

# PT501/PT510

## TO-18 Type Narrow Acceptance Phototransistor

### ■ Features

1. Narrow acceptance ( $\Delta\theta$  : TYP.  $\pm 6^\circ$ )
2. TO-18 type standard package
3. With base terminal : **PT510**

### ■ Applications

1. Optoelectronic switches, optoelectronic counters
2. Smoke detectors
3. Infrared applied systems

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-54151736  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

### ■ Absolute Maximum Ratings

(Ta = 25°C)

Parameter	Symbol	PT501	PT510	Unit
Collector-emitter voltage	V <sub>CEO</sub>	45	35	V
Emitter-collector voltage	V <sub>ECO</sub>	6	6	V
Collector-base voltage	V <sub>CBO</sub>	-	35	V
Emitter-base voltage	V <sub>EBO</sub>	-	6	V
Collector power dissipation	P <sub>C</sub>	75	75	mW
Operating temperature	T <sub>opr</sub>	- 25 to + 125	- 25 to + 125	°C
Storage temperature	T <sub>stg</sub>	- 55 to + 150	- 55 to + 150	°C
*1 Soldering temperature	T <sub>sol</sub>	260	260	°C

\*1 For 10 seconds at the position of 1.3mm from the bottom face of can package

### ■ Electro-optical Characteristics

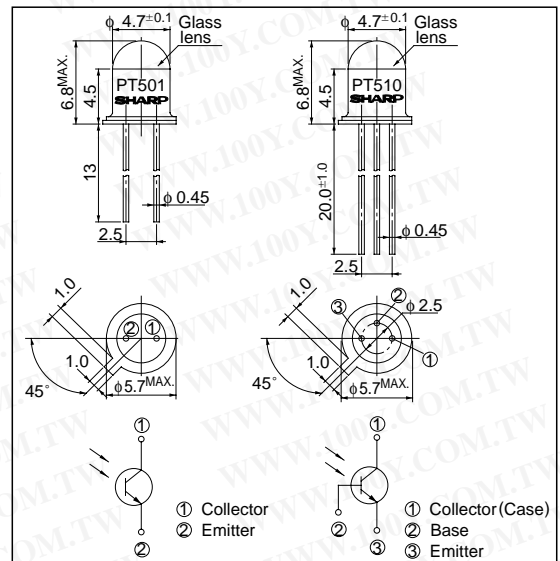
(Ta = 25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit		
*2Collector current		I <sub>C</sub>	V <sub>CE</sub> = 5V, E <sub>e</sub> = 10mW/cm <sup>2</sup>	2.5	<b>PT501</b>	10	-	mA	
					<b>PT510</b>	20			
Collector dark current		I <sub>CEO</sub>	V <sub>CE</sub> = 30V, E <sub>e</sub> = 0	-	2 x 10 <sup>-9</sup>	10 <sup>-7</sup>	A		
*2Collector-emitter saturation voltage		V <sub>CE(sat)</sub>	I <sub>C</sub> = 1mA, E <sub>e</sub> = 10mW/cm <sup>2</sup>	-	0.2	-	V		
Peak sensitivity wavelength		λ <sub>p</sub>		-	800	-	nm		
Response time	Rise time	t <sub>r</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 2mA, R <sub>L</sub> = 100Ω (PT501 : 1kΩ)	-	<b>PT501</b>	10	-	μs	
					<b>PT510</b>	2			
	Fall time	t <sub>f</sub>			<b>PT501</b>	10		-	μs
					<b>PT510</b>	3			

\*2 E<sub>e</sub> : Irradiance by CIE standard light source A (tungsten lamp)

### ■ Outline Dimensions

(Unit : mm)



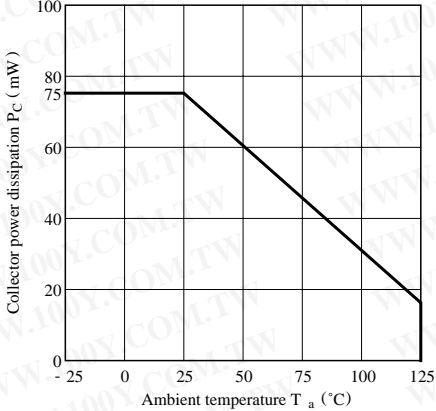
\*2 Classification Table of Collector Current(I<sub>c</sub>)

Model No.	I <sub>c</sub> (mA)
<b>PT501A</b>	20 to 80
<b>PT501B</b>	10 to 25
<b>PT501C</b>	2.5 to 15

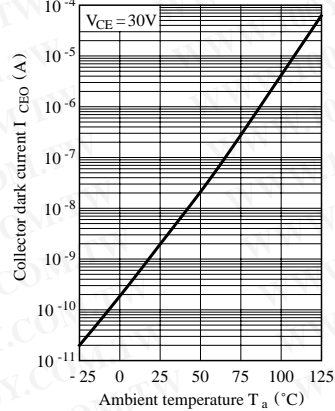
at V<sub>CE</sub>= 5V, E<sub>e</sub> = 10mW/cm<sup>2</sup>, T<sub>a</sub> = 25°C

**勝特力材料 886-3-5753170**  
**勝特力电子(上海) 86-21-54151736**  
**勝特力电子(深圳) 86-755-83298787**  
[Http://www.100y.com.tw](http://www.100y.com.tw)

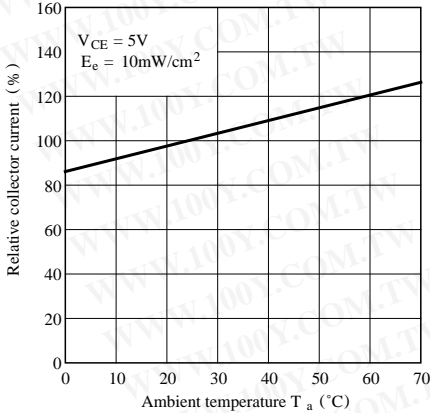
**Fig. 1 Collector Power Dissipation vs. Ambient Temperature**



**Fig. 2 Collector Dark Current vs. Ambient Temperature**



**Fig. 3 Relative Collector Current vs. Ambient Temperature**



**Fig.4-a Collector Current vs. Irradiance (PT501)**

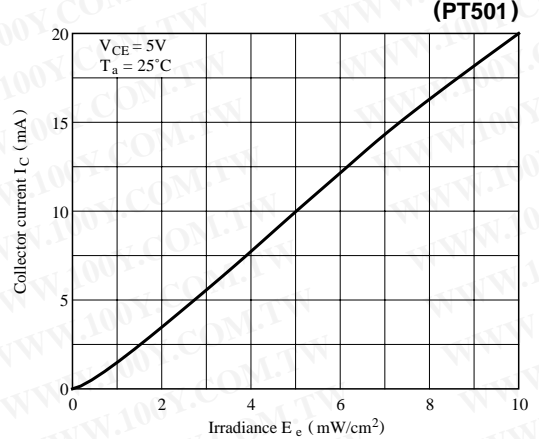


Fig.4-b Collector Current vs. Irradiance

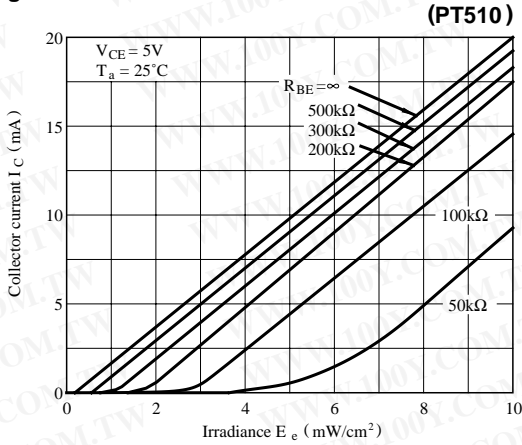
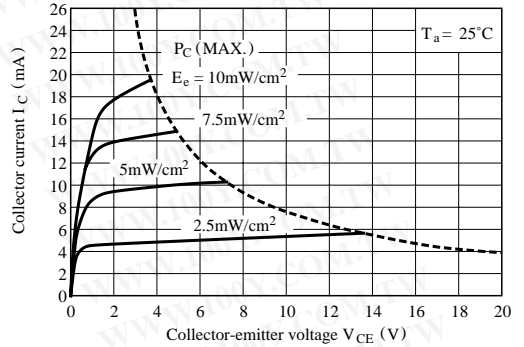


Fig.5-a Collector Current vs. Collector-emitter Voltage



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-54151736  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

Fig.5-b Collector Current vs. Collector-emitter Voltage

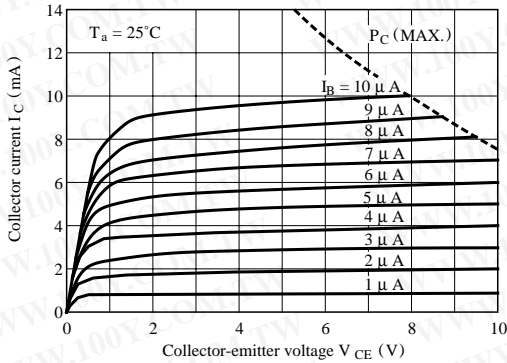


Fig. 6 Spectral Sensitivity

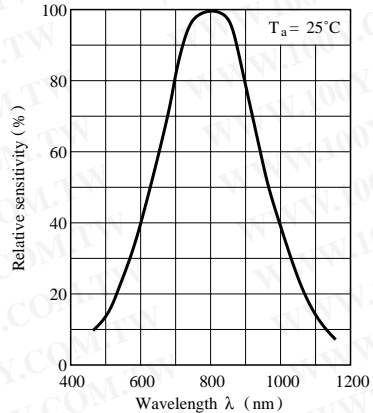


Fig. 7 Response Time vs. Load Resistance

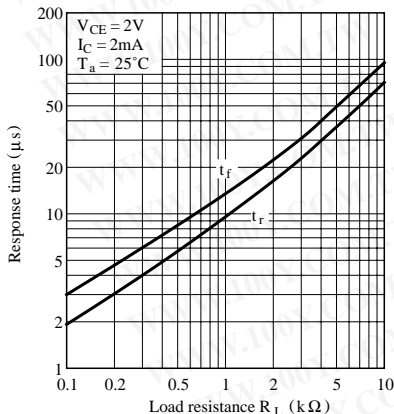
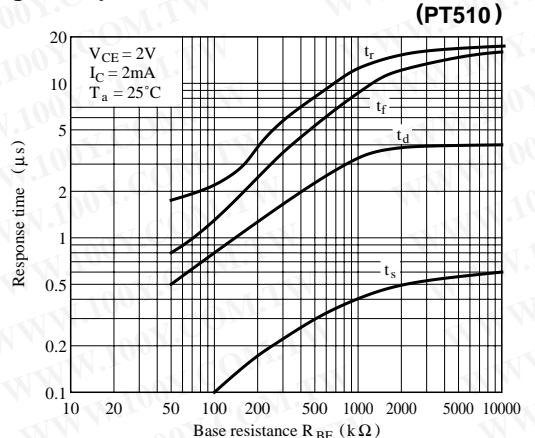


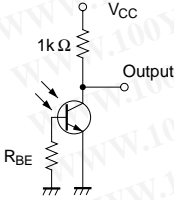
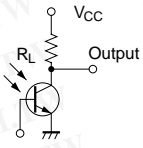
Fig. 8 Response Time vs. Base Resistance



Test Circuit for Response Time

Correspond to Fig. 7

Correspond to Fig. 8



(PT501 has no base terminal.)

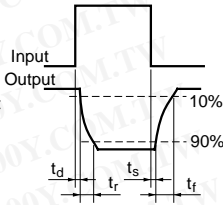


Fig. 9 Sensitivity Diagram (Ta = 25°C)

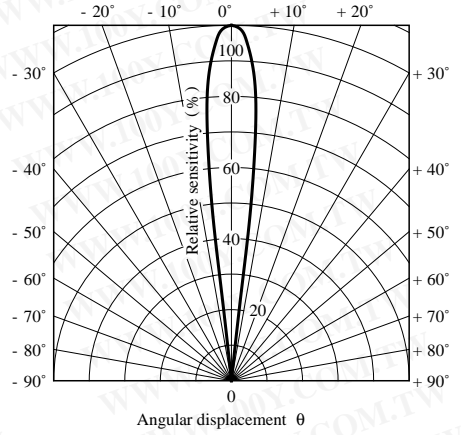
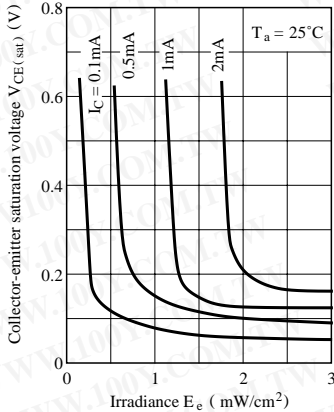


Fig.10 Collector-emitter Saturation Voltage vs. Irradiance



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-54151736  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

● Please refer to the chapter “Precautions for Use.”