

**NAiS****ECO-FRIENDLY SWITCHES****TIP (AHF1)  
SWITCHES****FEATURES**

An eco-friendly switch-replacing a mercury switch with steel ball inside  
High corrosive gas resistance-sealed construction by O ring assures high contact reliability

**TYPICAL APPLICATIONS**

- For detection of tip
  - Gas heaters
  - Electric air conditioners
  - Electric fans
- For criminal detection
  - Vending machines
  - Public phones
  - Amusement equipments

**ORDERING INFORMATION**

Vertical mounting type	Part number	Horizontal mounting type	Part number
<p>PC board Steel ball</p>	AHF11		AHF12

**SPECIFICATIONS****1. Contact rating**

0.1A 30VDC

Applicable range: 1mA 5VDC to 0.1A 30VDC

**2. Characteristics**

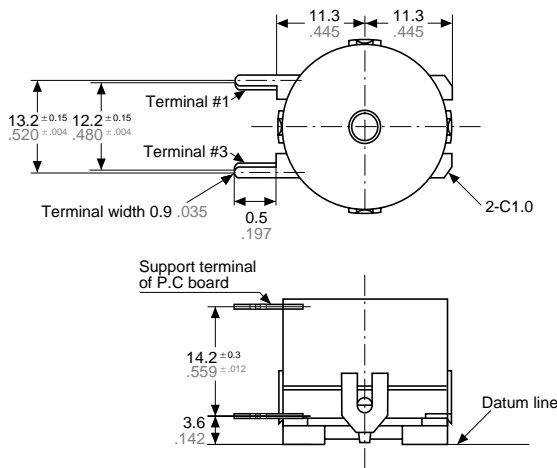
Expected electrical life (Min. operations)	0.1A 30VDC resistive	Min. $5 \times 10^3$
	1mA 5VDC resistive	Min. $10^6$
Insulation resistance		Min. 100 m at 500 VDC
Dielectric strength		100 Vrms for 1 min.
Vibration resistance		2.9 m/s <sup>2</sup> {0.3G} 40 to 400 Hz for 7 days 5 to 10 Hz at double amplitude of 10 mm, $5 \times 10^5$ cycles
Shock resistance		588 mm/s <sup>2</sup> {60G}, 6 directions, 3 times/each direction
Ambient temperature		-25°C to +85°C, -13°F to +185°F (not freezing below 0°C 32°F)
Ambient humidity		Max. 85%RH
Initial contact resistance		Max. 100 m (by voltage drop, 0.1A 6 to 8 VDC)

**3. Operating characteristics**

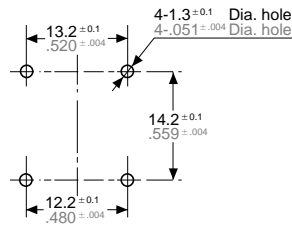
Operating angle (angle of turning off the circuit)	Goes off at more than 25 and less than 60 degrees in relation to the reference line (with an operation angle of 6 degrees/second in the X and Y directions)
Release angle (angle of turning on the circuit)	Goes on at 20 degrees or more (in the X and Y directions)

**DIMENSIONS**

**VERTICAL MOUNTING TYPE**



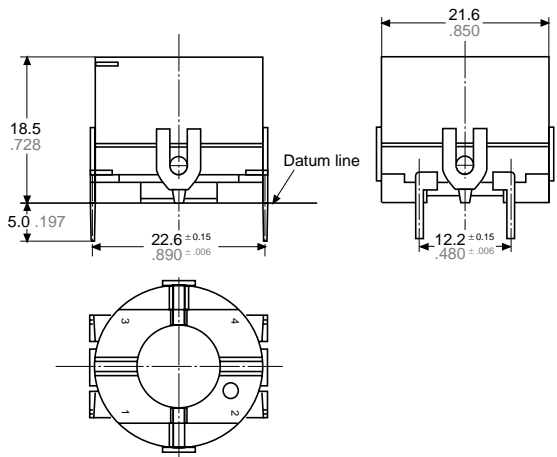
PC board pattern



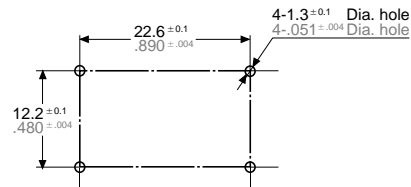
Schematic



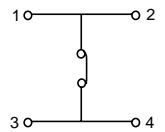
**HORIZONTAL MOUNTING TYPE**



PC board pattern



Schematic



**NOTES**

**1. Soldering operations**

1) for manual soldering  
Soldering should be accomplished in less than 8 seconds with a 60 watt iron max. (iron tip temperature: Max. 350°C 662°F)

2) For automatic soldering  
Soldering should be done less than 10 seconds in 260°C 500°F solder bath or less than 3 seconds in 350°C 662°F solder bath.

**2. Environment**

Avoid using and keeping switches in the following conditions.

- In corrosive gases
- In a dusty environment
- Where silicon atmosphere prevails

**3. Quality check under actual loading conditions**

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

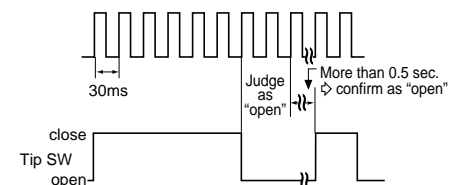
**4. Recommended circuit for tip**

Contact chattering may happen when vibration or shock is applied to the switch because of a leaf spring and steel ball inside. Please detect a signal by following procedure.

- 1) Read access by a microcomputer should be done every 30 msec. at 1mA 5VDC.
- 2) Two reading 'open' in succession should be judged as 'open' condition.
- 3) After the judgement, if the 'open' condition continues for more than 0.5 sec., the condition should be confirmed lastly.

<Example>

Microcomputer read access



**5. Others**

- Switch cover is set to the body through O-ring for sealing purpose. Do not disassemble the switch or the characteristics may change.
- For switching of inductive loads (relay, solenoids, buzzers, etc.), in order to prevent damage to contacts due to the occurrence of arcing, an arc absorbing circuit should be applied.