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.

Ordering Information

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

Note: The levers and rollers are made of stainless steel.

Model Number Legend

TZ - 1 G □
1 2 3

1. **Ratings**
   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

Specifications

■ Characteristics

Operating speed		0.05 mm to 1 m/s (See note 1)
Operating frequency	**Mechanical**	60 operations/min
	Electrical	20 operations/min
Contact resistance		100 mΩ max. (initial value)
Insulation resistance		100 MΩ min. (at 500 VDC)
Dielectric strength		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
Vibration resistance	**Malfunction**	10 to 55 Hz, 1.5-mm double amplitude (See note 2)
Shock resistance	**Destruction**	500 m/s^2 max.
	Malfunction	300 m/s^2 max. (See notes 1 and 2)
Degree of protection		IP00
Degree of protection against electric shock		Class I
Ambient operating temperature		−65°C to 400°C (with no icing)
Ambient operating humidity		35% to 85%RH
Service life	**Mechanical**	100,000 operations min.
	Electrical	50,000 operations min.
Weight		Approx. 45 to 54 g

Note: 1. The values are for pin plunger models
2. Malfunction: 1 ms max.

■ Ratings

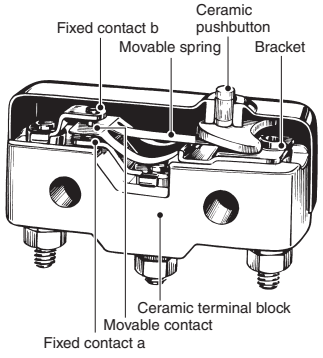
Rated voltage (V)	Non-inductive load (A)				Inductive load (A)			
	Resistive load		Lamp load		Inductive load		Motor load	
	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	1		0.9	0.45	1		1.5	0.75
250 VAC	1		0.45	0.3	1		0.45	0.3
8 VDC	1		0.9	0.45	1		1.5	1.5
14 VDC	1		0.9	0.45	1		1.5	1.5
30 VDC	1		0.9	0.45	1		1.5	1.5
125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

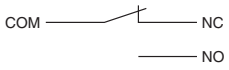
Note: 1. The above values are for steady-state current.
2. Inductive load has a power factor of 0.4 min. (AC) and a time constant of 7 ms max. (DC).
3. Lamp load has an inrush current of 10 times the steady-state current.
4. Motor load has an inrush current of 6 times the steady-state current.
5. The ratings values apply under the following test conditions:
(1) Ambient temperature: 20±2°C
(2) Ambient humidity: 65±5%RH
(3) Operating frequency: 20 operations/min

■ Contact Specifications

Contact	**Shape**	Rivet
	Material	Platinum alloy
	Gap (standard value)	0.5 mm
Inrush current	**NC**	9 A max.
	NO	4.5 A max.

■ Structure/Contact Form

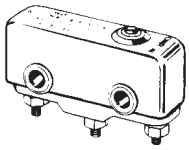


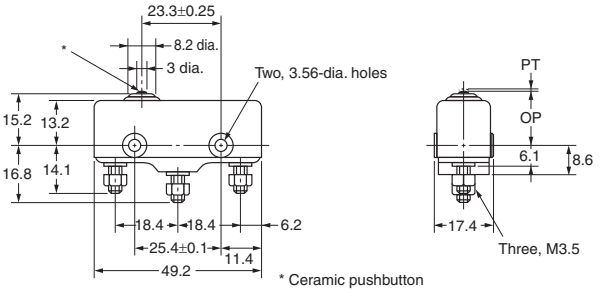


Dimensions

Note: Unless otherwise specified, all units are in millimeters and a tolerance of ± 0.4 mm applies to all dimensions.

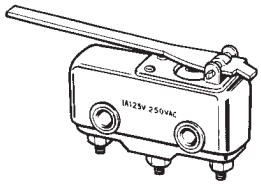
Pin Plunger
TZ-1G

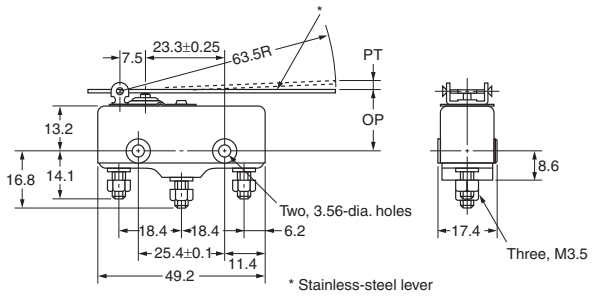




Operating force	**OF max.**	500 gf
Release force	**RF min.**	114 gf
Pretravel	**PT max.**	0.4 mm
Over travel	**OT min.**	0.13 mm
Movement Differential	**MD max.**	0.15 mm
Operating Position	**OP**	15.9±0.6 mm

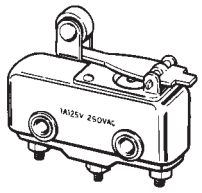
Hinge Lever
TZ-1GV

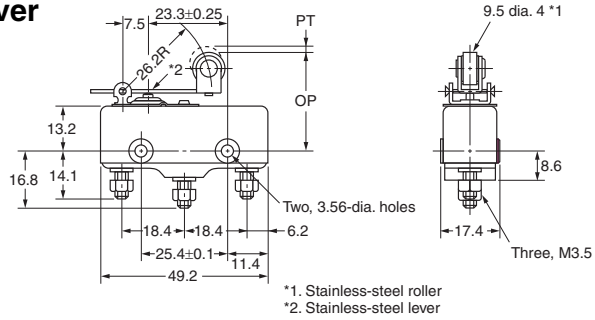




OF max.	100 gf
RF min.	14 gf
PT max.	3.5 mm
OT min.	4.6 mm
MD max.	1.3 mm
OP	18±1.2 mm

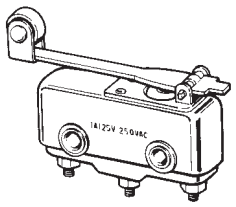
Short Hinge Roller Lever
TZ-1GV22

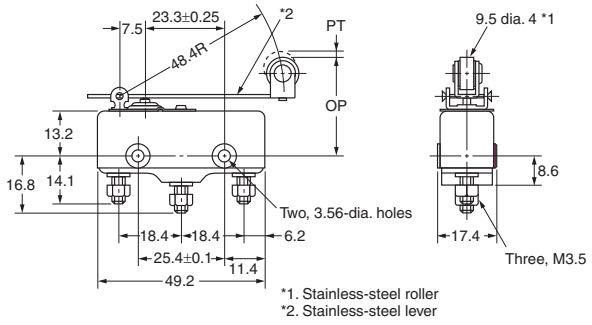




OF max.	240 gf
RF min.	35 gf
PT max.	1.5 mm
OT min.	1.9 mm
MD max.	0.6 mm
OP	28.6±1.2 mm

Hinge Roller Lever
TZ-1GV2



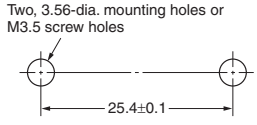


OF max.	130 gf
RF min.	20 gf
PT max.	2.6 mm
OT min.	3.5 mm
MD max.	1 mm
OP	28.6±1.2 mm

■ Mounting

- Be sure to turn OFF the power supply to the Switch before mounting, dismounting, wiring, or working on the Switch for maintenance.
- 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.

■ Mounting Holes



Safety Precautions

Be sure to read the precautions and information common to all Snap Action and Detection Switches, contained in the Technical User's Guide, "Snap Action Switches, Technical Information" for correct use.

Precautions for Safe 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.

- 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 plunger and the switching stroke are on the same vertical line.
- Make sure that the switching frequency or speed is within the specified range.

1. If the switching speed is extremely slow, the contact may not be switched smoothly, which may result in a contact failure or contact welding.
2. 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.

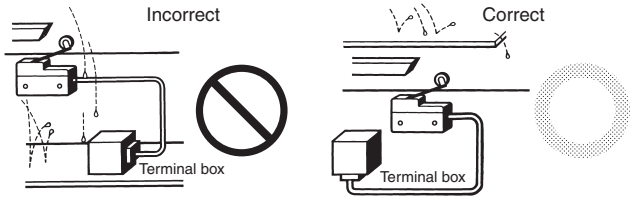
   The rated permissible switching speed and frequency indicate the switching reliability of the Switch.
   The life of a Switch is determined at the specified switching speed. The life varies with the switching speed and frequency even when they are within the permissible ranges. In order to determine 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.

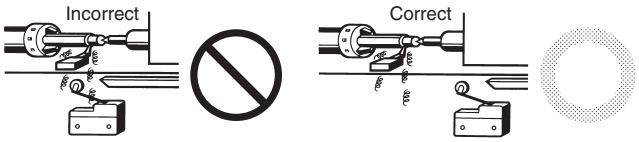
Precautions for Correct Use

Mounting Location

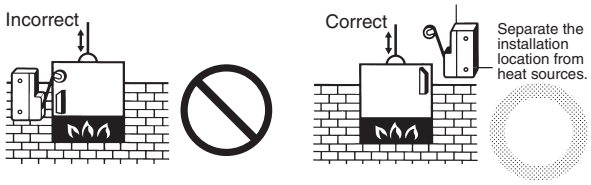
- Do not use the switch alone in atmospheres such as flammable or explosive gases. Arcing and heat generation associated with switching may cause fires or explosions.
- Switches are generally not constructed with resistance against water. Use a protective cover to prevent direct spraying if the switch is used in locations subject to splashing or spurting oil or water, dust adhering.



- Install the switch in a location that is not directly subject to debris and dust from cutting. The actuator and the switch body must be protected from accumulated cutting debris and dirt.



- Do not use the switch in locations subject to hot water (greater than 60°C) or in water vapor.
- Do not use the switch outside the specified temperature and atmospheric conditions.
  The permissible ambient temperature depends on the model. (Refer to the specifications in this catalog.) Sudden thermal changes may cause thermal shock to distort the switch and result in faults.



- Mount a cover if the switch is to be installed in a location where worker inattention could result in incorrect operation or accidents.

- Subjecting the switch to continuous vibration or shock may result in contact failure or faulty operation due to abrasion powder and in reduced durability. Excessive vibration or shock will cause the contacts to operate malfunction or become damaged. Mount the switch in a location that is not subject to vibration or shock and in a direction that does not subject the switch to resonance.
- If silver contacts are used with relatively low frequency for a long time or are used with microloads, the sulfide coating produced on the contact surface will not be broken down and contact faults will result. Use a microload switch that uses gold contacts.
- Do not use the switch in atmospheres with high humidity or heat or in harmful gases, such as sulfide gas (H_2S, SO_2), ammonia gas (NH_3), nitric acid gas (HNO_3), or chlorine gas (Cl_2). Doing so may impair functionality, such as with damage due to contacting faults or corrosion.
- The switch includes contacts. If the switch is used in an atmosphere with silicon gas, arc energy may cause silicon oxide (SiO_2) to accumulate on the contacts and result in contact failure. If there is silicon oil, silicon filling, silicon wiring, or other silicon products in the vicinity of the switch, use a contact protection circuit to limit arcing and remove the source of the silicon gas.

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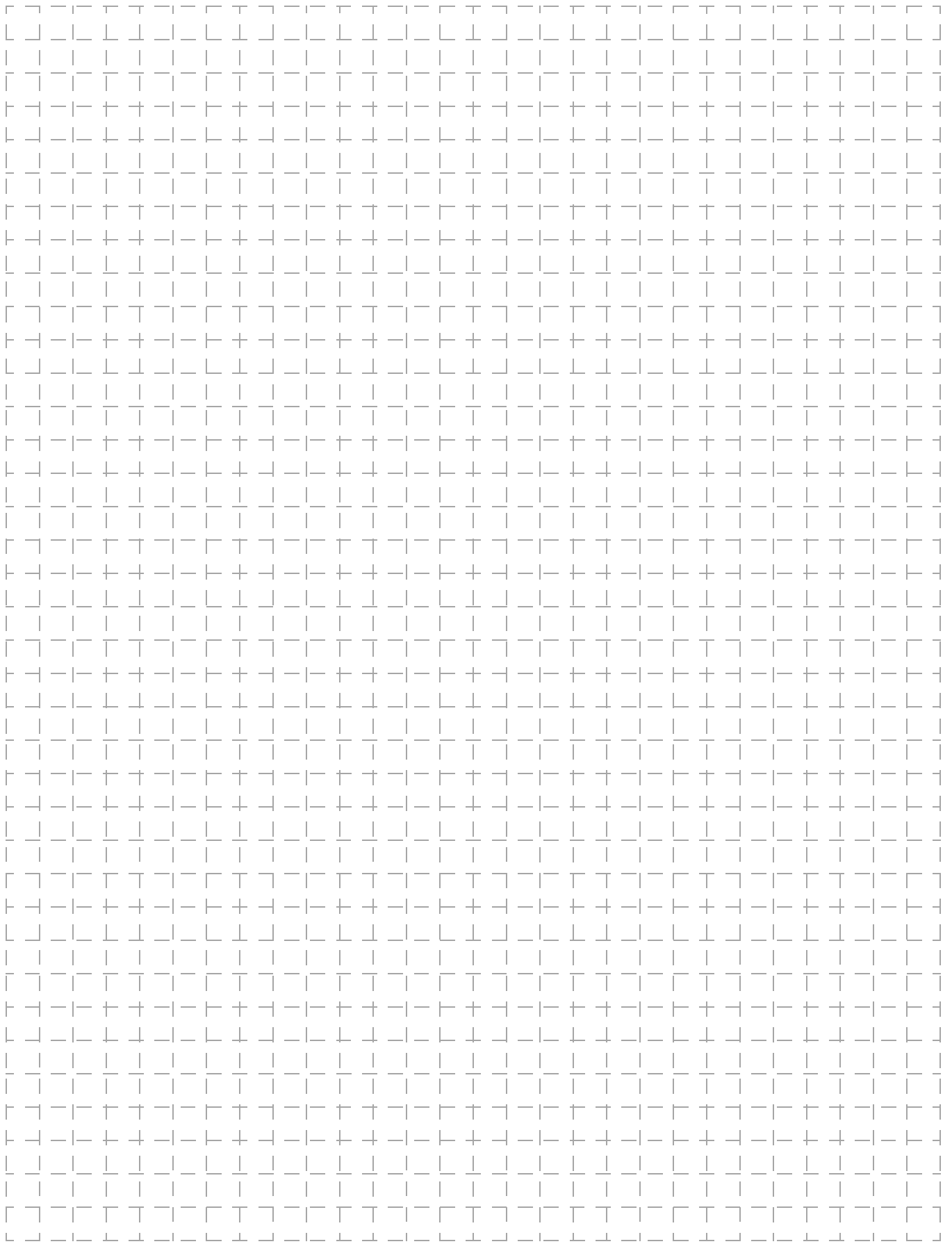

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