

PT550/PT550F

TO-18 Type Phototransistor with Base Terminal

■ Features

- High sensitivity
PT550 I_C : MIN.3mA at $E_e=0.1\text{mW}/\text{cm}^2$
 (**PT550F** I_C : MIN.3mA at $E_e=1\text{mW}/\text{cm}^2$)
- Narrow acceptance : **PT550**
 ($\Delta\theta$: TYP. $\pm 6^\circ$)
 Wide acceptance : **PT550F**
 ($\Delta\theta$: TYP. $\pm 50^\circ$)
- TO - 18 type standard package

■ Applications

- Optoelectronic switches, optoelectronic counters
- Smoke detectors
- Infrared applied systems

■ Absolute Maximum Ratings

(Ta = 25°C)

Parameter	Symbol	Rating	Unit
Collector -emitter voltage	V_{CEO}	35	V
Emitter -collector voltage	V_{ECO}	6	v
Collector -base voltage	V_{CBO}	35	v
Collector current	I_C	100	mA
Collector power dissipation	P_C	150	mW
Operating temperature	T_{opr}	-25 to +125	°C
Storage temperature	T_{stg}	-55 to +150	°C
*1 Soldering temperature	T_{sol}	260	°C

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

■ Electro-optical Characteristics

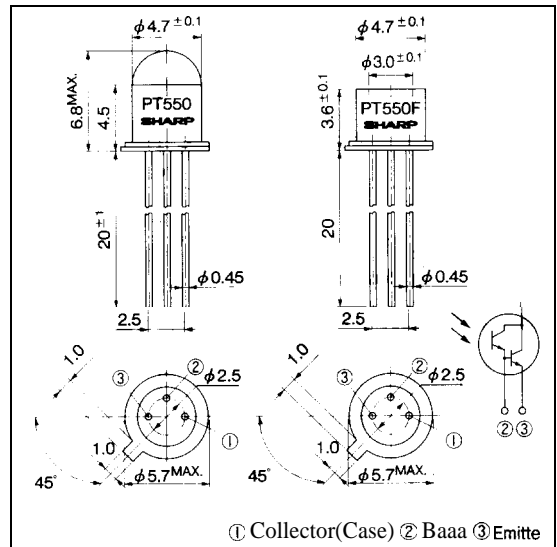
(Ta = 25°C)

Parameter	Symbol	Conditions		MIN.	TYP.	MAX.	Unit
		PT550	PT550F				
*2 Collector current	I_C	$V_{CE}=5\text{V}$ $E_e=0.1\text{mW}/\text{cm}^2$	$V_{CE}=5\text{V}$ $E_e=1\text{mW}/\text{cm}^2$	3	20	PT550 142 PT550F 150	mA
Collector dark current	I_{CEO}	$V_{CE}=10\text{V}$, $E_e=0$	$I_B=0$	—	10^{-7}	10^{-6}	A
Collector -emitter saturation voltage	$V_{CE(sat)}$	$I_C=1\text{mA}$, $I_B=0$ $E_e=0.1\text{mW}/\text{cm}^2$	$I_C=1\text{mA}$, $I_B=0$ $E_e=1\text{mW}/\text{cm}^2$	—	—	1.0	v
Peak sensitivity wavelength	λ_p			—	800	—	nm
Response time	Rise time	$V_{CC}=15\text{V}$, $I_C=1\text{mA}$, $R_L=1\text{k}\Omega$		—	350	—	μs
	Fall time			—	300	—	μs

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

■ Outline Dimensions

(Unit : mm)



5

Phototransistors

Fig. 1 Collector Power Dissipation vs. Ambient Temperature

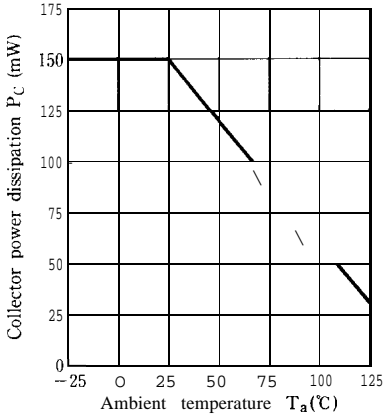


Fig. 2 Collector Dark Current vs. Ambient Temperature

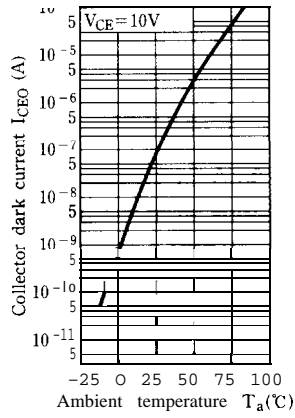


Fig. 3 Relative Collector Current vs. Ambient Temperature

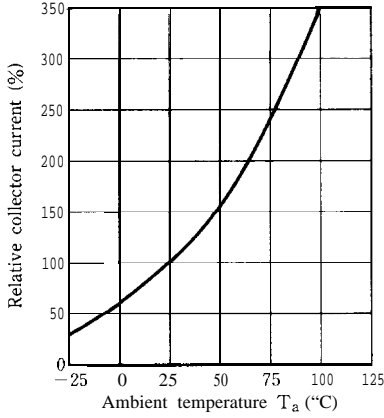


Fig.4-a Collector Current vs. Irradiance (PT550)

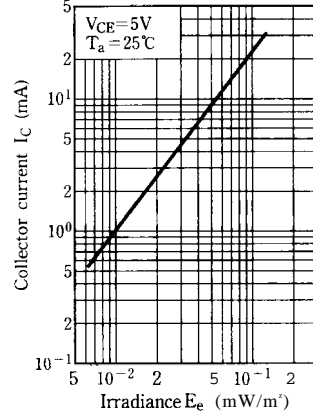


Fig.4-b Collector Current vs. Irradiance (PT550F)

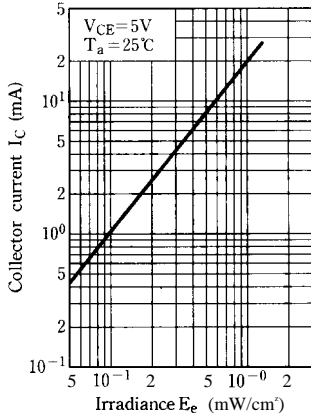


Fig.5-a Collector Current vs. Collector-emitter Voltage (PT550)

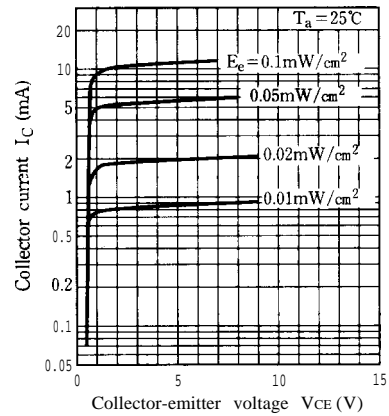


Fig.5-b Collector Current vs. Collector-emitter Voltage (PT550F)

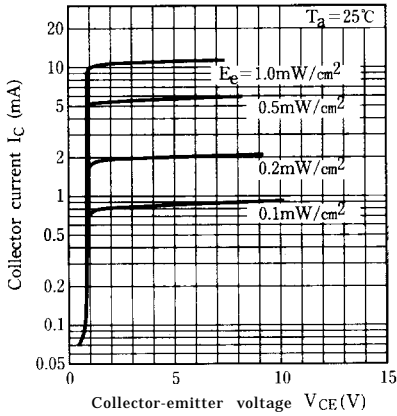


Fig. 7 Response Time vs. Load Resistance

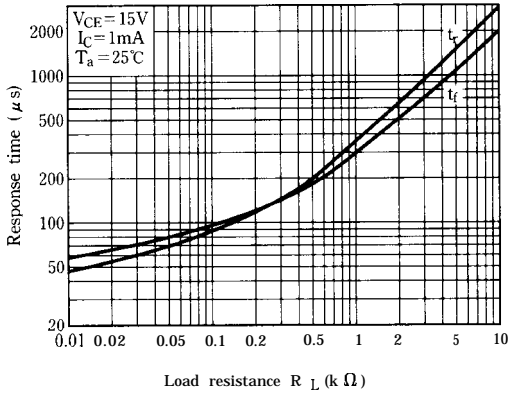


Fig.8-a Sensitivity Diagram (PT550)
(T_a = 25°C)

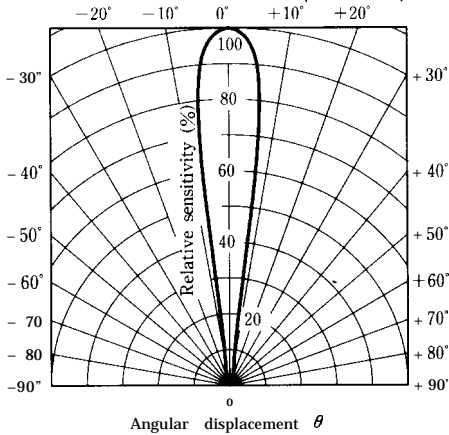
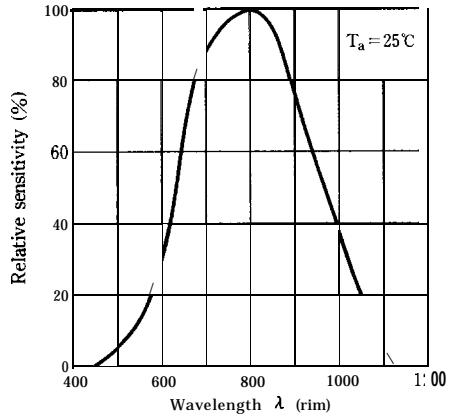


Fig. 6 Spectral Sensitivity



Test Circuit for Response Time

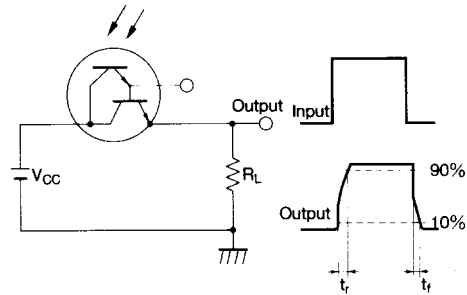


Fig.8-b Sensitivity Diagram (PT550F)
(T_a = 25°C)

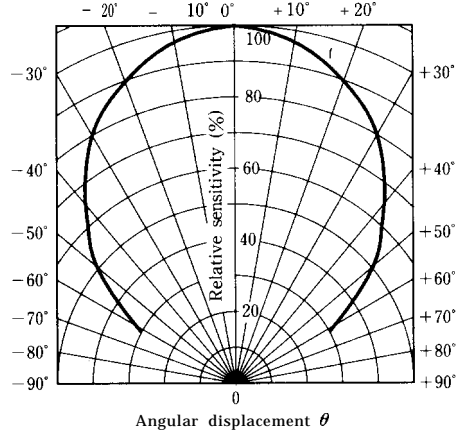


Fig.9-a Collector-emitter Saturation Voltage vs. Irradiance (PT550)

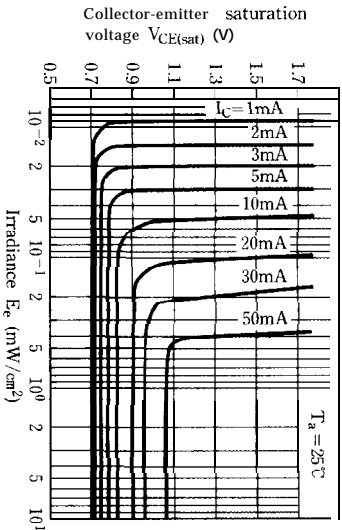
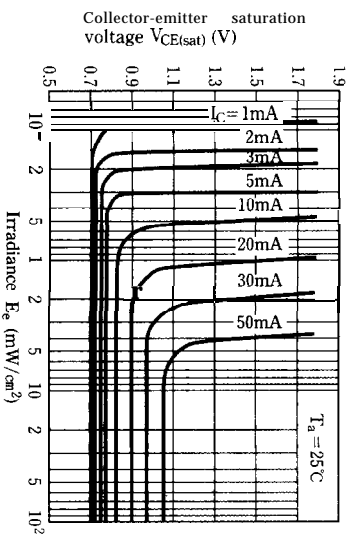


Fig.9-b Collector-emitter Saturation Voltage vs. Irradiance (PT550F)



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