

PT550 Datasheet

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| | |
|------------------------------|--|
| DiGi Electronics Part Number | PT550-DG |
| Manufacturer | Sharp Microelectronics |
| Manufacturer Product Number | PT550 |
| Description | SENSOR PHOTO 800NM TOP TO206AA |
| Detailed Description | Phototransistors 800nm Top View TO-206AA, TO-18 -3 Metal Can |

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Purchase and inquiry

Manufacturer Product Number:

PT550

Series:

-

Voltage - Collector Emitter Breakdown (Max):

35 V

Current - Dark (I_d) (Max):

1 μ A

Viewing Angle:

12°

Mounting Type:

Through Hole

Operating Temperature:

-25°C ~ 125°C (TA)

Manufacturer:

Sharp Microelectronics

Product Status:

Obsolete

Current - Collector (I_c) (Max):

100 mA

Wavelength:

800nm

Power - Max:

150 mW

Orientation:

Top View

Package / Case:

TO-206AA, TO-18-3 Metal Can

Environmental & Export classification

Moisture Sensitivity Level (MSL):

1 (Unlimited)

HTSUS:

8541.49.7080

ECCN:

EAR99

PT550/PT550F

TO-18 Type Phototransistor with Base Terminal

■ Features

1. High sensitivity

$$\left(\begin{array}{l} \text{PT550 } I_C : \text{MIN.}3\text{mA at } E_e = 0.1\text{mW/cm}^2 \\ \text{PT550F } I_C : \text{MIN.}3\text{mA at } E_e = 1\text{mW/cm}^2 \end{array} \right)$$

2. Narrow acceptance : **PT550**

$$(\Delta\theta : \text{TYP. } \pm 6^\circ)$$

Wide acceptance : **PT550F**

$$(\Delta\theta : \text{TYP. } \pm 50^\circ)$$

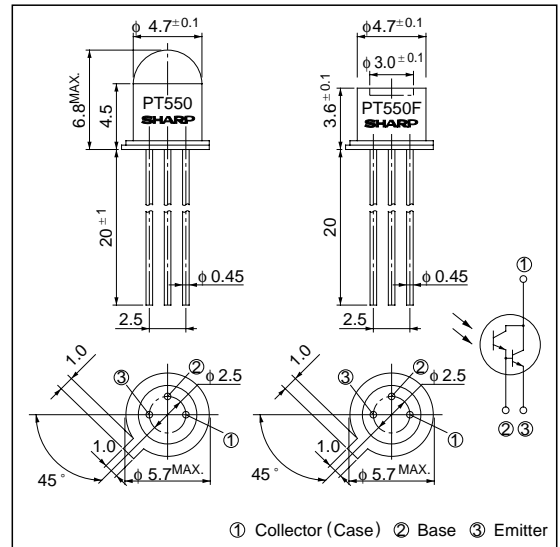
3. TO - 18 type standard package

■ Applications

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

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$)

| 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 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | - 55 to + 150 | $^\circ\text{C}$ |
| *1 Soldering temperature | T_{sol} | 260 | $^\circ\text{C}$ |

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

■ Electro-optical Characteristics

($T_a = 25^\circ\text{C}$)

| Parameter | Symbol | Conditions | | MIN. | TYP. | MAX. | | Unit |
|--------------------------------------|---------------|--|--|------|-----------|-----------|--------|---------------|
| | | PT550 | PT550F | | | PT550 | PT550F | |
| *2 Collector current | I_C | $V_{CE} = 5\text{V}$ $E_e = 0.1\text{mW/cm}^2$ | $V_{CE} = 5\text{V}$ $E_e = 1\text{mW/cm}^2$ | 3 | 20 | 142 | 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 | $V_{CE(sat)}$ | $I_C = 1\text{mA}, I_B = 0$ $E_e = 0.1\text{mW/cm}^2$ | $I_C = 1\text{mA}, I_B = 0$ $E_e = 1\text{mW/cm}^2$ | - | - | 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)

Fig. 1 Collector Power Dissipation vs. Ambient Temperature

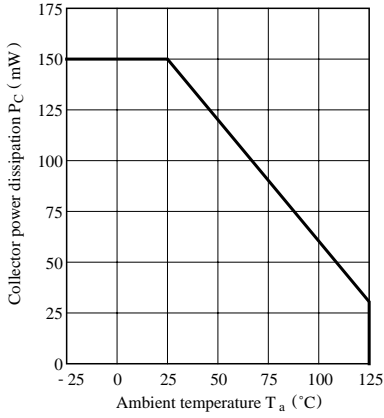


Fig. 2 Collector Dark Current vs. Ambient Temperature

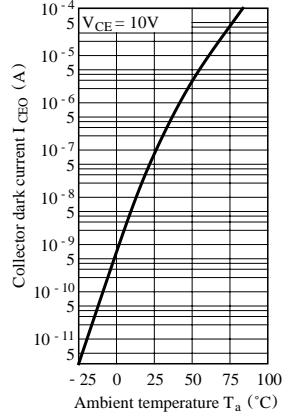


Fig. 3 Relative Collector Current vs. Ambient Temperature

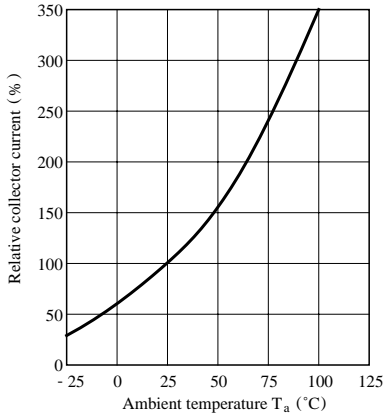


Fig.4-a Collector Current vs. Irradiance (PT550)

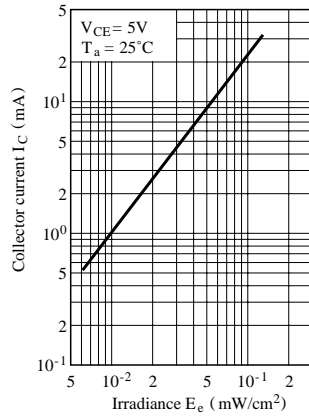


Fig.4-b Collector Current vs. Irradiance (PT550F)

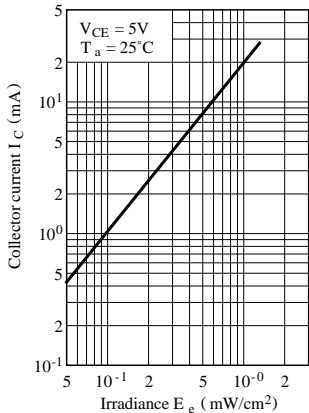


Fig.5-a Collector Current vs. Collector-emitter Voltage (PT550)

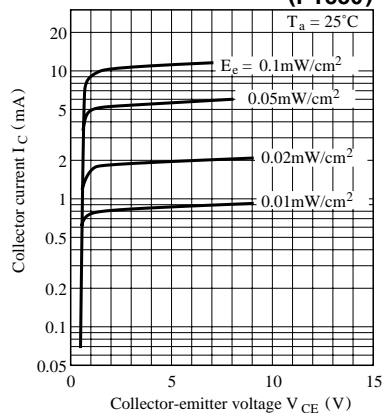


Fig.5-b Collector Current vs. Collector-emitter Voltage (PT550F)

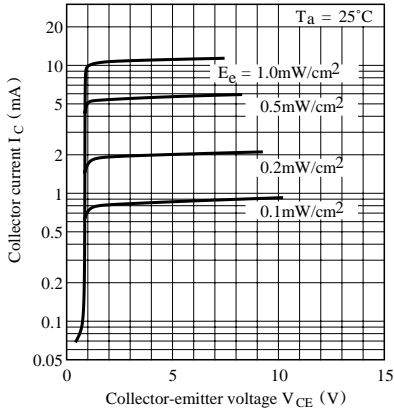


Fig. 6 Spectral Sensitivity

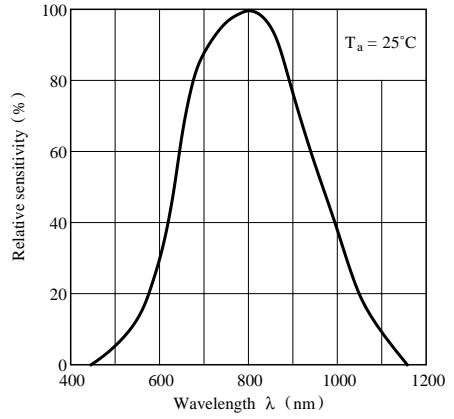
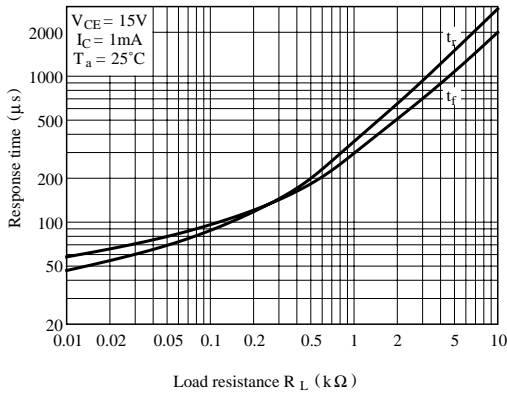


Fig. 7 Response Time vs. Load Resistance



Test Circuit for Response Time

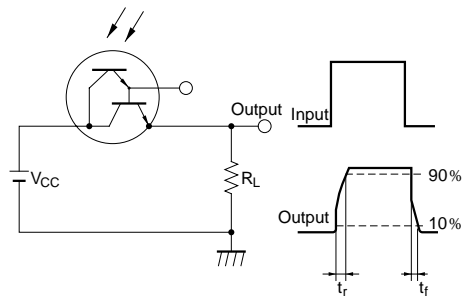


Fig.8-a Sensitivity Diagram (PT550) ($T_a = 25^\circ\text{C}$)

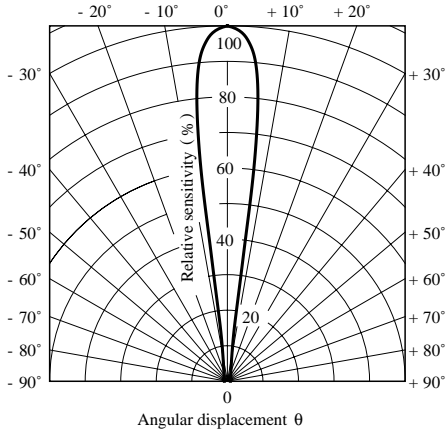


Fig.8-b Sensitivity Diagram (PT550F) ($T_a = 25^\circ\text{C}$)

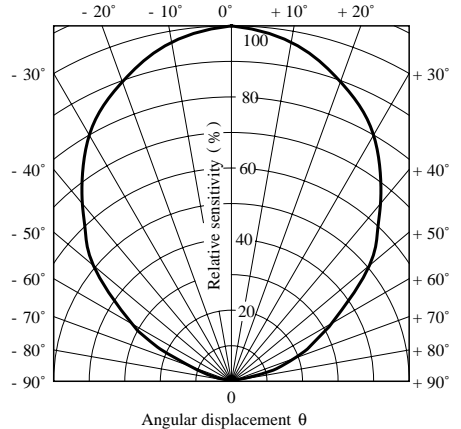


Fig.9-a Collector-emitter Saturation Voltage vs. Irradiance (PT550)

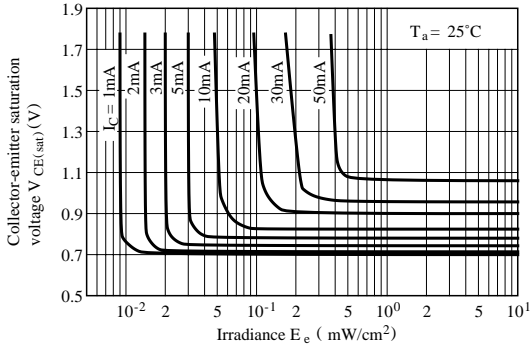
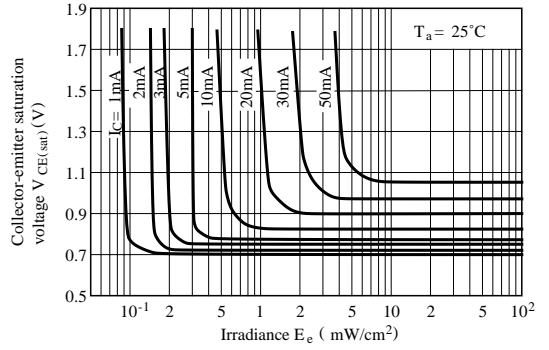


Fig.9-b Collector-emitter Saturation Voltage vs. Irradiance (PT550F)



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

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