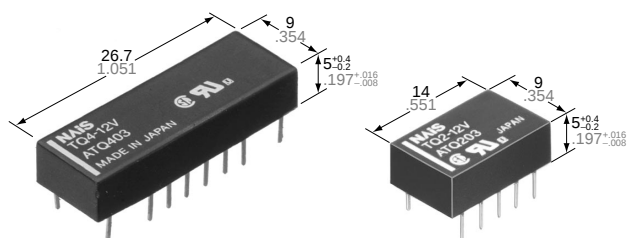


# NAIS

## LOW PROFILE 2 FORM C RELAY

# TQ-RELAYS



mm inch

## FEATURES

- **High sensitivity:**  
2 Form C: 140 mW power consumption (single side stable type)  
4 Form C: 280 mW power consumption (single side stable type)
- **Surge voltage withstand: 1500 V FCC Part 68**
- **Sealed construction allows automatic washing**
- **Self-clinching terminal also available**
- **M.B.B. contact types available**

## SPECIFICATIONS

### Contact

|                                                                 |                                                      | Standard (B.B.M) type                                                  |                                                 | M.B.B.type      |
|-----------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------------------------|-------------------------------------------------|-----------------|
| Arrangement                                                     |                                                      | 2 Form C                                                               | 4 Form C                                        | 2 Form D        |
| Initial contact resistance, max.<br>(By voltage drop 6 V DC 1A) |                                                      | 50 mΩ                                                                  |                                                 |                 |
| Contact material                                                |                                                      | Gold-clad silver                                                       |                                                 |                 |
| Rating                                                          | Nominal switching capacity<br>(resistive load)       | 1 A 30 V DC<br>0.5 A 125 V AC                                          |                                                 | 1 A 30 V DC     |
|                                                                 | Max. switching power<br>(resistive load)             | 30 W, 62.5 V A                                                         |                                                 | 30 W            |
|                                                                 | Max. switching voltage                               | 110 V DC, 125 V AC                                                     |                                                 | 110 V DC        |
|                                                                 | Max. switching current                               | 1 A                                                                    |                                                 |                 |
|                                                                 | Min. switching capacity ※1                           | 10 μA 10 mV DC                                                         |                                                 |                 |
| Nominal operating power                                         | Single side stable                                   | 140 mW<br>(3 to 12 V DC)<br>200 mW<br>(24 V DC)<br>300 mW<br>(48 V DC) | 280 mW<br>(3 to 24 V DC)<br>400 mW<br>(48 V DC) | 200 mW          |
|                                                                 | 1 coil latching                                      | 100 mW<br>(3 to 12 V DC)<br>150 mW<br>(24 V DC)                        | 200 mW                                          | —               |
|                                                                 | 2 coil latching                                      | 200 mW<br>(3 to 12 V DC)<br>300 mW<br>(24 V DC)                        | 400 mW                                          | —               |
| Expected life (min. operations)                                 | Mechanical (at 180 cpm)                              | 10 <sup>8</sup>                                                        |                                                 | 10 <sup>7</sup> |
|                                                                 | Electrical (at 20 cpm)<br>(1 A 30 V DC resistive)    | 2×10 <sup>5</sup>                                                      |                                                 | 10 <sup>5</sup> |
|                                                                 | Electrical (at 20 cpm)<br>(0.5 A 125 V AC resistive) | 10 <sup>5</sup>                                                        |                                                 | —               |

### Note:

※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.

### Remarks

\* Specifications will vary with foreign standards certification ratings.

\*1 Measurement at same location as "Initial breakdown voltage" section.

\*2 By resistive method, nominal voltage applied to the coil; contact carrying current: 1 A.

\*3 Nominal voltage applied to the coil, excluding contact bounce time.

\*4 Nominal voltage applied to the coil, excluding contact bounce time without diode.

\*5 Half-wave pulse of sine wave: 11 ms; detection time: 10 μs.

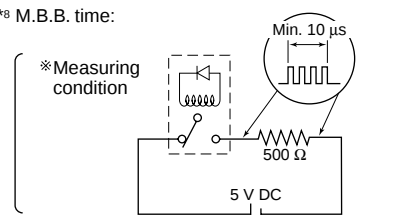
\*6 Half-wave pulse of sine wave: 6 ms.

\*7 Detection time: 10 μs.

### Characteristics

|                                                                                                       |                          | Standard (B.B.M) type                                                    | M.B.B.type                                        |
|-------------------------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------|---------------------------------------------------|
| Initial insulation resistance*1                                                                       |                          | Min. 1,000 MΩ (at 500 V DC)                                              |                                                   |
| Initial breakdown voltage                                                                             | Between open contacts    | 750 Vrms for 1 min.<br>(Detection current: 10 mA)                        | 300 Vrms for 1 min.<br>(Detection current: 10 mA) |
|                                                                                                       | Between contact and coil | 1,000 Vrms for 1 min.<br>(Detection current: 10 mA)                      |                                                   |
|                                                                                                       | Between contact sets     | 1,000 Vrms for 1 min.<br>(Detection current: 10 mA)                      |                                                   |
| FCC surge voltage between open contacts                                                               |                          | 1,500 V                                                                  |                                                   |
| Operate time [Set time]*3<br>(at 20°C)                                                                |                          | Max. 3 ms (Approx. 2 ms)<br>[Max. 3 ms (Approx. 2 ms)]                   |                                                   |
| Release time [Reset time]*4<br>(at 20°C)                                                              |                          | Max. 3 ms (Approx. 1 ms)<br>[Max. 3 ms (Approx. 2 ms)]                   |                                                   |
| M.B.B. time*8                                                                                         |                          | —                                                                        | Min. 10 μs.                                       |
| Temperature rise*2 (at 20°C)                                                                          |                          | Max. 50°C                                                                |                                                   |
| Shock resistance                                                                                      | Functional*5             | Min. 490 m/s <sup>2</sup> {50G}                                          |                                                   |
|                                                                                                       | Destructive*6            | Min. 980 m/s <sup>2</sup> {100G}                                         |                                                   |
| Vibration resistance                                                                                  | Functional*7             | 176.4 m/s <sup>2</sup> {18G}, 10 to 55 Hz<br>at double amplitude of 3 mm |                                                   |
|                                                                                                       | Destructive              | 294 m/s <sup>2</sup> {30G}, 10 to 55 Hz<br>at double amplitude of 5 mm   |                                                   |
| Conditions for operation, transport and storage*9<br>(Not freezing and condensing at low temperature) | Ambient temperature      | −40°C to +70°C<br>−40°F to +158°F                                        | −40°C to +50°C<br>−40°F to +122°F                 |
|                                                                                                       | Humidity                 | 5 to 85% R.H.                                                            |                                                   |
| Unit weight                                                                                           | 2 Form C:                | Approx. 1.5 g .053 oz                                                    |                                                   |
|                                                                                                       | 4 Form C:                | Approx. 3 g .106 oz.                                                     | —                                                 |

\*8 M.B.B. time:



\*9 Refer to 4. Conditions for operation, transport and storage mentioned in Cautions for use (Page 178).

## ORDERING INFORMATION

EX. TQ 2 H — L2 — 2M — 3V

| Contact arrangement        | Terminal shape                                                | Operating function                                                   | MBB function                                    | Coil voltage (DC)              |
|----------------------------|---------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------|--------------------------------|
| 2: 2 Form C<br>4: 4 Form C | Nil: Standard PC board terminal<br>H: Self-clinching terminal | Nil: Single side stable<br>L: 1 coil latching<br>L2: 2 coil latching | Nil: Standard (B.B.M.) type<br>2M: 2M.B.B. type | 3, 4.5, 5, 6, 9, 12, 24, 48* V |

\*48 V coil type: Single side stable only

Notes: 1. AgPd stationary contact types available for high resistance against contact sticking.

When ordering, please add suffix "–3" like TQ2-12V-3.

2. M.B.B. contact types are available only for TQ2 type.

## TYPES AND COIL DATA (at 20°C 68°F)

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

## 2 Form C type

## 1. Single side stable

| Part No.                   |                         | Nominal voltage, V DC | Pick-up voltage, V DC (max.) | Drop-out voltage, V DC (min.) | Nominal operating current, mA (±10%) | Coil resistance, Ω (±10%) | Nominal operating power, mW | Max. allowable voltage, V DC |
|----------------------------|-------------------------|-----------------------|------------------------------|-------------------------------|--------------------------------------|---------------------------|-----------------------------|------------------------------|
| Standard PC board terminal | Self-clinching terminal |                       |                              |                               |                                      |                           |                             |                              |
| TQ2-3 V                    | TQ2H-3 V                | 3                     | 2.25                         | 0.3                           | 46.7                                 | 64.3                      | 140                         | 4.5                          |
| TQ2-4.5 V                  | TQ2H-4.5 V              | 4.5                   | 3.38                         | 0.45                          | 31.1                                 | 144.6                     | 140                         | 6.7                          |
| TQ2-5 V                    | TQ2H-5 V                | 5                     | 3.75                         | 0.5                           | 28.1                                 | 178                       | 140                         | 7.5                          |
| TQ2-6 V                    | TQ2H-6 V                | 6                     | 4.5                          | 0.6                           | 23.3                                 | 257                       | 140                         | 9                            |
| TQ2-9 V                    | TQ2H-9 V                | 9                     | 6.75                         | 0.9                           | 15.5                                 | 579                       | 140                         | 13.5                         |
| TQ2-12 V                   | TQ2H-12 V               | 12                    | 9                            | 1.2                           | 11.7                                 | 1,028                     | 140                         | 18                           |
| TQ2-24 V                   | TQ2H-24 V               | 24                    | 18                           | 2.4                           | 8.3                                  | 2,880                     | 200                         | 36                           |
| TQ2-48 V                   | TQ2H-48 V               | 48                    | 36                           | 4.8                           | 6.25                                 | 7,680                     | 300                         | 57.6                         |

## 2. 1 Coil latching

| Part No.                   |                         | Nominal voltage, V DC | Set voltage, V DC (max.) | Reset voltage, V DC (min.) | Nominal operating current, mA (±10%) | Coil resistance, Ω (±10%) | Nominal operating power, mW | Max. allowable voltage, V DC |
|----------------------------|-------------------------|-----------------------|--------------------------|----------------------------|--------------------------------------|---------------------------|-----------------------------|------------------------------|
| Standard PC board terminal | Self-clinching terminal |                       |                          |                            |                                      |                           |                             |                              |
| TQ2-L-3 V                  | TQ2H-L-3 V              | 3                     | 2.25                     | 2.25                       | 33.3                                 | 90                        | 100                         | 4.5                          |
| TQ2-L-4.5 V                | TQ2H-L-4.5 V            | 4.5                   | 3.38                     | 3.38                       | 22.2                                 | 202.5                     | 100                         | 6.7                          |
| TQ2-L-5 V                  | TQ2H-L-5 V              | 5                     | 3.75                     | 3.75                       | 20                                   | 250                       | 100                         | 7.5                          |
| TQ2-L-6 V                  | TQ2H-L-6 V              | 6                     | 4.5                      | 4.5                        | 16.7                                 | 360                       | 100                         | 9                            |
| TQ2-L-9 V                  | TQ2H-L-9 V              | 9                     | 6.75                     | 6.75                       | 11.1                                 | 810                       | 100                         | 13.5                         |
| TQ2-L-12 V                 | TQ2H-L-12 V             | 12                    | 9                        | 9                          | 8.3                                  | 1,440                     | 100                         | 18                           |
| TQ2-L-24 V                 | TQ2H-L-24 V             | 24                    | 18                       | 18                         | 6.3                                  | 3,840                     | 150                         | 36                           |

## 3. 2 Coil latching

| Part No.                   |                         | Nominal voltage, V DC | Set voltage, V DC (max.) | Reset voltage, V DC (min.) | Nominal operating current, mA (±10%) | Coil resistance, Ω (±10%) | Nominal operating power, mW | Max. allowable voltage, V DC |
|----------------------------|-------------------------|-----------------------|--------------------------|----------------------------|--------------------------------------|---------------------------|-----------------------------|------------------------------|
| Standard PC board terminal | Self-clinching terminal |                       |                          |                            |                                      |                           |                             |                              |
| TQ2-L2-3 V                 | TQ2H-L2-3 V             | 3                     | 2.25                     | 2.25                       | 66.7                                 | 45                        | 200                         | 4.5                          |
| TQ2-L2-4.5 V               | TQ2H-L2-4.5 V           | 4.5                   | 3.38                     | 3.38                       | 44.4                                 | 101.2                     | 200                         | 6.7                          |
| TQ2-L2-5 V                 | TQ2H-L2-5 V             | 5                     | 3.75                     | 3.75                       | 40                                   | 125                       | 200                         | 7.5                          |
| TQ2-L2-6 V                 | TQ2H-L2-6 V             | 6                     | 4.5                      | 4.5                        | 33.3                                 | 180                       | 200                         | 9                            |
| TQ2-L2-9 V                 | TQ2H-L2-9 V             | 9                     | 6.75                     | 6.75                       | 22.2                                 | 405                       | 200                         | 13.5                         |
| TQ2-L2-12 V                | TQ2H-L2-12 V            | 12                    | 9                        | 9                          | 16.7                                 | 720                       | 200                         | 18                           |
| TQ2-L2-24 V                | TQ2H-L2-24 V            | 24                    | 18                       | 18                         | 12.5                                 | 1,920                     | 300                         | 28.8                         |

Notes: 1. Specified value of the pick-up, drop-out, set and reset voltage is with the condition of square wave coil pulse.

2. Standard packing: Tube: 50 pcs.; Case: 1,000 pcs.

3. In case of 5 V transistor drive circuit, it is recommend to use 4.5 V type relay.

4. AgPd stationary contact types available for high resistance against contact sticking. When ordering, please add suffix "–3" like TQ2-12V-3.

**4 Form C type****1. Single side stable**

| Part No.                   |                         | Nominal voltage, V DC | Pick-up voltage, V DC (max.) | Drop-out voltage, V DC (min.) | Nominal operating current, mA ( $\pm 10\%$ ) | Coil resistance, $\Omega$ ( $\pm 10\%$ ) | Nominal operating power, mW | Max. allowable voltage, V DC |
|----------------------------|-------------------------|-----------------------|------------------------------|-------------------------------|----------------------------------------------|------------------------------------------|-----------------------------|------------------------------|
| Standard PC board terminal | Self-clinching terminal |                       |                              |                               |                                              |                                          |                             |                              |
| TQ4-3 V                    | TQ4H-3 V                | 3                     | 2.25                         | 0.3                           | 93.8                                         | 32                                       | 280                         | 4.5                          |
| TQ4-4.5 V                  | TQ4H-4.5 V              | 4.5                   | 3.38                         | 0.45                          | 62.2                                         | 72.3                                     | 280                         | 6.7                          |
| TQ4-5 V                    | TQ4H-5 V                | 5                     | 3.75                         | 0.5                           | 56.2                                         | 89                                       | 280                         | 7.5                          |
| TQ4-6 V                    | TQ4H-6 V                | 6                     | 4.5                          | 0.6                           | 46.5                                         | 129                                      | 280                         | 9                            |
| TQ4-9 V                    | TQ4H-9 V                | 9                     | 6.75                         | 0.9                           | 31.1                                         | 289                                      | 280                         | 13.5                         |
| TQ4-12 V                   | TQ4H-12 V               | 12                    | 9                            | 1.2                           | 23.3                                         | 514                                      | 280                         | 18                           |
| TQ4-24 V                   | TQ4H-24 V               | 24                    | 18                           | 2.4                           | 11.7                                         | 2,056                                    | 280                         | 36                           |
| TQ4-48 V                   | TQ4H-48 V               | 48                    | 36                           | 4.8                           | 8.3                                          | 5,760                                    | 400                         | 57.6                         |

**2. 1 Coil latching**

| Part No.                   |                         | Nominal voltage, V DC | Set voltage, V DC (max.) | Reset voltage, V DC (min.) | Nominal operating current, mA ( $\pm 10\%$ ) | Coil resistance, $\Omega$ ( $\pm 10\%$ ) | Nominal operating power, mW | Max. allowable voltage, V DC |
|----------------------------|-------------------------|-----------------------|--------------------------|----------------------------|----------------------------------------------|------------------------------------------|-----------------------------|------------------------------|
| Standard PC board terminal | Self-clinching terminal |                       |                          |                            |                                              |                                          |                             |                              |
| TQ4-L-3 V                  | TQ4H-L-3 V              | 3                     | 2.25                     | 2.25                       | 66.6                                         | 45                                       | 200                         | 4.5                          |
| TQ4-L-4.5 V                | TQ4H-L-4.5 V            | 4.5                   | 3.38                     | 3.38                       | 44.4                                         | 101.2                                    | 200                         | 6.7                          |
| TQ4-L-5 V                  | TQ4H-L-5 V              | 5                     | 3.75                     | 3.75                       | 40                                           | 125                                      | 200                         | 7.5                          |
| TQ4-L-6 V                  | TQ4H-L-6 V              | 6                     | 4.5                      | 4.5                        | 33.3                                         | 180                                      | 200                         | 9                            |
| TQ4-L-9 V                  | TQ4H-L-9 V              | 9                     | 6.75                     | 6.75                       | 22.2                                         | 405                                      | 200                         | 13.5                         |
| TQ4-L-12 V                 | TQ4H-L-12 V             | 12                    | 9                        | 9                          | 16.7                                         | 720                                      | 200                         | 18                           |
| TQ4-L-24 V                 | TQ4H-L-24 V             | 24                    | 18                       | 18                         | 8.3                                          | 2,880                                    | 200                         | 36                           |

**3. 2 Coil latching**

| Part No.                   |                         | Nominal voltage, V DC | Set voltage, V DC (max.) | Reset voltage, V DC (min.) | Nominal operating current, mA ( $\pm 10\%$ ) | Coil resistance, $\Omega$ ( $\pm 10\%$ ) | Nominal operating power, mW | Max. allowable voltage, V DC |
|----------------------------|-------------------------|-----------------------|--------------------------|----------------------------|----------------------------------------------|------------------------------------------|-----------------------------|------------------------------|
| Standard PC board terminal | Self-clinching terminal |                       |                          |                            |                                              |                                          |                             |                              |
| TQ4-L2-3 V                 | TQ4H-L2-3 V             | 3                     | 2.25                     | 2.25                       | 133                                          | 22.5                                     | 400                         | 4.5                          |
| TQ4-L2-4.5 V               | TQ4H-L2-4.5 V           | 4.5                   | 3.38                     | 3.38                       | 88.9                                         | 50.6                                     | 400                         | 6.7                          |
| TQ4-L2-5 V                 | TQ4H-L2-5 V             | 5                     | 3.75                     | 3.75                       | 80                                           | 62.5                                     | 400                         | 7.5                          |
| TQ4-L2-6 V                 | TQ4H-L2-6 V             | 6                     | 4.5                      | 4.5                        | 66.6                                         | 90                                       | 400                         | 9                            |
| TQ4-L2-9 V                 | TQ4H-L2-9 V             | 9                     | 6.75                     | 6.75                       | 44.4                                         | 202.5                                    | 400                         | 13.5                         |
| TQ4-L2-12 V                | TQ4H-L2-12 V            | 12                    | 9                        | 9                          | 33.3                                         | 360                                      | 400                         | 18                           |
| TQ4-L2-24 V                | TQ4H-L2-24 V            | 24                    | 18                       | 18                         | 16.7                                         | 1,440                                    | 400                         | 36                           |

Notes: 1. Specified value of the pick-up, drop-out, voltage is with the condition of square wave coil pulse.

2. Standard packing: Tube: 50 pcs.; Case: 1,000 pcs.

3. In case of 5 V transistor drive circuit, it is recommend to use 4.5 V type relay.

4. 1 coil latching and 2 coil latching types are also available by request. Please consult us for details.

5. AgPd stationary contact types available for high resistance against contact sticking. When ordering, please add suffix "-3" like TQ2-12V-3.

**2. M.B.B. type****Single side stable**

| Part No.                   |                         | Nominal voltage, V DC | Pick-up voltage, V DC (max.) | Drop-out voltage, V DC (min.) | Nominal operating current, mA ( $\pm 10\%$ ) | Coil resistance, $\Omega$ ( $\pm 10\%$ ) | Nominal operating power, mW | Max. allowable voltage, V DC |
|----------------------------|-------------------------|-----------------------|------------------------------|-------------------------------|----------------------------------------------|------------------------------------------|-----------------------------|------------------------------|
| Standard PC board terminal | Self-clinching terminal |                       |                              |                               |                                              |                                          |                             |                              |
| TQ2-2M-3 V                 | TQ2H-2M-3 V             | 3                     | 2.4                          | 0.3                           | 66.7                                         | 45                                       | 200                         | 4.5                          |
| TQ2-2M-4.5 V               | TQ2H-2M-4.5 V           | 4.5                   | 3.6                          | 0.45                          | 44.4                                         | 101                                      | 200                         | 6.7                          |
| TQ2-2M-5 V                 | TQ2H-2M-5 V             | 5                     | 4                            | 0.5                           | 40                                           | 125                                      | 200                         | 7.5                          |
| TQ2-2M-6 V                 | TQ2H-2M-6 V             | 6                     | 4.8                          | 0.6                           | 33.3                                         | 180                                      | 200                         | 9                            |
| TQ2-2M-9 V                 | TQ2H-2M-9 V             | 9                     | 7.2                          | 0.9                           | 22.2                                         | 405                                      | 200                         | 13.5                         |
| TQ2-2M-12 V                | TQ2H-2M-12 V            | 12                    | 9.6                          | 1.2                           | 16.7                                         | 720                                      | 200                         | 18                           |
| TQ2-2M-24 V                | TQ2H-2M-24 V            | 24                    | 19.2                         | 2.4                           | 8.3                                          | 2,880                                    | 200                         | 36                           |

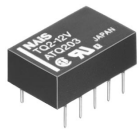
Notes: 1. Specified value of the pick-up, drop-out, set and reset voltage is with the condition of square wave coil pulse.

2. Standard packing: Tube: 50 pcs.; Case: 1,000 pcs.

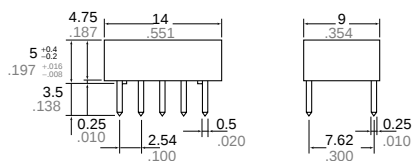
3. In case of 5 V transistor drive circuit, it is recommend to use 4.5 V type relay.

4. AgPd stationary contact types available for high resistance against contact sticking. When ordering, please add suffix "-3" like TQ2-12V-3.

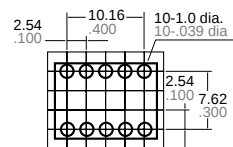
## 1) 2 Form C, 2 Form D



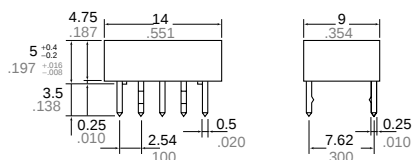
Standard PC board terminal



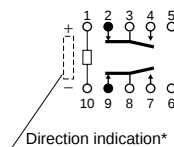
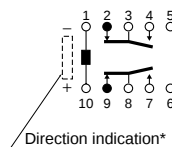
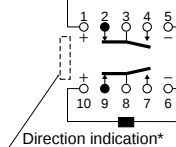
PC board pattern (Copper-side view)

Tolerance:  $\pm 0.1 \pm .004$ 

Self-clinching terminal



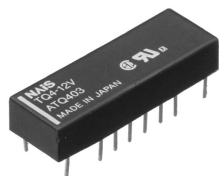
Schematic (Bottom view)

• Single side stable  
(Deenergized condition)• 1-coil latching  
(Reset condition)• 2-coil latching  
(Reset condition)

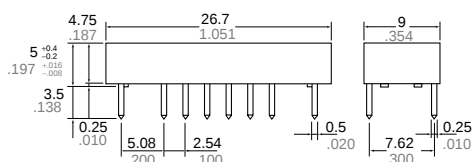
\*Orientation stripe typical-located on top of relay

General tolerance:  $\pm 0.3 \pm .012$ 

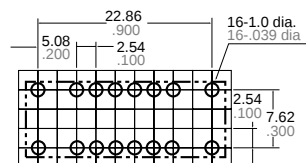
## 2) 4 Form C



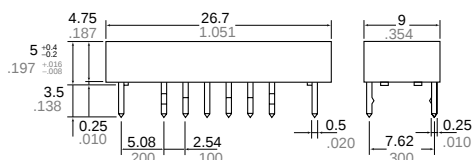
Standard PC board terminal



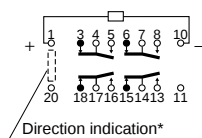
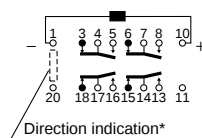
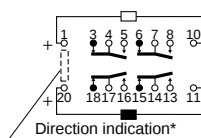
PC board pattern (Copper-side view)

Tolerance:  $\pm 0.1 \pm .004$ 

Self-clinching terminal



Schematic (Bottom view)

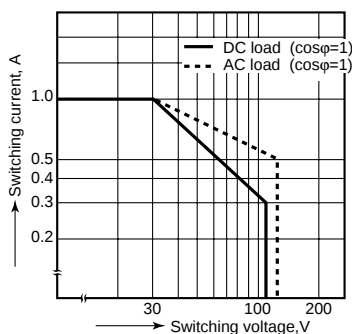
• Single side stable  
(Deenergized condition)• 1-coil latching  
(Reset condition)• 2-coil latching  
(Reset condition)

\*Orientation stripe typical-located on top of relay

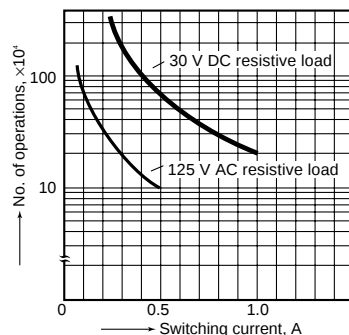
General tolerance:  $\pm 0.3 \pm .012$ 

## REFERENCE DATA

## 1. Maximum switching capacity

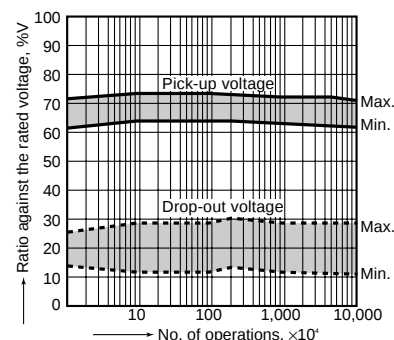


## 2. Life curve



## 3. Mechanical life

Tested sample: TQ2-12V, 10 pcs.

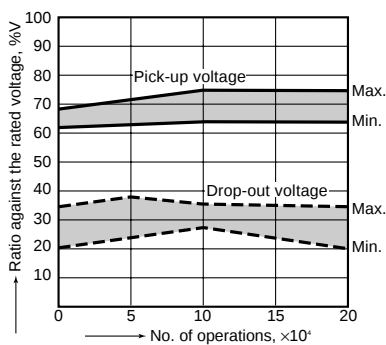


## 4.-(1) Electrical life (DC load)

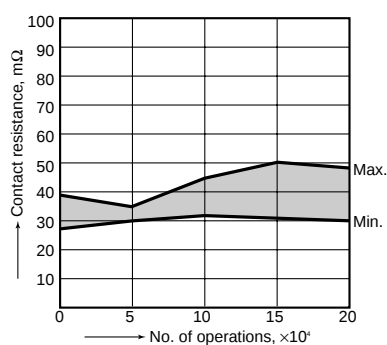
Tested sample: TQ2-12V, 6 pcs.

Condition: 1 A 30 V DC resistive load, 20 cpm

Change of pick-up and drop-out voltage



## Change of contact resistance

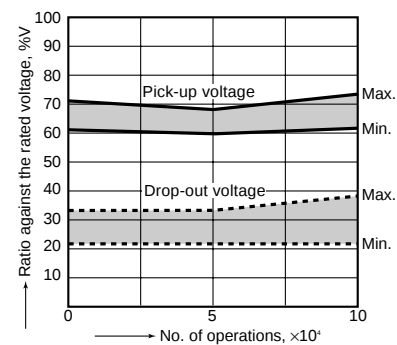


## 4.-(2) Electrical life (AC load)

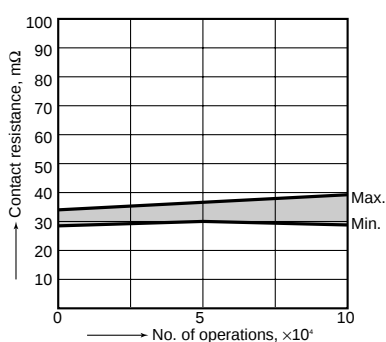
Tested sample: TQ2-12V, 6 pcs.

Condition: 0.5 A 125 V AC resistive load, 20 cpm

Change of pick-up and drop-out voltage



## Change of contact resistance

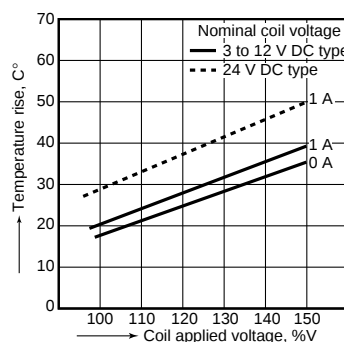


## 5.-(1) Coil temperature rise (2C)

Tested sample: TQ2-12V

Measured portion: Inside the coil

Ambient temperature: 30°C 86°F

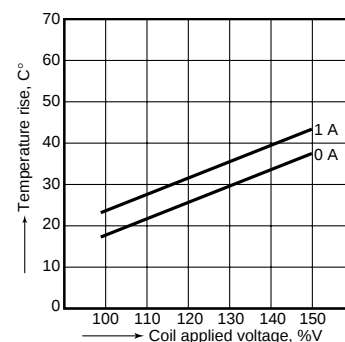


## 5.-(2) Coil temperature rise (4C)

Tested sample: TQ4-12V

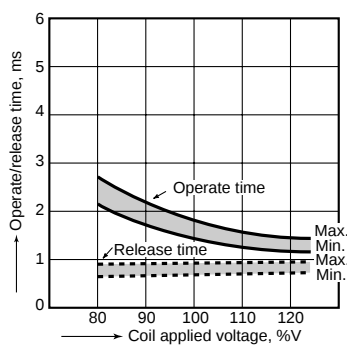
Measured portion: Inside the coil

Ambient temperature: 30°C 86°F



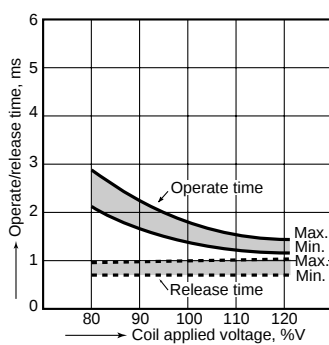
## 6.-(1) Operate/release time characteristics

Tested sample: TQ2-12V, 10 pcs.



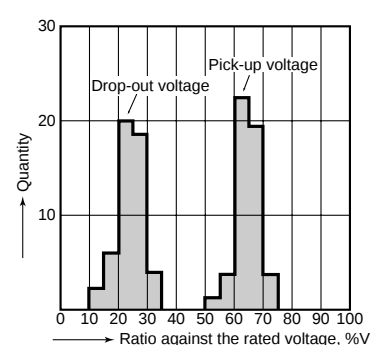
## 6.-(2) Operate/release time characteristics

Tested sample: TQ4-12V, 10 pcs.



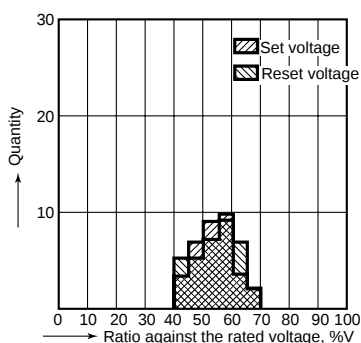
## 7. Distribution of pick-up and drop-out voltages

Tested sample: TQ2-12V, 50 pcs.



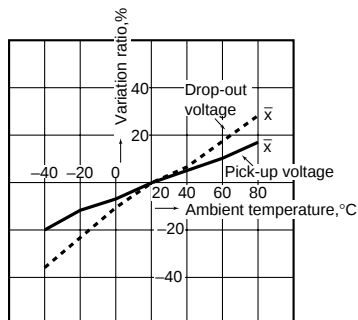
## 8. Distribution of set and reset voltage

Tested sample: TQ2-L2-12V, 35 pcs.



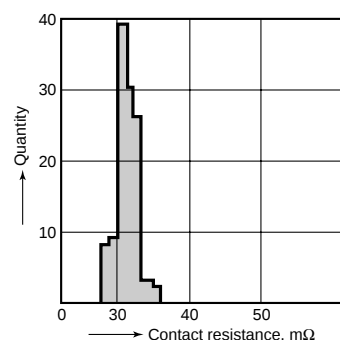
## 9. Ambient temperature characteristics

Tested sample: TQ2-12V, 5 pcs.

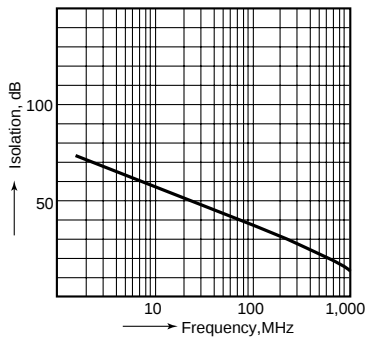


## 10. Distribution of contact resistance

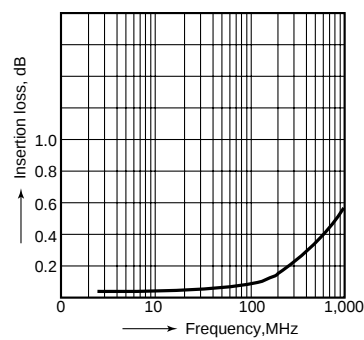
Tested sample: TQ2-12V, 30 pcs. (30x4 contacts)



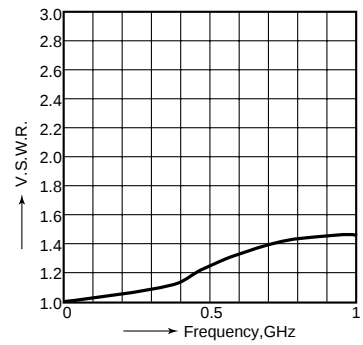
## 11.-(1) High-frequency characteristics Isolation characteristics



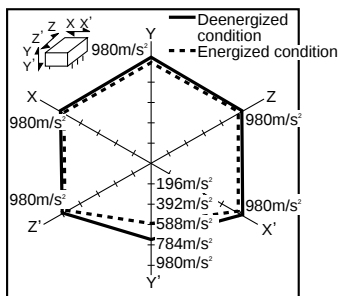
## 11.-(2) High-frequency characteristics Insertion loss characteristics



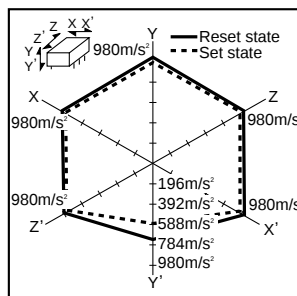
## 11.-(3) High-frequency characteristics V.S.W.R.



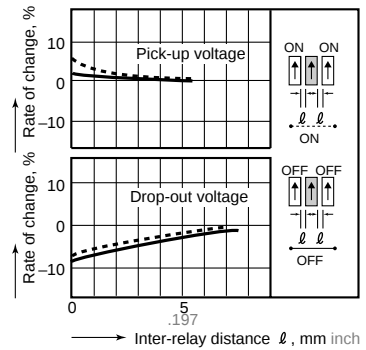
## 12.-(1) Malfunctional shock (single side stable) Tested sample: TQ2-12V, 6 pcs.



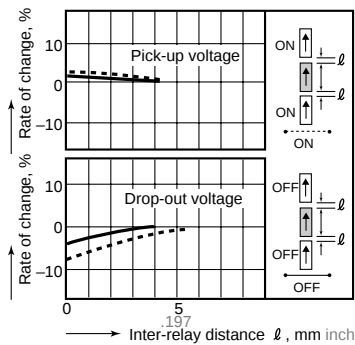
## 12.-(2) Malfunctional shock (latching) Tested sample: TQ2-L-12V, 6 pcs.



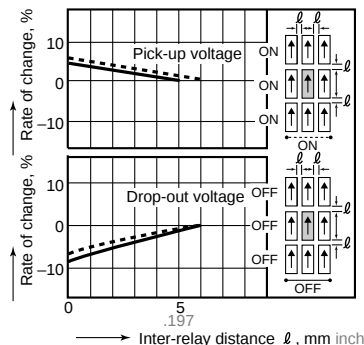
## 13.-(1) Influence of adjacent mounting



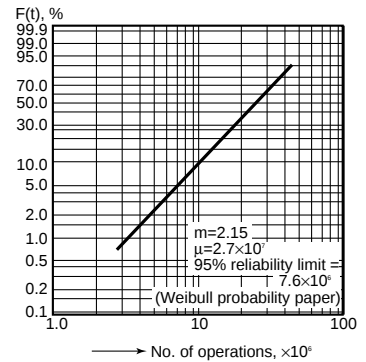
## 13.-(2) Influence of adjacent mounting



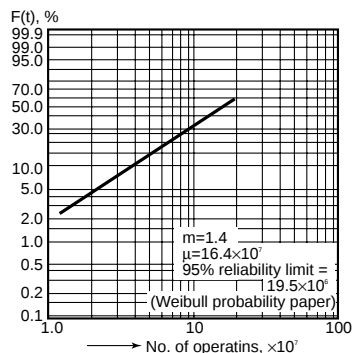
## 13.-(3) Influence of adjacent mounting



## 14.-(1) Contact reliability (1 mA 5 V DC resistive load) Tested sample: TQ2-12V Condition: Detection level 10 Ω

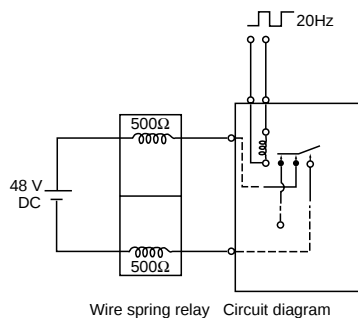


## 14.-(2) Contact reliability (100 μA 5 V DC resistive load) Tested sample: TQ2-12V Condition: Detection level 100 Ω

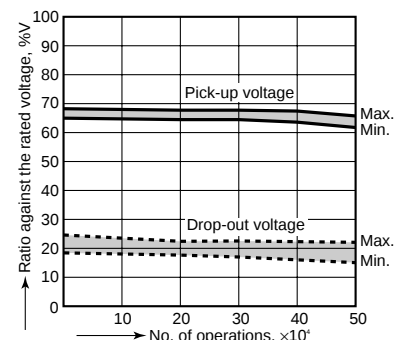


## 15. Actual load test (35 mA 48 V DC wire spring relay load)

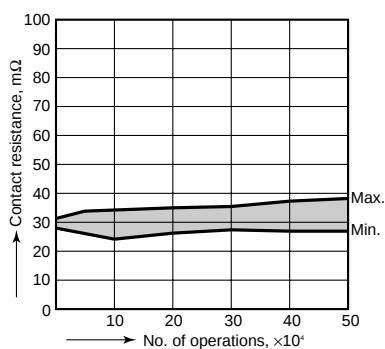
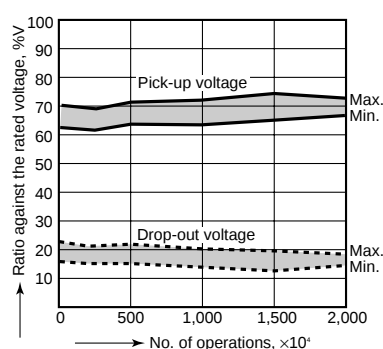
### Circuit



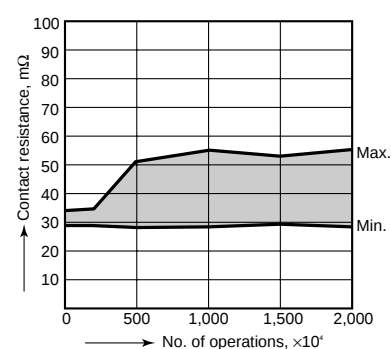
## Change of pick-up and drop-out voltage



Change of contact resistance

16. 0.1 A 53 V DC resistive load test  
Change of pick-up and drop-out voltage

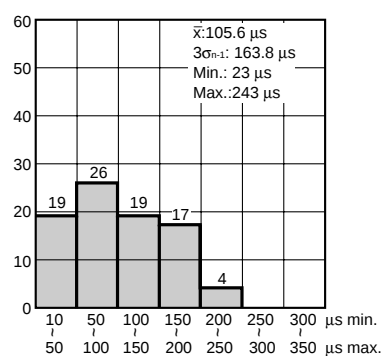
Change of contact resistance



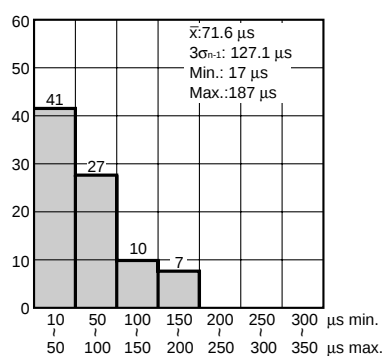
## 17.-(1) Distribution of M.B.B. time

Sample: TQ2-2M-5V, 85 pcs.

Terminal Nos. 2-3-4: ON



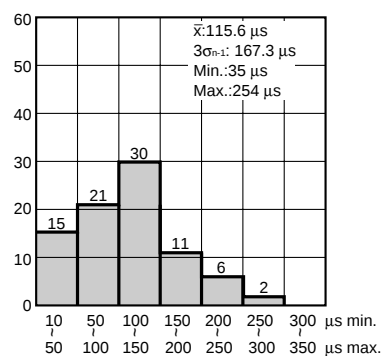
Terminal Nos. 2-3-4: OFF



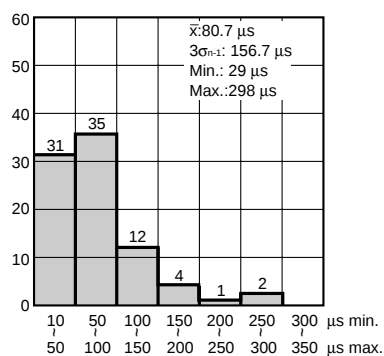
## 17.-(2) Distribution of M.B.B. time

Sample: TQ2-2M-5V, 85 pcs.

Terminal Nos. 7-8-9: ON



Terminal Nos. 7-8-9: OFF

**For Cautions for Use, see Page 178 and 179.**