

SENSOR SWITCH

Item No.	RBS130200	Description	TILT SWITCH	Version	10
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● **FUNCTIONS**

1. Rotation detecting for horizontal PCB.
2. Vibration detecting for vertical PCB.

● **APPLICATIONS**

1. Rotation Detection for LCD monitor
2. Alarm system
3. Wake up systems for power saving,
such like remote controllers
4. Automatically power off for Sporting equipment
5. Toys · Entertainment devices



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● FEATURES

1. PCB direction for applications:
 - Suitable for horizontal PCB : Rotation detecting.
 - Suitable for vertical PCB : Vibration detecting.
2. Switch State:
 - Rotation detection : Normal close.
 - Vibration detection :
RBS130200 acts like a normally close switch which chatters open and close as it is tilted or vibrated. Note that the RBS130200 is not guaranteed to be close --- occasionally the sensing mechanism may remain close when at rest. The engineer should design his or her software to look for high-to-low and low-to-high edge transitions rather than an open or closed state of the switch.
3. Gold-plated ball and terminals, low possibility of oxidization.
4. Housing made of high insulation plastic material, free from electric conduction and rust problem.
5. All plastic materials subject to industrial purpose, resist high temperature and meet fireproof function.
6. Simple ON and OFF signals, easy for design.
7. RoHS compliance, an ideal substitute for mercury switch.
8. A more economical tilt and rotation detection option than IC design solution.
9. All made in Taiwan and examined before shipment.



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● PATENTS

1. TAIWAN Patent No. I 261280
2. U.S.A. Patent No. US 7,473,857 B2
3. U.S.A. Patent No. US 7,256,360 B1
4. CHINA Patent No. ZL 200610078234.3
5. CHINA Patent No. 201220308500.8

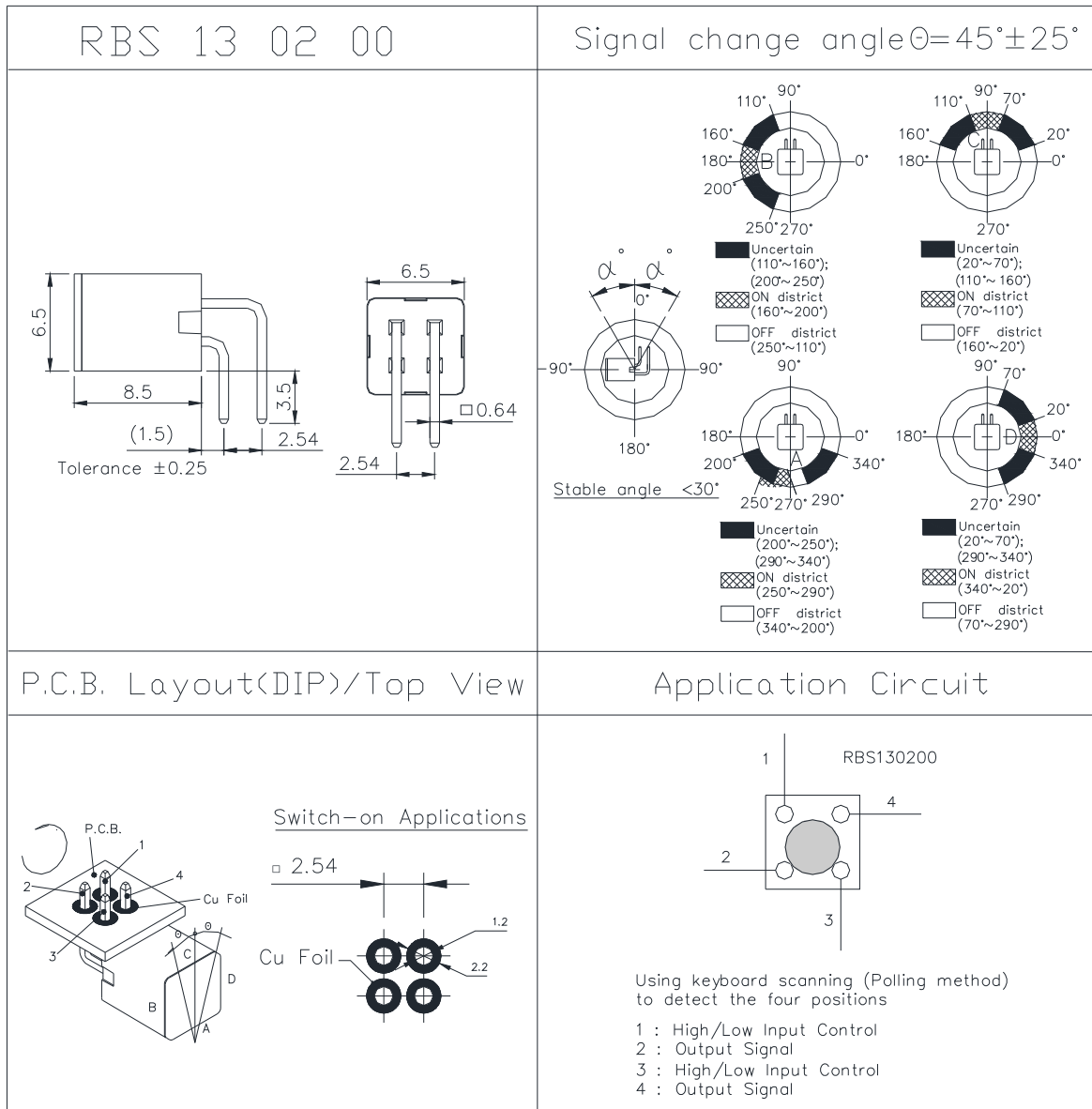


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● DIMENSIONS / OPERATION / P.C.B. LAYOUT (Unit: mm, Tolerance: ±0.25mm)

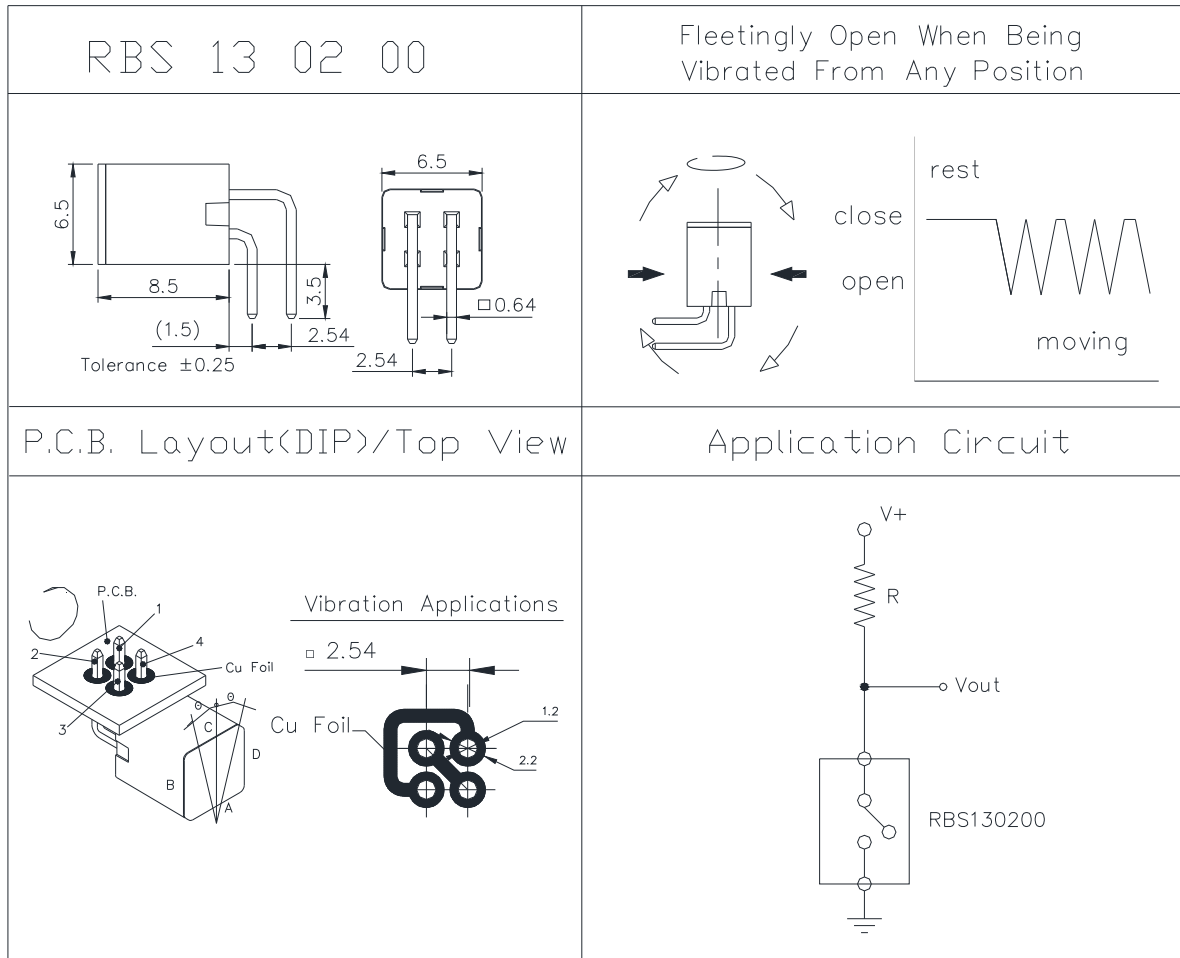
Fig. 1



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Fig. 2



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● Current/Voltage Suggested

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

● ELECTRICAL CHARACTERISTICS

1	Contact Rating	10 mA · 5 VDC
2	Contact Resistance (For rotation detection only)	10 Ω max.
3	Differential Angle	Refer to Fig. 1
4	Insulation Resistance	1000 MΩ min. · 100 VDC
5	Dielectric Strength	500 VDC min. · 1 minute
6	Capacitance	5 pF max.
7	Conductive Rate	96% min.



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● RELIABLE TEST ITEMS

Test Item	Standard	Test Content
IR Reflow	--	--
Operation Temperature	MIL-STD-202G, TEST METHOD 107G, TEST A	-25 °C ~ 85 °C
Storage Temperature	MIL-STD-202G, TEST METHOD 107G, TEST A	-40 °C ~ 85 °C
Humidity	MIL-STD-202G, TEST METHOD 103B	40 °C/95 %RH
Mechanical Life	--	2 Hz, horizontal 1,000,000 times
Electrical Life	--	100,000 times



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● **SOLDERING CONDITION**

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

Condition Operation Method	Soldering Temperature	Soldering Time	Wattage of Manual Soldering	Suitable Production Process
IR Reflow	Please refer to following < Table of classification Reflow profile > and Fig. 3		-	SMT
Wave Soldering	260±5°C	< 5 seconds max.	-	DIP
Manual Soldering	260±5°C	< 5 seconds max.	20W or Temperature-controlled manual soldering	DIP、SMT



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< Table of classification Reflow profile >

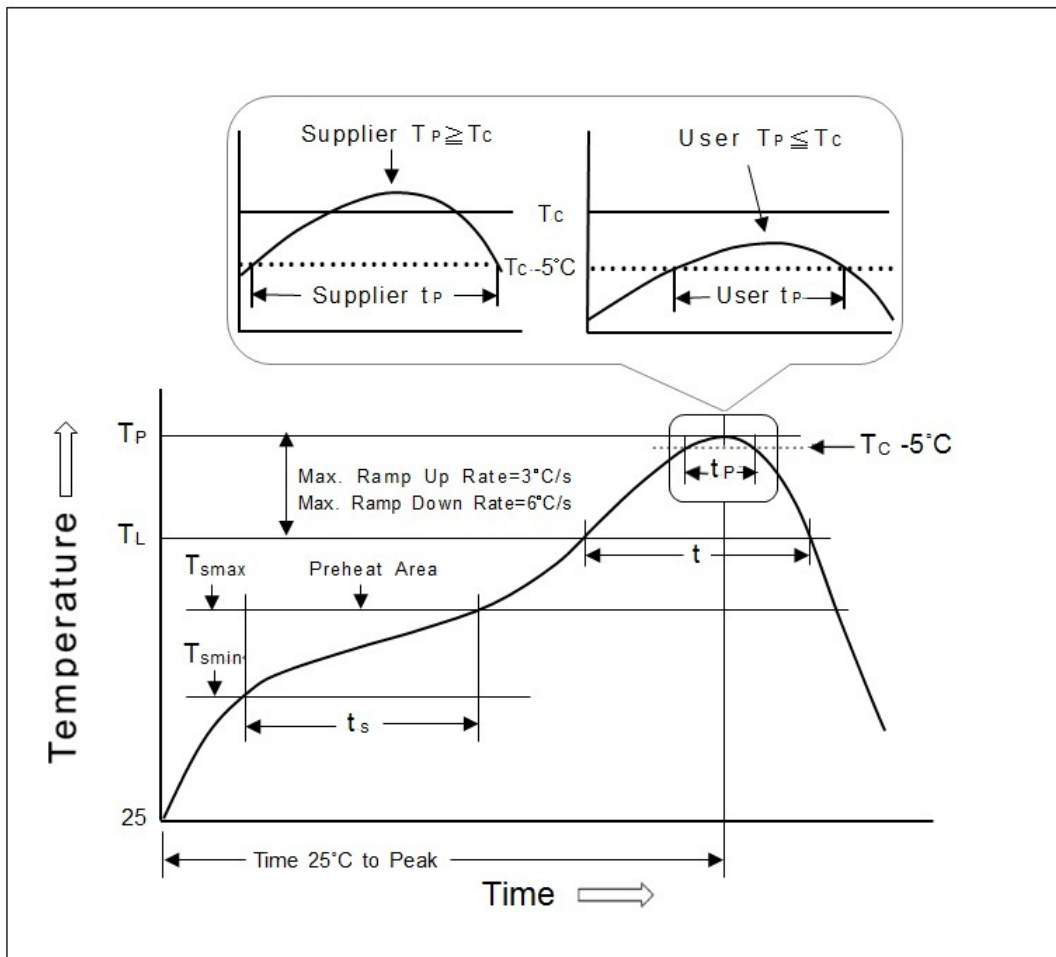
Item	Pb process	Pb free process
Pre-heat and Soak Temperature min.(T _{min}) Temperature max.(T _{max}) Time (T _{min} to T _{max})(t _s)	100 °C 150 °C 60-120 seconds	150 °C 200 °C 60-120 seconds
Average Rate of temperature rising up (T _{max} to T _p)	3 °C/second max.	3 °C/second max.
Liquidous Temperature (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 _{max})	6 °C/second max.	6 °C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.
<p>* 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.</p>		



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Fig. 3



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● PACKAGE

	Part Number	Package	Quantity	Total	Size(mm)
1.	RBS130200	PE Bag	500 pcs	500 pcs	180L*130W
		Inner Box	8 PE Bag	4,000 pcs	348L*191W*85H
		Carton	3 Boxes	12,000 pcs	364L*278W*213H

※ Package shown as below for reference.



PE Bag



Inner Box



Carton



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

