

SENSOR SWITCH

Item #	RBS07 Series	Description	TILT SWITCH	Version	V101.5
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● FUNCTIONS

1. 45° Tilt Detecting within a 360° radius
2. Up-Side Down Detecting



● APPLICATIONS

1. Automatically shut off for home appliances
2. Wake up systems for power saving, such like remote controllers
3. Anti-theft / Anti-tamper devices
4. Rotation Detection for monitor
5. Alarm system
6. Automatically shut off for Sporting equipment
7. Entertainment device: video game consoles, toys

● FEATURES

1. No electricity consumption during detection status.
2. Housing made of high insulation plastic material, free from electric conduction and rust problem.
3. Gold-plated ball and terminals, low possibility of oxidization.
4. All plastic materials subject to industrial purpose, resist high temperature and meet fireproof function.
5. Simple ON and OFF signals, easy for design.
6. RoHS compliance, an ideal substitute for mercury switch.
7. A more economical tilt and rotation detection option than IC design solution.
8. Item RBS070501 and RBS070601 are resistant to magnetization.
9. Switch state : Normal close.



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● PATENTS

1. Taiwan Patent No. 184124
2. Taiwan Patent No. M 437246
3. Japan Patent No. 3148127 (RBS070311)
4. U.S.A. Patent No. US 6,518,523 B1
5. China Patent No. ZL 01 2 34708.6

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

RBS 07 03 10	Tilt Angle $\theta = 45 \pm 15^\circ$
P.C.B. Layout (DIP) / Top View	Application Circuit



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RBS 07 03 11	Tilt Angle $\theta = 45 \pm 15^\circ$
P.C.B. Layout (DIP) / Top View	Application Circuit



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<p>RBS 07 04 10</p>	<p>Tilt Angle $\theta = 45 \pm 15^\circ$</p> <p>P.C.B.</p>
<p>P.C.B. Layout (DIP) / Top View</p>	<p>Application Circuit</p>



SENSOR SWITCH

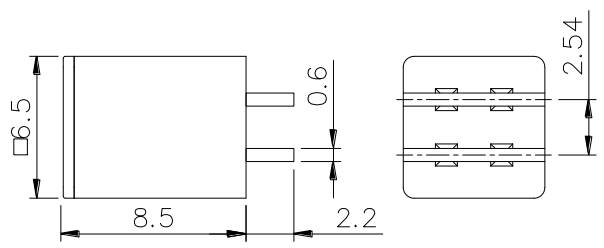
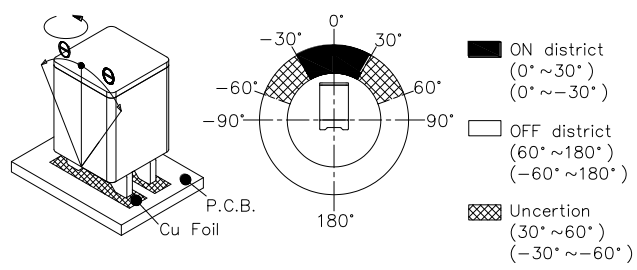
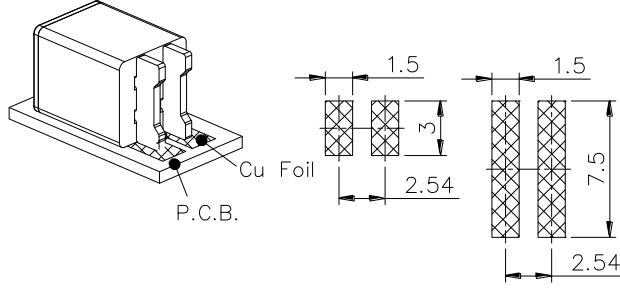
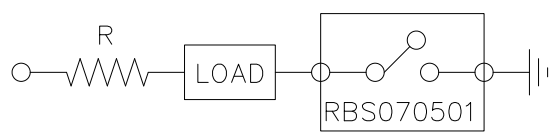
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<p>RBS 07 05 00</p>	<p>Tilt Angle $\theta = 45 \pm 15^\circ$</p>
<p>P.C.B. Layout (DIP) / Top View</p>	<p>Application Circuit</p>



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<p>RBS 07 05 01</p>	<p>Tilt Angle $\theta=45\pm 15^\circ$</p>
	
<p>P.C.B. Layout (SMT) / Top View</p>	<p>Application Circuit</p>
	



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<p>RBS 07 06 00</p>	<p>Tilt Angle $\theta = 45 \pm 15^\circ$</p> <p> ON district (0° ~ 30°) (0° ~ -30°) OFF district (60° ~ 180°) (-60° ~ -180°) Uncertion (30° ~ 60°) (-30° ~ -60°) </p>
<p>P.C.B. Layout (DIP) / Top View</p>	<p>Application Circuit</p>



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RBS 07 06 01	Tilt Angle $\theta = 45 \pm 15^\circ$
P.C.B. Layout (DIP) / Top View	Application Circuit

● Current/Voltage Suggested

Input Current (mA)	Operating Voltage (V)	Condition
10	5	--

● ELECTRICAL CHARACTERISTICS

1.	Contact Rating	10mA, 5VDC
2.	Contact Resistance	10Ω max.
3.	Differential Angle	Refer to above illustration
4.	Insulation Resistance	50 MΩ min. at 100VDC
5.	Dielectric Strength	50 VDC min. for 1 minute
6.	Capacitance	5pF max.



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● RELIABLE TEST ITEMS

Test Item	Standard	Contents
Storage Temperature	MIL-STD-202G, TEST METHOD 107G, TEST A	-40°C ~85°C
IR Reflow	MIL-STD-202G, TEST METHOD 210F、 IPC/JEDEC J-STD-020D	Peak temp.=255~260°C *3times
Humidity	MIL-STD-202G, TEST METHOD 103B	40°C/95%RH
Operating Temperature	MIL-STD-202G, TEST METHOD 107G, TEST A	-25°C ~85°C
Mechanical Life	--	2 Hz horizontal 1,000,000 times
Electrical Life	--	100,000 times
Pull Force of Terminal	--	500 GF · 1 minutes



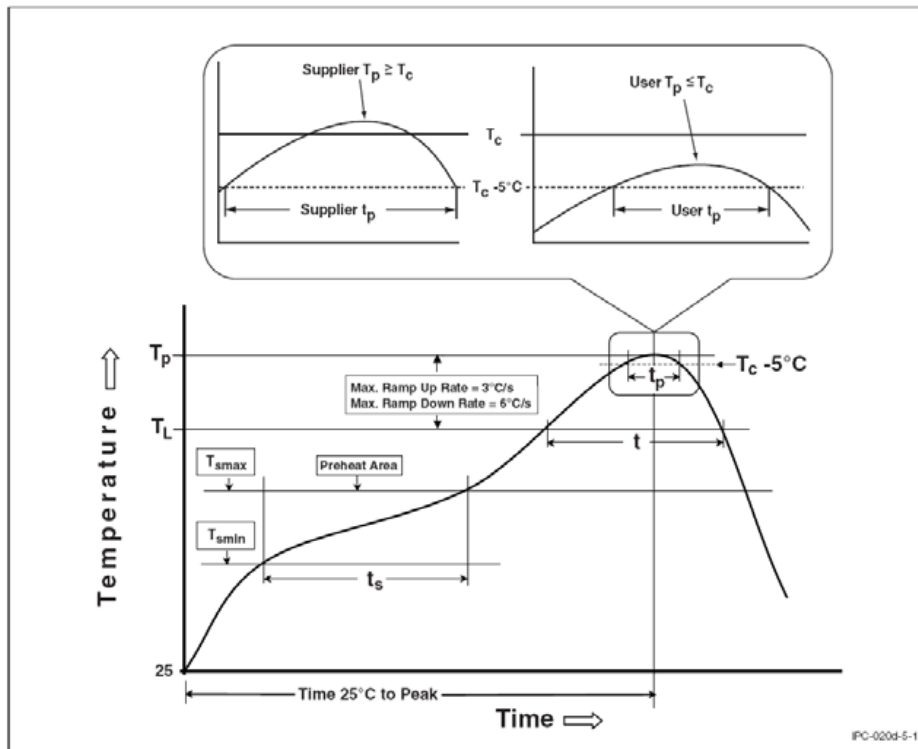
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● SOLDERING CONDITION

This information is applied to SMT type.

Following profile is for reference only. Please use solder paste that solder paste manufacturer recommends.



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< Table of classification Reflow profile >

Item	Pb process	Pb free process
Pre-heat and Soak Temperature min.(T _{smin}) Temperature max.(T _{smax}) Time (T _{smin} to T _{smax})(ts)	100 °C 150 °C 60-120 seconds	150 °C 200 °C 60-120 seconds
Average ram-up Rate (T _{smax} to T _p)	3 °C/second max.	3 °C/second max.
Liquidous Temperature (TL) Time at Liquidous (tL)	183 °C 60-150 seconds	217 °C 60-150 seconds
Peak package body Temperature (T _p)*	230 °C ~235 °C *	255 °C ~260 °C *
Classification temperature(T _c)	235 °C	260 °C
Time(tp)** within 5 °C of the specified classification temperature (T _c)	20** seconds	30** seconds
Average ram-down Rate (T _p to T _{smax})	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 (T _p) is defined as a supplier minimum and a user maximum. ** Tolerance for time at peak profile temperature (tp) is defined as a supplier minimum and a user maximum.		



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Applicable to DIP Type

● Soldering Temperature and time

Condition / Operation Method	Soldering Temperature	Soldering Time
Wave Soldering	260±5°C	<5 seconds Max
Manual Soldering	290±5°C	<5 seconds Max

● PACKAGE

	Part Number	Package	Quantity	Total	Size(mm)
1.	RBS070310 RBS070311	PE Bag	500 pcs	500 pcs	205L*145W
		Inner Box	10 PE Bags	5,000 pcs	348L*191W*85H
		Carton	3 Boxes	15,000 pcs	364L*278W*213H
2.	RBS070410	PE Bag	500 pcs	500 pcs	205L*145W
		Inner Box	8 PE Bags	4,000 pcs	348L*191W*85H
		Carton	3 Boxes	12,000 pcs	364L*278W*213H
3.	RBS070500 RBS070501	PE Bag	500 pcs	500 pcs	205L*145W
		Inner Box	8 PE Bags	4,000 pcs	348L*191W*85H
		Carton	3 Boxes	12,000 pcs	364L*278W*213H
4.	RBS070600 RBS070601	PE Bag	500 pcs	500 pcs	205L*145W
		Inner Box	8 PE Bags	4,000 pcs	348L*191W*85H
		Carton	3 Boxes	12,000 pcs	364L*278W*213H

※ Package shown as below for reference.



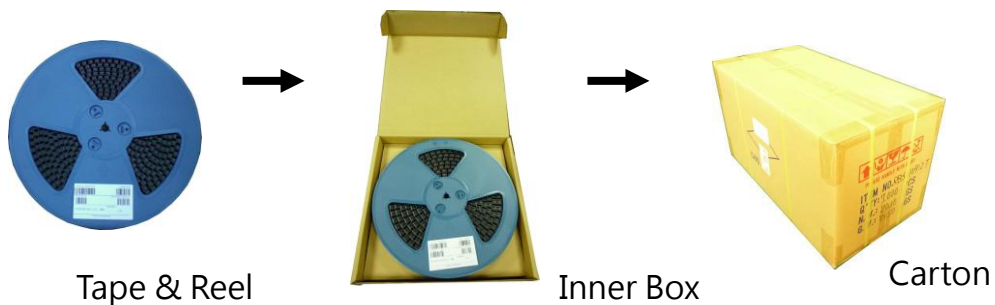
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	Part Number	Package	Quantity	Total	Size(mm)
1.	RBS070500T RBS070501T	Tape & Reel	800 pcs	800 pcs	φ330*25H
		Inner Box	2 Reels	1,600 pcs	355L*340W*68H
		Carton	10 Boxes	16,000 pcs	705L*365W*375H

	Part Number	Package	Quantity	Total	Size(mm)
1.	RBS070500T1 RBS070501T1	Tape & Reel	400 pcs	400 pcs	φ330*25H
		Inner Box	2 Reels	8,00 pcs	355L*340W*68H
		Carton	10 Boxes	8,000 pcs	705L*365W*375H

※ Package shown as below for reference.



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● NOTE

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. Do not use switch in the environment of high humidity · because such an environment may cause the leakage current between the terminals.
5. More than the rated load may cause fire, so do not use more than the load.
6. In the circuit · switch should not be near or directly connected with the magnetic component solder joints (for example: relays, transformers, etc.).

