SENSOR SWITCH

Item.#	VBS0307 Series	Description	VIBRATION SWITCH	Version	V101.0
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● FUNCTIONS

Omni-directional Vibration Detecting

VBS030700

● APPLICATIONS

1. Wake up systems for power saving, such as remote controls.
2. GPS starting system
3. Alarm system
4. Anti-theft、Anti-tampered devices.
5. Automatically flashing for bike lamp
6. Subsidiary night lamp flashing for car
7. RFID
8. Outsole of sporting shoes flashing
9. Toys

● FEATURES

1. Tiny size, suitable for small space.
2. Gold-plated ball and terminals, low possibility of oxidization.
3. All plastic materials subject to industrial purpose, resist high temperature and meet fireproof function.
4. Simple ON and OFF signals, easy for design.
5. RoHS compliance, an ideal substitute for mercury switch.
6. A more economical vibration detection option than IC design solution.
7. Wing-shaped terminals, half body of the sensor switch can be buried into PCB to save required room for installation.
8. Contact state: Normal Close.

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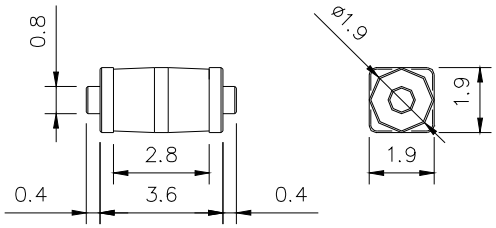
- PATENTS

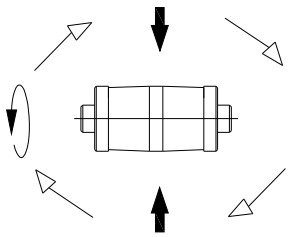
1. TAIWAN Patent No. 321798
2. TAIWAN Patent No. 204790
3. U.S.A. Patent No. US 6,706,979 B1
4. U.S.A. Patent No. US 7,465,893 B2
5. U.S.A. Patent No. US 2008/0078660 A1
6. CHINA Patent No. ZL 03 2 44812.0

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

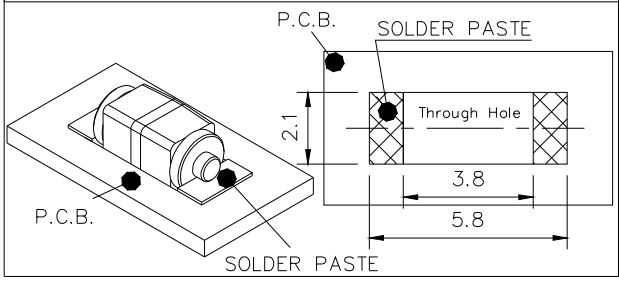
VBS 03 07 00



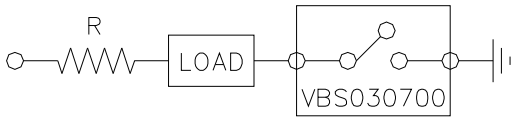
Fleetingly Open When Being Vibrated From Any Position



P.C.B. Layout (SMT) / Installation



Application Circuit



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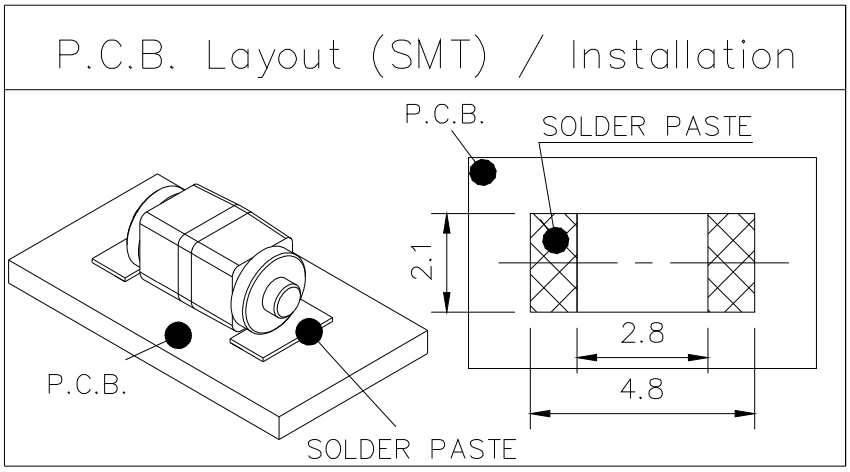

● Current/Voltage Suggested

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

● ELECTRICAL CHARACTERISTICS

1.	Contact Rating	10mA, 5VDC
2	Contact Resistance	10 Ω max.
3	Angle Tolerance	--
4.	Insulation Resistance	1,000MΩ min. at 100VDC
5.	Dielectric Strength	500VDC min. for 1 minute
6.	Capacitance	5pF max.

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● RELIABLE TEST ITEMS

Test Item	Standard	Test Contents
Reflow Oven	MIL-STD-202G, TEST METHOD 210F、IPC/JEDEC J-STD-020D	Peak temp.=255~260℃*3 times
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 ℃ ~ 85 ℃
Humidity	MIL-STD-202G, TEST METHOD 103B	40 ℃/95 %RH
Mechanical Life	--	2 Hz horizontal/1,000,000 times
Electrical Life	--	100,000 times
Pull Force of Terminals	--	500 GF，1 minutes

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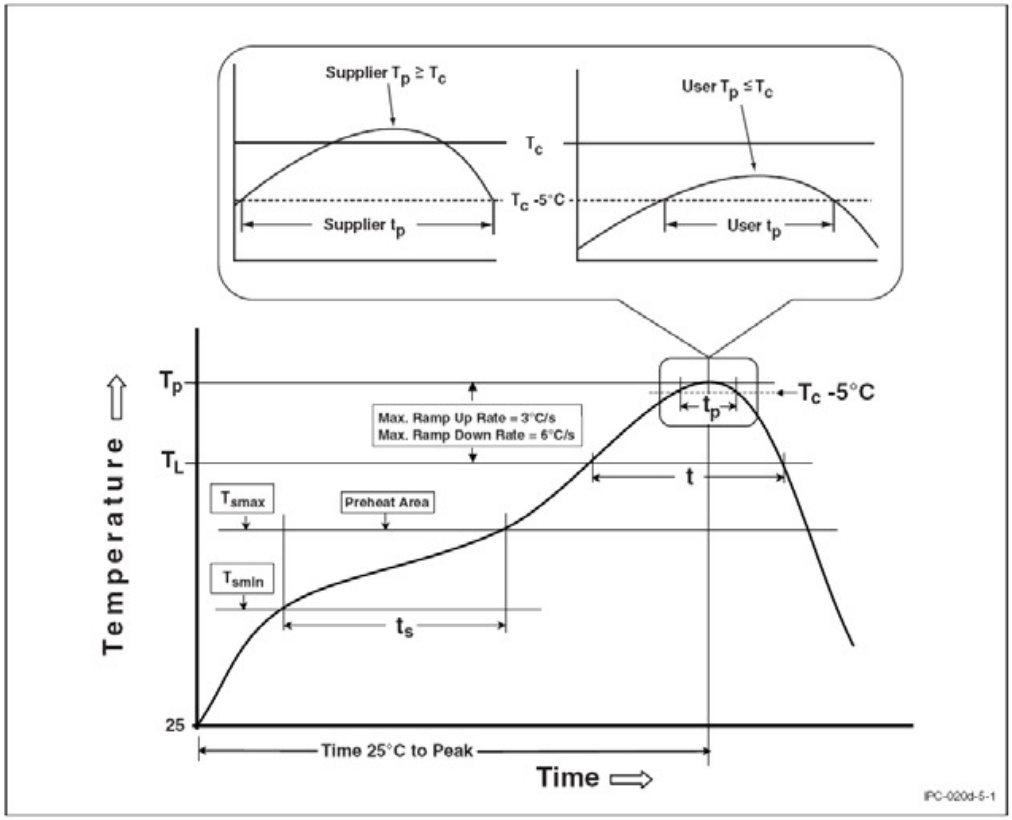
● IR REFLOW REFERENCE PROFILE

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.(Tsmin) Temperature max.(Tsmax) Time (Tsmin to Tsmax)(ts)	 100 ℃ 150 ℃ 60-120 seconds	 150 ℃ 200 ℃ 60-120 seconds
Average ram-up Rate (Tsmax to Tp)	3 ℃/second max.	3 ℃/second max.
Liquidous Temperature (TL) Time at Liquidous (tL)	183 ℃ 60-150 seconds	217 ℃ 60-150 seconds
Peak package body Temperature (Tp)*	230 ℃ ~235 ℃ *	255 ℃ ~260 ℃ *
Classification temperature(Tc)	235 ℃	260 ℃
Time(tp)** within 5 ℃ of the specified classification temperature (Tc)	20** seconds	30** seconds
Average ram-down Rate (Tp toTsmax)	6 ℃/second max.	6 ℃/second max.
Time 25 ℃ 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. ** Tolerance for time at peak profile temperature (tp) is defined as a supplier minimum and a user maximum.		

● Soldering Temperature and time

Condition / Operation Method	Soldering Temperature	Soldering Time
Wave Soldering	260±5℃	<5 sec. Max
Manual Soldering	290±5℃	<5 sec. Max

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● PACKAGE

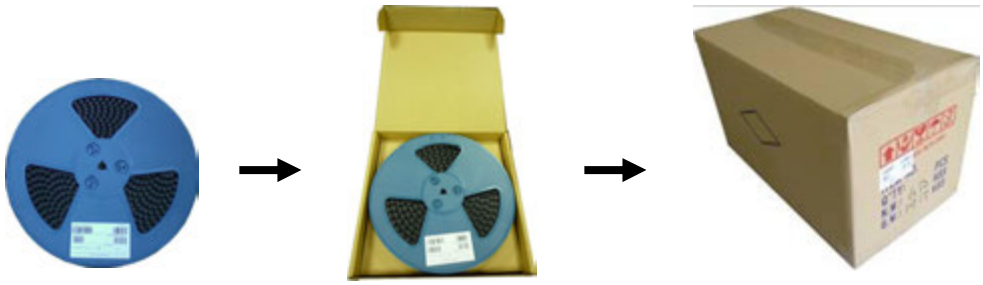
	Part Number	Package	Quantity	Total Q'ty	Size (mm)
1.	VBS030700	PE Bag	1,000 pcs	1,000 pcs	205L*145W
		Inner Box	10 PE bags	10,000 pcs	348L*191W*85H
		Carton	3 Boxes	30,000 pcs	364L*278W*213H

※ Package 1 shown as below for reference.

PE Bag　　Inner box　　Carton

	Part Number	Package	Quantity	Total Q'ty	Size (mm)
2.	VBS030700T	Tape & Reel	2,000 pcs	2,000 pcs	φ330*25H
		Inner Box	3 reels	6,000 pcs	355L*340W*68H
		Carton	10 boxes	60,000 pcs	705L*365W*375H

※ Package 2 shown as below for reference.



Tape & reel　　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 product 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.).