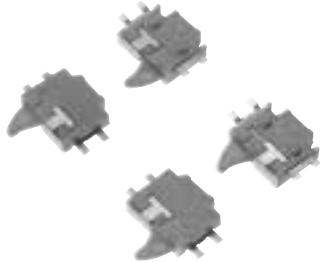


NAiS

IC CARD DETECTION SWITCHES

FT (ABC1) SWITCHES



FEATURES

- Ultra-low profile 1.4 mm .055 inch. They allow products to be slimmer.
- The original coil spring-activated mechanism yields a light operating force (max. 0.3N) and a high overtravel to facilitate installation.
- The coil spring serves as the contact and a high contact reliability is achieved by the more than adequate contact force and wiping effect.
- Detecting from vertical and horizontal directions is possible. The actuator is rotated by the rotary shaft in the body.
- 2 types of SMD terminal is available. The low-profile type is mounted by making square holes at the edges of the printed circuit boards, resulting in a low profile.

TYPICAL APPLICATIONS

- IC card and other electronic money-related products.
- CD-ROM drivers
- Cellular phones
- MD
- Video cameras
- Digital still camera
- Headphone stereo

PRODUCT TYPES

| Detection direction | Packing style | Contact type | Standard type | Low Profile type | |
|---------------------|-------------------------------|--------------|---------------|--------------------------------|-----------------------------------|
| | | | | Standard embossed tape packing | Upside-down embossed tape packing |
| Right angle | Embossed tape (3000 pcs/reel) | Gold-plated | ABC1111P61 | ABC1121P61 | ABC1121P161 |
| Left angle | | Gold-plated | ABC1112P61 | ABC1122P61 | ABC1122P161 |

CONTACT ARRANGEMENT: SPST-NO (1 Form A)

MOUNTING VIEW

| | Standard type | Low profile type | |
|----------------------|---------------|--------------------------------|-----------------------------------|
| | | Standard embossed tape packing | Upside-down embossed tape packing |
| TOP VIEW | | | |
| Mounting part layout | | | |

Note) * The mounting height of 0.35 mm .014 inch indicated by the asterisk applies when the standard embossed tape packages are used, that is to say, when the switches have been mounted using embossed tape packages on which the switches are encapsulated after their fronts and backs have been reversed.

ABC1

SPECIFICATIONS

1. Contact rating

| | |
|-------------|---|
| Gold-plated | 0.01 mA 5V DC to 10 mA 5V DC (resistive load) |
|-------------|---|

2. Characteristics

| | |
|-------------------------------|---|
| Electrical life | Gold-plated |
| | Min. 10^5 (0.01 mA 5V DC to 10 mA 5V DC contact opening 20 cpm) |
| Insulation resistance | Min. $100 \text{ M}\Omega$ (by 100V DC insulation resistance meter) |
| Dielectric strength | 100 Vrms for 1 min. (Between uncontinuous terminals) |
| Contact resistance (initial) | Max. 3Ω (by voltage drop at 10 mA 5V DC) |
| Contact resistance | 14.7 m/s ² 10 to 500Hz (Contact opening: max. 1 msec.) |
| Shock resistance | 294 m/s ² (Contact opening: max. 1 msec.) |
| Allowable operating speed | 30 to 300mm/s |
| Allowable operating frequency | 60 times/min. (at no load) |
| Ambient temperature | -25 to 80°C -13 to 176°F Not freezing nor condensing |

3. Operating characteristics

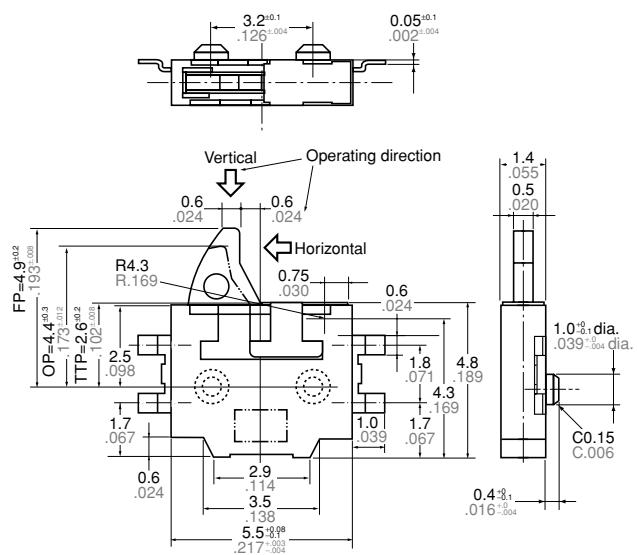
| Item | Standard type | Low profile type |
|--|--|--|
| Free position (F.P.) (mm inch) | 4.9 ± 0.2 .193±.008 | 7.1 ± 0.2 .280±.008 |
| Operating position (O.P.) (mm inch) | 4.4 ± 0.3 .173±.012 | 6.6 ± 0.3 .260±.012 |
| Total travel position (T.T.P.) (mm inch) | 2.6 ± 0.2 .102±.008 | 4.8 ± 0.2 .189±.008 |
| Operating force, Max. | 0.3N by 2.8 mm .110 inch from the center of the positioning projection | 0.3N by 5.0 mm .197 inch from the bottom of the switch |

mm inch

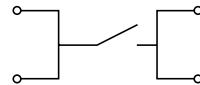
DIMENSIONS

1. Standard type

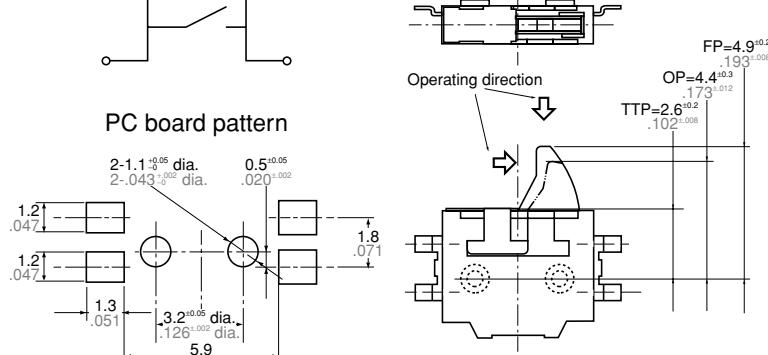
Right angle



Circuit construction
SPST-NO (1 Form A)

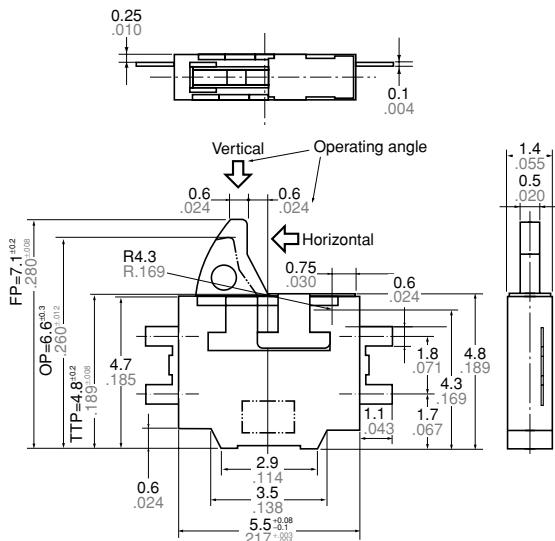


Left angle

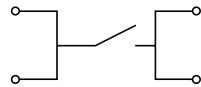


2. Low profile type

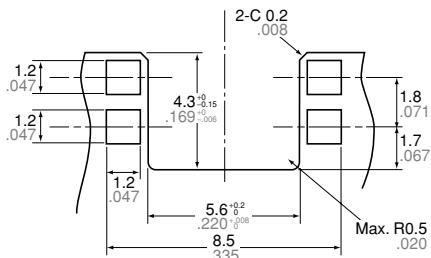
Right angle



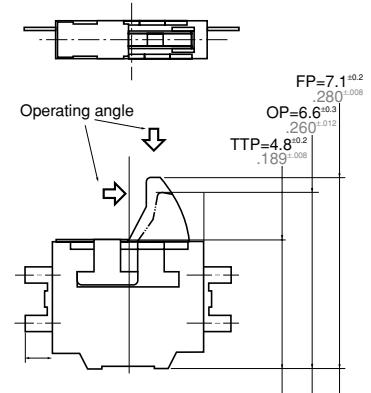
Circuit construction
SPST-NO (1 Form A)



PC board pattern



Left angle



NOTES

1. Mounting

- 1) The positioning of the switch should be such that the pushbutton for the switch should not directly apply force to the operating section in the free condition.
- 2) During both mounting and operation, care must be taken to protect the pushbutton from excessive stress, as this may cause malfunctioning. During mounting, the insulation distance between ground and each terminals/cover should be confirmed as sufficient.

2. Soldering

- 1) For manual soldering, iron tip temperature max. is 320°C 608°F and soldering should be completed within 3 seconds.
- 2) For reflow soldering, perform soldering reflow at a peak surface temperature of the PC board not to exceed 245°C 473°F.
- 3) For cream soldering, screen thickness is recommended between 0.15 to 0.20 mm .006 to .008 inch.
- 4) During soldering, care should be taken not to apply excessive stress to the terminals as the resulting deformation may cause malfunction.
- 5) Excessively high solder tab temperature and soldering iron wattage should also be avoided as these factors may harm switching performance.
- 6) As this switch is thin, using flux should be avoided for the reason of the flux may come inside of the switch and cause damage.

3. Switch operations

- 1) The installation position of the activating unit which operates the switch should be set at a distance of 2.8 to 3.9 mm .110 to .154 inch from the center of the positioning projection in the case of the standard type and at a distance of 5.0 to 6.1 mm .197 to .240 inch from the bottom of the switch in the case of the low-profile type.
- 2) Avoid using the switch as a stopper since it may cause trouble with the operations.
- 3) When using the switch to operate in the sideways direction, ensure that the corner roundness of the operating unit is more than R1.

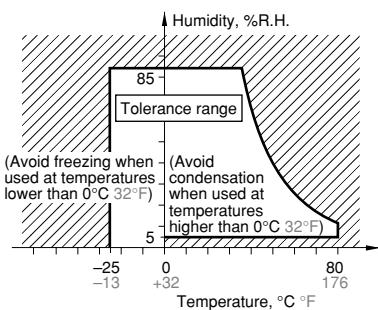
4. Environment

- 1) These switches do not have a sealed construction. As such, the construction of the equipment in which the switches are to be installed should be given careful consideration when the switches are to be used in locations where corrosive gases, silicon or other substances which will adversely affect the contacts are used, where there is a high concentration of dust or where the switches may be exposed to condensation or water. Using switches in locations like these may cause malfunctioning.
- 2) Avoid using this switch in high-temperature, high-humidity or condensation-forming environments and avoid allowing droplets of water to remain on the switch or come into contact with it. These condi-

tions may interfere with the performance of the switch (resulting in short-circuiting, migration, etc.). Use the type with the gold contacts in applications involving trains, aircraft, motor vehicles or medical equipment where the switch must satisfy safety and high reliability requirements.

- 3) Because the humidity range differs depending on the ambient temperature, the humidity range indicated below should be used. Continuous operation of the switch is possible within this range, but continuous use near the limit of the range should be avoided.

- This humidity range does not guarantee permanent performance.



5. Quality check under actual loading conditions

To improve reliability, check the switch under actual loading conditions.

6. Others

Consult with us if this switch is to be used outside its ratings.