,880 Ω	2,880 Ω			

^{*}Pulse drive (JIS C 5442-1986)

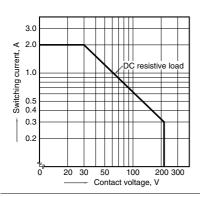
2. Specifications

Characteristics	Item		Specifications		
	Arrangement		2 Form C		
Contact	Initial contact resistar	nce, max.	Max. 100 mΩ (By voltage drop 6 V DC 1A)		
	Contact material		Standard contact: Ag+Au clad, AgPd contact (low level load): AgPd+Au clad (stationary), AgPd (movable)		
	Nominal switching ca	pacity	Standard contact: 2 A 30 V DC, AgPd contact: 1 A 30 V DC (resistive load)		
	Max. switching power	r	Standard contact: 60 W (DC), AgPd contact: 30 W (DC) (resistive load)		
	Max. switching voltage	je	220V DC		
Rating	Max. switching currer	nt	Standard contact: 2 A, AgPd contact: 1 A		
	Min. switching capac	ity (Reference value)*1	10μA 10mV DC		
	Nominal operating	Single side stable	140 mW (3 to 24 V DC)		
	power	2 coil latching	200 mW (3 to 24 V DC)		
	Insulation resistance	(Initial)	Min. 1,000M Ω (at 500V DC) Measurement at same location as "Initial breakdown voltage" section		
	D 11 11	Between open contacts	1,000 Vrms for 1min. (Detection current: 10mA)		
	Breakdown voltage (Initial)	Between contact and coil	2,000 Vrms for 1min. (Detection current: 10mA)		
	(Illidal)	Between contact sets	1,000 Vrms for 1min. (Detection current: 10mA)		
Electrical	Surge breakdown voltage (Initial)	Between open contacts	1,500 V (10×160μs) (FCC Part 68)		
characteristics		Between contacts and coil	2,500 V (2×10µs) (Telcordia)		
	Temperature rise (at	20°C 68°F)	Max. 50°C (By resistive method, nominal coil voltage applied to the coil; contact carrying current: 2A.)		
	Operate time [Set tim	ne] (at 20°C 68°F)	Max. 4 ms [Max. 4 ms] (Nominal coil voltage applied to the coil, excluding contact bounce time.)		
	Release time [Reset	time] (at 20°C 68°F)	Max. 4 ms [Max. 4 ms] (Nominal coil voltage applied to the coil, excluding contact bounce time.) (without diode)		
	Shock resistance	Functional	Min. 750 m/s² (Half-wave pulse of sine wave: 6 ms; detection time: 10µs.)		
Mechanical		Destructive	Min. 1,000 m/s² (Half-wave pulse of sine wave: 6 ms.)		
characteristics	\(\(\) \(Functional	10 to 55 Hz at double amplitude of 3.3 mm (Detection time: 10μs.)		
	Vibration resistance Destructive		10 to 55 Hz at double amplitude of 5 mm		
Even entered life	Mechanical	•	Min. 108 (at 180 cpm)		
Expected life	Electrical (Standard	contact)	Min. 10 ⁵ (2 A 30 V DC resistive), 5×10 ⁵ (1 A 30 V DC resistive) (at 20 cpm)		
Conditions	Conditions for operat	ion, transport and storage*2	Ambient temperature: -40°C to +85°C (up to 24 V coil) -40°F to +185°F (up to 24 V coil) [-40°C to +70°C (48 V coil) -40°F to +158°F (48 V coil)]; Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature)		
	Max. operating speed	d (at rated load)	20 cpm		
Unit weight			Approx. 2 g .071 oz		

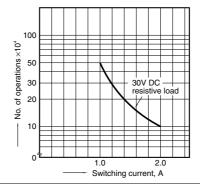
Notes: *1 This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load. (AgPd contact type is available for low level load switching [10V DC, 10mA max. level])
*2 Refer to "AMBIENT ENVIRONMENT" in GENERAL APPLICATION GUIDELINES.

REFERENCE DATA

1. Maximum switching capacity

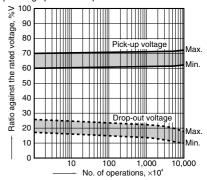


2. Life curve



3. Mechanical life

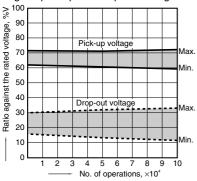
Tested sample: TX2-5V, 10 pcs. Operating speed: 180 cpm



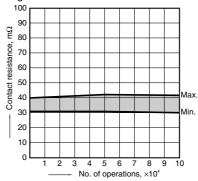
4. Electrical life (2A 30V DC resistive load)

Tested sample: TX2-5V, 6 pcs. Operating speed: 20 cpm

Change of pick-up and drop-out voltage



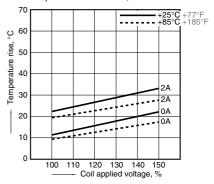
Change of contact resistance



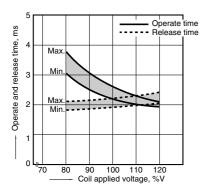
5. Coil temperature rise Tested sample: TX2-5V, 6 pcs.

Point measured: Inside the coil

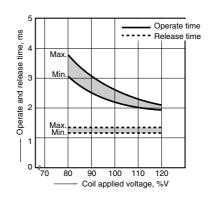
Ambient temperature: 25°C 77°F, 85°C 185°F



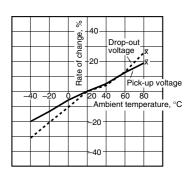
6-(1). Operate and release time (with diode) Tested sample: TX2-5V, 10 pcs.



6-(2). Operate and release time (without diode) Tested sample: TX2-5V, 10 pcs.

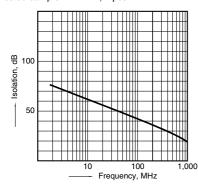


7. Ambient temperature characteristics Tested sample: TX2-5V, 5 pcs.



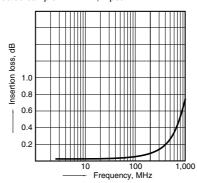
8-(1). High frequency characteristics (Isolation)

Tested sample: TX2-12V, 2 pcs.

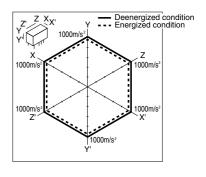


8-(2). High frequency characteristics (Insertion loss)

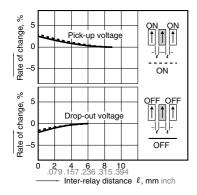
Tested sample: TX2-12V, 2 pcs.



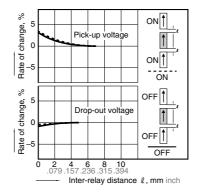
9. Malfunctional shock (single side stable) Tested sample: TX2-5V, 6 pcs.



10-(1). Influence of adjacent mounting Tested sample: TX2-12V, 6 pcs.

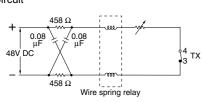


10-(2). Influence of adjacent mounting Tested sample: TX2-12V, 6 pcs.

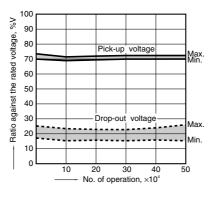


11. Pulse dialing test Tested sample: TX2-5V, 6 pcs. (35 mA 48 V DC wire spring relay load)

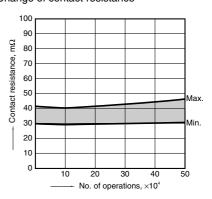
Circuit



Change of pick-up and drop-out voltage



Change of contact resistance



Note: Data of surface-mount type are the same as those of PC board terminal type.

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DIMENSIONS (mm inch)

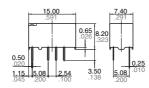
The CAD data of the products with a CAD Data mark can be downloaded from: http://industrial.panasonic.com/ac/e/

1. Standard PC board terminal and Self clinching terminal

CAD Data

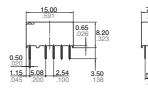
Single side stable type

External dimensions Standard PC board terminal



2 coil latching type

External dimensions Standard PC board terminal



General tolerance: ±0.3 ±.012

PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

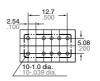
Schematic (Bottom view) Single side stable

General tolerance: ±0.3 ±.012



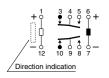
(Deenergized condition)

PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Schematic (Bottom view) 2 coil latching



(Reset condition)

2. Surface-mount terminal

CAD Data



Туре	External dimensions (Gen	eral tolerance: ±0.3 ±.012)	Suggested mounting pad (Top view) (Tolerance: ±0.1 ±.004)		
	Single side stable type	2 coil latching type	Single side stable type	2 coil latching type	
SA type	15 	15 .591 .323 .324 .323 .324 .323 .324 .323 .324 .323 .324 .325 .326 .0	3.16 039 100 100 124 100 100 100 100 100 100 100 100 100 10	3.16.039 2.54 1.124 399 100 100 100 100 100 100 100 100 100 1	

Schematic (Top view) Single side stable



2 coil latching

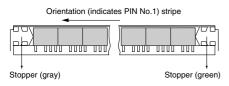
(Deenergized condition)

(Reset condition)

NOTES

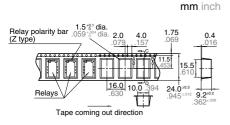
1. Packing style

1) The relay is packed in a tube with the relay orientation mark on the left side, as shown in the figure below.

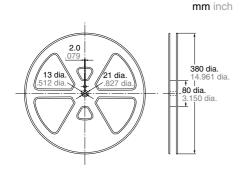


2) Tape and reel packing (surface-mount terminal type)

(1) Tape dimensions



(2) Dimensions of plastic reel



2. Automatic insertion

To maintain the internal function of the relay, the chucking pressure should not exceed the values below.

Chucking pressure in the direction A: $4.9 N \{500gf\}$ or less

Chucking pressure in the direction B:

9.8 N {1 kgf} or less

Chucking pressure in the direction C: $9.8 N \{1 \text{ kgf}\}$ or less



Please chuck the portion.

Avoid chucking the center of the relay.

In addition, excessive chucking pressure to the pinpoint of the relay should be avoided.

For general cautions for use, please refer to the "Cautions for use of Signal Relays" or "General Application Guidelines".

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