

# High-temperature Basic Switch TZ

## Stable Operation at an Ambient Temperature of 400° C

- Incorporates a ceramic insulator, cobalt-alloy spring, and special-alloy contact, thus ensuring high contact reliability at high ambient temperature.
- Smoothly operates at an ambient temperature of 400° C.



## Model Number Structure

### ■ Model Number Legend

**TZ-1G□**  
1 2 3

#### 1. Rating

1: 1 A, 250 VAC

#### 2. Contact Gap

G: 0.5 mm

#### 3. Actuator

None: Pin plunger

V: Hinge lever

V2: Hinge roller lever

V22: Short hinge roller lever

## Ordering Information

### ■ List of Model

Actuator	Model
Pin plunger 	TZ-1G
Hinge lever 	TZ-1GV
Short hinge roller lever 	TZ-1GV22
Hinge roller lever 	TZ-1GV2

# Specifications

## ■ Ratings

Rated voltage	Non-inductive load (A)				Inductive load (A)			
	Resistive load		Lamp load		Inductive load		Motor load	
	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	1		0.9	0.45	1		1.5	0.75
250 VAC	1		0.45	0.3	1		0.45	0.3
8 VDC	1		0.9	0.45	1		1.5	1.5
14 VDC	1		0.9	0.45	1		1.5	1.5
30 VDC	1		0.9	0.45	1		1.5	1.5
125 VDC	0.4		0.05	0.05	0.4		0.05	0.05

- Note:**
- The above current ratings are the values of the steady-state current.
  - Inductive load has a power factor of 0.4 min. (AC) and a time constant of 7 ms max. (DC).
  - Lamp load has an inrush current of 10 times the steady-state current.
  - Motor load has an inrush current of 6 times the steady-state current.
  - The above ratings are tested under the following conditions.
    - Ambient temperature: 20±2 °C
    - Ambient humidity: 65±5%
    - Switching frequency: 20 times/min

## ■ Characteristics

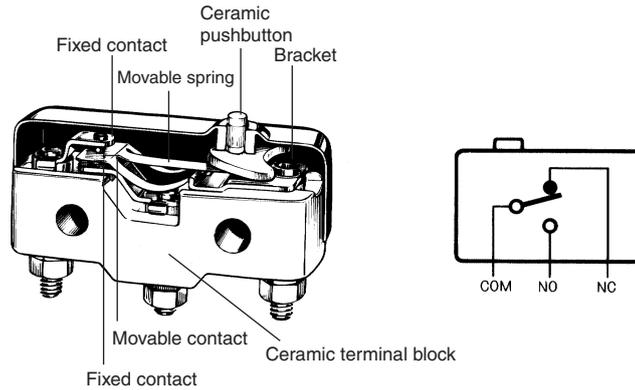
<b>Operating speed</b>	0.05 mm to 1 m/s (see note 1)
<b>Operating frequency</b>	Mechanical: 60 operations/min Electrical: 20 operations/min
<b>Insulation resistance</b>	100 MΩ min. (at 500 VDC)
<b>Contact resistance</b>	100 mΩ max. (initial value)
<b>Dielectric strength</b>	1,000 VAC, 50/60 Hz for 1 min between terminals of same polarity 1,500 VAC, 50/60 Hz for 1 min between current-carrying metal parts and ground and between each terminal and non-current-carrying metal parts
<b>Vibration resistance</b>	Malfunction: 10 to 55 Hz, 1.5-mm double amplitude (see note 2)
<b>Shock resistance</b>	Destruction: 500 m/s <sup>2</sup> {50G} max. Malfunction: 300 m/s <sup>2</sup> {30G} max. (see note 2)
<b>Durability</b>	Mechanical: 100,000 operations min. Electrical: 50,000 operations min.
<b>Degree of protection</b>	IP00
<b>Electric shock protection</b>	Class I
<b>Ambient temperature</b>	Operating: -65° C to 400° C (with no icing)
<b>Ambient humidity</b>	Operating: 35% to 85% max.
<b>Weight</b>	Approx. 45 to 54 g

- Note:**
- This operating speed applies to switches with pin-type pushbuttons.
  - This refers to a malfunction period of 1 ms max.

## ■ Contact Specifications

Item		
Contact	Specification	Cross bar
	Material	Platinum alloy
	Gap (standard value)	0.5 mm
Inrush current	NC	9 A max.
	NO	4.5 A max.

# Nomenclature



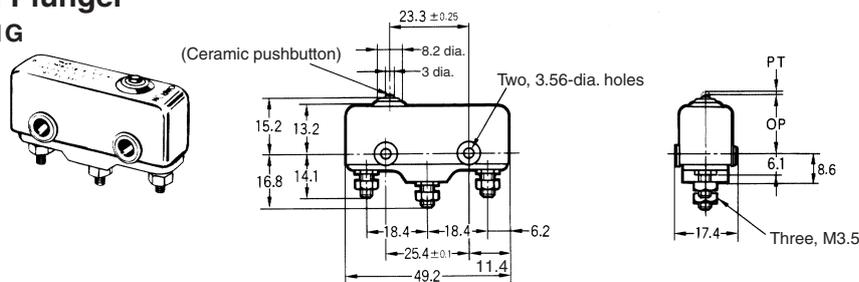
## Dimensions

### ■ Dimensions and Operating Characteristics

**Note:** 1. All units are in millimeters unless otherwise indicated.  
 2. Each dimension has a tolerance of  $\pm 0.4$  mm unless otherwise specified.

#### Pin Plunger

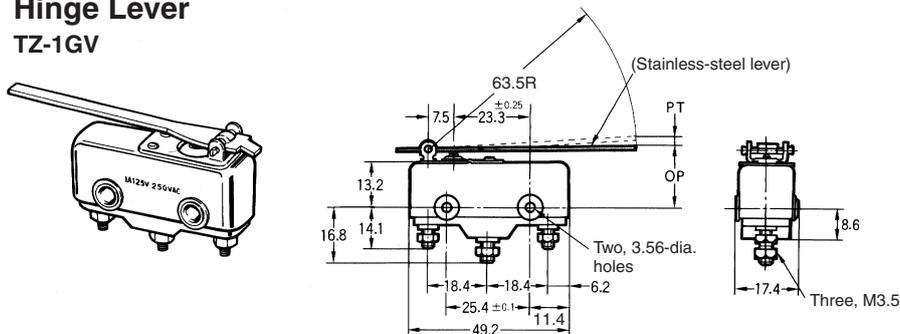
TZ-1G



<b>OF max.</b>	4.9 N {500 gf}
<b>RF min.</b>	1.12 N {114 gf}
<b>PT max.</b>	0.4 mm
<b>OT min.</b>	0.13 mm
<b>MD max.</b>	0.15 mm
<b>OP</b>	15.6±0.6 mm

#### Hinge Lever

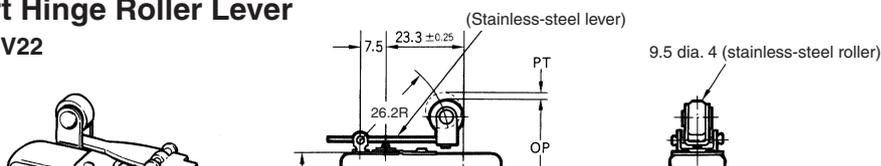
TZ-1GV



<b>OF max.</b>	0.98 N {100 gf}
<b>RF min.</b>	0.14 N {14 gf}
<b>PT max.</b>	3.5 mm
<b>OT min.</b>	4.6 mm
<b>MD max.</b>	1.3 mm
<b>OP</b>	18±1.2 mm

#### Short Hinge Roller Lever

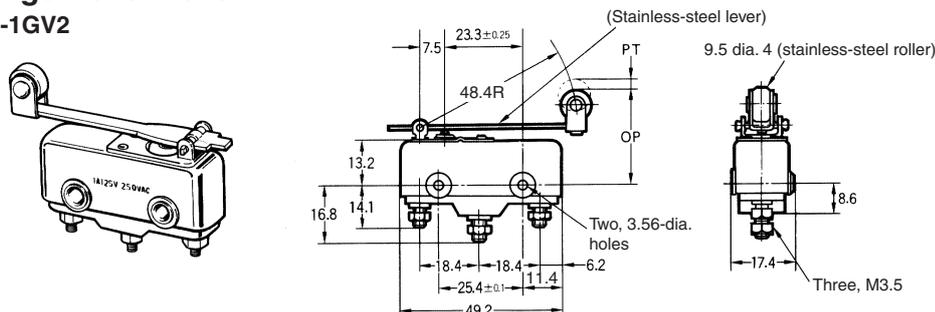
TZ-1GV22



<b>OF max.</b>	2.35 N {240 gf}
<b>RF min.</b>	0.33 N {34 gf}
<b>PT max.</b>	1.5 mm
<b>OT min.</b>	1.9 mm
<b>MD max.</b>	0.6 mm
<b>OP</b>	28.6±1.2 mm

#### Hinge Roller Lever

TZ-1GV2



<b>OF max.</b>	1.27 N {130 gf}
<b>RF min.</b>	0.2 N {20 gf}
<b>PT max.</b>	2.6 mm
<b>OT min.</b>	3.5 mm
<b>MD max.</b>	1 mm
<b>OP</b>	28.6±1.2 mm

Limit switches

# Precautions

Refer to the *Technical Information for Basic Switches* (Cat. No. C122) for common precautions.

## ■ Correct Use

### Handling

The Switch has a ceramic casing. Do not drop the Switch from a height of 30 cm or more. Doing so will break the casing.

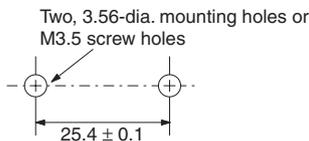
### Mounting

Be sure to turn OFF the power supply to the Switch before mounting, dismounting, wiring, or working on the Switch for maintenance. Not doing so may result in an electric shock or the Switch may burn.

Mount the switch with M3.5 stainless-steel screws with plane washer and spring washers securely.

Use M3.5 stainless-steel mounting screws with plane washers or spring washers to securely mount the Switch. Tighten the screws to a torque of 0.69 to 0.98 N·m {7 to 10 kgf·cm}.

### Mounting Holes



Connect nickel-plated solderless terminals to the TZ. Each terminal must be secured on the TZ with M3.5 nut.

Make sure that the ceramic case is free of metal powder or other impurities.

## Operation

Do not modify the Actuator and change the operating position.

Make sure that the switching speed is not extremely slow or do not use the Switch so that the pushbutton will be set to a position between the FP and OP.

Make sure that the pin-type pushbutton and the switching stroke are on the same vertical line.

Make sure that the switching frequency or speed is within the specified range.

- If the switching speed is extremely slow, the contact may not be switched smoothly, which may result in a contact failure or contact welding.
- If the switching speed is extremely fast, switching shock may damage the Switch soon. If the switching frequency is too high, the contact may not catch up with the speed.

The rated permissible switching speed and frequency indicate the switching reliability of the Switch.

The life of a Switch is determined at the specified switching speed. The life varies with the switching speed and frequency even when they are within the permissible ranges. In order to determine the life of a Switch model to be applied to a particular use, it is best to conduct an appropriate durability test on some samples of the model under actual conditions.

Make sure that the actuator travel does not exceed the permissible OT position. The operating stroke must be set to 70% to 100% of the rated OT.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

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