PT370/PT371/PT372

Compact, Stem Type Phototransistor

T-41-61
T-41-63

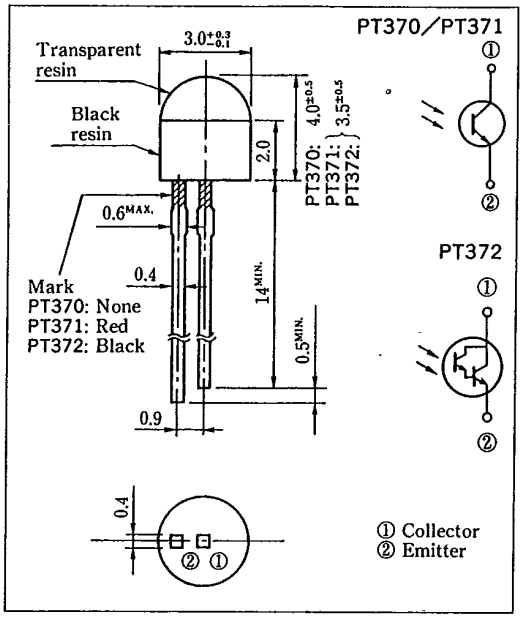
■ Features

1. ϕ3mm compact, resin stem type
2. Acceptance PT370 $\Delta\theta$: TYP. ±45°
   PT371 $\Delta\theta$: TYP. ±65°
   PT372 $\Delta\theta$: TYP. ±70°
3. Single phototransistor output: PT370/PT371
   Darlington phototransistor output: PT372

■ Applications

1. Floppy disk drives
2. VCRs,
3. Automatic stroboscopes
4. Optoelectronic switches, optoelectronic counters

■ Outline Dimensions (Unit : mm)



■ 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 current	PT370/PT371	I_C	20	mA
	PT372		50	
Collector power dissipation		P_C	75	mW
Operating temperature		T_{opr}	−25~+85	°C
Storage temperature		T_{stg}	−25~+85	°C
*1Soldering temperature		T_{sol}	260	°C

*1 For 3 seconds at the position of 1.5mm from the bottom face of resin package

■ Electro-optical Characteristics

(Ta=25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*2Collector current	PT370	I_C	*3 Ev=100ℓx, V_{CE}=5V	100	300	900	μA
	PT371			100	—	900	
	PT372		(PT372: V_{CE}=2V)	3.0	—	23	mA
Collector dark current	PT370/PT371	I_{CEO}	E_e=0, V_{CE}=20V	—	2.0	100	nA
	PT372		E_e=0, V_{CE}=10V	—	—	1.0	μA
Collector-emitter saturation voltage	PT370/PT371	$V_{CE(sat)}$	*3 E_e=10mW/cm², I_C=0.5mA	—	0.2	0.4	V
	PT372		*3 E_e=1mW/cm², I_C=2.5mA	—	0.8	1.0	
Peak sensitivity wavelength		λp	—	—	800	—	nm
Response time (Rise)	PT370/PT371	t_r	V_{CC}=20V, I_C=1mA, R_L=1kΩ	—	10	40	μs
	PT372		V_{CE}=2V, I_C=10mA, R_L=100Ω	—	100	400	μs
Response time (Fall)	PT370/PT371	t_f	V_{CC}=20V, I_C=1mA, R_L=1kΩ	—	8	35	μs
	PT372		V_{CE}=2V, I_C=10mA, R_L=100Ω	—	100	400	μs
Half intensity angle	PT370	Δθ	—	—	±45	—	deg.
	PT371			—	±65	—	
	PT372			—	±70	—	

*2 The collector current (I_C) shall be classified into the ranks as follows before delivery.

Rank	Collector current I_C		
	PT370 (μA)	PT371 (μA)	PT372 (mA)
A	100~216	100~244	3.0~9.66
B	170~320	192~463	7.14~23.0
C	252~533	363~900	—
D	419~900	—	—

*3 E_v, E_e: Illuminance, irradiance by CIE standard light source A (tungsten lamp)

Fig. 1 Collector Power Dissipation vs. Ambient Temperature

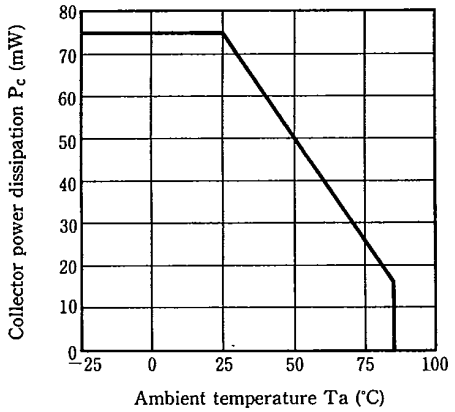


Fig. 2 Collector Dark Current vs. Ambient Temperature (PT370/PT371)

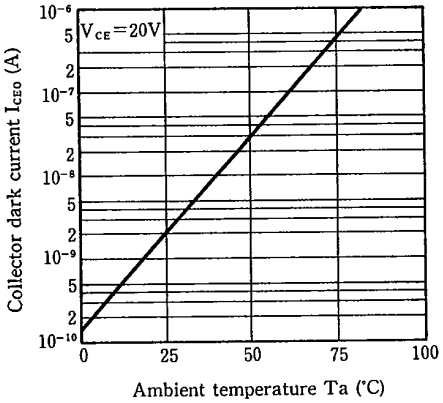


Fig. 3 Collector Dark Current vs. Ambient Temperature (PT372)

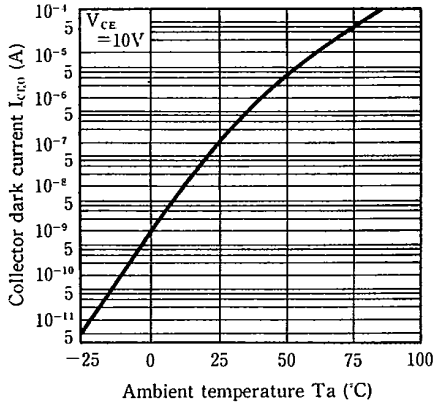


Fig. 4 Relative Collector Current vs. Ambient Temperature (PT370/PT371)

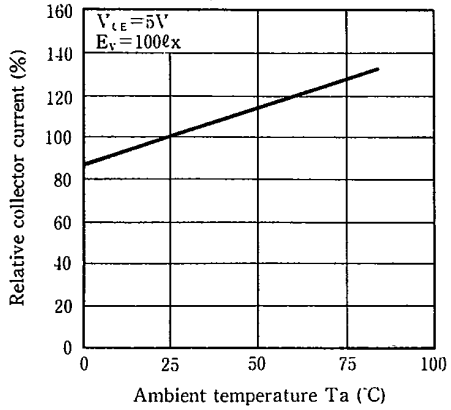


Fig. 5 Relative Collector Current vs. Ambient Temperature (PT372)

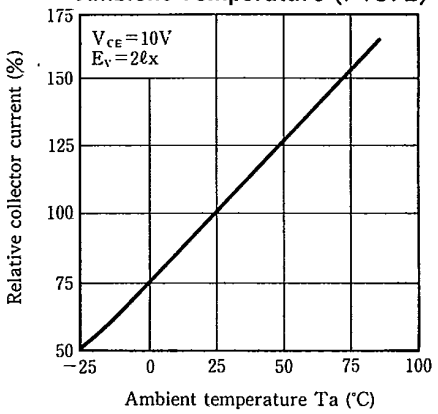


Fig. 6 Collector Current vs. Irradiance (PT370/PT371)

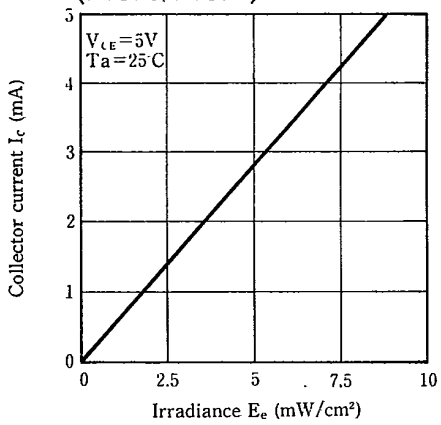


Fig. 7 Collector Current vs. Irradiance (PT372)

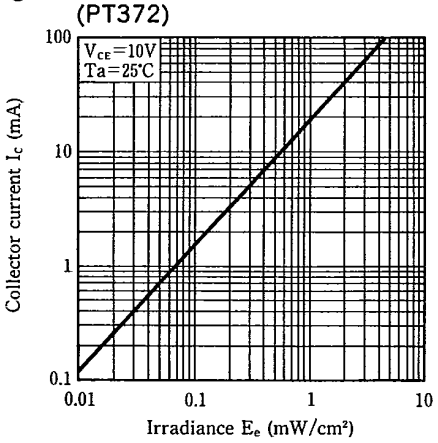


Fig. 8 Collector Current vs. Collector-emitter Voltage (PT370)

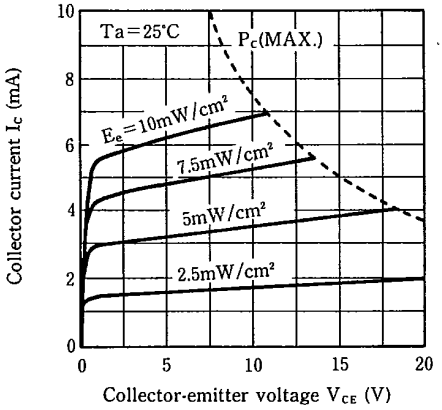


Fig. 9 Collector Current vs. Collector-emitter Voltage (PT371)

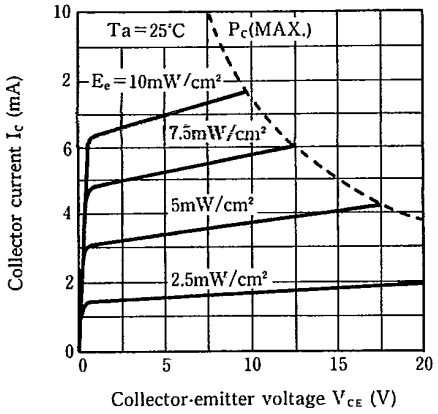


Fig. 10 Collector Current vs. Collector-emitter Voltage (PT372)

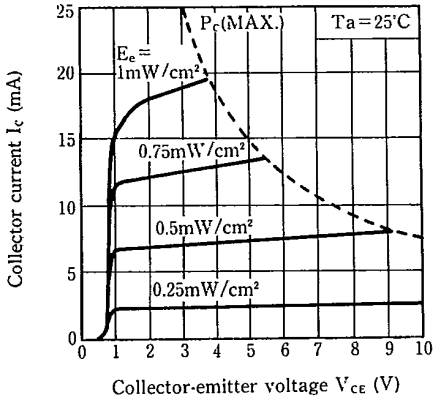


Fig. 11 Spectral Sensitivity

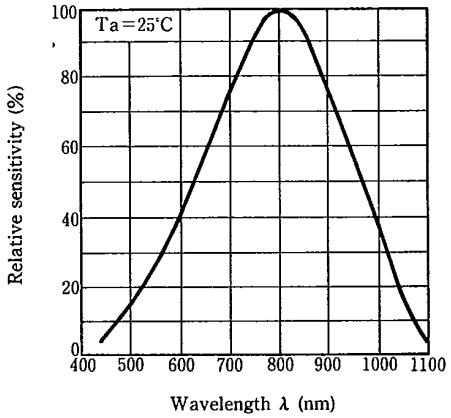


Fig. 12 Response Time vs. Load Resistance (PT370/PT371)

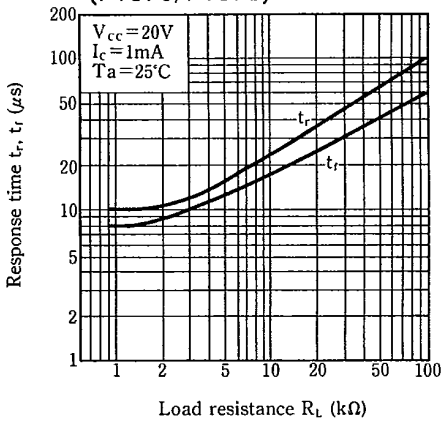
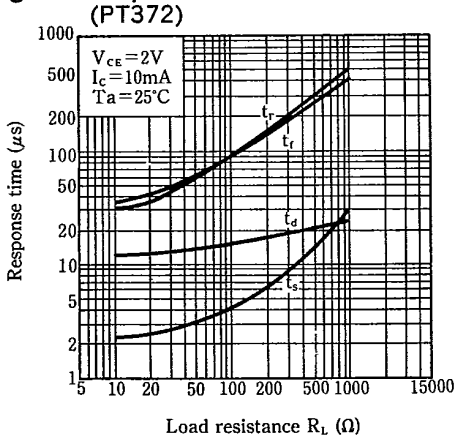
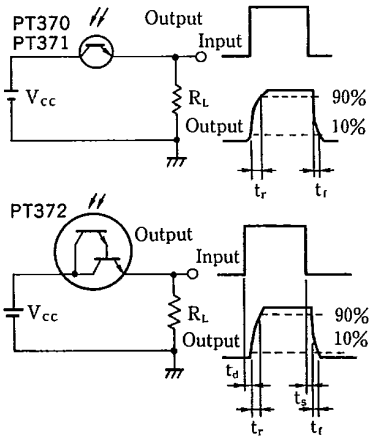


Fig. 13 Response Time vs. Load Resistance (PT372)

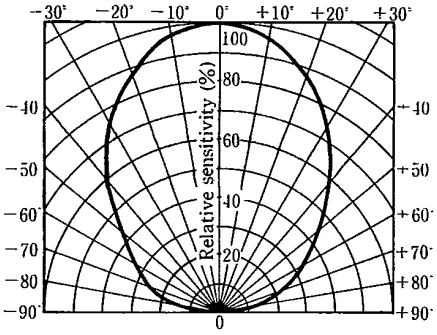


Test Circuit for Response Time



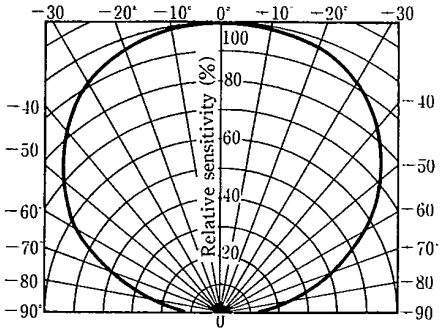
5

Fig. 14 Sensitivity Diagram (PT370)
(Ta=25°C)



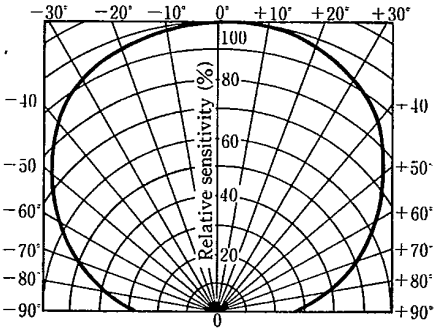
Angular displacement θ

Fig. 15 Sensitivity Diagram (PT371)
(Ta=25°C)



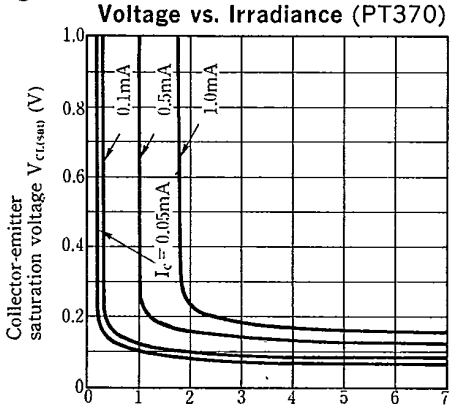
Angular displacement θ

Fig. 16 Sensitivity Diagram (PT372)
(Ta=25°C)



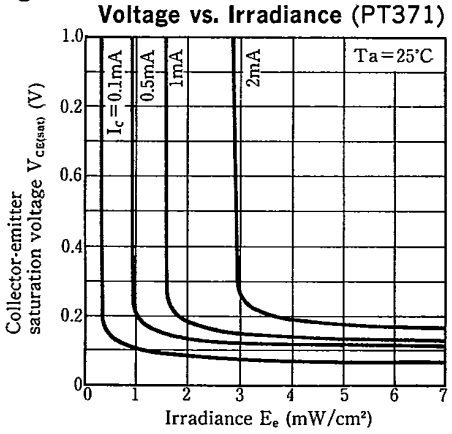
Angular displacement θ

Fig. 17 Collector-emitter Saturation Voltage vs. Irradiance (PT370)



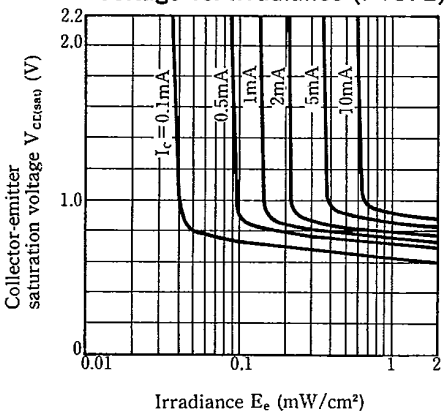
Irradiance E_e (mW/cm²)

Fig. 18 Collector-emitter Saturation Voltage vs. Irradiance (PT371)



Irradiance E_e (mW/cm²)

Fig. 19 Collector-emitter Saturation Voltage vs. Irradiance (PT372)



Irradiance E_e (mW/cm²)