# Tilt Sensor Switch

| Item No. | RBS020902T | Description | Ball-Contact | Version | 15 |
|---|---|---|---|---|---|
| Page | 1 of 8 | | Publish Date | Jun. 21, 2018 | |

- FUNCTIONS
  1. Horizontal Tilt Detecting
  2. Vertical Rotation Detecting
  3. Shock Detecting



- APPLICATIONS
  1. Screen Rotation
  2. Web Camera
  3. Alarm System
  4. Iron Position Detecting
  5. Bicycle lights flashing
  6. Step Counter

- FEATURES
  1. Suitable for horizontal PCB.
  2. Switch state: SMD Normal Open.
  3. Tiny size, suitable for small space.
  4. Wing-shaped terminals, a feature enables half body of the sensor switch to be buried into PCB.
  5. Gold-plated ball and terminals, low possibility of oxidization.
  6. All plastic materials subject to industrial purpose, resist high temperature and meet fireproof function.
  7. Simple ON and OFF signals, easy for design.
  8. RoHS compliance, an ideal substitute for mercury switch.
  9. A more economical tilt and rotation detection option than IC design solution.
  10. All made in Taiwan and examined before shipment

- PATENTS
  1. Taiwan Patent NO.390563
  2. China Patent NO.ZL 200710123228.X

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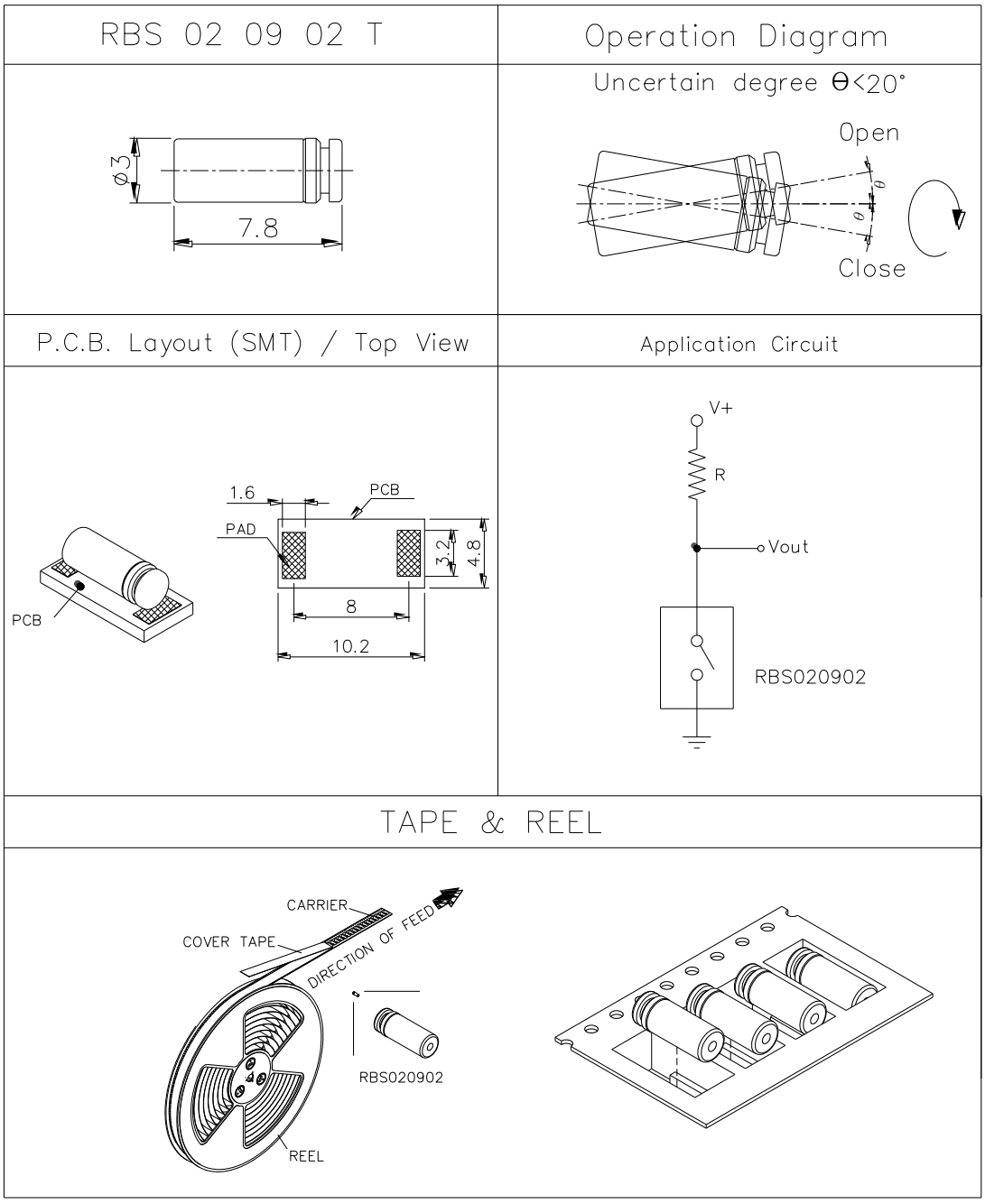
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|---|---|---|---|---|---|
| Page | 2 of 8 | | Publish Date | Jun. 21, 2018 | |

● DIMEN SIONS / OPERATION / P.C.B. LAYOUT (Unit: mm, Tolerance: ±0.25mm)

Fig. 1



# Tilt Sensor Switch

| Item No. | RBS020902T | Description | Ball-Contact | Version | 15 |
|---|---|---|---|---|---|
| Page | 3 of 8 | | Publish Date | Jun. 21, 2018 | |

● Current/Voltage Suggested

| Input Current (mA) | Operating Voltage (V) | Condition |
|---|---|---|
| 1.0 | 5 | -- |

● ELECTRICAL CHARACTERISTICS

| | | |
|---|---|---|
| 1. | Contact Rating | 10mA, 5VDC |
| 2. | Contact Resistance | 10Ω max. |
| 3. | Operation Diagram | Refer to Fig. 1 |
| 4. | Insulation Resistance | 50MΩ min. at 100VDC |
| 5. | Dielectric Strength | 50VDC min. for 1 minute |
| 6. | Capacitance | 5pF max. |
| 7 | Conductive Rate | 85% min. |

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|---|---|---|---|---|---|
| Page | 4 of 8 | | Publish Date | Jun. 21, 2018 | |

## ● RELIABLE TEST ITEMS

Reliable Test for RBS020902T

| | Test Item | Contents |
|---|---|---|
| 1 | IR Reflow | Peak temp.=255~260℃ |
| 2 | Operating Temperature | -25℃ ~ 85℃ |
| 3 | Storage Temperature | -40℃ ~ 85℃ |
| 4 | Humidity | 40 ℃ / 95 %RH |
| 5 | Mechanical Life | 2 Hz, horizontal<br>1,000,000 times |
| 6 | Electrical Life | 100,000 times |

## ● SOLDERING CONDITION

Following soldering conditions are for reference only, please use soldering information that solder paste manufacturer recommends.

| Condition / Suitable Production Process | Soldering Temperature | Soldering Time | Wattage of Manual Soldering | Type |
|---|---|---|---|---|
| IR Reflow | Please refer to following < Table of classification Reflow profile > and Fig. 2 | | - | SMD |
| Manual Soldering | 300±5℃ | < 3 seconds max. | 30W or Temperature-controlled manual soldering | SMD |

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|---|---|---|---|---|---|
| Page | 5 of 8 | | Publish Date | Jun. 21, 2018 | |

< Table of classification Reflow profile>

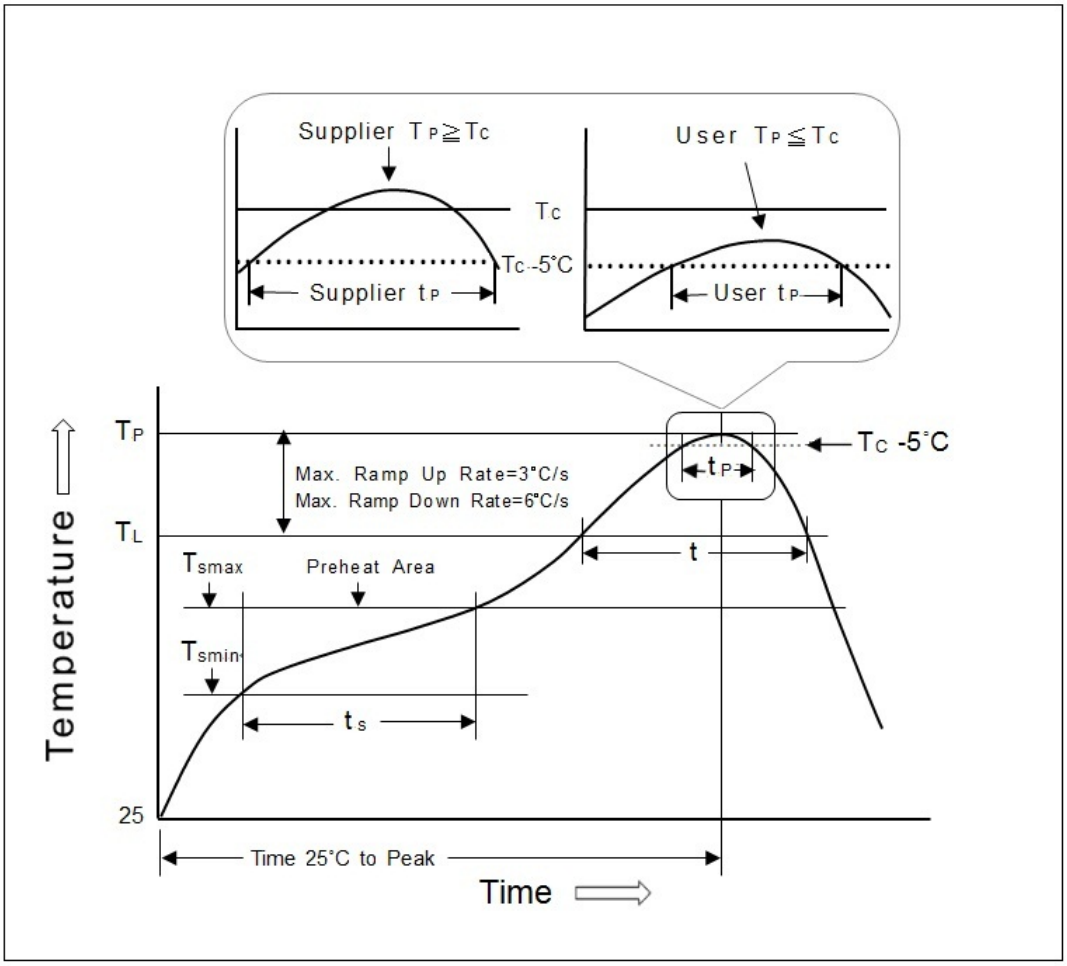
| Item | Pb process | Pb free process |
|---|---|---|
| Pre-heat and Soak<br>Temperature min.(Tsmin)<br>Temperature max.(Tsmax)<br>Time (Tsmin to Tsmax)(ts) | <br>100 °C<br>150 °C<br>60-120 seconds | <br>150 °C<br>200 °C<br>60-120 seconds |
| Average Rate of temperature rising up (Tsmax to Tp) | 3 °C/second max. | 3 °C/second max. |
| Liquidous Temperature (TL)<br>Time at Liquidous (tL) | 183 °C<br>60-150 seconds | 217 °C<br>60-150 seconds |
| Peak package body Temperature (Tp)* | 230 °C ~235 °C * | 255 °C ~260 °C * |
| Classification temperature(Tc) | 235 °C | 260 °C |
| Time(tp)** within 5 °C of the specified classification temperature (Tc) | 20** seconds | 30** seconds |
| Average ram-down Rate (Tp to Tsmax) | 6 °C/second max. | 6 °C/second max. |
| Time 25 °C to peak temperature | 6 minutes max. | 8 minutes max. |
| * Tolerance for peak profile temperature (Tp) is defined as a supplier minimum and a user maximum.<br>** Tolerance for time at peak profile temperature (tp) is defined as a supplier minimum and a user maximum. | | |

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|---|---|---|---|---|---|
| Page | 6 of 8 | | Publish Date | Jun. 21, 2018 | |

Fig. 2



# Tilt Sensor Switch

| Item No. | RBS020902T | Description | Ball-Contact | Version | 15 |
|---|---|---|---|---|---|
| Page | 7 of 8 | | Publish Date | Jun. 21, 2018 | |

● PACKAGE

| | Part Number | Package | Quantity | Total | Dimension(mm) |
|---|---|---|---|---|---|
| 1. | RBS020902 | PE Bag | 2,000 pcs | 2,000 pcs | 205L*145W |
| | | Inner Box | 10 PE Bags | 20,000 pcs | 348L*191W*85H |
| | | Carton | 3 Boxes | 60,000 pcs | 364L*278W*213H |

※ Package shown as below for reference.



PE bag　　Inner box　　Carton

| | Part Number | Package | Quantity | Total | Dimension(mm) |
|---|---|---|---|---|---|
| 2. | RBS020902T | Tape & reel | 2,500 pcs | 2,500 pcs | φ330*25H |
| | | Inner Box | 2 Reels | 5,000 pcs | 355L*340W*68H |
| | | Carton | 4 Boxes | 20,000 pcs | 373L*358W*309H |

※ Package shown as below for reference.



Tape & reel　　Inner box　　Carton

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| Page | 8 of 8 | | Publish Date | Jun. 21, 2018 | |

## ● NOTES

1. Suggestion for usage: For vibration usage or application, we suggest to add hysteresis for IC; if vibration is heavy, optical type of sensor switch is recommended.
2. For the continued product improvement as one of the company policy, specifications may change or update without notice. The latest information can be obtained through our sales offices. Normally, all products are supplied under our standard conditions.
3. If buyer's products will stay in power supply for a long time which needs very high stability, optical sensor switch is strongly recommended.

## ● PRECAUTIONS FOR USE

1. If the products is intended to be used for other endurance equipment requiring higher safety and reliability such as life support system, space and aviation devices, disaster and safety system, it's necessary to make verification of conformity or contact us for the details before using.
2. Do not try to clean the switch with a solvent or similar substance after the soldering process.
3. Use water-soluble flux may damage the switch.
4. Please follow the soldering instruction accordingly, otherwise might lead to defective.
5. Do not use switch in the environment of high humidity, because such an environment may cause the leakage current between the terminals.
6. Please do not exceed the rated load as there will be a risk of disabling the product function.
7. In the circuit, switch should not be near or directly connected with the magnetic component solder joints (for example: relays, transformers, etc.).
8. Complete welding within 168 hours after unpacking, to avoid products humid which caused by prolonged exposure.

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