PT501/PT510

TO-18 Type Narrow Acceptance Phototransistor

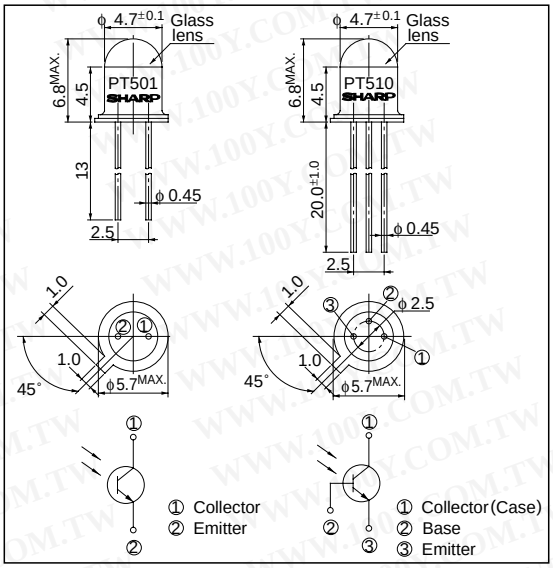
■ Features

1. Narrow acceptance (Δθ : TYP. ± 6°)
2. TO -18 type standard package
3. With base terminal : **PT510**

■ Applications

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

■ Outline Dimensions (Unit : mm)



■ Absolute Maximum Ratings (Ta = 25°C)

Parameter	Symbol	PT501	PT510	Unit
Collector-emitter voltage	V_{CEO}	45	35	V
Emitter-collector voltage	V_{ECO}	6	6	V
Collector-base voltage	V_{CBO}	-	35	V
Emitter-base voltage	V_{EBO}	-	6	V
Collector power dissipation	P_C	75	75	mW
Operating temperature	T_{opr}	- 25 to + 125	- 25 to + 125	°C
Storage temperature	T_{stg}	- 55 to + 150	- 55 to + 150	°C
*1 Soldering temperature	T_{sol}	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_C	V_{CE} = 5V, E_e = 10mW/cm²	2.5	**PT501**	10	-	mA
					PT510	20		
Collector dark current		I_{CEO}	V_{CE} = 30V, E_e = 0	-	2 x 10^{-9}		10^{-7}	A
*2Collector-emitter saturation voltage		$V_{CE(sat)}$	I_C = 1mA, E_e = 10mW/cm²	-	0.2		-	V
Peak sensitivity wavelength		λ_P		-	800		-	nm
Response time	Rise time	t_r	V_{CE} = 2V, I_C = 2mA, R_L = 100Ω (**PT501** : 1kΩ)	-	**PT501**	10	-	μs
					PT510	2		
	Fall time	t_f		-	**PT501**	10	-	μs
					PT510	3		

*2 E_e : Irradiance by CIE standard light source A (tungsten lamp)

*2 Classification Table of Collector Current (I_C)

Model No.	I_C (mA)
PT501A	20 to 80
PT501B	10 to 25
PT501C	2.5 to 15

at V_{CE}= 5V, E_e = 10mW/cm^2, Ta = 25°C

Fig. 1 Collector Power Dissipation vs. Ambient Temperature

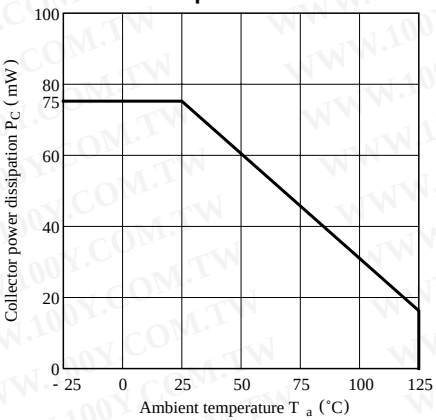


Fig. 2 Collector Dark Current vs. Ambient Temperature

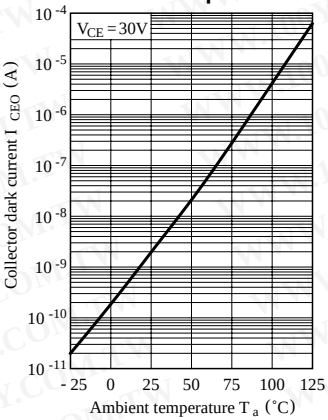


Fig. 3 Relative Collector Current vs. Ambient Temperature

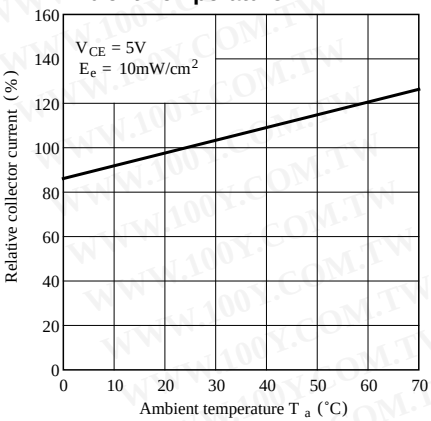


Fig.4-a Collector Current vs. Irradiance (PT501)

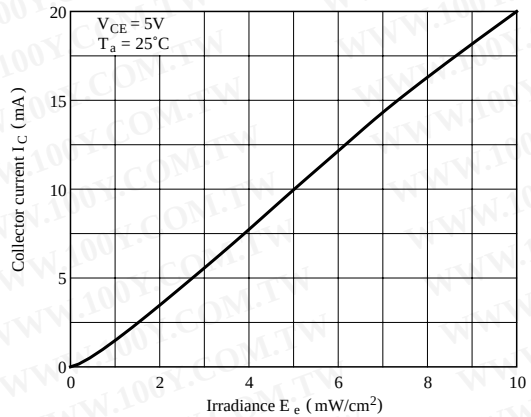


Fig.4-b Collector Current vs. Irradiance (PT510)

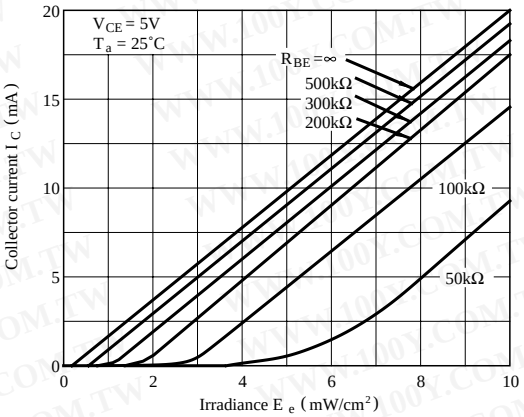


Fig.5-a Collector Current vs. Collector-emitter Voltage (PT501)

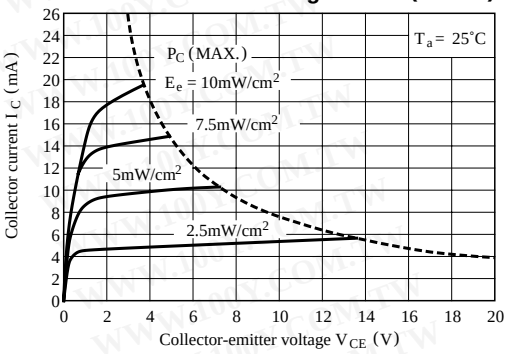


Fig.5-b Collector Current vs. Collector-emitter Voltage (PT510)

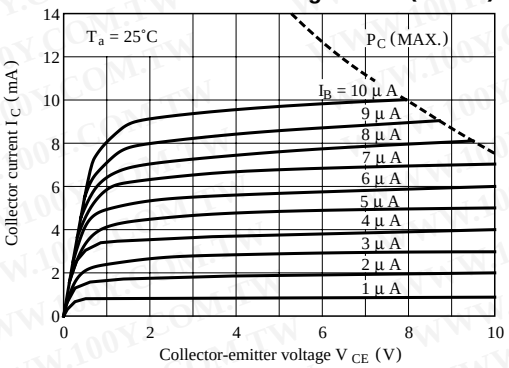


Fig. 6 Spectral Sensitivity

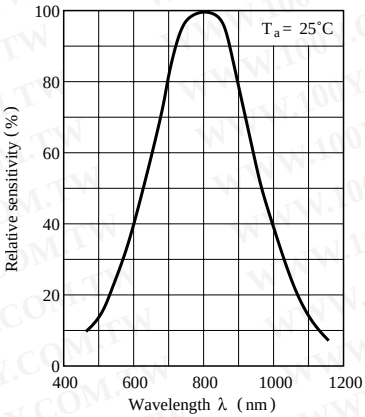


Fig. 7 Response Time vs. Load Resistance

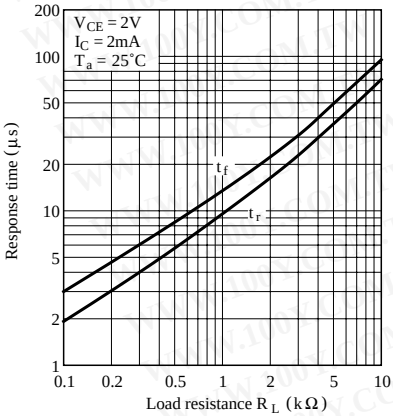
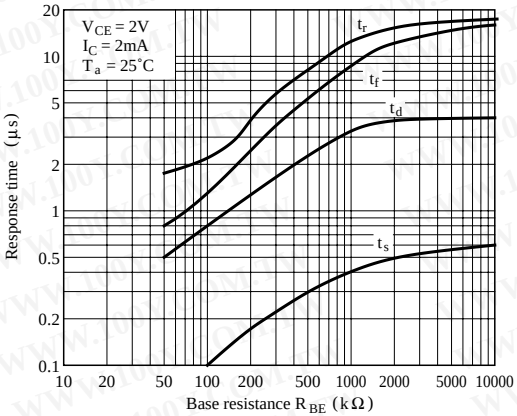
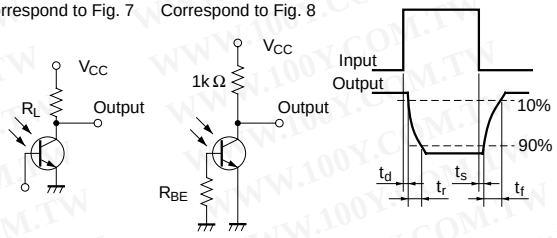


Fig. 8 Response Time vs. Base Resistance (PT510)



Test Circuit for Response Time

Correspond to Fig. 7 Correspond to Fig. 8



(**PT501** has no base terminal.)

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

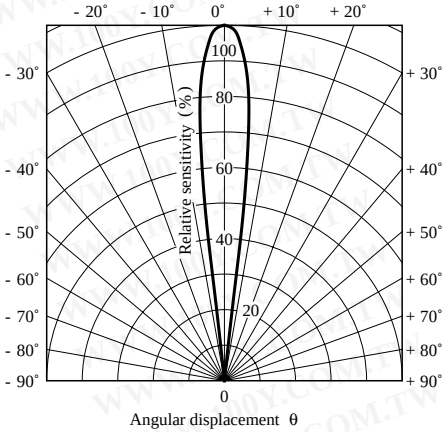
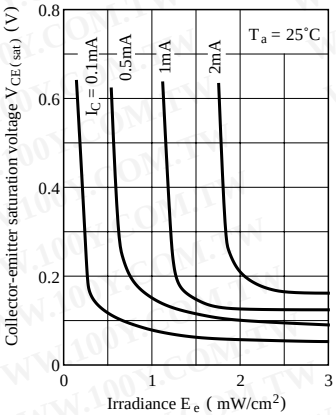


Fig.10 Collector-emitter Saturation Voltage vs. Irradiance



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