

PT501/PT510

TO-18 Type **Narrow** Acceptance Phototransistor

■ Features

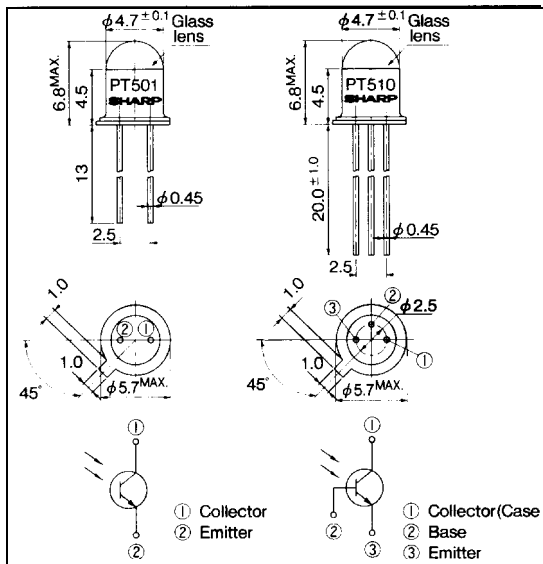
1. Narrow acceptance ($\Delta\theta$: TYP. $\pm 6^\circ$)
2. TO -18 type standard package
3. With base terminal : PT51 O

■ 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
*Soldering temperature	T _{sol}	260	260	°C

*1 For 10 wends 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
*Collector current	I _C	V _{CE} = 5V, E _e = 10mW/cm ²	2.5	PT501	10	—	mA
				PT510	20		
Collector dark current	I _{CEO}	V _{CE} = 30V, E _e = 0	—	2X1 0-9	10 ⁻⁷	A	
*Collector-emitter saturation voltage	V _{CE(sat)}	I _C = 1mA, E _e = 10mW/cm ²	—	0.2	—	v	
Peak sensitivity wavelength	λ _P		—	800	—	nm	
Response time	Rise time	V _{CE} = 2V, I _C = 2mA, R _L = 100Ω (PT501 : 1kΩ)	—	PT501	10	—	μs
				PT510	2		
	Fall time			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 $V_{CE} = 5V$, $E_e = 10mW/cm^2$, $T_a = 25^\circ C$

Fig. 1 Collector Power Dissipation vs. Ambient Temperature

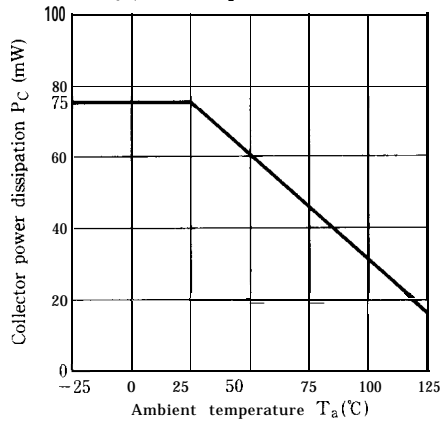


Fig. 2 Collector Dark Current vs. Ambient Temperature

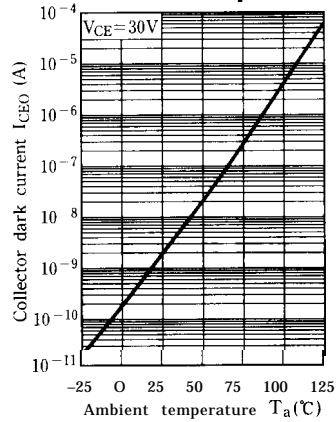


Fig. 3 Relative Collector Current vs. Ambient Temperature

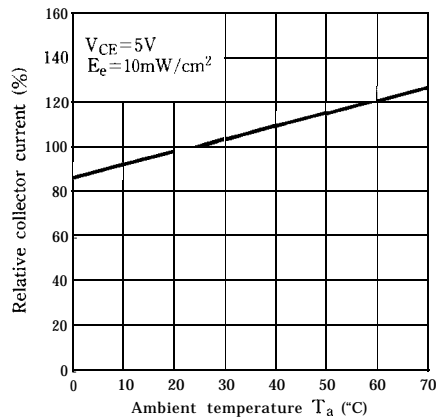


Fig.4-a Collector Current vs. Irradiance (PT501)

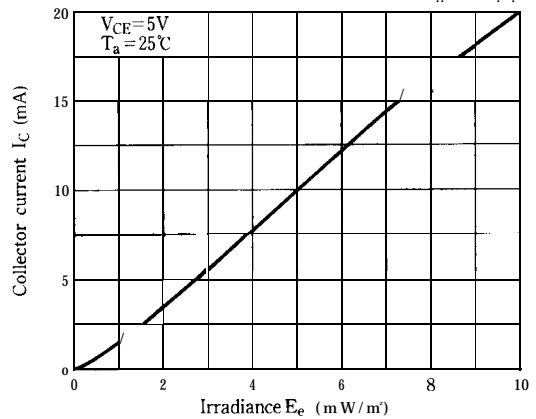


Fig.4-b Collector Current vs. Irradiance (PT510)

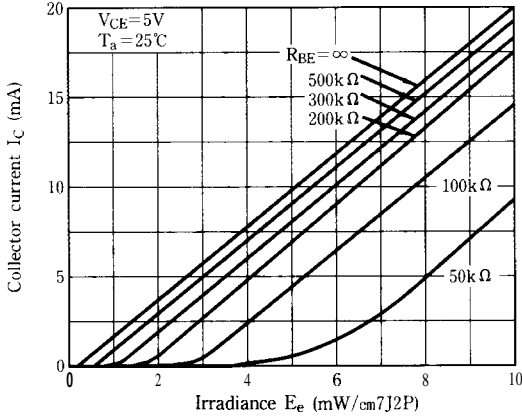


Fig.5-a Collector Current vs. Collector-emitter Voltage (PT501)

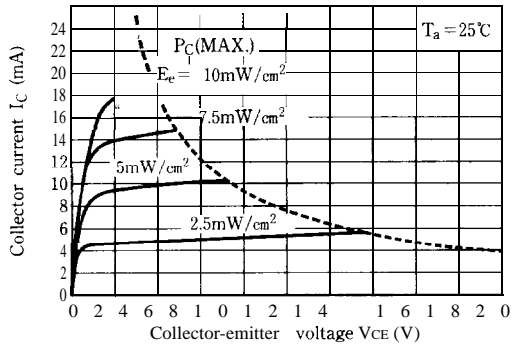


Fig.5-b Collector Current vs. Collector-emitter Voltage (PT510)

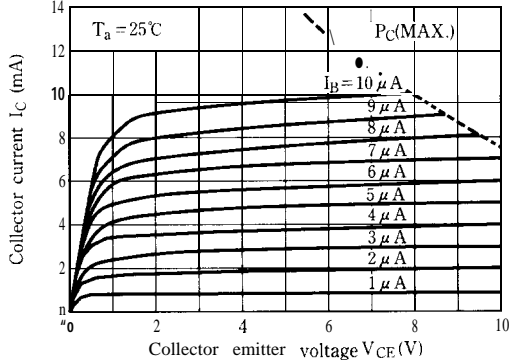


Fig. 6 Spectral Sensitivity

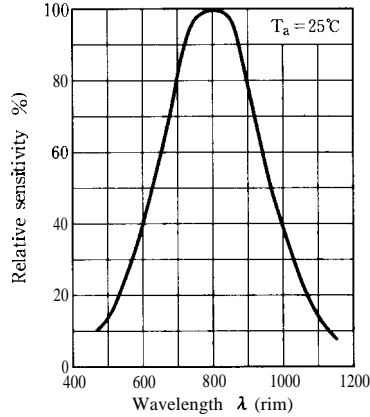


Fig. 7 Response Time vs. Load Resistance

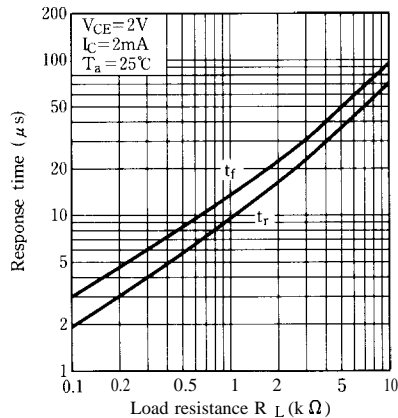
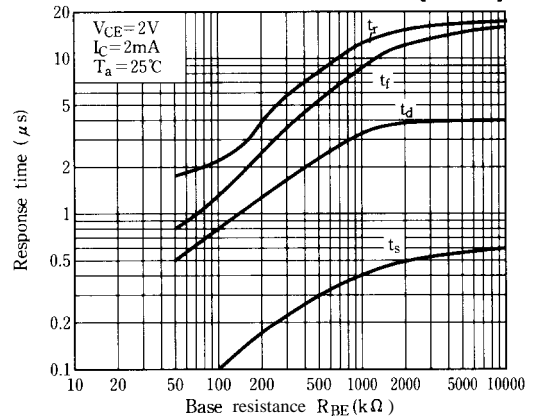
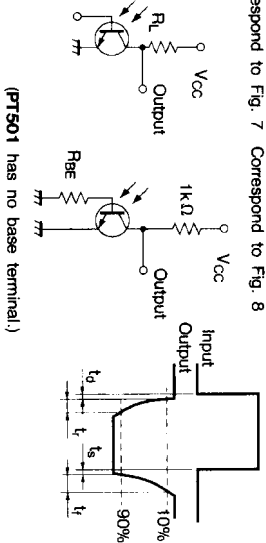


Fig. 8 Response Time vs. Base Resistance (PT510)



Test Circuit for Response Time

Correspond to Fig. 7 Correspond to Fig. 8



(PT501 has no base terminal.)

Fig. 9 Sensitivity Diagram ($T_a = 25^\circ\text{C}$)

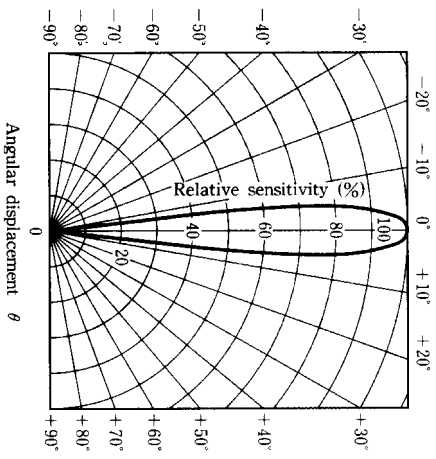
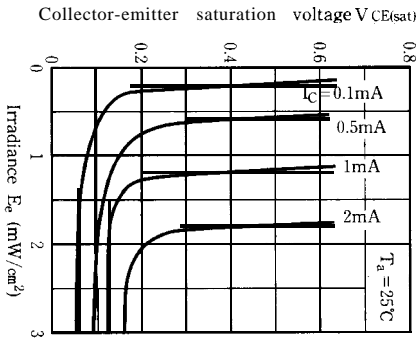


Fig.10 Collector-emitter Saturation Voltage vs. Irradiance



● Please refer to the chapter “Precautions for Use.” (Page 78 to 93)