Tilt Sensor Switch

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FUNCTION

1. Tilt Angles: 15° within a 360° radius.
2. Suitable for horizontal PCB.
3. Vibration Detecting

APPLICATIONS

1. Automatically shut off for home appliances
2. Automatically shut off for Sporting equipment
3. Alarm system
4. Anti-theft / Anti-tamper devices
5. Being motion detection (personal locator)
6. Wake up systems for power saving, such like remote controllers
7. Automatically shut off for motorbike tilt
8. Earthquake Detecting

FEATURES

1. Housing made of high insulation plastic material, free from electric conduction and rust problem.
2. Detecting with photo transistors, generating highly reliable and stable signals.
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 tilt and vibration detection option than IC design solution.
7. All made in Taiwan and examined before shipment.

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● PATENTS

1. Taiwan Patent No. I 310952
2. Taiwan Patent No. M 450817
3. Japan Patent No. 4384217
4. Japan Patent No. 3148127
5. U.S.A. Patent No. US 6,800,841 B1
6. U.S.A. Patent No. US 7,402,791 B2
7. China Patent No. ZL 200610083013.5
8. China Patent No. ZL 200820126206.9
9. China Patent No. ZL 201220539712.7

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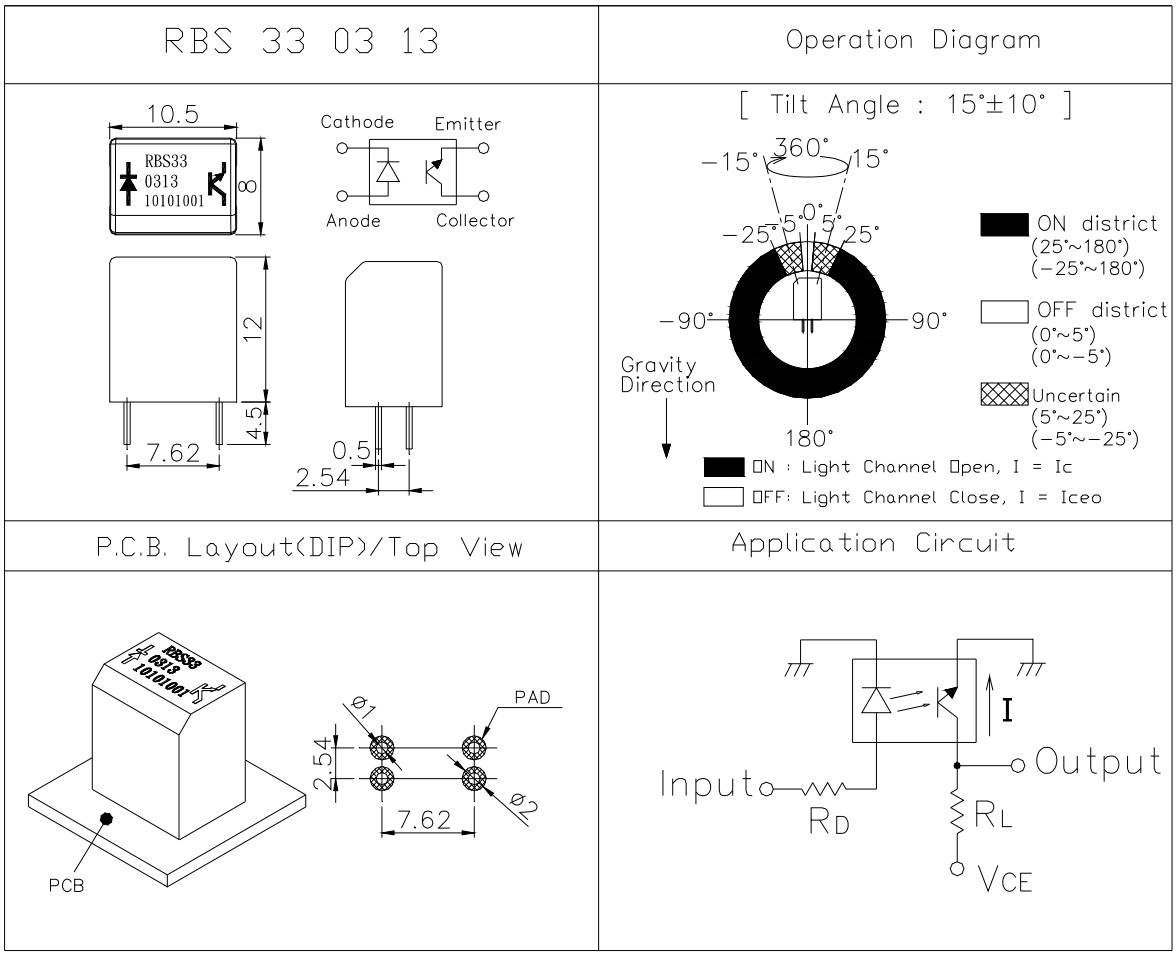
● DIMENSIONS / OPERATION / P.C.B. LAYOUT (Unit: mm, Tolerance: ±0.25mm)

Fig. 1



● Current/Voltage Suggested

Input Current (mA)	Operating Voltage (V)	Condition
10	3.3	V_{CE}=3.3V R_D=200 ohm R_L=100K ohm
10	5	V_{CE}=5V R_D=390 ohm R_L=100K ohm

* Please refer to above Application Circuit for designing electrical circuit.

● Absolute Maximum Rating （Ta=25°C）

Item		Symbol	Rating	Unit
Input	Power Dissipation	Pd	75	mW
	Reverse Voltage	V_R	5	V
	Forward Current	I_F	50	mA
	Peak Forward Current (*1)	I_{FP}	1	A
Output	Collector Power Dissipation	P_C	100	mW
	Collector Current	I_C	20	mA
	C-E Voltage	V_{CEO}	30	V
	E-C Voltage	V_{ECO}	5	V
Operating Temperature		Topr	-25~+85	°C
Storage Temperature		Tstg	-40~+85	°C
Soldering Temperature (*2)		Tsol	260	°C

(*1) tw=100 uSec.、T=10 mSec.

(*2) Please refer to soldering condition.

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● Electrical Optical Characteristics (Ta=25℃)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	I_F=20mA	-	1.2	1.5	V
Reverse Current	I_R	V_R=5V	-	-	10	μA
Peak Wavelength	λp	I_F=10mA		940		nm
Dark Current	Iceo	V_{CE}=10V	-	-	2	μA
C-E Saturation Voltage	V_{CE} (sat)	I_C=0.25mA I_F=20mA	-	-	0.4	V
Light Current	I_C	V_{CE}=5V I_F=20mA	0.5	5	-	mA
Rise Time	Tr	I_C=0.8mA V_{CC}=30V R_L=1KΩ	-	5	-	μsec
Fall Time	Tf		-	5	-	μsec
Operation Diagram	θ	Fig. 1	5	15	25	°

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● Typical Electrical / Optical Characteristics Curves (Ta=25°C)

Fig.1 Power Dissipation vs. Ambient Temperature

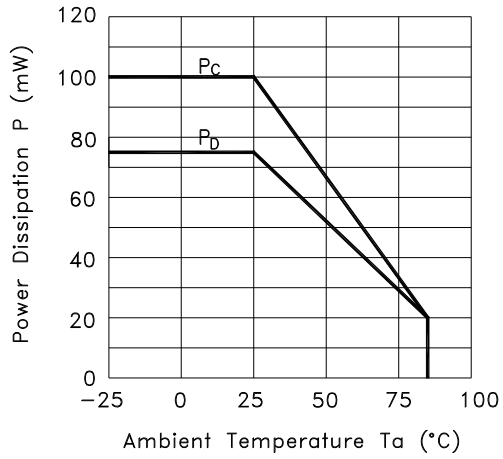

Fig.2 Forward Current vs. Forward Voltage

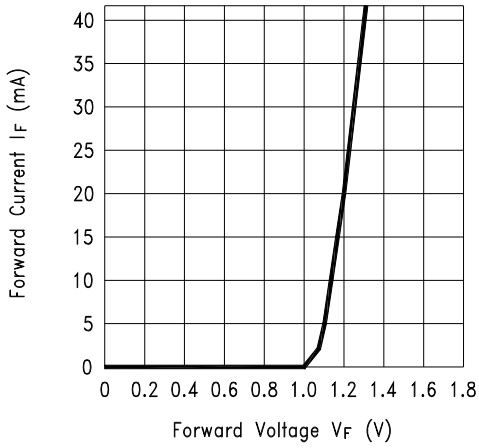

Fig.3 Collector Current vs. Collector−emitter Voltage

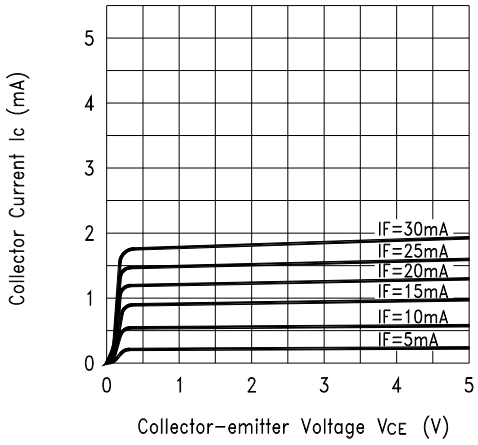

Fig.4 Collector Current vs. Ambient Temperature

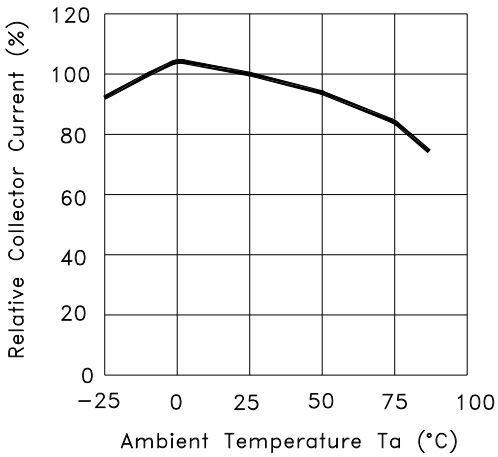

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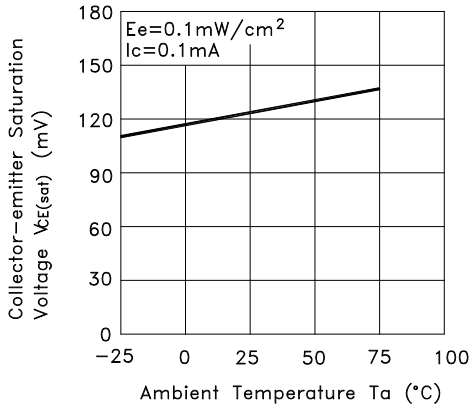
Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature



● RELIABLE TEST ITEMS

Reliable Test for RBS330313

	Test Item	Contents
1	Operating Temperature	-25°C ~ 85°C
2	Storage Temperature	-40°C ~ 85°C
3	Humidity	40 °C / 95 %RH
4	Mechanical Life	2Hz, horizontal 1,000,000 times
5	Electrical Life	I_F=20 mA, V_{CE}=5 V TIME: 30,000 hrs

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● SOLDERING CONDITION

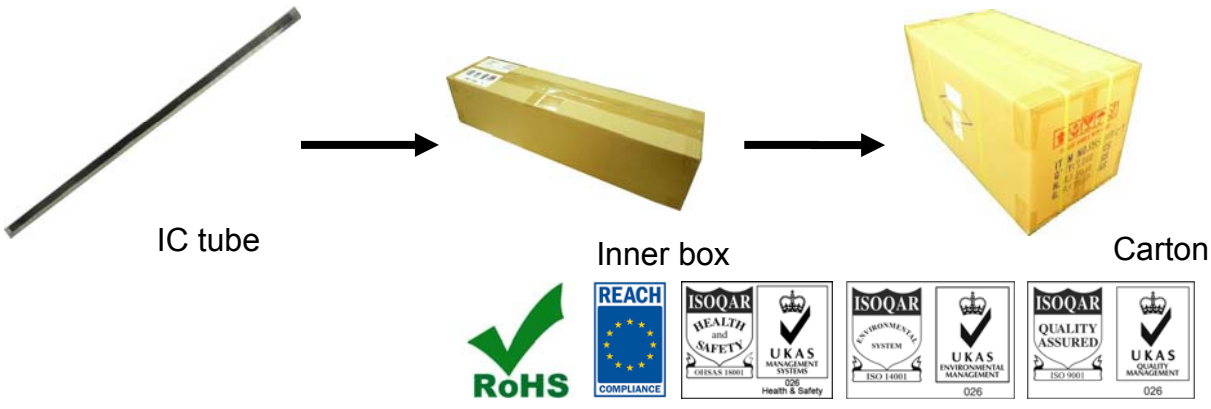
Following soldering conditions are for reference only, please use soldering information that solder paste manufacturer recommends.

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

● PACKAGE

	Part Number	Package	Quantity	Total	Dimension
1.	RBS330313	IC tube	48 pcs	48 pcs	525L*10W*17.5H
		Inner box	72 tubes	3,456 pcs	539L*130W*130H
		Carton	4 boxes	13,824 pcs	551L*285W*288H

※ Package shown as below for reference.



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