PT4800/PT4800F/PT4810 PT4810F/PT4850F

Thin Type Phototransistor

■ Features

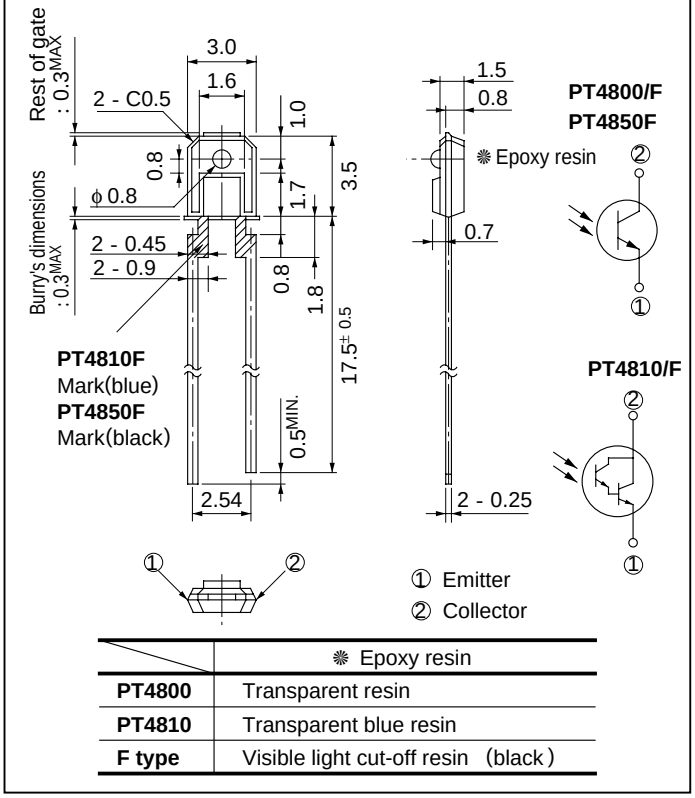
1. Thin type package（Thickness：1.5mm）
2. Visible light cut-off type：
   PT4800F/PT4810F/PT4850F
3. Single phototransistor output：
   PT4800/PT4800F/PT4850F
   Darlington phototransistor output:
   PT4810/PT4810F
4. Thin type

■ Applications

1. VCRs
2. Floppy disk drives

■ Outline Dimensions

（Unit：mm）



	✵ Epoxy resin
PT4800	Transparent resin
PT4810	Transparent blue resin
F type	Visible light cut-off resin （black）

■ 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	**PT4800/PT4800F/PT4850F**	I_C	20	mA
	PT4810/PT4810F		50	
Collector power dissipation		P_C	75	mW
Operating temperature		T_{opr}	- 25 to + 85	˚C
Storage temperature		T_{stg}	- 40 to + 85	˚C
*1Soldering temperature		T_{sol}	260	˚C

*1 For 3 seconds at the position of 1.8mm from the bottom face of resin package

■ Electro-optical Characteristics (Ta = 25˚C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*2Collector current	**PT4800**	I_C	E_e = 1mW/cm^2, V_{CE} = 5V	0.12	0.4	1.0	mA
	PT4800F			0.08	0.25	0.75	mA
	PT4850F			0.12	-	0.56	mA
	PT4810		E_e = 0.1mW/cm^2, V_{CE} = 2V	0.45	-	7.0	mA
	PT4810F			0.27	-	6.0	mA
Collector dark current	**PT4800/PT4800F PT4850F**	I_{CEO}	E_e = 0, V_{CE} = 20V	-	-	0.1	m A
	PT4810/PT4810F		E_e = 0, V_{CE} = 10V	-	-	1.0	m A
*2Collector-emitter saturation voltage	**PT4800/PT4800F PT4850F**	V_{CE} (sat)	E_e = 10mW/cm^2, I_C = 0.5mA	-	-	0.4	V
	PT4810/PT4810F		E_e = 1mW/cm^2, I_C = 2.5mA	-	-	1.0	V
Collector-emitter breakdown voltage		BV_{CEO}	I_C = 0.1mA, E_e = 0	35	-	-	V
Emitter-collector breakdown voltage		BV_{ECO}	I_E = 0.01mA, E_e = 0	6	-	-	V
Peak sensitivity wavelength	**PT4800**	λp	-	-	800	-	nm
	PT4800F			-	860	-	nm
	PT4850F			-	860	-	nm
	PT4810			-	800	-	nm
	PT4810F			-	860	-	nm
Response time — Rise time	**PT4800/PT4800F PT4850F**	t_r	V_{CE} = 2V, I_C = 2mA, R_L = 100Ω	-	3.0	-	µs
	PT4810/PT4810F		V_{CE} = 2V, I_C = 10mA, R_L = 100Ω	-	80	400	µs
Response time — Fall time	**PT4800/PT4800F PT4850F**	t_f	V_{CE} = 2V, I_C = 2mA, R_L = 100Ω	-	3.5	-	µs
	PT4810/PT4810F		V_{CE} = 2V, I_C = 10mA, R_L = 100Ω	-	70	350	µs
Half intensity angle		$\Delta\theta$	-	-	± 35	-	˚

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

Fig. 1 Collector Power Dissipation vs. Ambient Temperature

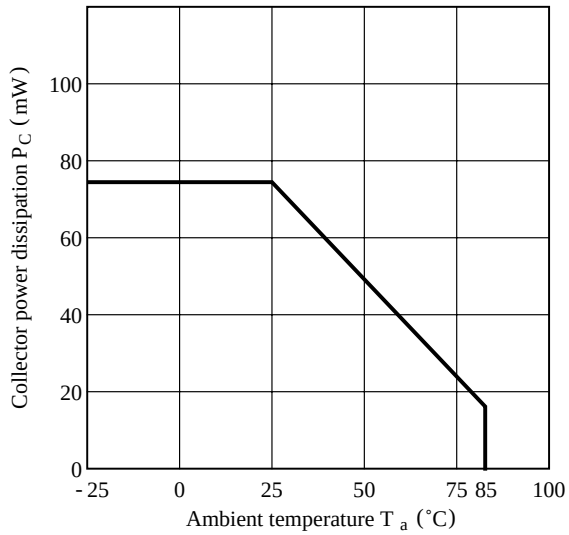


Fig. 2-a Collector Dark Current vs. Ambient Temperature (PT4800/PT4800F/PT4850F)

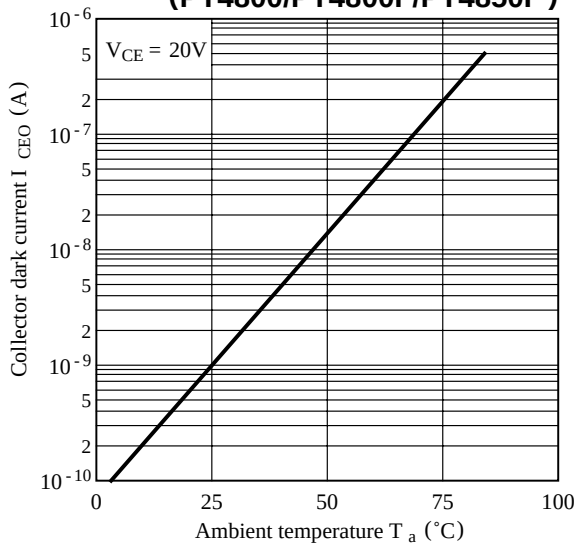


Fig. 2-b Collector Dark Current vs. Ambient Temperature (PT4810/PT4810F)

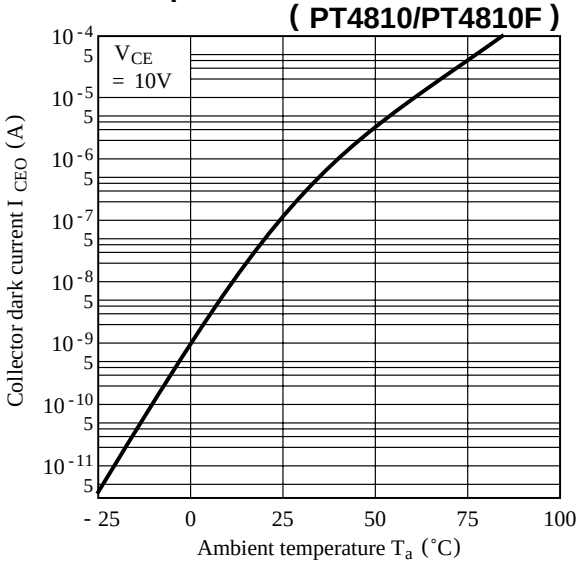


Fig. 3-a Relative Collector Current vs. Ambient Temperature (PT4800/PT4800F/PT4850F)

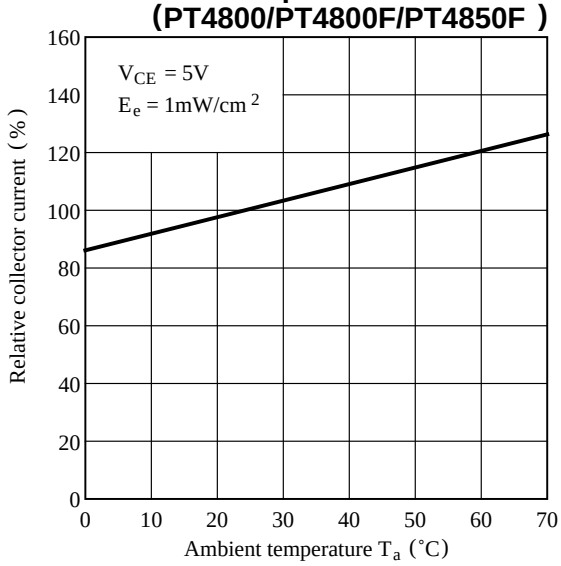


Fig. 3-b Relative Collector Current vs. Ambient Temperature (PT4810/PT4810F)

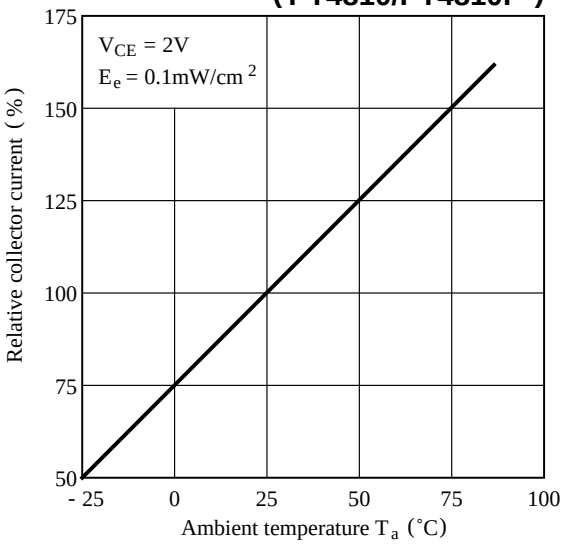


Fig. 4-a Collector Current vs. Irradiance (PT4800)

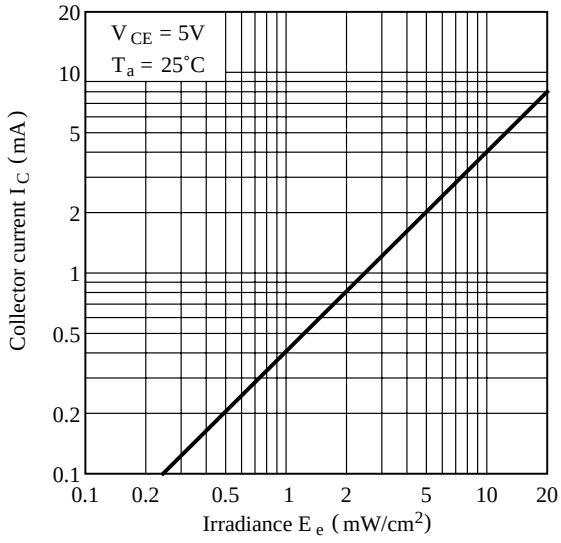


Fig. 4-b Collector Current vs. Irradiance (PT4800F/PT4850F)

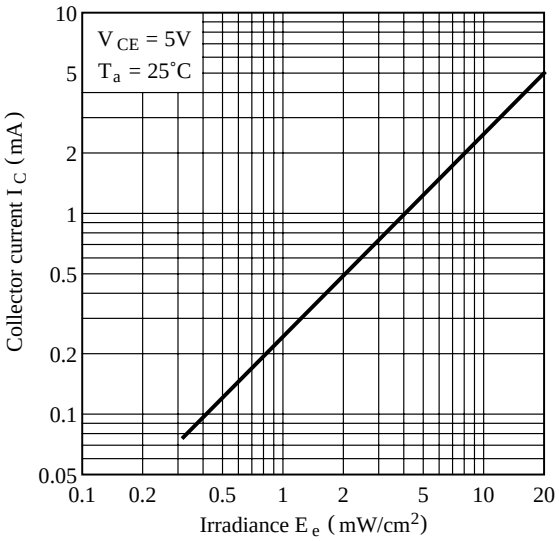


Fig. 4-c Collector Current vs. Irradiance (PT4810/PT4810F)

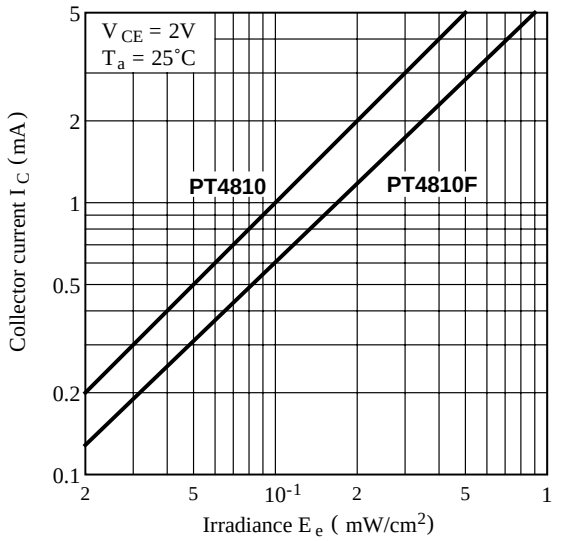


Fig. 5-a Collector Current vs. Collector-emitter Voltage (PT4800)

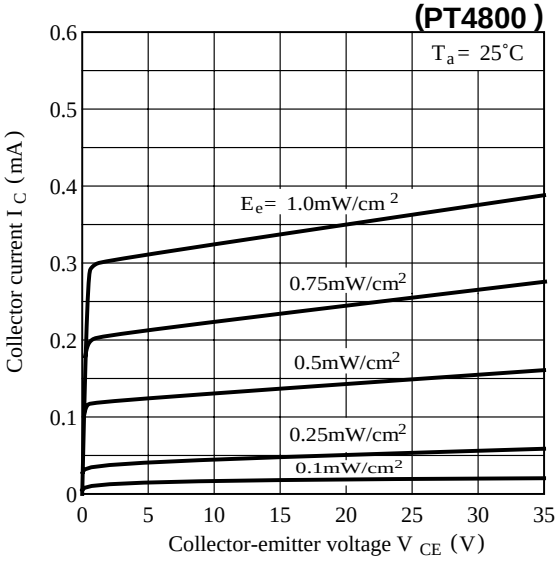


Fig. 5-b Collector Current vs. Collector-emitter Voltage (PT4800F/PT4850F)

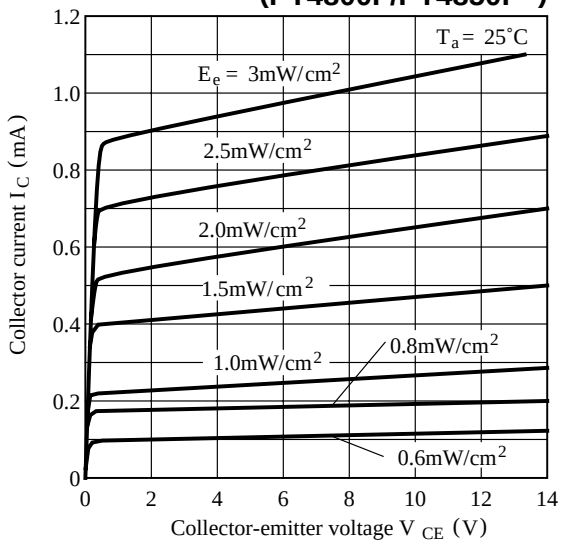


Fig. 5-c Collector Current vs. Collector-emitter Voltage (PT4810)

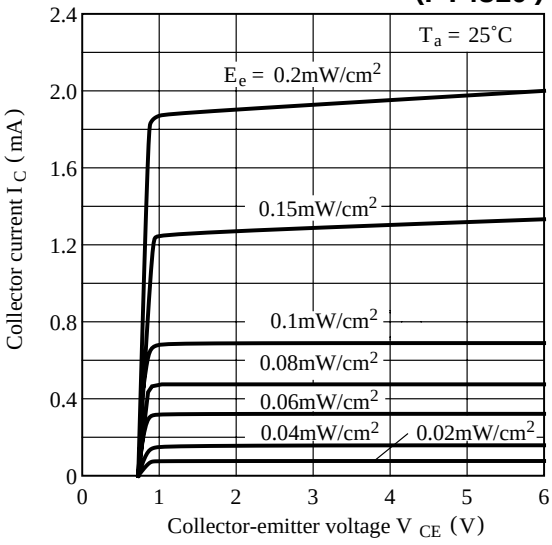


Fig. 5-d Collector Current vs. Collector-emitter Voltage (PT4810F)

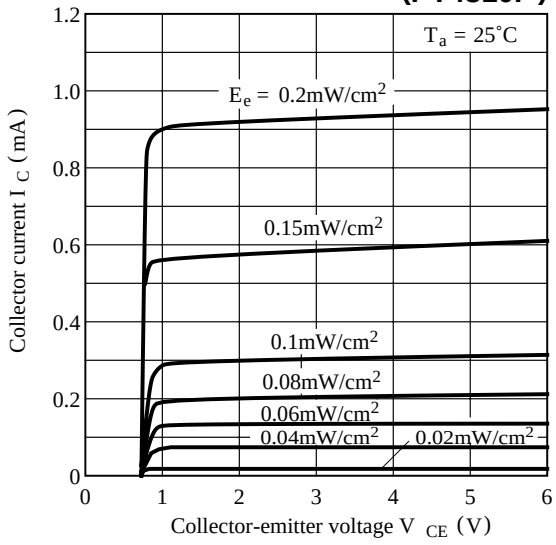


Fig. 6 Spectral Sensitivity

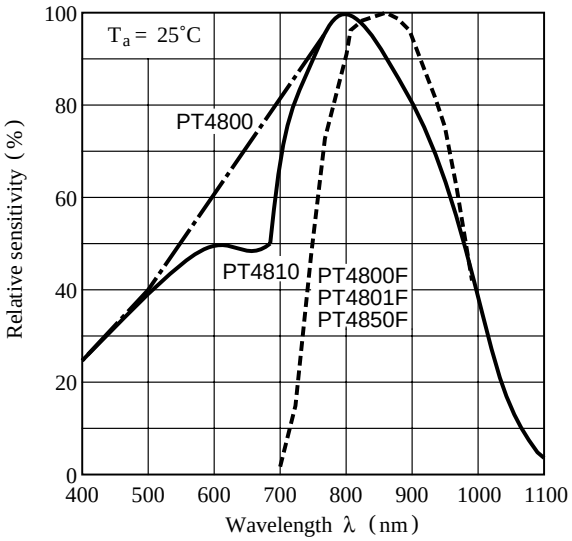


Fig. 7-a Response Time vs. Load Resistance (PT4800/PT4800F/PT4850F)

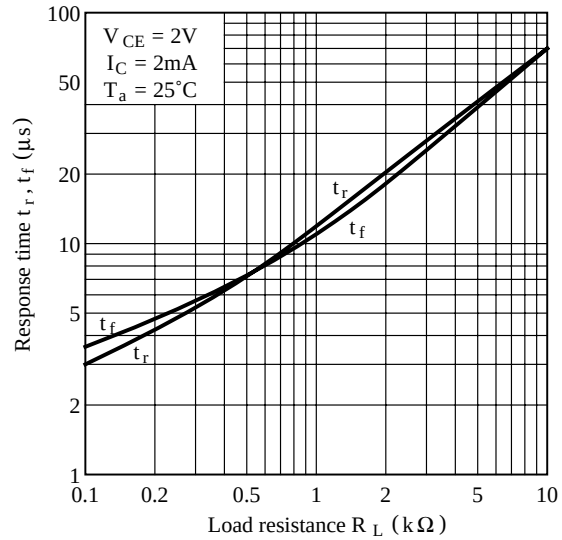
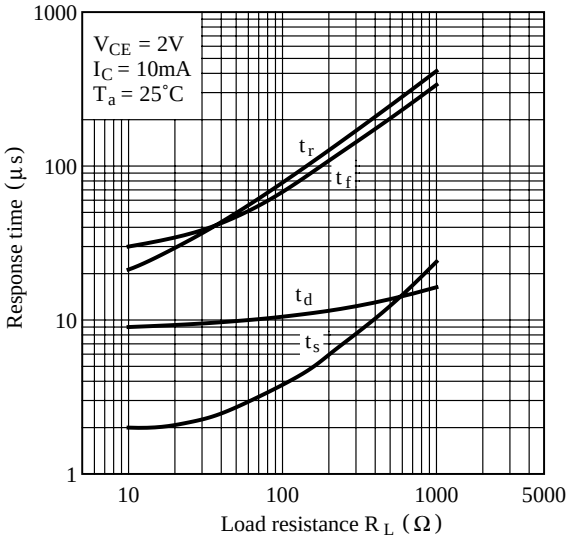
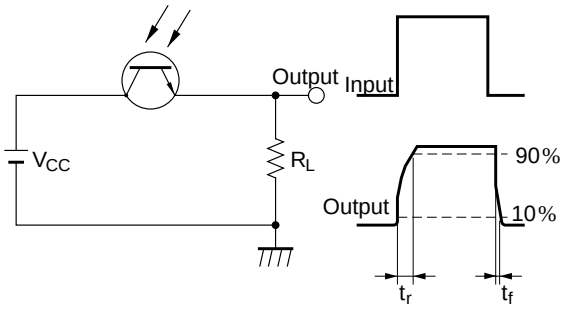


Fig. 7-b Response Time vs. Load Resistance (PT4810/ PT4810F)



Test Circuit for Response Time (PT4800/ PT4800F/ PT4850F)



Test Circuit for Response Time (PT4810/ PT4810F)

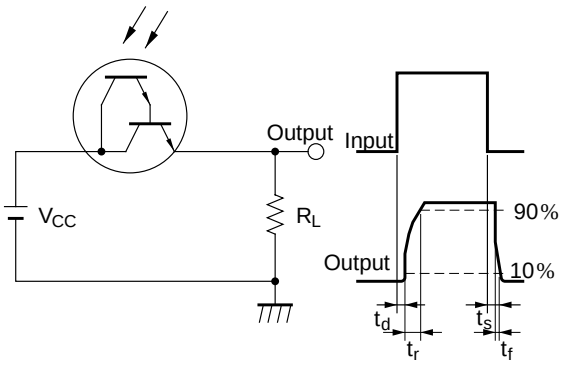


Fig. 8 Sensitivity Diagram (T_a = 25˚C)

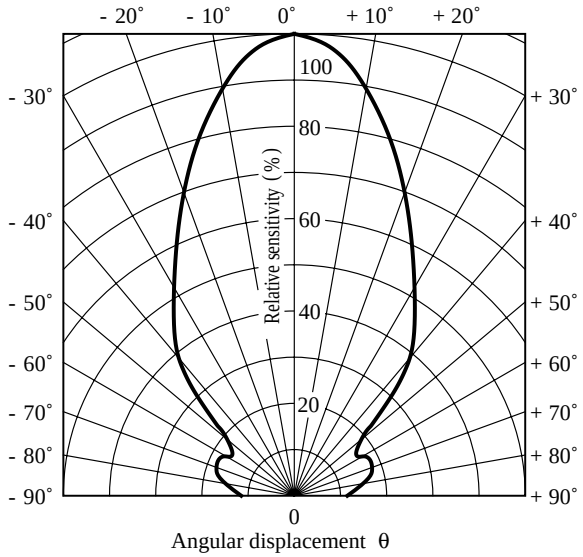


Fig. 9-a Collector-emitter Saturation Voltage vs. Irradiance (PT4800)

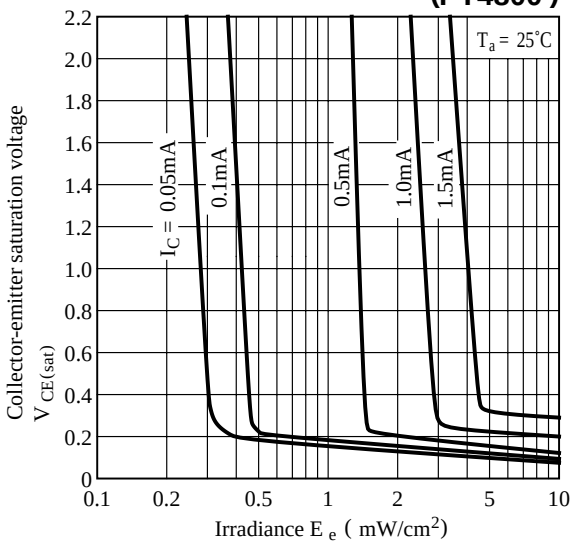


Fig. 9-b Collector-emitter Saturation Voltage vs. Irradiance (PT4800F/ PT4850F)

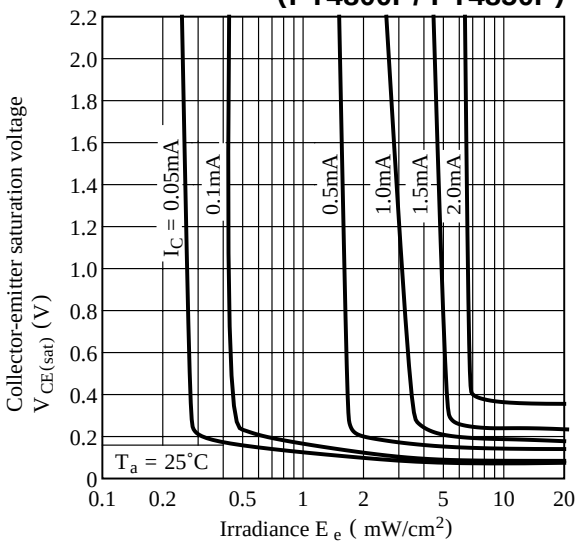


Fig. 9-c Collector-emitter Saturation Voltage vs. Irradiance (PT4810)

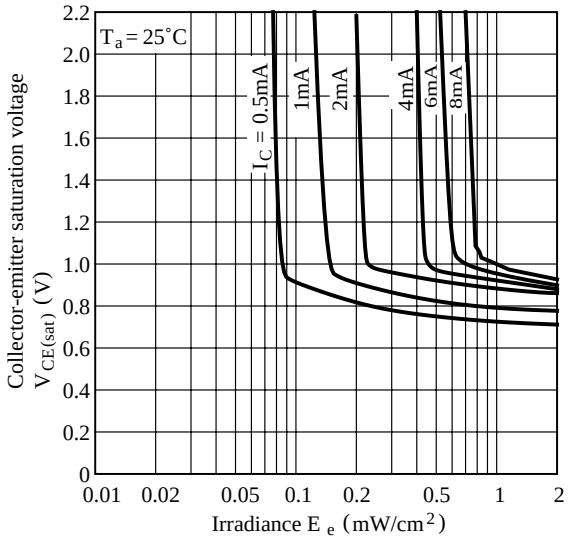


Fig.9-d Collector-emitter Saturation Voltage vs. Irradiance (PT4810F)

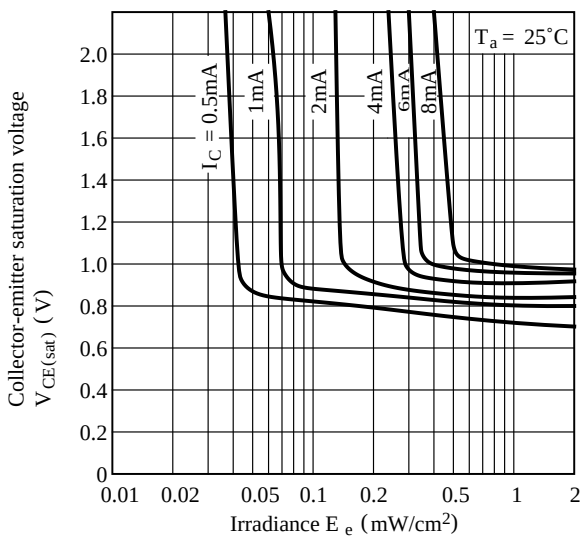


Fig.10-a Relative Output vs. Distance (PT4800F) (Emitter : GL4800)

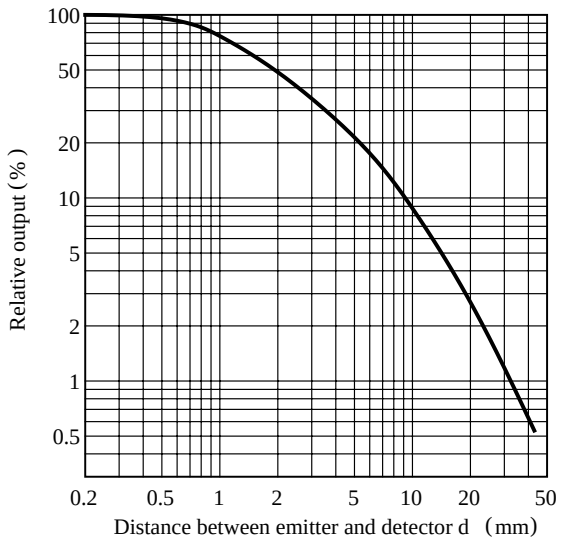
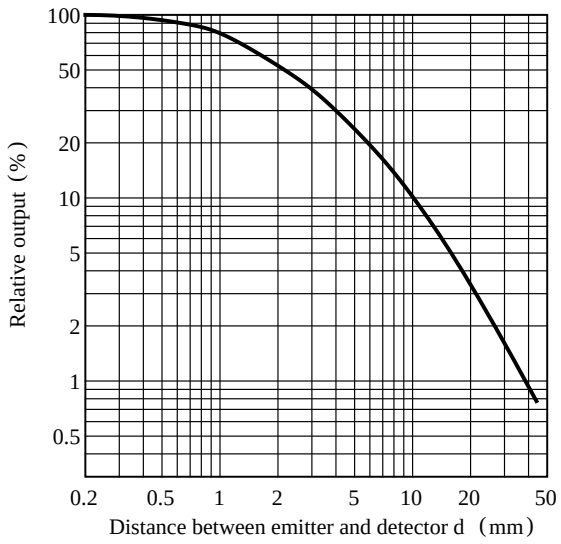


Fig.10-b Relative Output vs. Distance (PT4810F) (Emitter : GL4800)



● Please refer to the chapter " Precautions for Use"

NOTICE

- The circuit application examples in this publication are provided to explain representative applications of SHARP devices and are not intended to guarantee any circuit design or license any intellectual property rights. SHARP takes no responsibility for any problems related to any intellectual property right of a third party resulting from the use of SHARP's devices.
- Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device. SHARP reserves the right to make changes in the specifications, characteristics, data, materials, structure, and other contents described herein at any time without notice in order to improve design or reliability. Manufacturing locations are also subject to change without notice.
- Observe the following points when using any devices in this publication. SHARP takes no responsibility for damage caused by improper use of the devices which does not meet the conditions and absolute maximum ratings to be used specified in the relevant specification sheet nor meet the following conditions:

(i) The devices in this publication are designed for use in general electronic equipment designs such as:
— Personal computers
— Office automation equipment
— Telecommunication equipment [terminal]
— Test and measurement equipment
— Industrial control
— Audio visual equipment
— Consumer electronics

(ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
— Transportation control and safety equipment (i.e., aircraft, trains, automobiles, etc.)
— Traffic signals
— Gas leakage sensor breakers
— Alarm equipment
— Various safety devices, etc.

(iii) SHARP devices shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as:
— Space applications
— Telecommunication equipment [trunk lines]
— Nuclear power control equipment
— Medical and other life support equipment (e.g., scuba).

- Contact a SHARP representative in advance when intending to use SHARP devices for any "specific" applications other than those recommended by SHARP or when it is unclear which category mentioned above controls the intended use.
- If the SHARP devices listed in this publication fall within the scope of strategic products described in the Foreign Exchange and Foreign Trade Control Law of Japan, it is necessary to obtain approval to export such SHARP devices.
-
- Contact and consult with a SHARP representative if there are any questions about the contents of this publication.