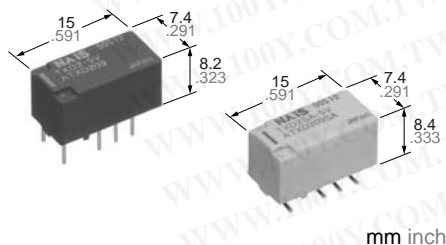


NAIS

HIGH INSULATION RELAYS (Conforming to the supplementary insulation class of EN Standards (EN41003))

TX-D RELAYS



mm inch

FEATURES

- Approved to the supplementary insulation class in the EN standards (EN41003).

The insulation distance between the contact and coil meet the supplementary insulation class of the EN41003 standards as required for equipment connected to the telephone lines in Europe.

Satisfies the following conditions:

- Clearances: 2.0 mm .079 inch or more
- Creepage distance: 2.5 mm .098 inch or more
- 2,000 V breakdown voltage between contact and coil.

The body block construction of the coil that is molded by plastic offers a high breakdown voltage of 2,000 V between contact and coil, and 1,000 V between open contacts.

- Outstanding surge resistance.

Surge withstand between open contacts: 1,500 V 10×160 μsec. (FCC part 68)

Surge withstand between contact and coil: 2,500 V 2×10 μsec. (Bellcore)

- High sensitivity 200 mW.

- High contact capacity: 2 A 30 V DC (Standard type)

- Surface-mount type also available.

- M.B.B. type also available

- The use of gold-clad twin crossbar contacts ensures high contact reliability.

- Outstanding vibration and shock resistance.

Functional shock resistance:

750 m/s² {75G}

Destructive shock resistance:

1,000 m/s² {100G}

Functional vibration resistance:

10 to 55 Hz (at double amplitude of 3.3 mm .130 inch)

Destructive vibration resistance:

10 to 55 Hz (at double amplitude of 5 mm .197 inch)

- Sealed construction allows automatic washing.

SPECIFICATIONS

Contact

		Standard (B.B.M) type	M.B.B.type
Arrangement		2 Form C	2 Form D
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)		100 mΩ	
Contact material		Gold-clad silver	
Rating	Nominal switching capacity (resistive load)	2 A 30 V DC	1 A 30 V DC
	Max. switching power (resistive load)	60 W	30 W
	Max. switching voltage	220 V DC	110 V DC
	Max. switching current	2 A	1 A
	Min. switching capacity ※1	10 μA 10 mV DC	
	Nominal operating power	Single side stable	200 mW (1.5 to 12 V DC) 230 mW (24 V DC)
1 coil latching		150 mW (1.5 to 12 V DC) 170 mW (24 V DC)	—
Expected life (min. operations)	Mechanical (at 180 cpm)	10 ⁸	10 ⁷
	Electrical (at 20 cpm)	10 ⁵ (2 A 30 V DC resistive), 5 × 10 ⁵ (1 A 30 V DC resistive)	10 ⁵ (1 A 30 V DC resistive)

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.

※2 The upper limit for the ambient temperature is the maximum temperature that can satisfy the coil temperature rise. Under the packing condition, allowable temperature range is from -40 to +70°C -40°C to +158°F.

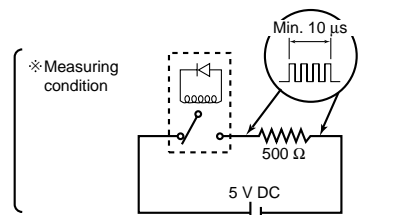
Remarks

- * Specifications will vary with foreign standards certification ratings.
- *1 Measurement at same location as "Initial breakdown voltage" section.
- *2 Detection current: 10 mA
- *3 By resistive method; nominal voltage applied to the coil; contact carrying current: 2 A.
- *4 By resistive method; nominal voltage applied to the coil; contact carrying current: 1 A.
- *5 Nominal voltage applied to the coil, excluding contact bounce time.
- *6 Nominal voltage applied to the coil, excluding contact bounce time without diode.
- *7 Half-wave pulse of sine wave: 6 ms.; detection time: 10 μs.
- *8 Half-wave pulse of sine wave: 11 ms.; detection time: 10 μs.
- *9 Half-wave pulse of sine wave: 6 ms.
- *10 Detection time: 10 μs.
- *11 Refer to 4. Conditions for operation, transport and storage mentioned in Cautions for use (Page 178).

Characteristics

		Standard (B.B.M) type	M.B.B.type
Initial insulation resistance*1		Min. 1,000 MΩ (at 500 V DC)	
Initial break-down voltage*2	Between open contacts	1,000 Vrms for 1 min.	500 Vrms for 1 min.
	Between contact and coil	2,000 Vrms for 1 min.	
Initial surge voltage	Between contact sets	1,000 Vrms for 1 min.	
	Between contacts, 10 × 160 μs	1,500 V [FCC Part 68]	—
Temperature rise (at 20°C)	Between contact and coil, 2 × 10 μs	2,500 V [Bellcore]	
		Max. 50°C*3	Max. 50°C*4
Operate time [Set time]*5 (at 20°C)		Max. 4 ms (Approx. 2 ms) [Max. 4 ms (Approx. 2 ms)]	Max. 4 ms (Approx. 2 ms)
		Max. 4 ms (Approx. 1 ms) [Max. 4 ms (Approx. 2 ms)]	Max. 4 ms (Approx. 1 ms)
M.B.B. time*12		—	Min. 10 μs
		Min. 750 m/s ² {75 G}*7	Min. 500 m/s ² {50 G}*8
Shock resistance	Functional	Min. 1,000 m/s ² {100 G}	
	Destructive*9	10 to 55 Hz at double amplitude of 3.3 mm	
Vibration resistance	Functional*10	10 to 55 Hz at double amplitude of 5 mm	
	Destructive	10 to 55 Hz at double amplitude of 5 mm	
Conditions for operation, transport and storage*11 (Not freezing and condensing at low temperature)	Ambient temp. ※2	-40°C to +85°C -40°F to +185°F	
	Humidity	5 to 85%R.H.	
Unit weight		Approx. 2 g .071 oz.	

*12 M.B.B. time:



TYPICAL APPLICATIONS

- Facsimiles
- Modems
- Communication devices

ORDERING INFORMATION

1) Standard (B.B.M.)type

Ex. TXD 2 SA - L - - 4.5V - Z

Contact arrangement	Surface-mount availability	Operating function	Terminal shape	Coil voltage (DC)	Packing style
2: 2 Form C	Nil: Standard PC board terminal or self-clinching terminal SA: Standard surface-mount terminal SL: High connection reliability surface-mount terminal type SS: Space saving surface-mount terminal type	Nil: Single side stable L: 1 coil latching	Nil: Standard PC board terminal or surface-mount type H: Self-clinching terminal	1.5, 3, 4.5, 5, 6, 9, 12, 24 V	Nil: Tube packing Z: Tape and reel packing (Picked from the 8/9/10/12-pin side)

2) M.B.B.type

Ex. TXD 2 SA - 2M - - 4.5V - Z

Contact arrangement	Surface-mount availability	Operating function	Terminal shape	Coil voltage (DC)	Packing style
2: 2 Form D	Nil: Standard PC board terminal or self-clinching terminal SA: Standard surface-mount terminal SL: High connection reliability surface-mount terminal type SS: Space saving surface-mount terminal type	2M: 2 M.B.B. type	Nil: Standard PC board terminal or surface-mount type H: Self-clinching terminal	1.5, 3, 4.5, 5, 6, 9, 12, 24 V	Nil: Tube packing Z: Tape and reel packing (Picked from the 8/9/10/12-pin side)

Notes: 1. Tape and reel (picked from 1/3/4/5-pin side) is also available by request. Part number. suffix "-X" is needed when ordering.
 (ex.) TXD2SA-3V-X
 2. Tape and reel packing symbol "-Z" or "-X" are not marked on the relay.

Surface-mount terminal variation

Variation	Terminal style	Usable conditions based on terminal connection solder reliability	
		Normal environments (indoor)	Drastic temperature fluctuations (outdoor)
SA type (Standard surface-mount terminal type)		Recommended	—
SL type (Highly connection reliability surface-mount terminal type)		Recommended	Recommended
SS type (Space saving surface-mount terminal type)		Recommended	Recommended

OPERATION INFORMATION

Contact Operation	Open	During Operation	Operation Complete	During Reset	Reset Complete
M.B.B. contact operation					
Standard (B.B.M.) contact operation					

TYPES AND COIL DATA (at 20°C 68°F)

勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-54151736
 勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

1. Standard (B.B.M.) type

(1) Standard PC board terminal and self-clinching terminal

1. Single side stable

Coil Rating, V DC	Part No. V DC		Pick-up voltage, V DC (max.) (initial)	Drop-out voltage, V DC (min.) (initial)	Nominal operating current, mA ($\pm 10\%$)	Coil resistance, Ω ($\pm 10\%$)	Nominal operating power, mW	Max. allowable voltage, V DC
	Standard PC board terminal	Self-clinching terminal						
1.5	TXD2-1.5V	TXD2-H-1.5V	1.13	0.15	132.7	11	200	1.8
3	TXD2-3V	TXD2-H-3V	2.25	0.3	66.7	45	200	3.6
4.5	TXD2-4.5V	TXD2-H-4.5V	3.38	0.45	44.4	101	200	5.4
5	TXD2-5V	TXD2-H-5V	3.75	0.5	40.0	125	200	6
6	TXD2-6V	TXD2-H-6V	4.5	0.6	33.3	180	200	7.2
9	TXD2-9V	TXD2-H-9V	6.75	0.9	22.2	405	200	10.8
12	TXD2-12V	TXD2-H-12V	9	1.2	16.7	720	200	14.4
24	TXD2-24V	TXD2-H-24V	18	2.4	9.6	2,504	230	28.8

2. 1 coil latching

Coil Rating, V DC	Part No.		Set voltage, V DC (max.) (initial)	Reset voltage, V DC (max.) (initial)	Nominal operating current, mA ($\pm 10\%$)	Coil resistance, Ω ($\pm 10\%$)	Nominal operating power, mW	Max. allowable voltage, V DC
	Standard PC board terminal	Self-clinching terminal						
1.5	TXD2-L-1.5V	TXD2-L-H-1.5V	1.13	1.13	100.0	15	150	1.8
3	TXD2-L-3V	TXD2-L-H-3V	2.25	2.25	50.0	60	150	3.6
4.5	TXD2-L-4.5V	TXD2-L-H-4.5V	3.38	3.38	33.3	135	150	5.4
5	TXD2-L-5V	TXD2-L-H-5V	3.75	3.75	30.0	166	150	6
6	TXD2-L-6V	TXD2-L-H-6V	4.5	4.5	25.0	240	150	7.2
9	TXD2-L-9V	TXD2-L-H-9V	6.75	6.75	16.7	540	150	10.8
12	TXD2-L-12V	TXD2-L-H-12V	9	9	12.5	960	150	14.4
24	TXD2-L-24V	TXD2-L-H-24V	18	18	7.1	3,388	170	28.8

Standard packing: 40 pcs. in an inner package (tube); 1,000 pcs. in an outer package.
 Note: In case of 5 V transistor drive circuit, it is recommended to use 4.5 V type relay.

(2) Surface-mount terminal

1. Single side stable

Coil Rating, V DC	Part No.		Pick-up voltage, V DC (max.) (initial)	Drop-out voltage, V DC (min.) (initial)	Nominal operating current, mA ($\pm 10\%$)	Coil resistance, Ω ($\pm 10\%$)	Nominal operating power, mW	Max. allowable voltage, V DC
	Tube packing	Tape and reel packing						
1.5	TXD2S \circ -1.5V	TXD2S \circ -1.5V-Z	1.13	0.15	132.7	11	200	1.8
3	TXD2S \circ -3V	TXD2S \circ -3V-Z	2.25	0.3	66.7	45	200	3.6
4.5	TXD2S \circ -4.5V	TXD2S \circ -4.5V-Z	3.38	0.45	44.4	101	200	5.4
5	TXD2S \circ -5V	TXD2S \circ -5V-Z	3.75	0.5	40.0	125	200	6
6	TXD2S \circ -6V	TXD2S \circ -6V-Z	4.5	0.6	33.3	180	200	7.2
9	TXD2S \circ -9V	TXD2S \circ -9V-Z	6.75	0.9	22.2	405	200	10.8
12	TXD2S \circ -12V	TXD2S \circ -12V-Z	9	1.2	16.7	720	200	14.4
24	TXD2S \circ -24V	TXD2S \circ -24V-Z	18	2.4	9.6	2,504	230	28.8

2. 1 coil latching

Coil Rating, V DC	Part No.		Set voltage, V DC (max.) (initial)	Reset voltage, V DC (max.) (initial)	Nominal operating current, mA ($\pm 10\%$)	Coil resistance, Ω ($\pm 10\%$)	Nominal operating power, mW	Max. allowable voltage, V DC
	Tube packing	Tape and reel packing						
1.5	TXD2S \circ -L-1.5V	TXD2S \circ -L-1.5V-Z	1.13	1.13	100.0	15	150	1.8
3	TXD2S \circ -L-3V	TXD2S \circ -L-3V-Z	2.25	2.25	50.0	60	150	3.6
4.5	TXD2S \circ -L-4.5V	TXD2S \circ -L-4.5V-Z	3.38	3.38	33.3	135	150	5.4
5	TXD2S \circ -L-5V	TXD2S \circ -L-5V-Z	3.75	3.75	30.0	166	150	6
6	TXD2S \circ -L-6V	TXD2S \circ -L-6V-Z	4.5	4.5	25.0	240	150	7.2
9	TXD2S \circ -L-9V	TXD2S \circ -L-9V-Z	6.75	6.75	16.7	540	150	10.8
12	TXD2S \circ -L-12V	TXD2S \circ -L-12V-Z	9	9	12.5	960	150	14.4
24	TXD2S \circ -L-24V	TXD2S \circ -L-24V-Z	18	18	7.1	3,388	170	28.8

\circ : For each surface-mounted terminal variation, input the following letter.

SA type: A, SL type: L, SS type: S

Standard packing: 40 pcs. (tube), 500 pcs. (tape and reel) in an inner package; 1,000 pcs. in an outer package

- Notes:**
1. Tape and reel packing symbol "-Z" is not marked on the relay. "X" type tape and reel packing (picked from 1/3/4/5-pin side) is also available.
 2. In case of 5 V transistor drive circuit, it is recommended to use 4.5 V type relay.

2. M.B.B. Type

(1) Standard PC board terminal and self-clinching terminal
 Single side stable

Coil Rating, V DC	Part No.		Pick-up voltage, V DC (max.)	Drop-out voltage, V DC (min.)	Nominal operating current, mA ($\pm 10\%$)	Coil resistance, Ω ($\pm 10\%$)	Nominal operating power, mW	Max. allowable voltage, V DC
	Standard PC board terminal	Self-clinching terminal						
1.5	TXD2-2M-1.5V	TXD2-2M-H-1.5V	1.13	0.15	166.7	9	250	1.8
3	TXD2-2M-3V	TXD2-2M-H-3V	2.25	0.3	83.3	36	250	3.6
4.5	TXD2-2M-4.5V	TXD2-2M-H-4.5V	3.38	0.45	55.6	81	250	5.4
5	TXD2-2M-5V	TXD2-2M-H-5V	3.75	0.5	50.0	100	250	6
6	TXD2-2M-6V	TXD2-2M-H-6V	4.5	0.6	41.7	144	250	7.2
9	TXD2-2M-9V	TXD2-2M-H-9V	6.75	0.9	27.8	324	250	10.8
12	TXD2-2M-12V	TXD2-2M-H-12V	9	1.2	20.8	576	250	14.4
24	TXD2-2M-24V	TXD2-2M-H-24V	18	2.4	11.3	2,133	270	28.8

Standard packing: 40 pcs. in an inner package (tube); 1,000 pcs. in an outer package

(2) Surface-mount terminal
 Single side stable

Coil Rating, V DC	Part No.		Set voltage, V DC (max.)	Reset voltage, V DC (min.)	Nominal operating current, mA ($\pm 10\%$)	Coil resistance, Ω ($\pm 10\%$)	Nominal operating power, mW	Max. allowable voltage, V DC
	Tube packing	Tape and reel packing						
1.5	TXD2S \circ -2M-1.5V	TXD2S \circ -2M-1.5V-Z	1.13	0.15	166.7	9	250	1.8
3	TXD2S \circ -2M-3V	TXD2S \circ -2M-3V-Z	2.25	0.3	83.3	36	250	3.6
4.5	TXD2S \circ -2M-4.5V	TXD2S \circ -2M-4.5V-Z	3.38	0.45	55.6	81	250	5.4
5	TXD2S \circ -2M-5V	TXD2S \circ -2M-5V-Z	3.75	0.5	50.0	100	250	6
6	TXD2S \circ -2M-6	TXD2S \circ -2M-6V-Z	4.5	0.6	41.7	144	250	7.2
9	TXD2S \circ -2M-9	TXD2S \circ -2M-9V-Z	6.75	0.9	27.8	324	250	10.8
12	TXD2S \circ -2M-12	TXD2S \circ -2M-12V-Z	9	1.2	20.8	576	250	14.4
24	TXD2S \circ -2M-24	TXD2S \circ -2M-24V-Z	18	2.4	11.3	2,133	270	28.8

\circ : For each surface-mounted terminal variation, input the following letter.
 SA type: A, SL type: L, SS type: S

Standard packing: 40 pcs. (tube), 500 pcs. (tape and reel) in an inner package; 1,000 pcs. in an outer package

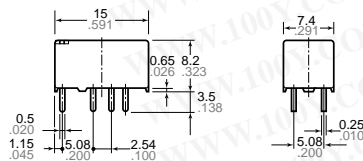
Notes:

1. Tape and reel packing symbol "-Z" is not marked on the relay. "X" type tape and reel packing (picked from 1/3/4/5-pin side) is also available.
2. In case of 5 V transistor drive circuit, it is recommended to use 4.5 V type relay.

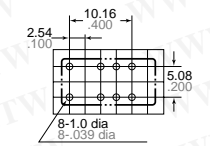
DIMENSIONS

mm inch

1. Standard PC board terminal and self-clinching terminal
 Standard PC board terminal

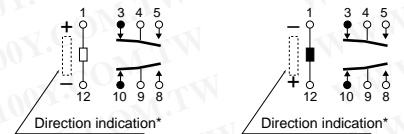


PC board pattern
 (Copper side view)



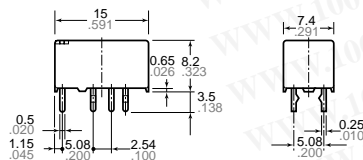
Tolerance: $\pm 0.1 \pm 0.004$

Schematic (Bottom view)
 Single side stable (Deenergized condition) 1 coil latching (Reset condition)



*Orientation stride located on top of relay.

Self clinching terminal

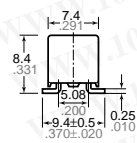
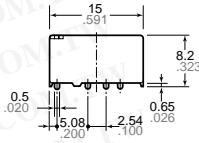


General tolerance: $\pm 0.3 \pm 0.012$

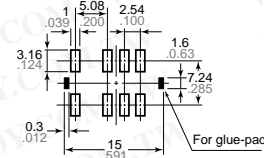
TX-D

2. Surface-mount terminal

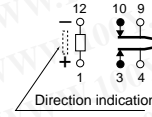
SA type



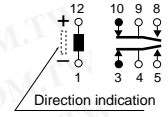
Suggested mounting pad (Top view)



Single side stable (Deenergized condition)

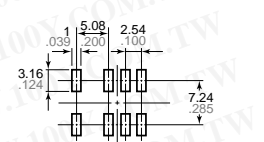
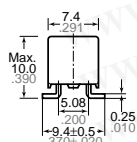
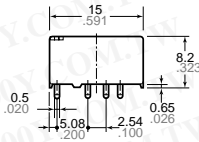


1 coil latching (Reset condition)

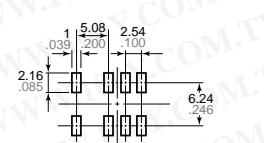
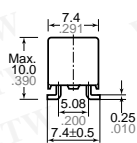
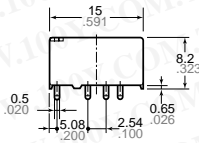


mm inch

SL type



SS type



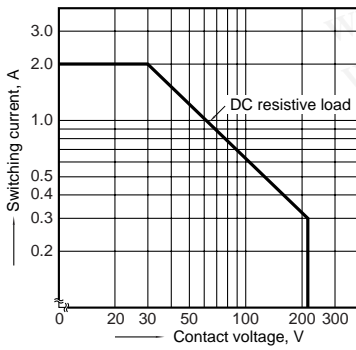
General tolerance: $\pm 0.3 \pm 0.12$

Tolerance: $\pm 0.1 \pm 0.04$

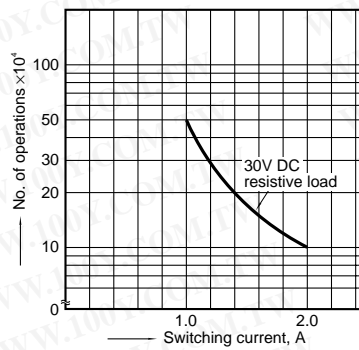
勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-54151736
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

REFERENCE DATA

1. Maximum switching capacity

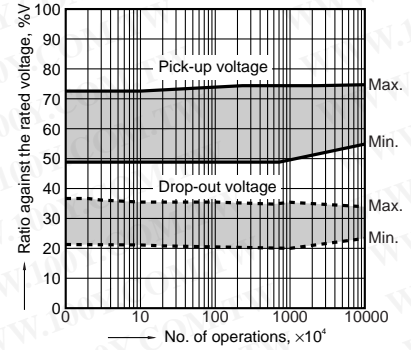


2. Life curve



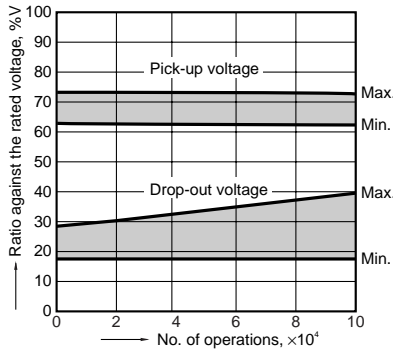
3. Mechanical life

Tested sample: TXD2-5V, 10 pcs.
Operating frequency: 180 cpm

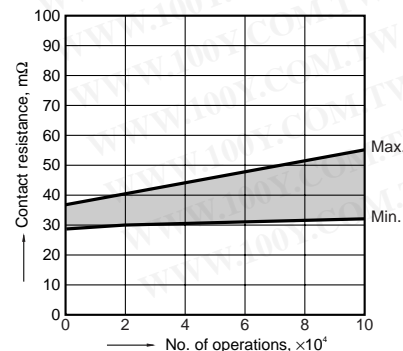


4. Electrical life (2 A 30 V DC resistive load)

Tested sample: TXD2-5V, 6 pcs.
Operating frequency: 20 cpm
Change of pick-up and drop-out voltage

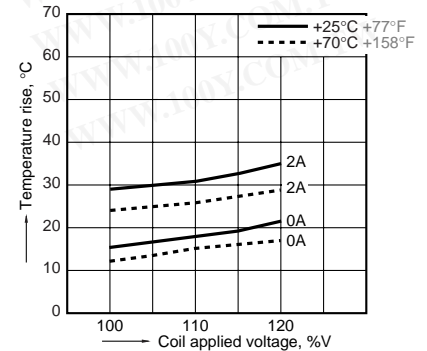


Change of contact resistance



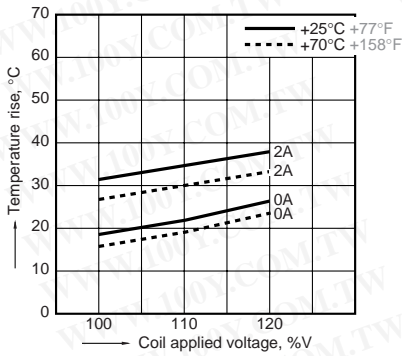
5-(1). Coil temperature rise

Tested sample: TXD2-5V, 6 pcs.
Measured portion: Inside the coil
Ambient temperature: 25°C 77°F, 70°C 158°F



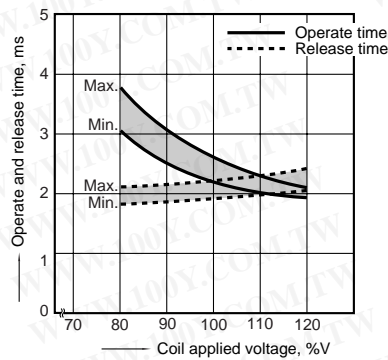
5-(2). Coil temperature rise

Tested sample: TXD2-24V, 6 pcs.
Measured portion: Inside the coil
Ambient temperature: 25°C 77°F, 70°C 158°F



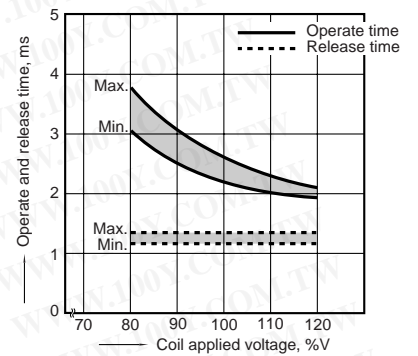
6-(1). Operate/release time characteristics (with diode)

Tested sample: TXD2-5V, 10 pcs.



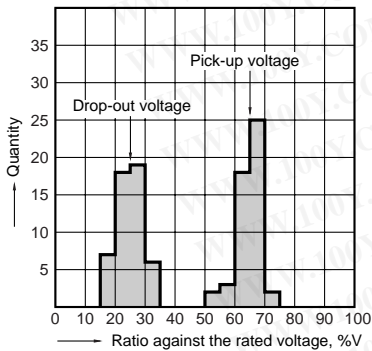
6-(2). Operate/release time characteristics (without diode)

Tested sample: TXD2-5V, 10 pcs.



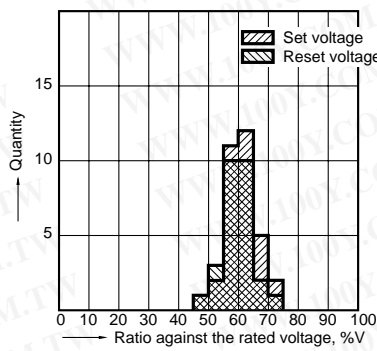
7. Distribution of pick-up and drop-out voltage

Tested sample: TXD2-5V, 50 pcs.



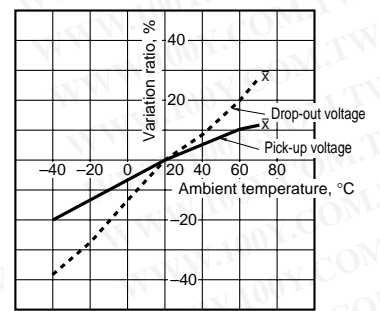
8. Distribution of set and reset voltage

Tested sample: TXD2-L-12V, 30 pcs.



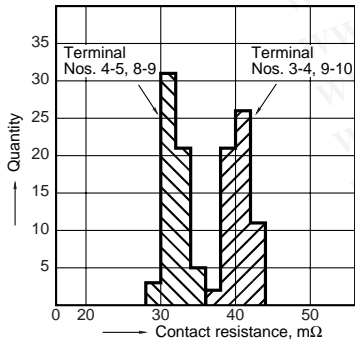
9. Ambient temperature characteristics

Tested sample: TXD2-5V, 5 pcs.



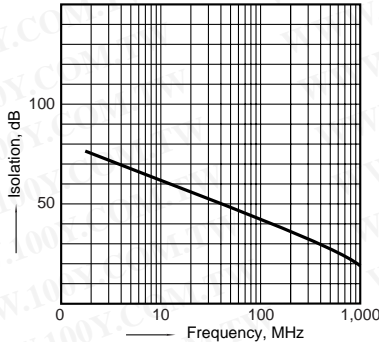
10. Distribution of contact resistance

Tested sample: TXD2-5V, 30 pcs. (30 x 4 contacts)



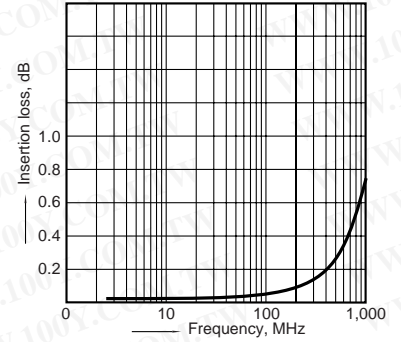
11-(1). High-frequency characteristics Isolation characteristics

Tested sample: TXD2-12V, 2 pcs.



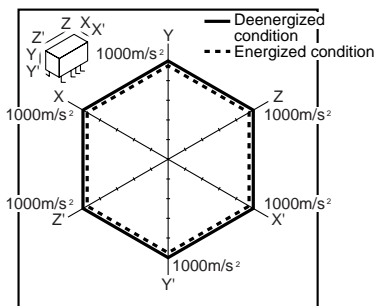
11-(2). High-frequency characteristics Insertion loss characteristics

Tested sample: TXD2-12V, 2 pcs.



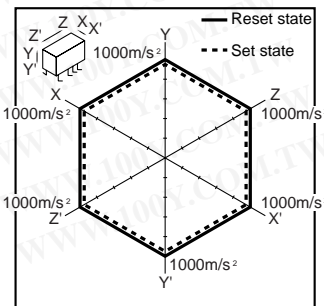
12-(1). Malfunctional shock (single side stable)

Tested sample: TXD2-5V, 6 pcs



12-(2). Malfunctional shock (latching)

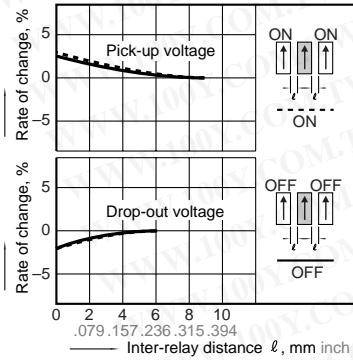
Tested sample: TXD2-L-12V, 6 pcs.



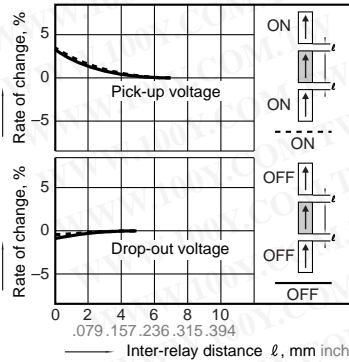
勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-54151736
勝特力电子(深圳) 86-755-83298787
Http://www.100y.com.tw

TX-D

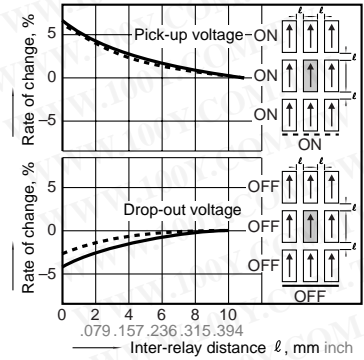
13-(1). Influence of adjacent mounting
Tested sample: TXD2-12V, 6 pcs.



13-(2). Influence of adjacent mounting
Tested sample: TXD2-12V, 6 pcs.



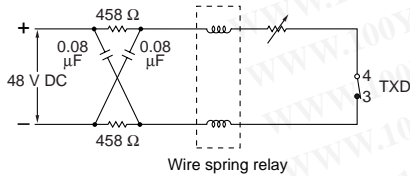
13-(3). Influence of adjacent mounting
Tested sample: TXD2-12V, 6 pcs.



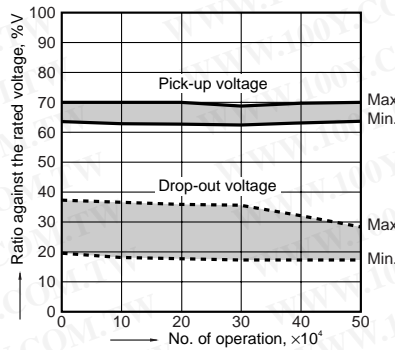
14. Actual load test (35 mA 48 V DC wire spring relay load)

Tested sample: TXD2-5V, 6 pcs.

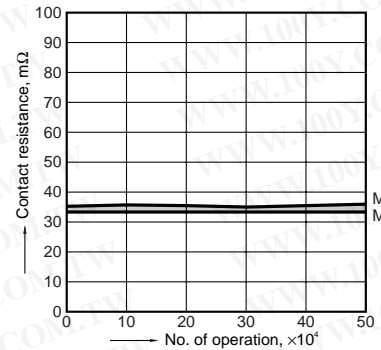
Circuit



Change of pick-up and drop-out voltage



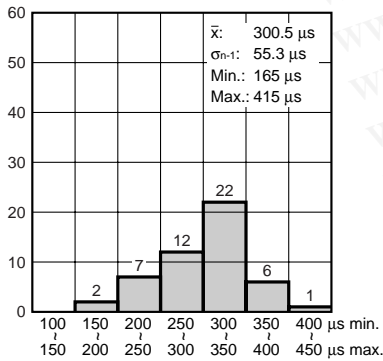
Change of contact resistance



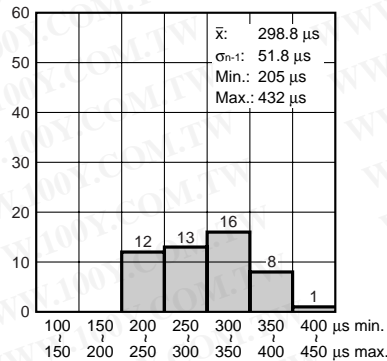
15-(1). Distribution of M.B.B. time

Tested sample: TXD2-2M-5V, 50 pcs.

Terminal No. 3-4-5: ON



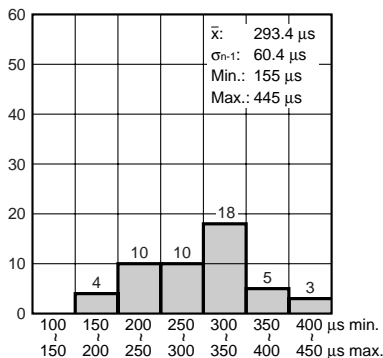
Terminal No. 3-4-5: OFF



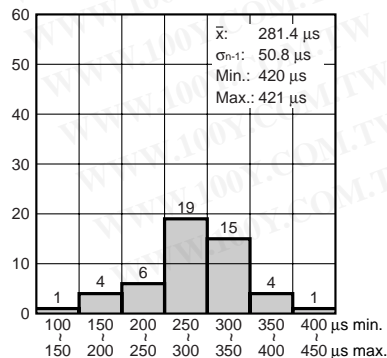
15-(2). Distribution of M.B.B. time

Tested sample: TXD2-2M-5V, 50 pcs.

Terminal No. 8-9-10: ON



Terminal No. 8-9-10: OFF



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For Cautions for Use, see Relay Technical Information

T-Series Relays

T series Cautions for Use

1. Coil operating power

Pure DC current should be applied to the coil. The wave form should be rectangular. If it includes ripple, the ripple factor should be less than 5%.

However, check it with the actual circuit since the characteristics may be slightly different.

The nominal operating voltage should be applied to the coil for more than 10 ms to set/reset the latching type relay.

2. Coil connection

When connecting coils, refer to the wiring diagram to prevent mis-operation or mal-function.

3. External magnetic field

Since T-Series relays are highly sensitive polarized relays, their characteristics will be affected by a strong external magnetic field.

Avoid using the relay under that conditions.

4. Conditions for operation, transport and storage

1) Ambient temperature, humidity, and atmospheric pressure during usage, transport, and storage of the relay:

TX(-SMD)/TX-D(-SMD)/TQ-SMD

(1) Temperature:

-40 to +85°C -40 to +185°F.

The temperature range is -40 to +70°C

-40 to +158°F for the packaged relay.

TX-S(-SMD)

(1) Temperature:

-40 to +70°C -40 to +158°F. for the package/non-package relay.

TXQ/TF/TN/TK

TQ/TF/TN/TK

(1) Temperature: -40 to +70°C -40 to +158°F

The temperature range is -40 to +60°C -40 to +140°F for the packaged relay.

(2) Humidity: 5 to 85% R.H.

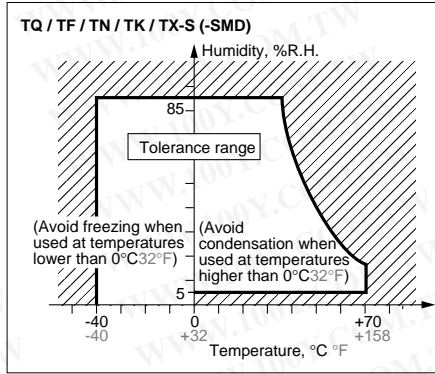
(Avoid freezing and condensation.)

The humidity range varies with the temperature.

Use within the range indicated in the graph below.

(3) Atmospheric pressure: 86 to 106 kPa

Temperature and humidity range for usage, transport, and storage:



2) Condensation

Condensation forms when there is a sudden change in temperature under high temperature, high humidity conditions. Condensation will cause deterioration of the relay insulation.

3) Freezing

Condensation or other moisture may freeze on the relay when the temperature is lower than 0°C 32°F.

This causes problems such as sticking of movable parts or operational time lags.

4) Low temperature, low humidity environments

The plastic becomes brittle if the relay is exposed to a low temperature, low humidity environment for long periods of time.

5. M.B.B. contact relays

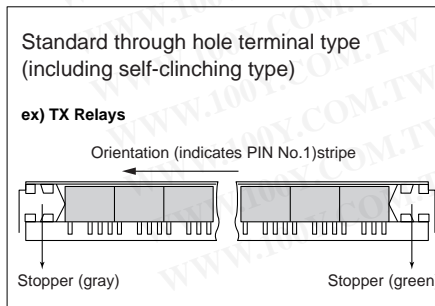
A small OFF time may be generated by the contact bounce during contact switching. Check the actual circuit carefully. If the relay is dropped accidentally, check the appearance and characteristics including M.B.B. time before use.

6. Packing style

1) Tube orientation for both standard through hole terminal type (including self-clinching type) and surface-mount terminal type.

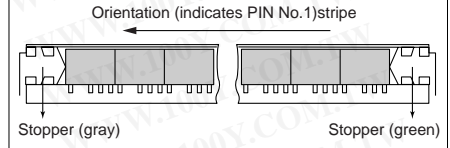
The relay is packed in a tube with the relay orientation mark on the left side, as shown in the figure below.

Take note of the relay orientation when mounting relays on the printed circuit board.



Surface-mount terminal type

ex) TX-SMD Relays

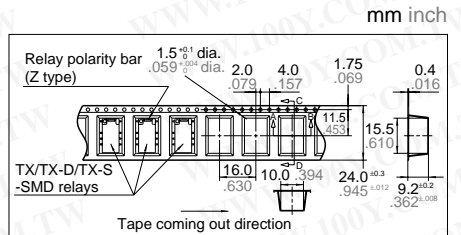


(2) Tape and reel packing (surface-mount terminal type)

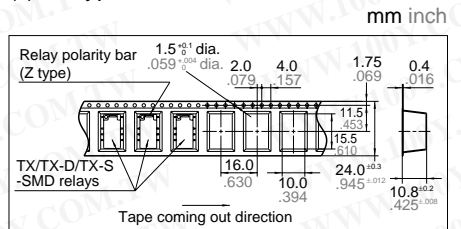
(1) Tape dimensions

1. TX/TX-D/TX-S-SMD Relays

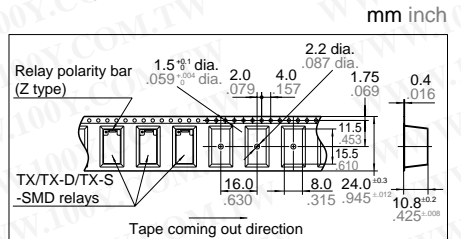
(i) SA type



(ii) SL type

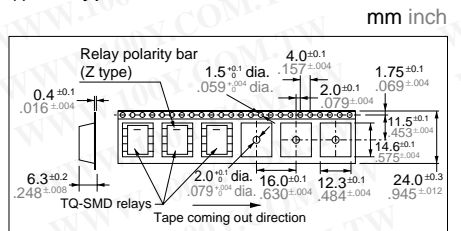


(iii) SS type

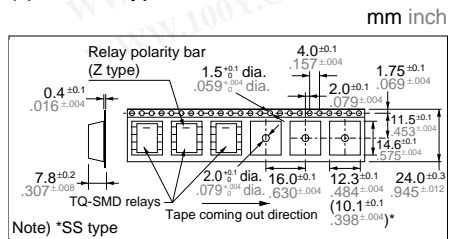


2. TQ-SMD Relays

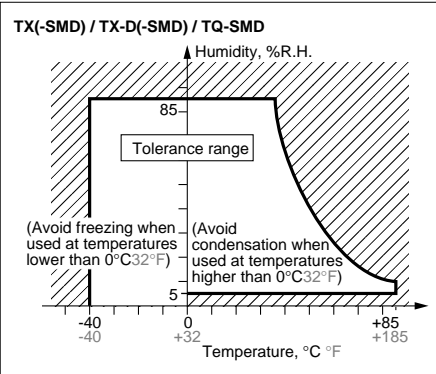
(i) SA type



(ii) SL, SS type

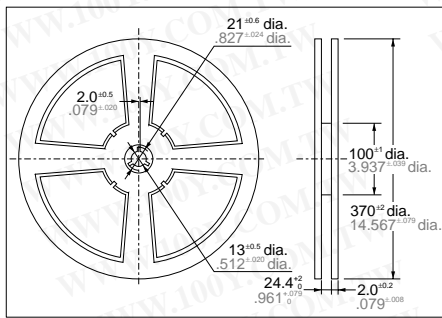


(Note) *SS type

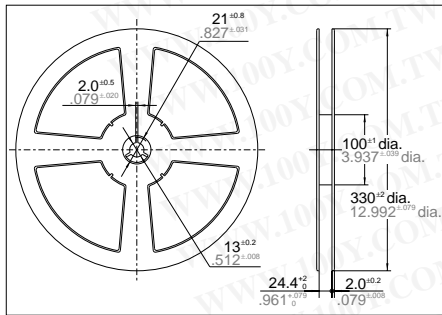


(2) Dimensions of plastic reel

(i) TX/TX-D/TX-S-SMD Relays



(ii) TQ-SMD Relays



7. Automatic insertion

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

1) TX(-SMD)/TX-D(-SMD)/TQ/TF

Chucking pressure in the direction A:

4.9 N {500 g} or less

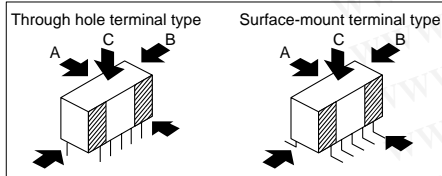
Chucking pressure in the direction B:

9.8 N {1 kg} or less

Chucking pressure in the direction C:

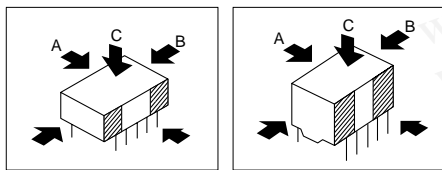
9.8 N {1 kg} or less

TX(-SMD)/TX-D(-SMD)/TX-S(-SMD)



TQ

TF



Please chuck the portion.

Avoid chucking the center of the relay.

2) TQ-SMD

Chucking pressure in the direction A:

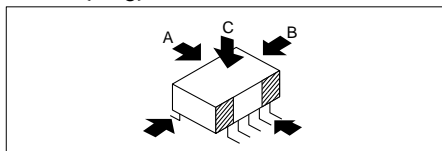
9.8 N {1 kg} or less

Chucking pressure in the direction B:

9.8 N {1 kg} or less

Mounting pressure in the direction C:

9.8 N {1 kg} or less



Please chuck the portion.

Avoid chucking the center of the relay.

3) TN

Chucking pressure in the direction A:

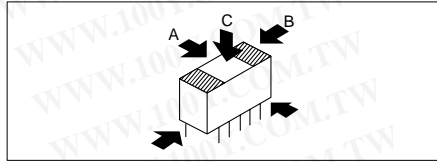
9.8 N {1 kg} or less

Chucking pressure in the direction B:

9.8 N {1 kg} or less

Chucking pressure in the direction C:

4.9 N {500 g} or less



Please chuck the portion.

Avoid chucking the center of the relay.

4) TK

Chucking pressure* in the direction A:

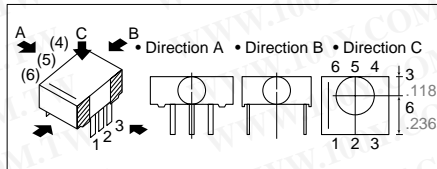
9.8 N {1 kg} or less

Chucking pressure* in the direction B:

29.4 N {3 kg} or less

Chucking pressure* in the direction C:

9.8 N {1 kg} or less



Please chuck the portion.

Avoid chucking the center of the relay.

*Value of chucking pressure is shown by the value of weight pressed on the portion(4 mm dia.)

8. Soldering

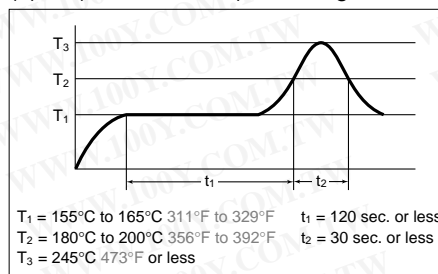
1) Preheat according to the following conditions.

Temperature	100°C 212°F or less
Time	Within approx. 1 minute

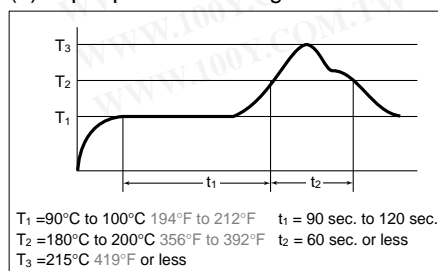
When soldering standard PC board terminals or self-clinching terminals, soldering should be done at 250°C 482°F within 5 sec.

2) When soldering surface-mount terminals, the following conditions are recommended.

(1) IR (Infrared reflow) soldering method



(2) Vapor phase soldering method



(3) Soldering iron method

Tip temperature: 280°C to 300°C 536°F to 572°C

Wattage: 30 to 60 W

Soldering time: within 5 sec.

(4) Other soldering methods

Check mounting conditions before using other soldering methods (hot-air, hot plate, pulse heater, etc.).

Remarks

The temperature profile indicates the temperature of the soldered terminal on the surface of the PC board.

The ambient temperature may increase excessively.

Check the temperature under mounting conditions.

The conditions for the infrared reflow soldering apply when preheating using the VPS method.

9. Cleaning

In automatic cleaning, cleaning with the boiling method is recommended. Avoid ultrasonic cleaning which subject the relay to high frequency vibrations. It may cause the contacts to stick.

It is recommended that a fluorinated hydrocarbon or other alcoholic solvents be used.

10. Others

1) If in error the relay has been dropped, the appearance and characteristics should be checked before use without fail.

2) The cycle lifetime is defined under the standard test condition specified in the JIS* C 5442-1986 standard (temperature 15 to 35°C 59 to 95°F, humidity 25 to 85%). Check this with the real device as it is affected by coil driving circuit, load type, activation frequency, activation phase, ambient conditions and other factors.

3) For secure operations, the voltage applied to the coil should be nominal voltage. In addition, please note that pick-up and drop-out voltage will vary according to the ambient temperature and operation conditions.

4) Latching relays are shipped from the factory in the reset state. A shock to the relay during shipping or installation may cause it to change to the set state.

Therefore, it is recommended that the relay be used in a circuit which initializes the relay to the required state (set or reset) whenever the power is turned on.

5) Check the ambient conditions when storing or transporting the relays and devices containing the relays. Freezing or condensation may occur in the relay, causing functional damage. Avoid subjecting the relays to heavy loads, or strong vibration and shocks.

*Japanese Industrial Standards