

mm inch

**RoHS Directive compatibility information**  
<http://www.nais-e.com/>

## 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. (By voltage drop 6 V DC 1A) |                                                                                 | 50 mΩ                                                         |                                           |                      |
| Contact material                                             |                                                                                 | Gold-clad silver                                              |                                           |                      |
| Rating                                                       | Nominal switching capacity (resistive load)                                     | 1 A 30 V DC<br>0.5 A 125 V AC                                 |                                           | 1 A 30 V DC          |
|                                                              | Max. switching power (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 (Reference value)*1                                     | 10 μA 10 mV DC                                                |                                           |                      |
| Nominal operating power                                      | Single side stable                                                              | 140 mW (3 to 12 V DC)<br>200 mW (24 V DC)<br>300 mW (48 V DC) | 280 mW (3 to 24 V DC)<br>400 mW (48 V DC) | 200 mW               |
|                                                              | 1 coil latching                                                                 | 100 mW (3 to 12 V DC)<br>150 mW (24 V DC)                     | 200 mW                                    | —                    |
|                                                              | 2 coil latching                                                                 | 200 mW (3 to 12 V DC)<br>300 mW (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)<br>(0.5 A 125 V AC resistive) | 2×10 <sup>5</sup><br>10 <sup>5</sup>                          |                                           | 10 <sup>5</sup><br>— |

### 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. (SX relays are available for low level load switching [10V DC, 10mA max. level])

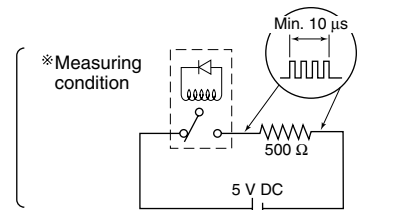
### Remarks

- \* 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. (Detection current: 10 mA)                        | 300 Vrms for 1 min. (Detection current: 10 mA) |
|                                                                                                    | Between contact and coil | 1,000 Vrms for 1 min. (Detection current: 10 mA)                      |                                                |
|                                                                                                    | Between contact sets     | 1,000 Vrms for 1 min. (Detection current: 10 mA)                      |                                                |
| FCC surge voltage between open contacts                                                            |                          | 1,500 V                                                               |                                                |
| Operate time [Set time]*3 (at 20°C)                                                                |                          | Max. 3 ms [Max. 3 ms]                                                 |                                                |
| Release time [Reset time]*4 (at 20°C)                                                              |                          | Max. 3 ms [Max. 3 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 at double amplitude of 3 mm |                                                |
|                                                                                                    | Destructive              | 294 m/s <sup>2</sup> {30G}, 10 to 55 Hz at double amplitude of 5 mm   |                                                |
| Conditions for operation, transport and storage*9 (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 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT.

ORDERING INFORMATION

| EX. TQ <div>2</div> <div>H</div> — <div>L2</div> — <div>2M</div> — <div>3V</div> |                                                               |                                                                      |                                                 |                                |
|----------------------------------------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------|--------------------------------|
| 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: 25 pcs.; Case: 500 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**

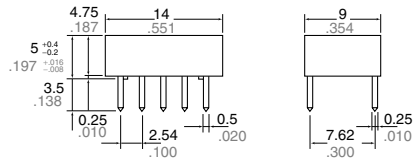
| Part No.                   |                         | Nominal voltage, V DC | Pick-up voltage, V DC (max.) | Drop-out voltage, V DC (min.) | Nominal operating current, mA ( $\pm 10\%$ ) | Coil resistance, $\Omega$ ( $\pm 10\%$ ) | Nominal operating power, mW | Max. allowable voltage, V DC |
|----------------------------|-------------------------|-----------------------|------------------------------|-------------------------------|----------------------------------------------|------------------------------------------|-----------------------------|------------------------------|
| 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.

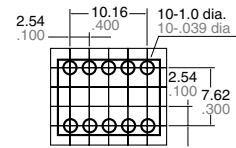
## 1) 2 Form C, 2 Form D



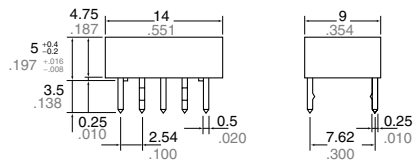
Standard PC board terminal



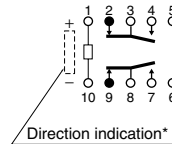
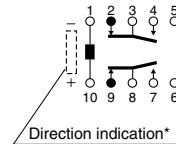
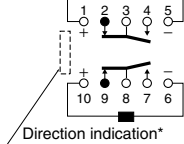
PC board pattern (Copper-side view)

Tolerance:  $\pm 0.1 \pm .004$ 

Self-clinching terminal

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

Schematic (Bottom view)

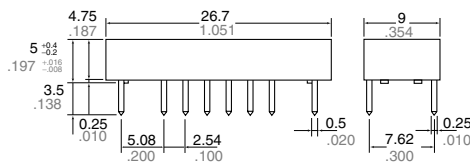
• Single side stable  
(Deenergized condition)• 1-coil latching  
(Reset condition)• 2-coil latching  
(Reset condition)

\*Orientation stripe typical-located on top of relay

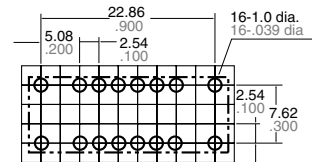
## 2) 4 Form C



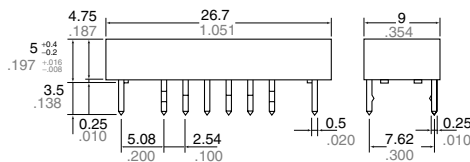
Standard PC board terminal



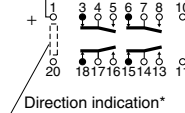
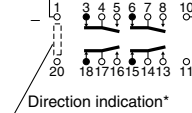
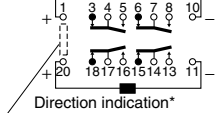
PC board pattern (Copper-side view)

Tolerance:  $\pm 0.1 \pm .004$ 

Self-clinching terminal

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

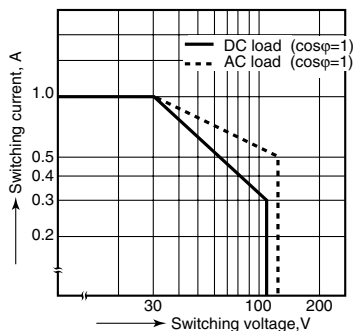
Schematic (Bottom view)

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

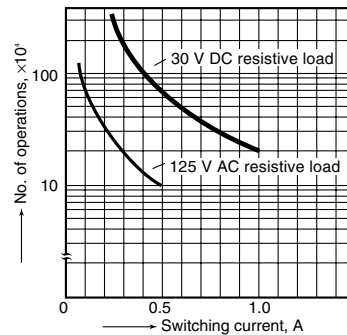
\*Orientation stripe typical-located on top of relay

## REFERENCE DATA

## 1. Maximum switching capacity

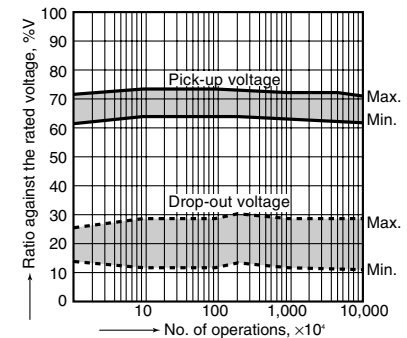


## 2. Life curve



## 3. Mechanical life

Tested sample: TQ2-12V, 10 pcs.

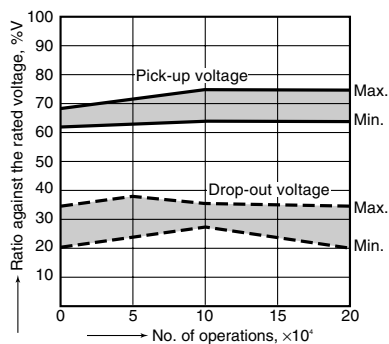


## 4.-(1) Electrical life (DC load)

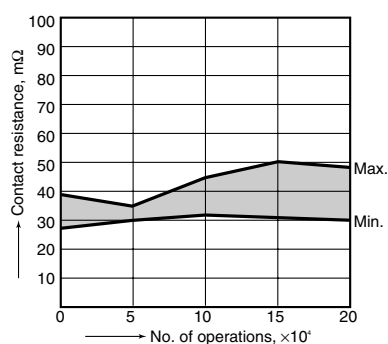
Tested sample: TQ2-12V, 6 pcs.

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

Change of pick-up and drop-out voltage



## Change of contact resistance

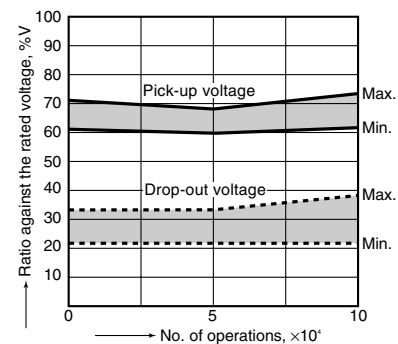


## 4.-(2) Electrical life (AC load)

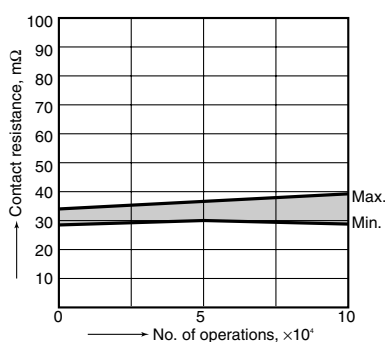
Tested sample: TQ2-12V, 6 pcs.

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

Change of pick-up and drop-out voltage



## Change of contact resistance

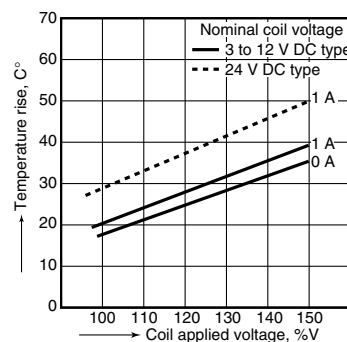


## 5.-(1) Coil temperature rise (2C)

Tested sample: TQ2-12V

Measured portion: Inside the coil

Ambient temperature: 30°C 86°F

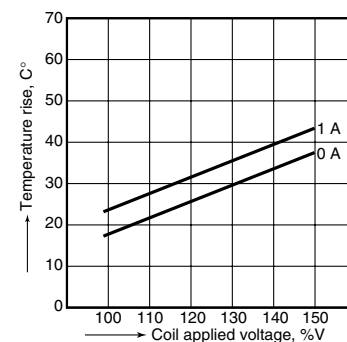


## 5.-(2) Coil temperature rise (4C)

Tested sample: TQ4-12V

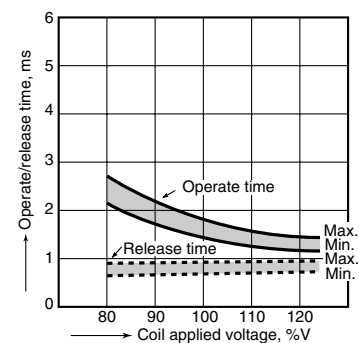
Measured portion: Inside the coil

Ambient temperature: 30°C 86°F



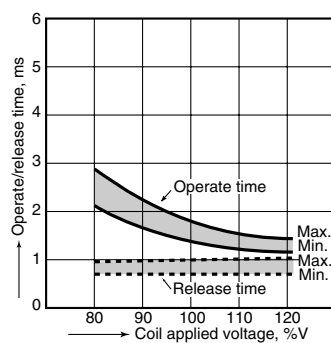
## 6.-(1) Operate/release time characteristics

Tested sample: TQ2-12V, 10 pcs.



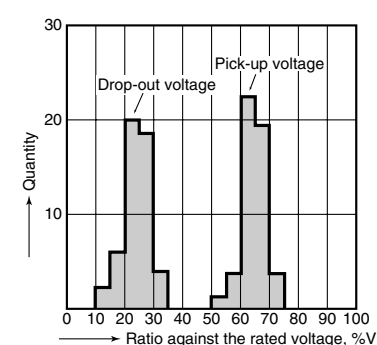
## 6.-(2) Operate/release time characteristics

Tested sample: TQ4-12V, 10 pcs.



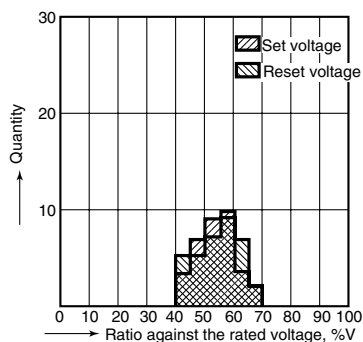
## 7. Distribution of pick-up and drop-out voltages

Tested sample: TQ2-12V, 50 pcs.



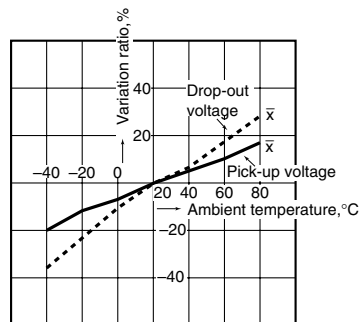
## 8. Distribution of set and reset voltage

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



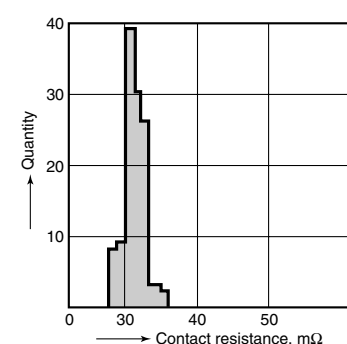
## 9. Ambient temperature characteristics

Tested sample: TQ2-12V, 5 pcs.

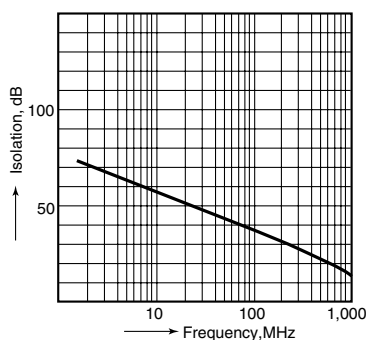


## 10. Distribution of contact resistance

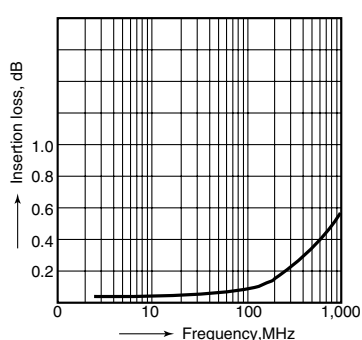
Tested sample: TQ2-12V, 30 pcs. (30x4 contacts)



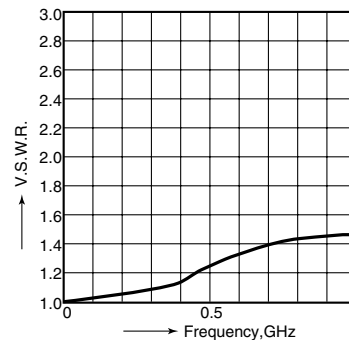
11.-(1) High-frequency characteristics  
Isolation characteristics



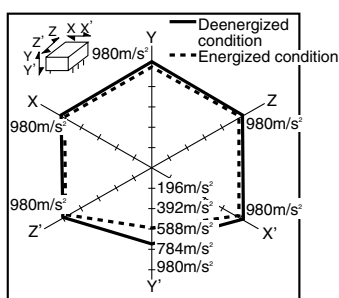
11.-(2) High-frequency characteristics  
Insertion loss characteristics



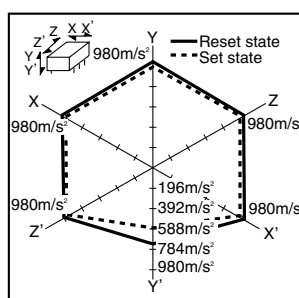
11.-(3) High-frequency characteristics  
V.S.W.R.



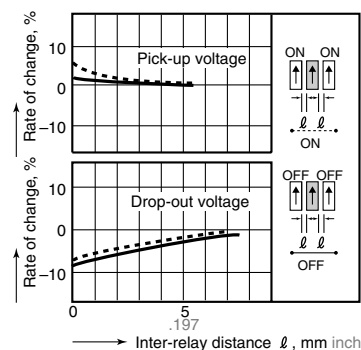
12.-(1) Malfunctional shock (single side stable)  
Tested sample: TQ2-12V, 6 pcs.



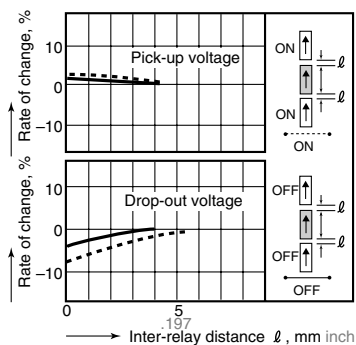
12.-(2) Malfunctional shock (latching)  
Tested sample: TQ2-L-12V, 6 pcs.



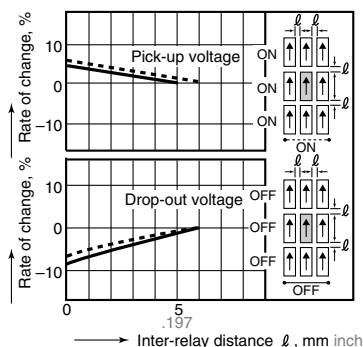
13.-(1) Influence of adjacent mounting



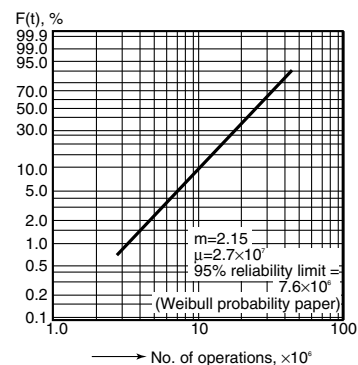
13.-(2) Influence of adjacent mounting



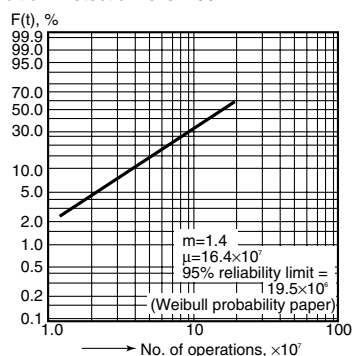
13.-(3) Influence of adjacent mounting



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

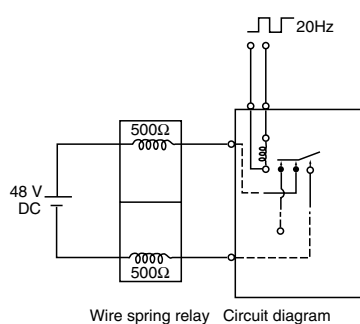


14.-(2) Contact reliability  
(100  $\mu$ A 5 V DC resistive load)  
Tested sample: TQ2-12V  
Condition: Detection level 100  $\Omega$

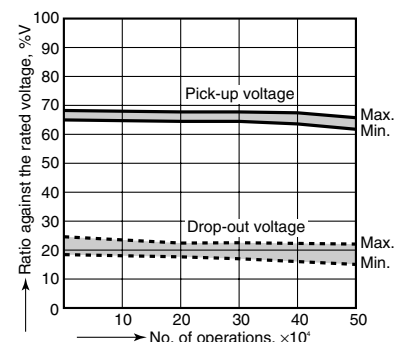


15. Actual load test (35 mA 48 V DC wire spring relay load)

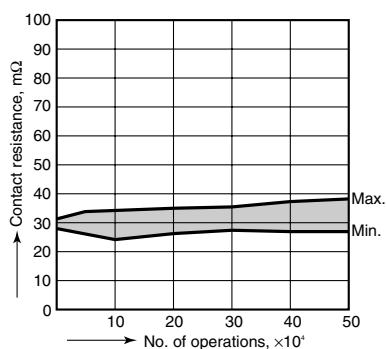
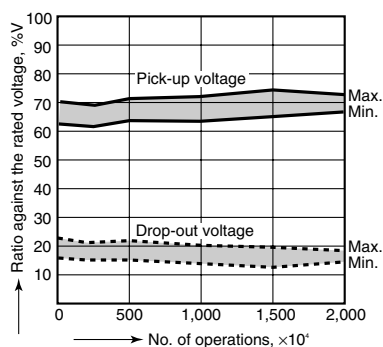
Circuit



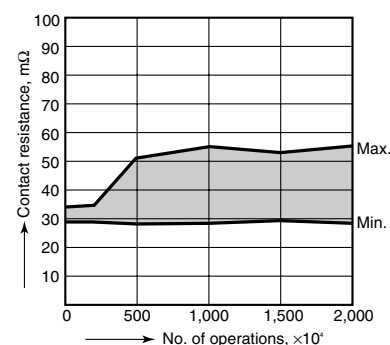
Change of pick-up and drop-out voltage



Change of contact resistance

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

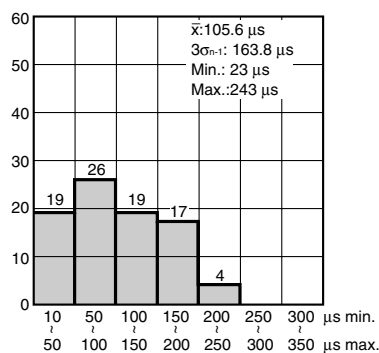
Change of contact resistance



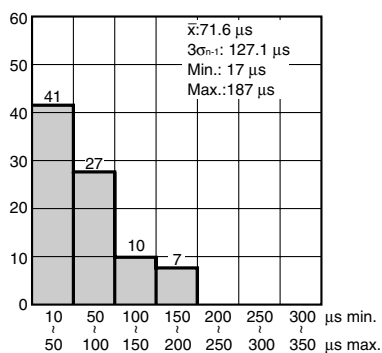
## 17.-(1) Distribution of M.B.B. time

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

Terminal Nos. 2-3-4: ON



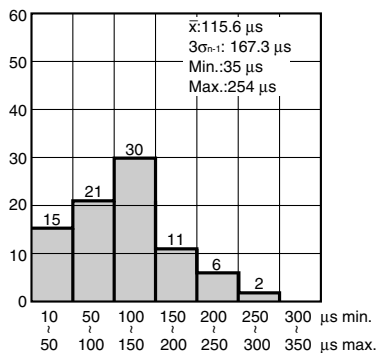
Terminal Nos. 2-3-4: OFF



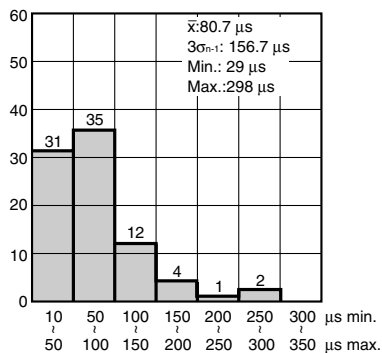
## 17.-(2) Distribution of M.B.B. time

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

Terminal Nos. 7-8-9: ON



Terminal Nos. 7-8-9: OFF

**For Cautions for Use, see Relay Technical Information.**