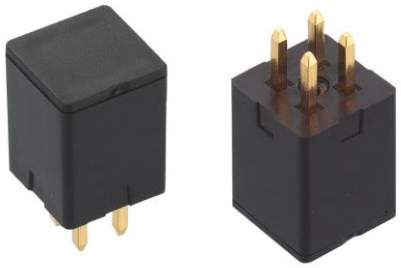
Tilt Sensor Switch

Item No.	RBS130100	Description	Ball-Contact	Version	11
Page	1 of 9		Publish Date	Jul. 03, 2018	

● FUNCTIONS

1. Rotation detecting for vertical PCB.
2. Vibration detecting for horizontal 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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Item No.	RBS130100	Description	Ball-Contact	Version	11
Page	2 of 9		Publish Date	Jul. 03, 2018	

● FEATURES

1. PCB direction for applications
   - ■ Suitable for horizontal PCB: Vibration detecting.
   - ■ Suitable for vertical PCB: Rotation detecting.
2. Switch State:
   - ■ Rotation detection: DIP Normal close.
   - ■ Vibration detection:

     RBS130100 acts like a normally close switch which chatters open and close as it is tilted or vibrated. Note that the RBS130100 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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Item No.	RBS130100	Description	Ball-Contact	Version	11
Page	3 of 9		Publish Date	Jul. 03, 2018	

● 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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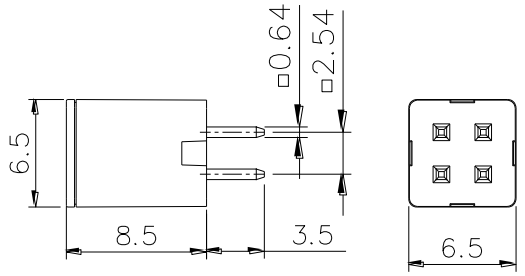
Item No.	RBS130100	Description	Ball-Contact	Version	11
Page	4 of 9		Publish Date	Jul. 03, 2018	

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

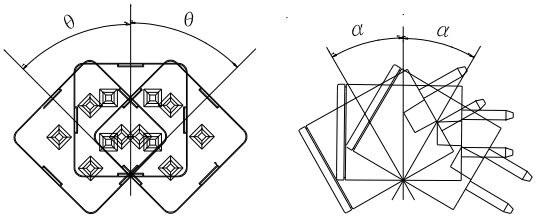
Fig. 1

RBS 13 01 00



Operation Diagram

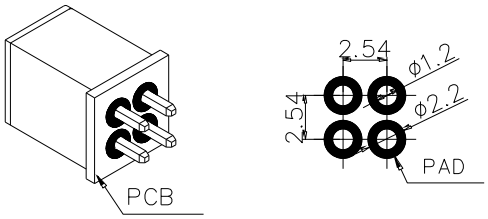
[Tilt Angle : 45°±25°]



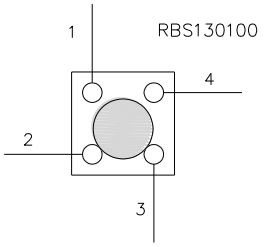
Signal change angle
$\theta = 45° \pm 25°$

Unstable angle
$\alpha > 30°$

P.C.B. Layout(DIP)/Top View



Application Circuit



Using keyboard scanning (Polling method)
to detect the four positions

1 : High/Low Input Control
2 : Output Signal
3 : High/Low Input Control
4 : Output Signal

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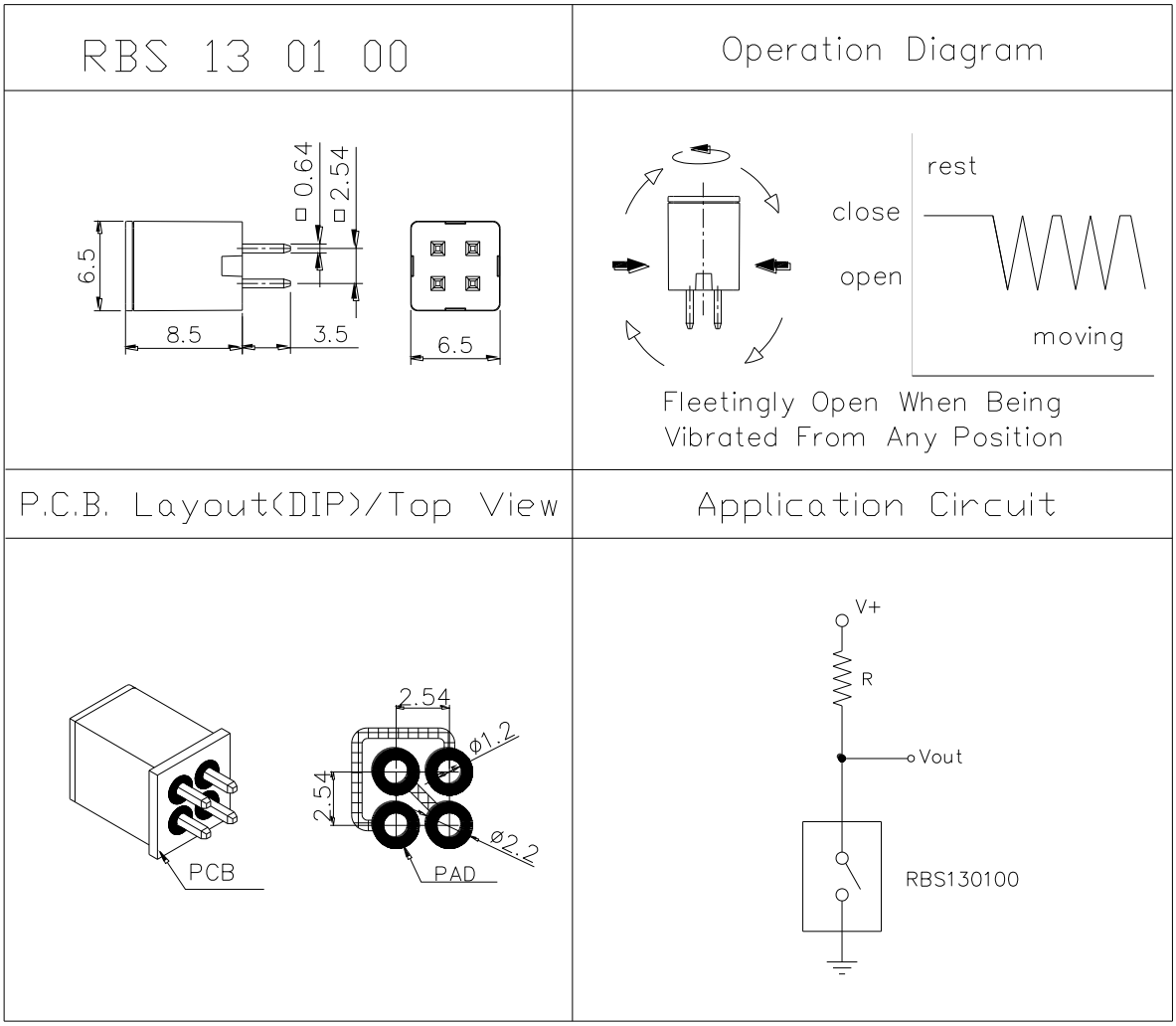
Tilt Sensor Switch

Item No.	RBS130100	Description	Ball-Contact	Version	11
Page	5 of 9		Publish Date	Jul. 03, 2018	

Fig. 2



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Item No.	RBS130100	Description	Ball-Contact	Version	11
Page	6 of 9		Publish Date	Jul. 03, 2018	

● 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	Operation Diagram	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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Item No.	RBS130100	Description	Ball-Contact	Version	11
Page	7 of 9		Publish Date	Jul. 03, 2018	

● RELIABLE TEST ITEMS

Reliable Test for RBS130100

	Test Item	Test Content
1	Operation Temperature	-25°C ~ 85°C
2	Storage Temperature	-40°C ~ 85°C
3	Humidity	40 °C / 95 %RH
4	Mechanical Life	2 Hz, horizontal 1,000,000 times
5	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
Wave Soldering	260±5°C	< 5 seconds max.	-	DIP
Manual Soldering	300±5°C	< 3 seconds max.	30W or Temperature-controlled manual soldering	DIP

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Item No.	RBS130100	Description	Ball-Contact	Version	11
Page	8 of 9		Publish Date	Jul. 03, 2018	

● PACKAGE

	Part Number	Package	Quantity	Total	Dimension (mm)
1.	RBS130100	PE Bag	500 pcs	500 pcs	205L*145W
		Inner Box	10PE Bags	5,000 pcs	348L*191W*85H
		Carton	3 Boxes	15,000 pcs	364L*278W*213H

※ Package shown as below for reference.

PE Bag

Inner Box

Carton

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Item No.	RBS130100	Description	Ball-Contact	Version	11
Page	9 of 9		Publish Date	Jul. 03, 2018	

● 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. 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.).

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