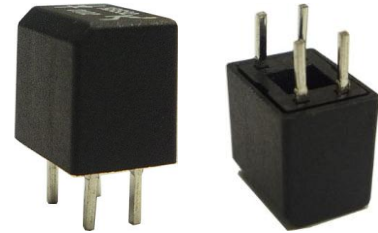


SENSOR SWITCH

Item.#	RBS3201 Series	Description	TILT SWITCH	Version	V101.5
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● FUNCTIONS

1. One way tilt detection
2. Upside down detection
3. Rotation detection in vertical position



● APPLICATIONS

1. Rotation Detection for LCD monitor
2. Position Detection for Iron
3. Wireless mouse
4. Anti-theft for motorbike

● 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, complete replacement of mercury switch.
6. A more economical tilt and vibration detection option than IC design solution.
7. Made in Taiwan and examined before shipment.



SENSOR SWITCH

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● PATENTS

1. TAIWAN Patent NO. I 321332
2. U.S.A. Patent NO. US 7,485,818 B2
3. CHINA Patent NO. ZL 200610078607.7

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

<p>RBS 32 01 00</p>	<p>Operation Angle</p>
<p>P.C.B. Layout<DIP>/Top View</p>	<p>Application Circuit</p> <ol style="list-style-type: none"> 1. Vce=5V 2. RD=430ohm 3. RL=33Kohm



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<p>RBS 32 01 02</p>	<p>Operation Angle</p>
<p>P.C.B. Layout<DIP>/Top View</p>	<p>Application Circuit</p>



SENSOR SWITCH

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<p>RBS 32 01 03</p>	<p>Operation Angle</p> <ul style="list-style-type: none"> Hi district (40°~180°) (-40°~180°) Lo district (0°~10°) (0°~-10°) Uncertion (20°~40°) (-20°~-40°)
<p>P.C.B. Layout(DIP)/Top View</p>	<p>Application Circuit</p> <ul style="list-style-type: none"> 1. Vce=5V 2. RD=430ohm 3. RL=33Kohm



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<p>RBS 32 01 10</p>	<p>Operation Angle</p>
<p>P.C.B. Layout(DIP)/Top View</p>	<p>Application Circuit</p>



SENSOR SWITCH

Item.#	RBS3201 Series	Description	TILT SWITCH	Version	V101.5
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● Current/Voltage Suggested

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

● Absolute Maximum Rating (Ta=25°C)

Item		Symbol	Rating	Unit
Input	Power Dissipation	Pd	75	mW
	Reverse Voltage	Vr	5	V
	Forward Current	I _F	50	mA
	Peak Forward Current (*1)	I _{FP}	1	A
Output	Collector Power Dissipation	Pc	100	mW
	Collector Current	Ic	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~+100	°C
Soldering Temperature (*2)		Tsol	260	°C

(*1) tw=100 uSec. ∙ T=10 mSec.

(*2) t=5 Sec



SENSOR SWITCH

Item.#	RBS3201 Series	Description	TILT SWITCH	Version	V101.5
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● MECHANICAL CHARACTERISTICS

1.	Temperature Range	Operating : -25°C to +85°C Storage : -40°C to +85°C
2.	Pull Force of Terminal	500 gf for 1 minute
3.	Operation Life	30,000 hrs
4.	Humidity	95% , RH 40°C · 96 hrs.
5.	Solder Ability	After flux 260±5°C for 5±0.5 seconds 95% coverage.

● Electrical Optical Characteristics (Ta=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V _F	I _F =20mA	-	-	1.5	V
Reverse Current	I _R	V _R =5V	-	-	10	μA
Peak Wavelength	λ _p	I _F =10mA		940		nm
Dark Current	I _D	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 _L	V _{CE} =5V I _F =20mA	0.5	5	-	mA
Rise Time	T _r	I _C =0.8mA	-	5	-	μsec
Fall Time	T _f	V _{CC} =30V R _L =1KΩ	-	5	-	μsec



SENSOR SWITCH

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

Fig.1 Power Dissipation vs. Ambient Temperature

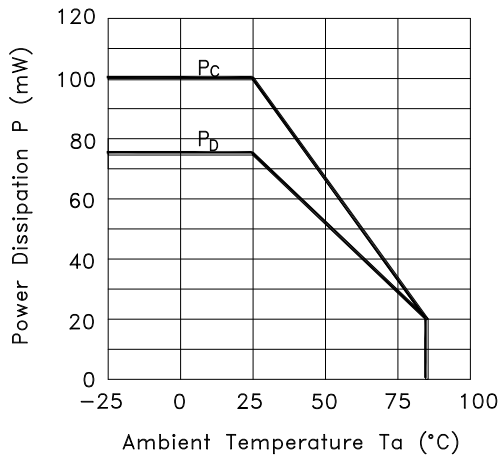


Fig.2 Forward Current vs. Forward Voltage

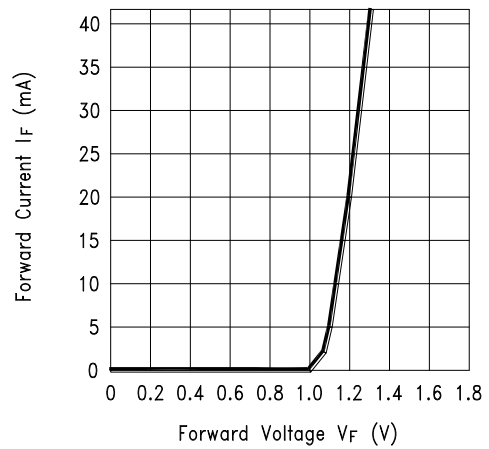


Fig.3 Collector Current vs. Collector-emitter Voltage

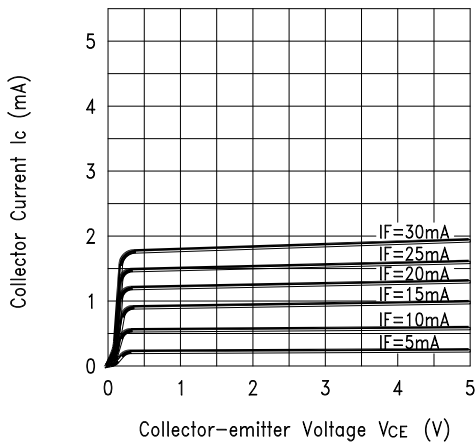
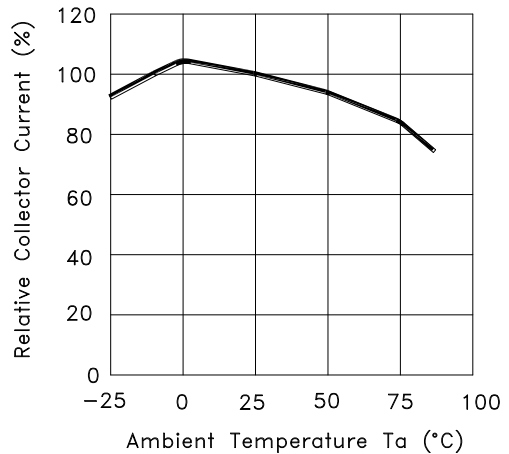


Fig.4 Collector Current vs. Ambient Temperature



SENSOR SWITCH

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

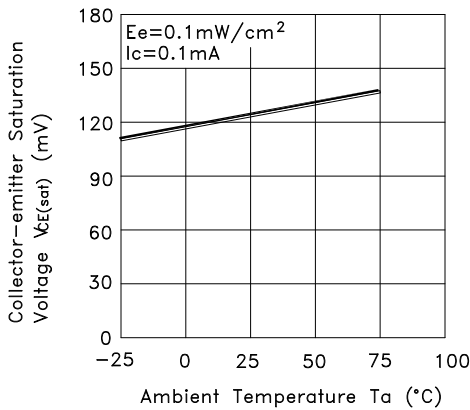


Fig.6 Response Time vs. Load Resistance

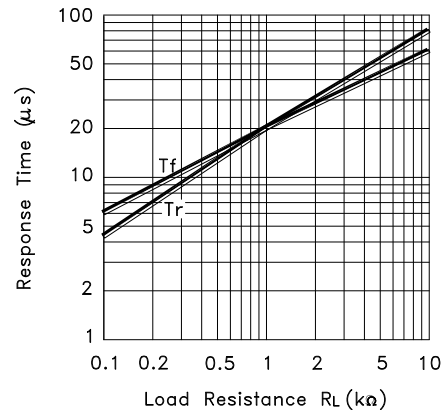
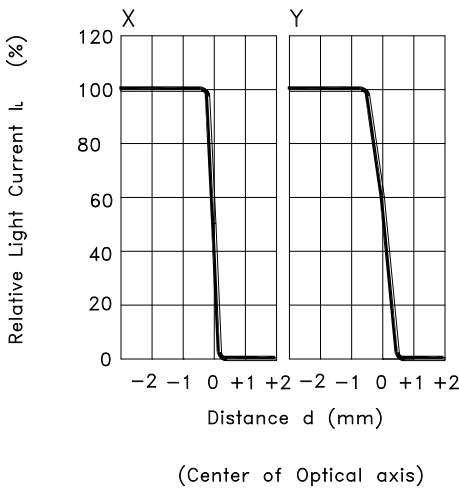
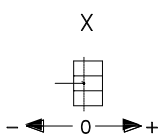
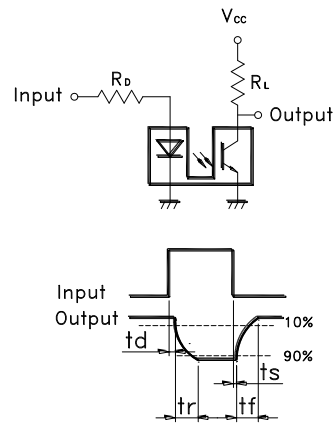


Fig.7 Sensing Position Characteristics (Typical)



Test Circuit for Response Time



SENSOR SWITCH

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● Reliable Test Items

Reliable Test

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	--	2Hz Horizontal
Electrical Life	MIL-STD-883E:1016	IF=20mA VCE=5V TIME:1,000 hrs



SENSOR SWITCH

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● Soldering Temperature and Times

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

● PACKAGE

	Part Number	Package	Quantity	Total	Dimension
1.	RBS320100 RBS320102 RBS320103 RBS320110	IC tube	62 pcs	62 pcs	525L*10W*17.5H
		Inner box	120 pcs of IC tube	7,440 pcs	539L*130W*130H
		Outer carton	4 Inner boxes	29,760 pcs	551L*285W*288H

※ Package shown as below for reference.



SENSOR SWITCH

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● NOTES

1. Suggestion for usage : For vibration usage or application · we suggest to add hysteresis for IC.
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.

● 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. When the soldering temperature exceeds specifications, the switch may fall 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.).

