

PT380/PT380F

PT381/PT381F

High Sensitivity, $\phi 3\text{mm}$ Resin Mold Type Phototransistor

■ Features

- High sensitivity
(I_C : MIN.160 μA at $E_V=100\text{lX}$, **PT380**)
(I_C : MIN.120 μA at $E_V=2\text{lX}$, **PT381**)
- Compact $\phi 3\text{mm}$ resin mold package
- Intermediate acceptance ($\Delta\theta$: TYP. $\pm 20^\circ$)
- Visible light cut-off type : **PT380F/PT381F**

■ Model Line-ups

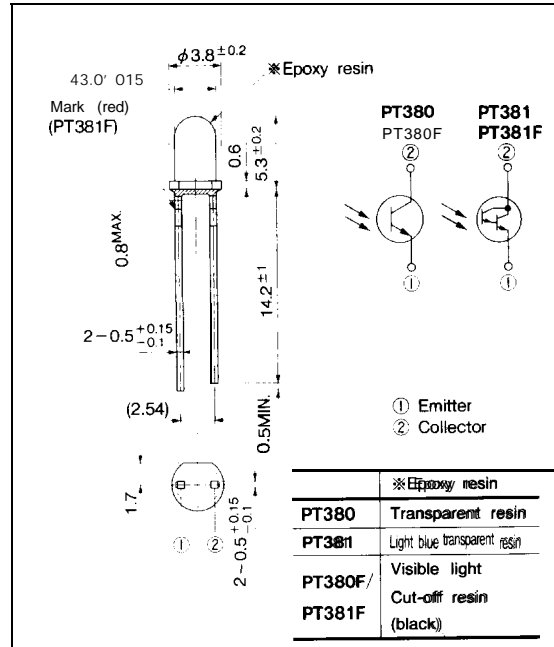
	Single photo transistor output	Darlington photo-transistor output
No visible light cut-off filter	PT380	PT381
Built-in visible light cut-off filter	PT380F	PT381F

■ Applications

- Floppy disk drives
- Optoelectronic switches
- Infrared applied systems

■ Outline Dimensions

(Unit : mm)



5

■ 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	I_C	20	mA
Collector power dissipation	P_C	50	mW
Operating temperature	T_{opr}	-25 to +85	°C
Storage temperature	T_{stg}	-40 to +85	°C
*1 Soldering temperature	T_{sol}	260	°C

*1 For 3 seconds at the position of 1.4mm from the bottom face of resin package

■ Electro-optical Characteristics

(Ta=25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*Collector current	PT380	I _C	E _V = 100lx	0.16	—	1.17	mA
	PT380F		V _{CE} = 5V	0.095	—	0.90	
	PT381		E _V = 2lx	0.12	—	1.5	
	PT381F		V _{CE} = 10V	0.07	—	1.08	
Collector dark current	PT380/PT380F	I _{CEO}	E _e = 0, V _{CE} = 20V	—	—	0.1	μA
	PT381/PT381F		E _e = 0, V _{CE} = 10V	—	—	1.0	
*Collector-emitter saturation voltage	PT380/PT380F	V _{CE(sat)}	E _e = 10mW/cm ² , I _C = 0.5mA	—	0.2	0.4	V
	PT381/PT381F		E _e = 1mW/cm ² , I _C = 2.5mA	—	—	1.0	
Collector -emitter breakdown voltage		BV _{CEO}	I _C = 0.1mA E _e = 0	35	—	—	V
Emitter-Collector breakdown voltage		BV _{ECO}	I _C = 0.01mA E _e = 0	6	—	—	V
Peak sensitivity wavelength	PT380/PT381	λ _P		—	800	—	nm
	PT380F/PT381F			—	860	—	
Response time	Rise time	t _r	V _{CE} = 20V, I _C = 1mA, R _L = 1kΩ	—	10	40	μs
			V _{CE} = 2V, I _C = 10mA, R _L = 100Ω	—	100	400	
	Fall time	t _f	V _{CE} = 20V, I _C = 1mA, R _L = 1kΩ	—	8	35	
			V _{CE} = 2V, I _C = 10mA, R _L = 100Ω	—	100	400	
Half intensity angle		Δθ		—	+20	—	°

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

Fig. 1 Collector Power Dissipation vs. Ambient Temperature

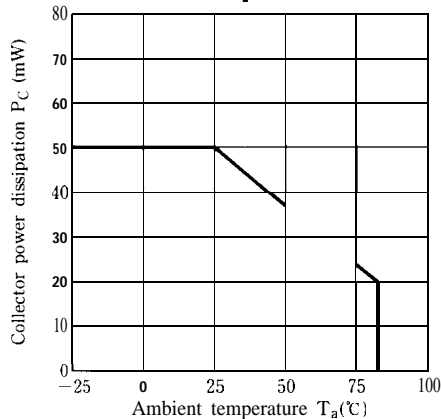


Fig. 2-a Collector Dark Current vs. Ambient Temperature (PT380/PT380F)

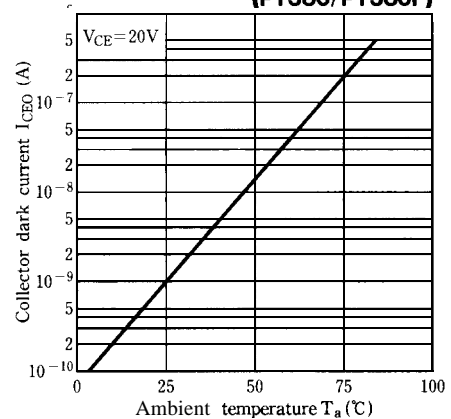


Fig. 2-b Collector Dark Current vs. Ambient Temperature

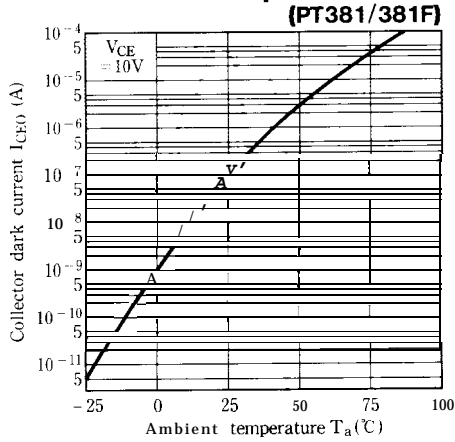


Fig. 3-a Relative Collector Current vs. Ambient Temperature

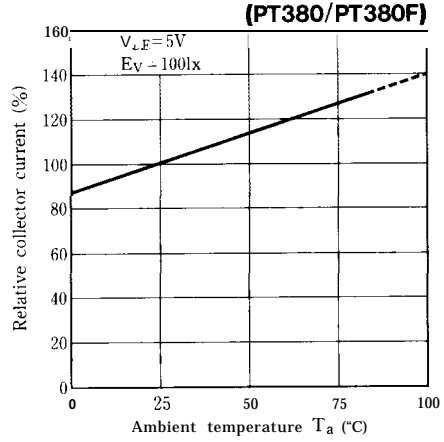


Fig. 3-b Relative Collector Current vs. Ambient Temperature

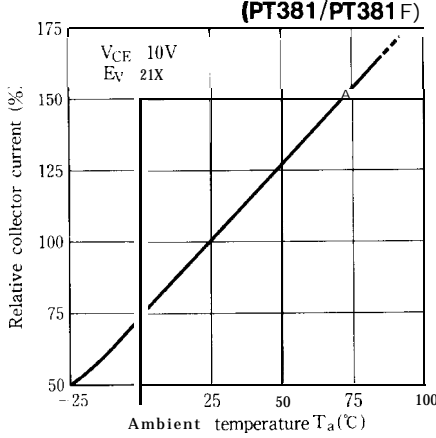


Fig. 4-a Collector Current vs. Irradiance

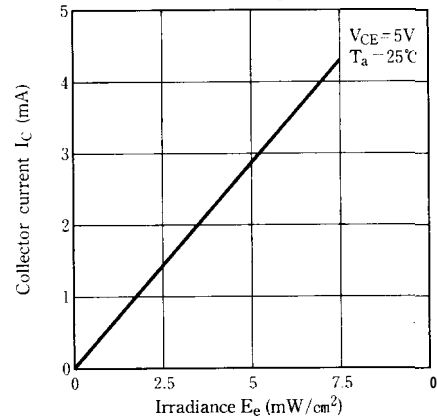


Fig. 4-b Collector Current vs. Irradiance (PT381/PT381 F)

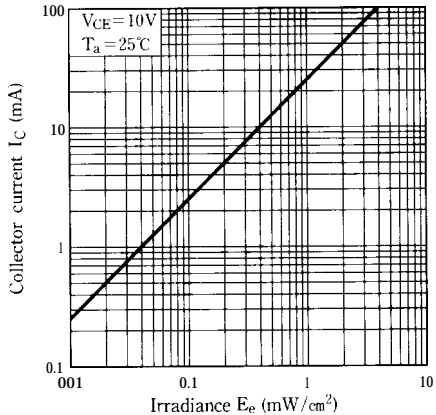
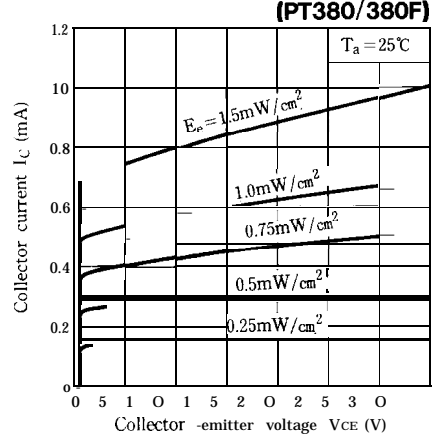


Fig. 5-a Collector Current vs. Collector-emitter Voltage



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Fig. 5-b **Collector Current vs. Collector-emitter Voltage**
(PT381/381F)

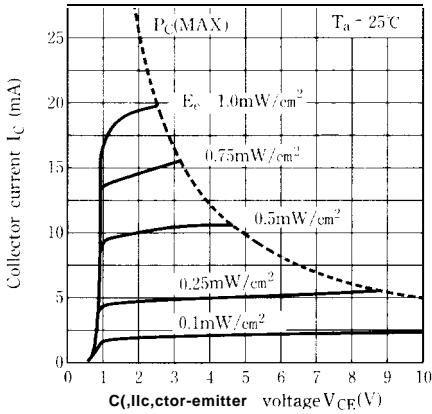


Fig. 6 **Spectral Sensitivity**

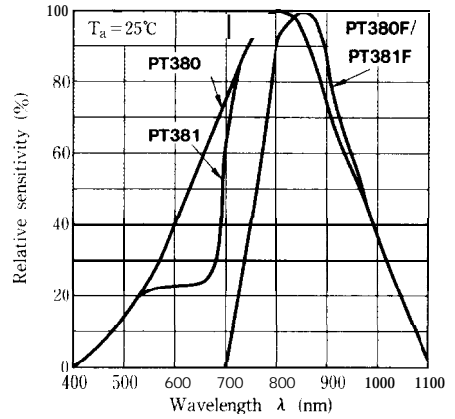
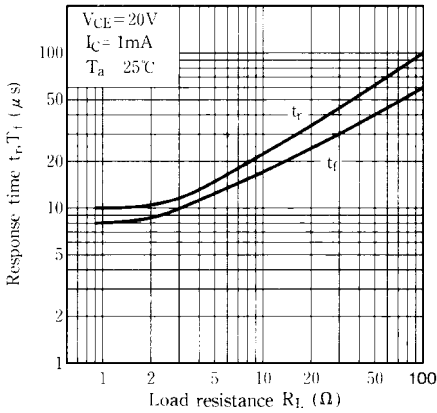


Fig. 7-a **Response Time vs. Load Resistance**
PT380/PT380F



Test Circuit for **Response Time**

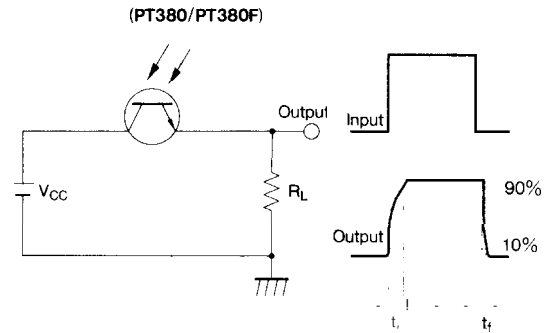
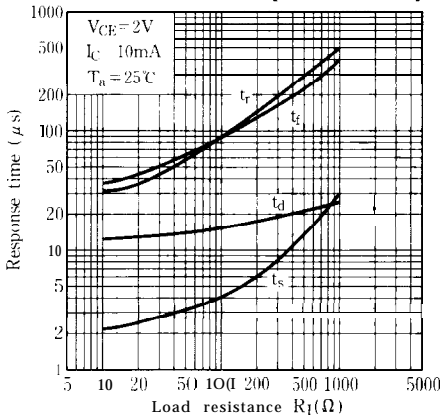


Fig. 7-b **Response Time vs. Load Resistance**
(PT381/381F)



Test Circuit for **Response Time**

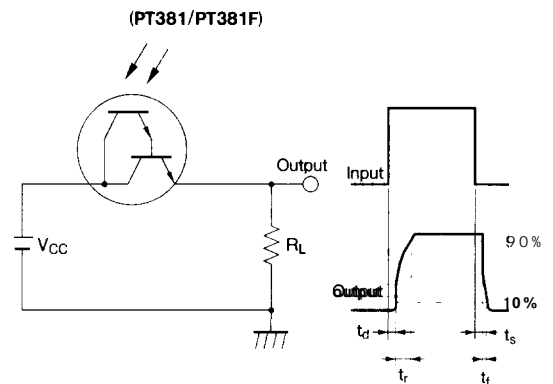


Fig. 8-s Collector-emitter Saturation voltage vs. Irradiance (PT380/380F)

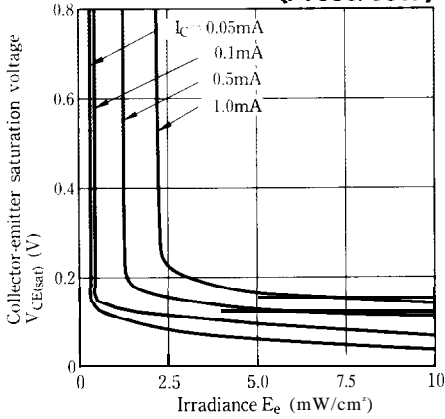


Fig. 8-b Collector-emitter Saturation voltage vs. Irradiance (PT381/381F)

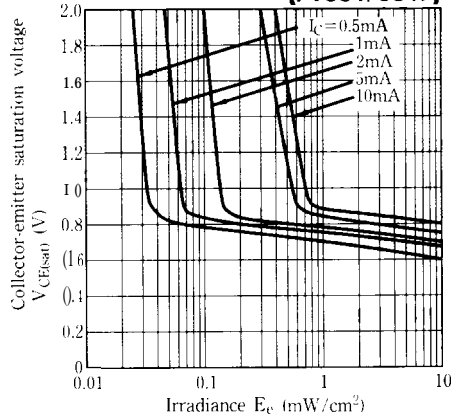


Fig. 9 Sensitivity Diagram (T_a = 25°C)

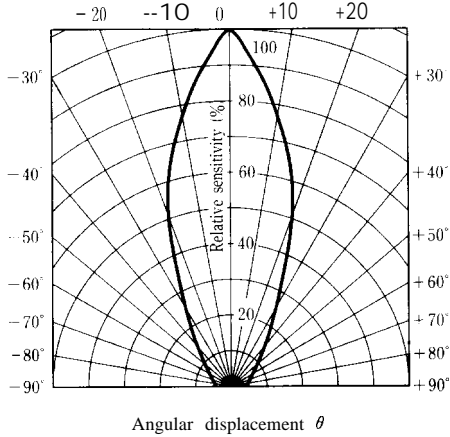
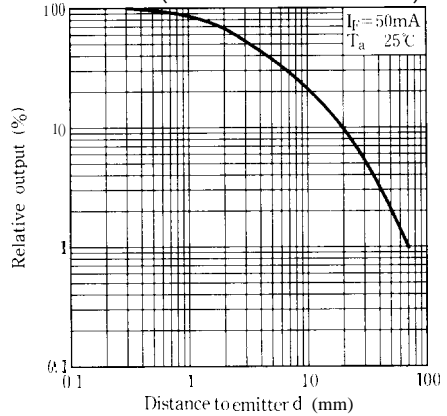


Fig. 10 Relative Collector current vs. Distance to Emitter (EmittecGL380/GL381)



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

5