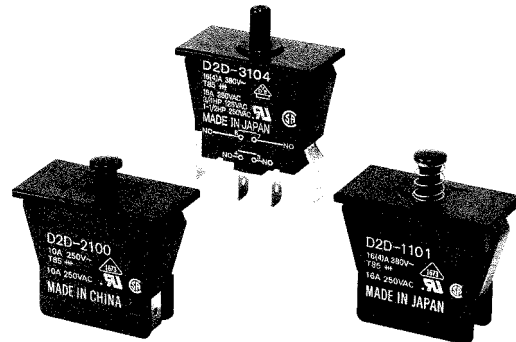


### Power Switch with Minimum Contact Gap of 3 mm

- Offers the minimum contact gap of 3 mm required for power switches as standard equipment. Highly reliable design conforms to European safety standards.
- Safety considerations include a double return spring and direct drive positive contact opening feature. Also conforms to Class II of VDE Insulation.
- Pull-on lock model for easy maintenance is also available.



## Ordering Information

### Model Number Legend

D2D-      0  

1    2    3

#### 1. Construction

- 1: Single pole, 3-mm contact gap
- 2: Pull-on-lock type, 1-mm contact gap
- 3: Double-pole, 3-mm contact gap

#### 2. Mounting

- 0: Screw mounting
- 1: Panel snap-fit mounting

#### 3. Contact Form

- 0: SPDB-NO/NC
- 1: SPDB-NO
- 2: SPDB-NC
- 3: SPDB-NO+SPDB-NO/NC
- 4: DPDB-NO

### List of Models

| Mounting method | Contact form       | Standard               | Pull-on lock (see note) |
|-----------------|--------------------|------------------------|-------------------------|
|                 |                    | Contact gap: 3 mm min. | Contact gap: 1 mm       |
| Screw mounting  | SPDB-NO/NC         | D2D-1000               | D2D-2000                |
|                 | SPDB-NO            | D2D-1001               | ---                     |
|                 | SPDB-NC            | D2D-1002               | ---                     |
| Panel mounting  | SPDB-NO/NC         | D2D-1100               | D2D-2100                |
|                 | SPDB-NO            | D2D-1101               | ---                     |
|                 | SPDB-NC            | D2D-1102               | ---                     |
|                 | SPDB-NO+SPDB-NO/NC | D2D-3103               | ---                     |
|                 | DPDB-NO            | D2D-3104               | ---                     |

**Note:** Refer to page 273 for the pull-on lock function.

# Specifications

## ■ Ratings

| Type         | Item<br>Rated voltage | Resistive load |
|--------------|-----------------------|----------------|
| Standard     | 250 VAC               | 16 A           |
| Pull-on lock | 250 VAC               | 10 A           |

**Note:** The ratings values apply under the following test conditions:

Ambient temperature: 20±2°C

Ambient humidity: 65±5%

Operating frequency: 30 operations/min

## ■ Switching Capacity per Load (Reference Values)

| Type         | Voltage | Non-inductive load |    | Inductive load |    |
|--------------|---------|--------------------|----|----------------|----|
|              |         | Resistive load     |    | Motor load     |    |
|              |         | NC                 | NO | NC             | NO |
| Standard     | 125 VAC | 16 A               |    | 4 A            |    |
|              | 250 VAC | 16 A               |    | 4 A            |    |
| Pull-on lock | 125 VAC | 10 A               |    | ---            |    |
|              | 250 VAC | 10 A               |    | ---            |    |

**Note:** 1. The above values are for the steady-state current.

2. Motor load has an inrush current of 6 times the steady-state current.

## ■ Characteristics

| Item  |   | D2D-1000 models   | D2D-2000 models                                      | D2D-3000 models                                      |
|---|---|---|--|--|
| Operating speed                             |   | 10 mm to 1 m/s  |  |  |
| Operating frequency                         |   | Mechanical: 300 operations/min max.<br>Electrical: 30 operations/min max.   |  |  |
| Insulation resistance                       |   | 100 MΩ min. (at 500 VDC)  |  |  |
| Contact resistance (initial value)          |   | 50 mΩ max.  |  |  |
| Dielectric strength (50/60 Hz 1mm)          | Between terminals of same polarity                    | 2,000 VAC   | 1,000 VAC  | 2,000 VAC  |
|   | Between terminals and ground (see note 2)             | 2,000 VAC   | 1,500 VAC  | 2,000 VAC  |
|   | Between terminals and non-current-carrying metal part | 2,500 VAC   | 1,500 VAC  | ---  |
|   | Between terminals and actuator                        | 4,000 VAC   | ---  | 4,000 VAC  |
| Vibration resistance                        |   | Malfunction: 10 to 55 Hz, 1.5-mm double amplitude   |  |  |
| Shock resistance                            |   | Destruction: 1,000 m/s <sup>2</sup> {approx. 100G} max.   |  |  |
|   |   | Malfunction: 500 m/s <sup>2</sup> {approx. 50G} max.  | Malfunction: 300 m/s <sup>2</sup> {approx. 30G} max. | Malfunction: 500 m/s <sup>2</sup> {approx. 50G} max. |
| Durability (see note 3)                     |   | Mechanical: 10,000,000 operations min. (60 operations/min)<br>Electrical: 100,000 operations min. (30 operations/min) |  |  |
| Degree of protection                        |   | IEC IP40  |  |  |
| Degree of protection against electric shock |   | Class II  |  |  |
| Proof tracking index (PTI)                  |   | 175   |  |  |
| Ambient operating temperature               |   | -25°C to 85°C (at ambient humidity of 60% max.) (with no icing)   |  |  |
| Ambient operating humidity                  |   | 85% max. (for 5°C to 35°C)  |  |  |
| Weight                                      |   | Approx. 14 g (D2D-1000)   |  |  |

**Note:** 1. The data given above are initial values.

2. The dielectric strength shown in the table indicates a value for models with a Separator.

3. For testing conditions, consult your OMRON sales representative.

■ Approved Standards

Consult your OMRON sales representative for specific models with standard approvals.

**UL1054 (File No. E41515)/  
CSA C22.2 No. 55 (File No. LR21642)**

| Rated voltage | D2D-1000 | D2D-2000 | D2D-3000          |
|---------------|----------|----------|-------------------|
| 125 VAC       | ---      | ---      | 3/4 HP            |
| 250 VAC       | 16 A     | 10 A     | 16 A,<br>1-1/2 HP |

**EN61058-1 (File No. 136005, VDE approval)**

| Rated voltage | D2D-1000 | D2D-2000 | D2D-3000 |
|---------------|----------|----------|----------|
| 250 VAC       | 16 (4) A | 10 A     | 16 (4) A |

Testing conditions: 1E4 (10,000 operations), T85 (0°C to 85°C)

**Note:** The values in parentheses indicate motor load ratings.

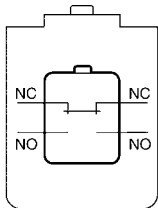
**EN61058-1 (File No. R9551934, TÜV Rheinland approval)**

| Rated voltage | D2D-3104 |
|---------------|----------|
| 24 VDC        | 4 A      |

Testing conditions: 5E4 (50,000 operations), T85 (0°C to 85°C)

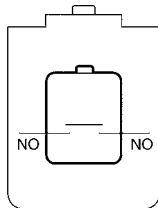
■ Contact Form

**SPDB-NO/NC**



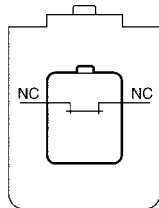
D2D-1000 D2D-2000  
D2D-1100 D2D-2100

**SPDB-NO**



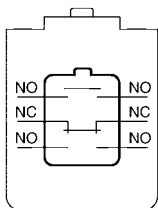
D2D-1001  
D2D-1101

**SPDB-NC**



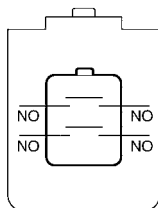
D2D-1002  
D2D-1102

**SPDB-NO  
+SPDB-NO/NC**



D2D-3103

**DPDB-NO**



D2D-3104

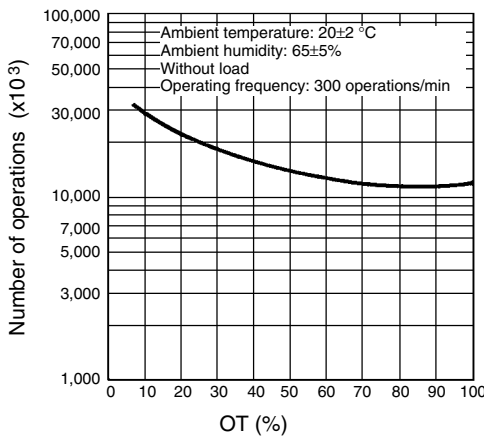
■ Contact Specifications

| Item                               |                      | Standard model  | Pull-on lock model |
|------------------------------------|----------------------|-----------------|--------------------|
| Contact                            | Specification        | Rivet           |                    |
|                                    | Material             | Silver          |                    |
|                                    | Gap (standard value) | 3 mm min.       | 1 mm               |
| Inrush current                     | NC                   | 30 A max.       | 24 A max.          |
|                                    | NO                   | 30 A max.       | 24 A max.          |
| Minimum applicable load (see note) |                      | 160 mA at 5 VDC |                    |

**Note:** For more information on the minimum applicable load, refer to *Using Micro Loads* on page 277.

# Engineering Data (Reference Values)

## Mechanical Durability (D2D-1000)



### ■ Pull-on Lock Function

When opening or closing the door, the power ON state of the Switch can be checked with the door left open. By closing the door after maintenance inspection, the Switch will resume the normal momentary action. (This feature is ideal for conducting the electrical continuity test, inspection, repair, etc. of the Switch after its assembly.)

| Example    |       | To turn ON the power when the door is closed | To turn OFF the power when the door is open | To turn ON the power with the door left open |
|------------|-------|--|---|--|
| State      |       |  |   |  |
| Connection | NO-NO | ON   | OFF   | ON   |
|            | NC-NC | OFF  | ON  | OFF  |

### ■ Double Spring Mechanism

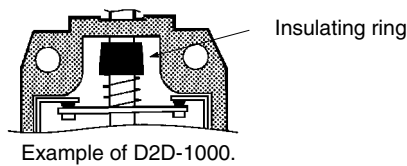
Two return springs are provided for the pin plunger. Thus, if either of the springs is broken, this feature will prevent the Switch from malfunctioning or short-circuiting.

Applicable Models: D2D-1000 and 3000 models

### ■ Direct Contact Opening Mechanism

The insulating ring will positively break the circuit if a contact weld occurs in the Switch.

Applicable Models: D2D-1000 Models



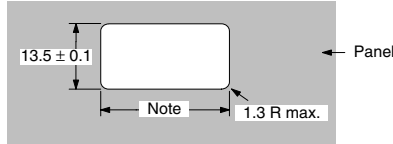
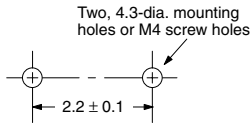
# Dimensions

## ■ Mounting Holes

**Note:** All units are in millimeters unless otherwise indicated.

### Panel Cutout Dimensions

Panel thickness: 1.0 to 2.5 mm



**Note:** Dimension is 36.7±0.1 with a panel thickness of 1.0 mm and 37.0±0.1 with a panel thickness of 2.5 mm

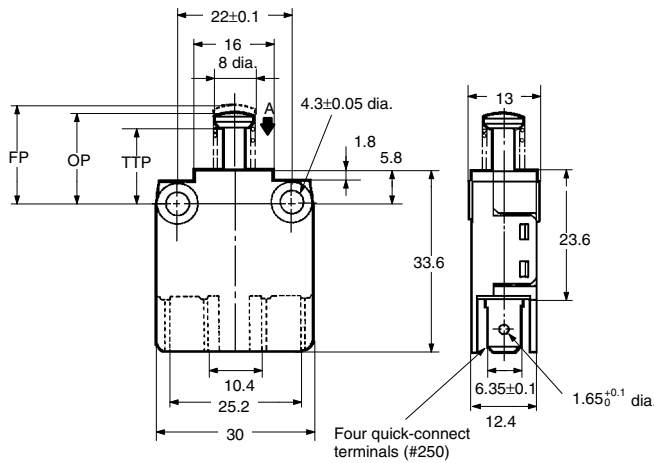
## ■ Dimensions and Operating Characteristics

- Note:**
1. All units are in millimeters unless otherwise indicated.
  2. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.
  3. The operating characteristics are for operation in the A direction (▼).

## ■ Standard Models

### Screw Mounting

- D2D-1000
- D2D-1001
- D2D-1002

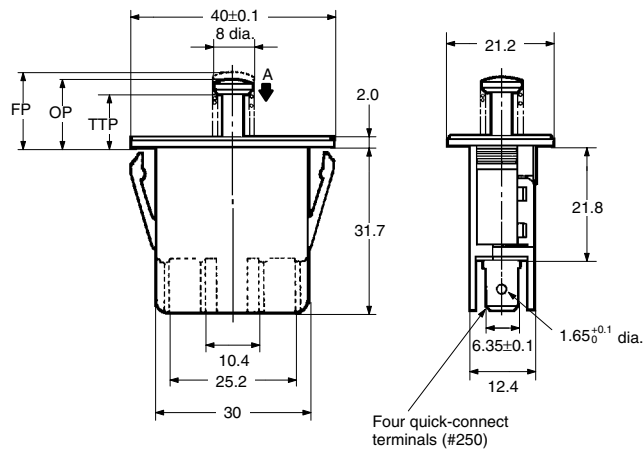
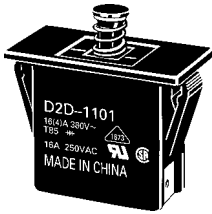


**Note:** NC-OFF: The force applied to the actuator to cause it to move from the free position to the position at which the NC contact opens.  
 NO-ON: The force applied to the actuator to cause it to move from the free position to the position at which the NO contact closes.

| Model          | Screw mounting  |                 |                 |
|----------------|-----------------|-----------------|-----------------|
|                | D2D-1000        | D2D-1001        | D2D-1002        |
| OF max. NC-OFF | 2.94 N {300 gf} | ---             | 2.94 N {300 gf} |
| NO-ON          | 5.88 N {600 gf} | 5.88 N {600 gf} | ---             |
| TTF max.       | 7.35 N {750 gf} | 7.35 N {750 gf} | 7.35 N {750 gf} |
| OT min.        | 2.3 mm          | 2.3 mm          | 5.5 mm          |
| FP max.        | 16.4 mm         | 17 mm           | 16.4 mm         |
| OP NC-OFF      | 15.9±0.4 mm     | ---             | 15.9±0.4 mm     |
| NO-ON          | 12.7±0.4 mm     | 12.7±0.4 mm     | ---             |
| TTP max.       | 10 mm           | 10 mm           | 10 mm           |

**Panel Mounting**

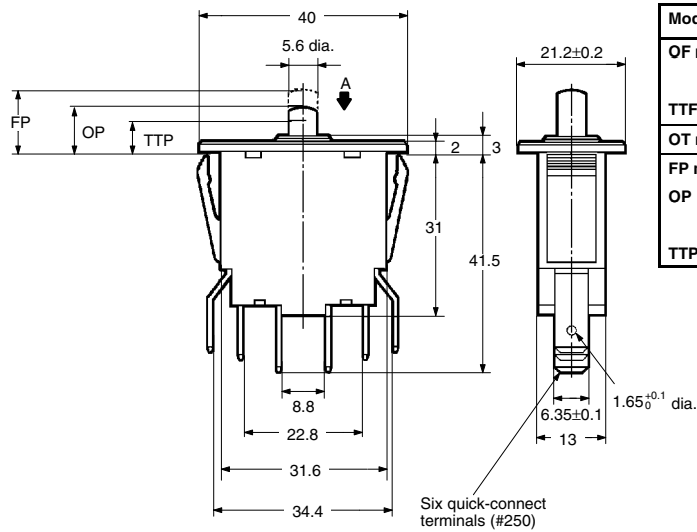
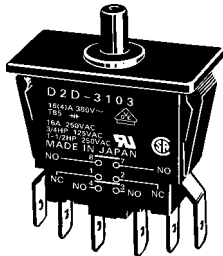
D2D-1100  
D2D-1101  
D2D-1102



| Model          | Panel mounting  |                 |                 |
|----------------|-----------------|-----------------|-----------------|
|                | D2D-1100        | D2D-1101        | D2D-1102        |
| OF max. NC-OFF | 2.94 N {300 gf} | ---             | 2.94 N {300 gf} |
| NO-ON          | 5.88 N {600 gf} | 5.88 N {600 gf} | ---             |
| TTF max.       | 7.35 N {750 gf} | 7.35 N {750 gf} | 7.35 N {750 gf} |
| OT min.        | 2.3 mm          | 2.3 mm          | 5.5 mm          |
| FP max.        | 12.4 mm         | 13 mm           | 12.4 mm         |
| OP NC-OFF      | 11.9±0.4 mm     | ---             | 11.9±0.4 mm     |
| NO-ON          | 8.7±0.4 mm      | 8.7±0.4 mm      | ---             |
| TTP max.       | 6 mm            | 6 mm            | 6 mm            |

**Panel Mounting**

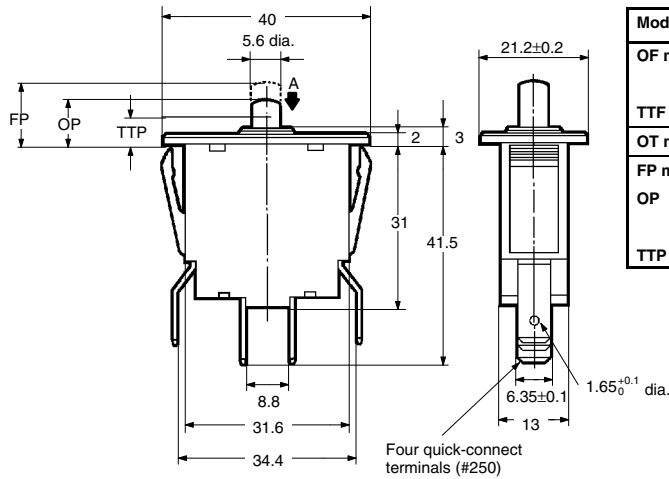
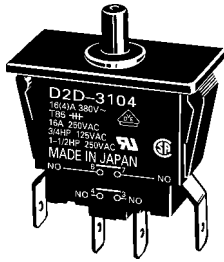
D2D-3103



| Model          | D2D-3103          |                   |
|----------------|-------------------|-------------------|
| OF max. NC-OFF | 2.94 N {300 gf}   | 2.94 N {300 gf}   |
| NO-ON          | 5.88 N {600 gf}   | 5.88 N {600 gf}   |
| TTF max.       | 9.81 N {1,000 gf} | 9.81 N {1,000 gf} |
| OT min.        | 2.3 mm            | 2.3 mm            |
| FP max.        | 12.4 mm           | 12.4 mm           |
| OP NC-OFF      | 11.9±0.8 mm       | 11.9±0.8 mm       |
| NO-ON          | 8.7±0.8 mm        | 8.7±0.8 mm        |
| TTP max.       | 6.4 mm            | 6.4 mm            |

Panel Mounting

D2D-3104



| Model    |        | D2D-3104          |
|----------|--------|-------------------|
| OF max.  | NC-OFF | ---               |
|          | NO-ON  | 5.88 N (600 gf)   |
| TTF max. |        | 9.81 N (1,000 gf) |
| OT min.  |        | 2.3 mm            |
| FP max.  | NC-OFF | ---               |
|          | NO-ON  | 8.7±0.8 mm        |
| TTP max. |        | 6.4 mm            |

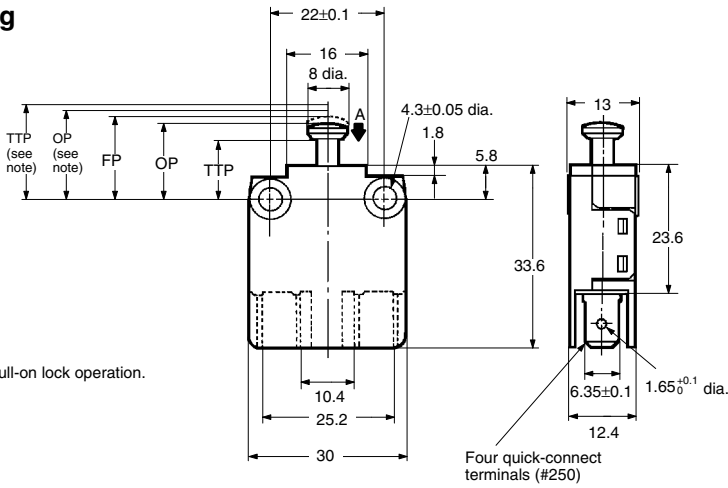
■ Pull-on Lock Models

Screw Mounting

D2D-2000



Note: At pull-on lock operation.



Momentary Operation (Normal Operation)

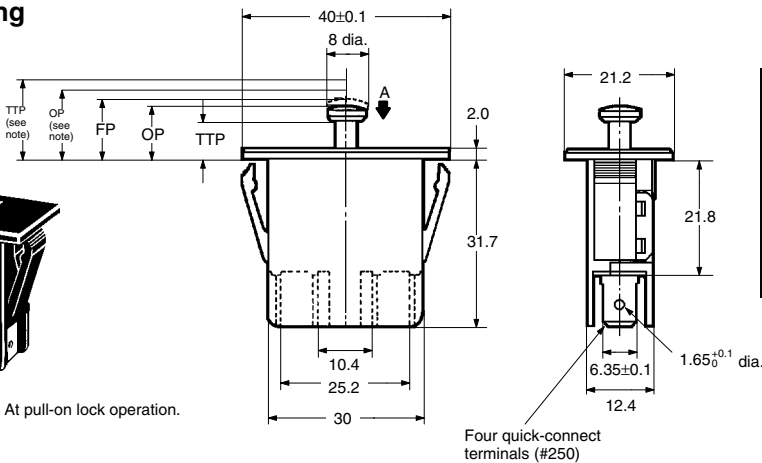
| Model    |        | D2D-2000        | D2D-2100        |
|----------|--------|-----------------|-----------------|
| OF max.  | NC-OFF | 1.96 N (200 gf) | 1.96 N (200 gf) |
|          | NO-ON  | 2.94 N (300 gf) | 2.94 N (300 gf) |
| TTF max. |        | 5.88 N (600 gf) | 5.88 N (600 gf) |
| OT min.  |        | 4.5 mm          | 4.5 mm          |
| FP max.  |        | 14.3 mm         | 10.3 mm         |
| OP       | NC-OFF | 13.5±0.6 mm     | 9.5±0.6 mm      |
|          | NO-ON  | 12.7±0.6 mm     | 8.7±0.6 mm      |
| TTP max. |        | 8.3 mm          | 4.3 mm          |

Panel Mounting

D2D-2100



Note: At pull-on lock operation.



Pull-on Lock Operation

| Model    |  | D2D-2000           | D2D-2100    |
|----------|--|--------------------|-------------|
| OF max.  |  | 19.61 N (2,000 gf) |             |
| PT max.  |  | 2 mm               |             |
| OT min.  |  | 0.4 mm             |             |
| MD max.  |  | 1.5 mm             |             |
| FP max.  |  | 14.3 mm            | 10.3 mm     |
| OP       |  | 15.1±0.6 mm        | 11.1±0.6 mm |
|          |  |                    |             |
| TTP max. |  | 16.5 mm            | 12.5 mm     |

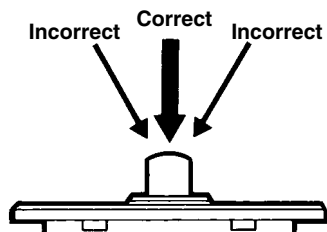
## Precautions

Refer to pages 26 to 31 for common precautions.

### ■ Correct Use

#### Mounting

Apply operation force to the pin plunger in the direction it operates. Applying forces laterally or from an oblique direction may damage the pin plunger.

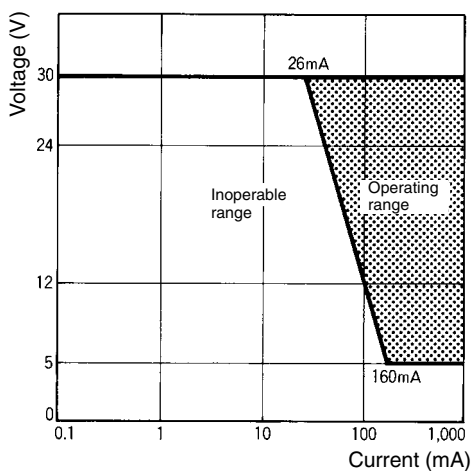


Use M4 mounting screws with plane washers or spring washers to securely mount the Switch. Tighten the screws to a torque of 0.49 to 0.69 N • m {5 to 7 kg • cm}

#### Using Micro Loads

Using a model for ordinary loads to open or close the contact of a micro load circuit may result in faulty contact. Use models that operate in the following range. However, even when using micro load models within the operating range shown below, if inrush current occurs when the contact is opened or closed, it may increase contact wear and so decrease durability. Therefore, insert a contact protection circuit where necessary.

The minimum applicable load is the N-level reference value. This value indicates the malfunction reference level for the reliability level of 60% ( $\lambda_{60}$ ). The equation,  $\lambda_{60} = 0.5 \times 10^{-6}/\text{operations}$  indicates that the estimated malfunction rate is less than 1/2,000,000 operations with a reliability level of 60%.



**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.