OncQue®

SENSOR SWITCH

Item.#	RBS3111 Series	Description	TILT SWITCH	Version	V97.0
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● 應用

1. 全周 360°傾倒偵測:
   液晶螢幕翻轉、家用設備自動斷電系統
2. 輕微震動偵測: 地震感測系統

● 特性

1. 體積小，不佔空間。
2. 外殼採用高絕緣性塑膠材料，可避免外殼導電或生鏽。
3. 採用光電晶體感測訊號，不受金屬氧化或磨損影響。
4. 所有塑膠材料均使用高耐溫之工程塑膠。
5. 適合應用在 IC 之觸發訊號。
6. 適用於垂直電路板。
7. 傾斜角度：15°、20°、30°、45°四種選擇，全周 360° 皆可檢測無死角。
8. 可完全替代水銀開關，符合環保需求。

● 專利

1. 台灣專利第 181431 號
2. 中國專利第 ZL 01 2 60920.X 號
3. 美國專利第 US 6,800,841 B1 號

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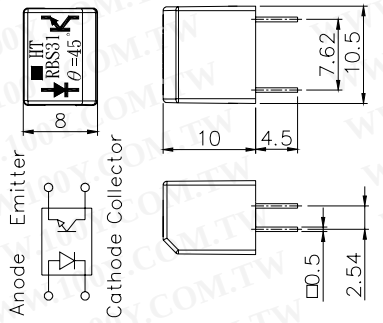
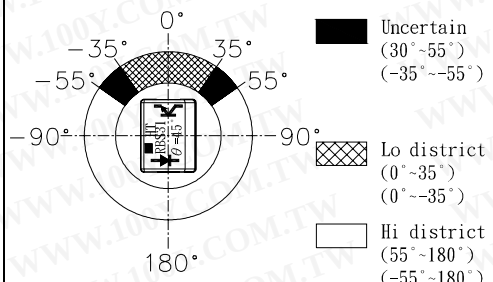
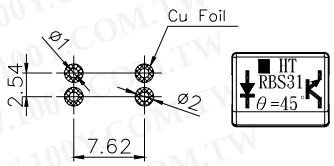
● 尺寸 / 運用 / 電路板佈線圖 (單位: mm，公差: ±0.25mm)

RBS 31 11 10	Tilt Angle 45°±10°	P.C.B. Layout (DIP)/Top View
		
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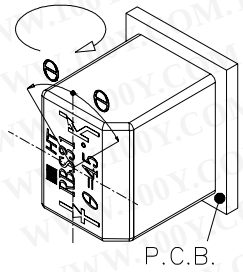	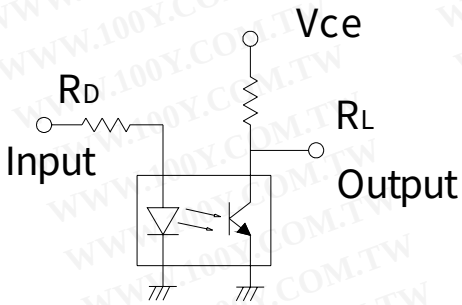 1.Vce=5V 2.RD=430ohn 3.RL=33Kohn	

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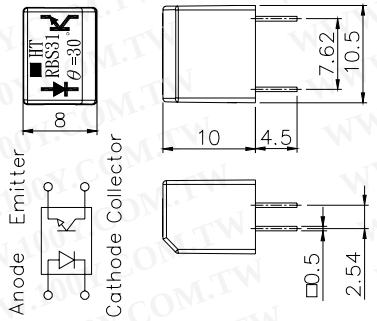
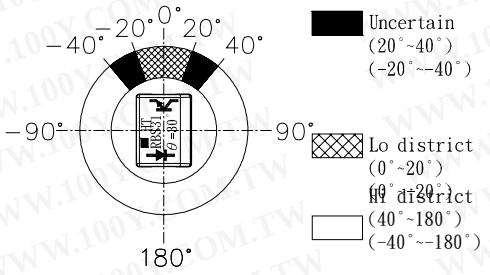
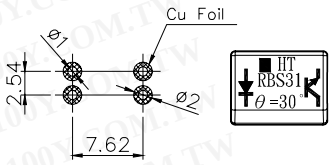
RBS 31 11 11



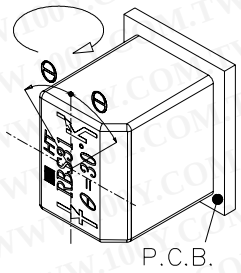
Tilt Angle 30°±10°



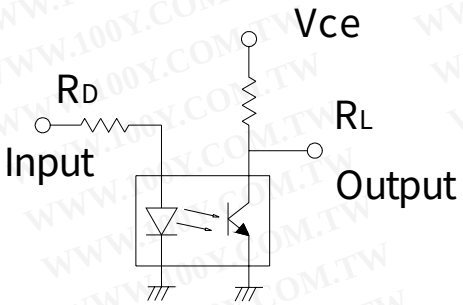
P.C.B. Layout (DIP)/Top View



Installation Position



Application Circuit



1. Vce=5V
2. RD=430ohn
3. RL=33Kohn

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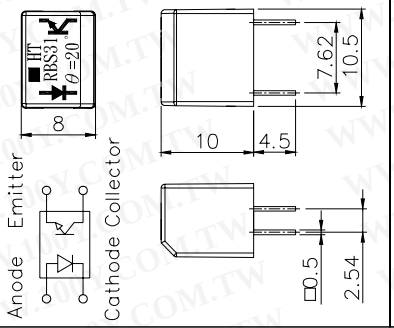
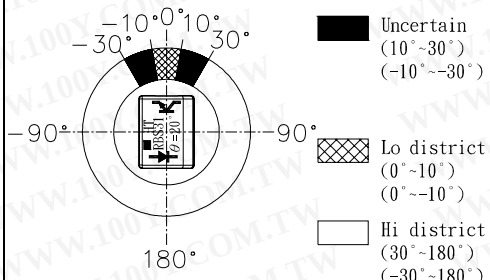
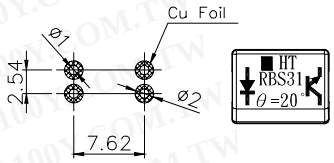
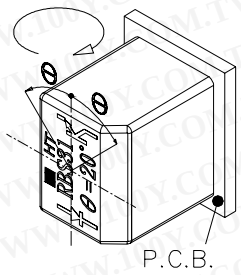
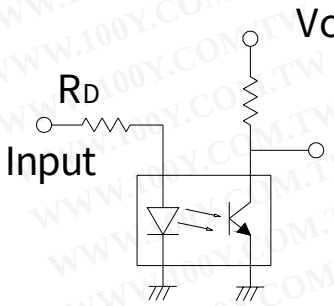
RBS 31 11 12	Tilt Angle 20°±10°	P.C.B. Layout (DIP)/Top View
		
Installation Position	**Application Circuit**	
		1.Vce=5V 2.RD=430ohn 3.RL=33Kohn

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Item.#	RBS3111 Series	Description	TILT SWITCH	Version	V97.0
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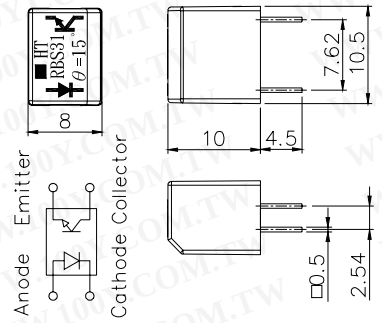
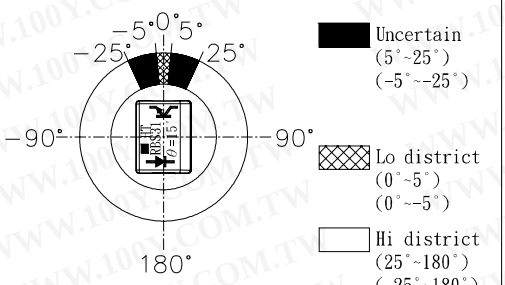
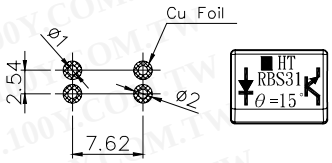
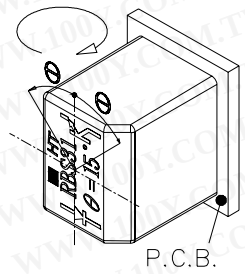
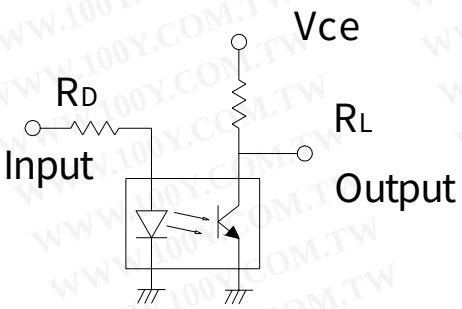
RBS 31 11 13	Tilt Angle 15°±10°	P.C.B. Layout (DIP)/Top View
		
Installation Position	**Application Circuit**	
		

● 建議電流、電壓條件

10	5
輸入電流 (mA)	操作電壓 (V)

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● Absolute Maximum Rating （Ta=25℃）

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	℃
Storage Temperature		Tstg	-40~+100	℃
Soldering Temperature (*2)		Tsol	260	℃

(*1) tw=100 uSec.、T=10 mSec.　　(*2) t=5 Sec

● 機械特性

1.	溫度範圍	工作中：-25°C to +85°C 儲存：-40°C to +85°C
2.	端子拉力	500 gf，1 分鐘
3.	操作壽命	30,000 小時
4.	濕度	95% RH 40° C，96 小時
5.	焊接性	錫爐溫度 260±5°C 試驗時間 5±0.5 秒，錫覆蓋面積達 95%

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● 光電、電性特性 (Ta=25℃)

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	λp	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	Tr	I_C=0.8mA Vcc=30v R_L=1KΩ	—	5	—	μsec
Fall Time	Tf		—	5	—	μsec

● 材料 BOM

1.	本體	PA+玻纖
2.	底座	PA+玻纖
3.	金屬珠	不鏽鋼
4.	紅外線發射二極體	
5.	光電晶體	
6.	內部本體	銅合金，鍍鎳

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● 光電、電性特性曲線 (Ta=25℃)

Fig.1 Power Dissipation vs. Ambient Temperature

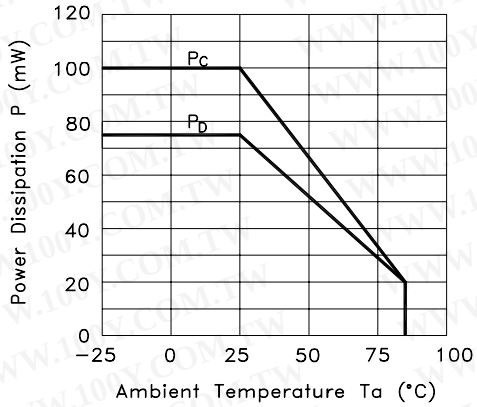

Fig.2 Forward Current vs. Forward Voltage

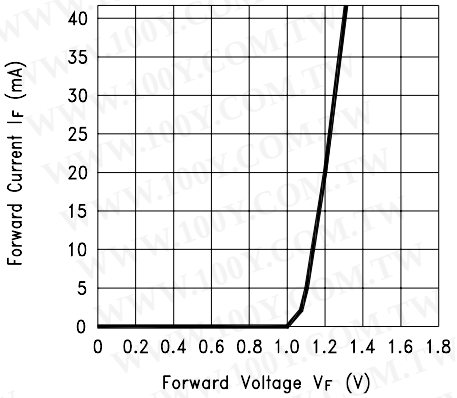

Fig.3 Collector Current vs. Collector-emitter Voltage

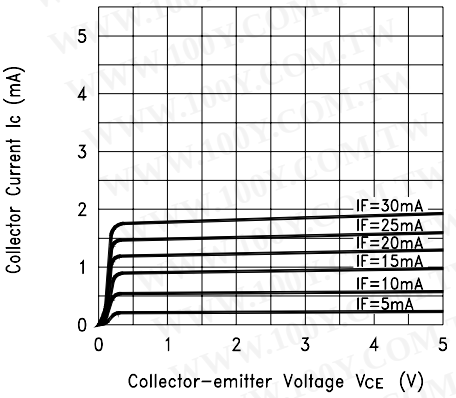

Fig.4 Collector Current vs. Ambient Temperature

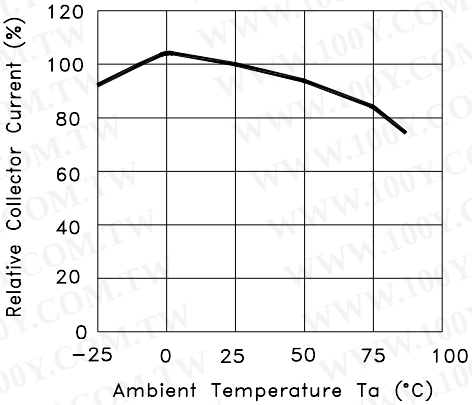

Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature

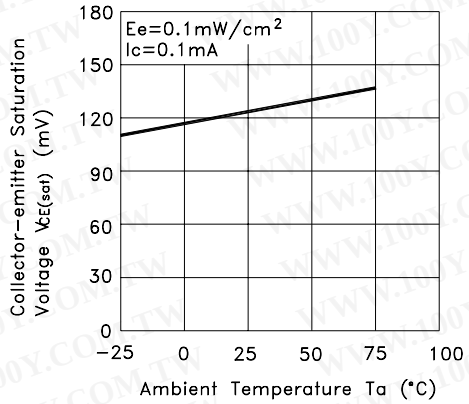

Fig.6 Response Time vs. Load Resistance

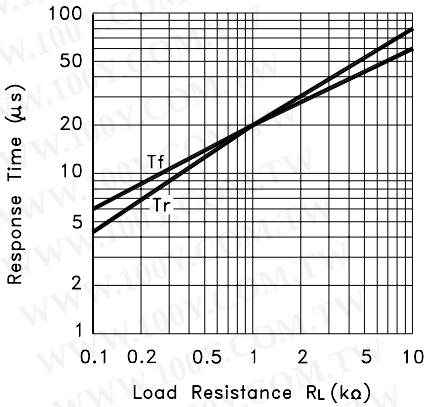

Fig.7 Sensing Position Characteristics (Typical)