

# PT491 /PT491 F PT493/PT493F

Intermediate Acceptance **High Sensitivity** Phototransistor

## Features

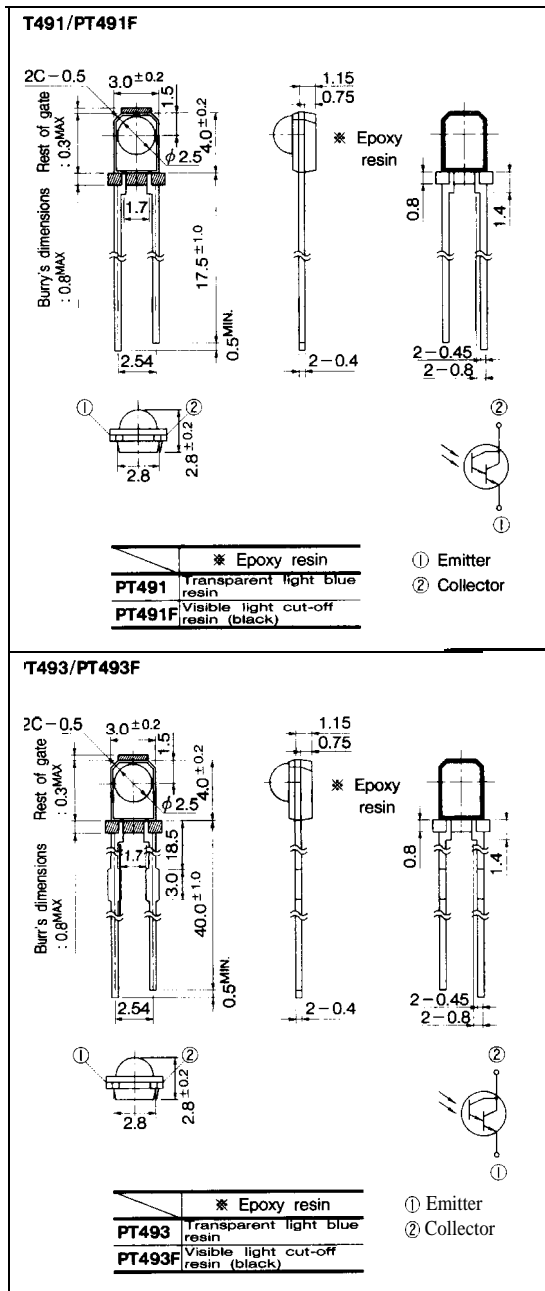
1. Epoxy resin package
2. Compact
3. Intermediate acceptance ( $\Delta\theta$ : TYP.  $\pm 40^\circ$ )
4. Long lead pin type : **PT493/PT493F**
5. Visible light cut-off type : **PT491F/PT493F**

## Applications

1. VCRs
2. Optoelectronic switches

## Outline Dimensions

(Unit : mm)



## Absolute Maximum Ratings (Ta = 25°C)

Parameter	Symbol	Rating	Unit
Collector-emitter voltage	V <sub>CSO</sub>	35	V
Emitter-collector voltage	V <sub>ECO</sub>	6	v
Collector current	I <sub>C</sub>	50	mA
Collector power dissipation	P <sub>C</sub>	75	mW
Operating temperature	T <sub>opr</sub>	-25 to +85	°C
Storage temperature	T <sub>stg</sub>	-40 to +85	°C
*1 Soldering temperature	T <sub>sol</sub>	260	°C

\*1 For 3 seconds at the position of 1.4mm from the surface of resin edge

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Phototransistors

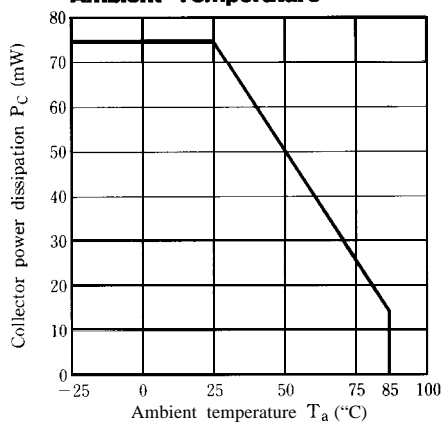
**■ Electro-optical Characteristics**

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

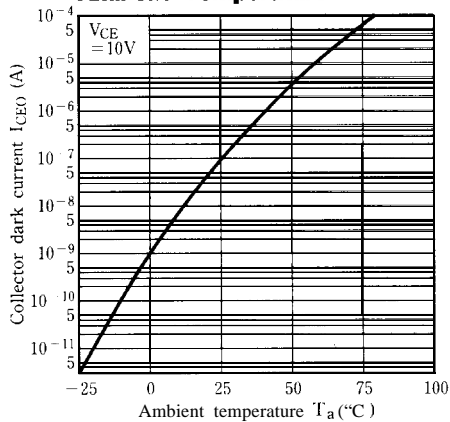
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*1 Collector current	PT491/PT493	$V_{CE} = 2\text{V}$ $E_V = 21\text{x}$	0.3	0.6	1.3	mA
	PT491F/PT493F		0.2	0.4	0.8	
Collector dark current	$I_{CEO}$	$V_{CE} = 10\text{V}, E_e = 0$	—	—	$10^{-4}$	A
*2 Collector emitter saturation voltage	$V_{CE(sat)}$	$I_C = 0.8\text{mA}$ , $E_e = 1\text{mW/cm}^2$	—	—	1.0	V
Peak sensitivity wavelength	PT491/PT493 PT491F/PT493F	$\lambda_p$	—	800	—	nm
			—	—	860	—
Response time	Rise time	$V_{CE} = 2\text{V}, I_C = 5\text{mA}$ $R_L = 100\Omega$	—	80	400	$\mu\text{s}$
	Fall time		—	70	350	
Half intensity angle	$\Delta\theta$			$\pm 40$	—	

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

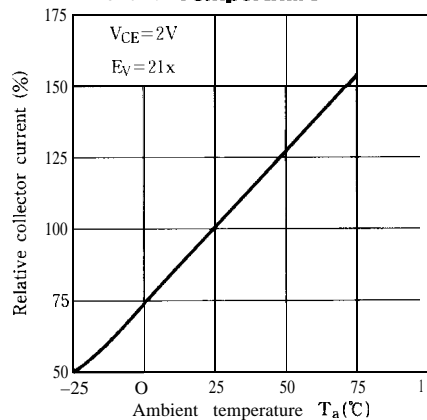
**Fig. 1 Collector Power Dissipation vs. Ambient Temperature**



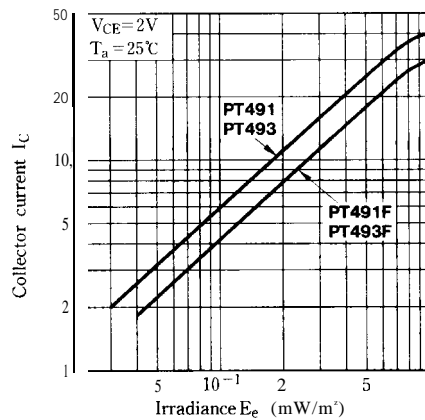
**Fig. 2 Collector Dark Current vs. Ambient Temperature**



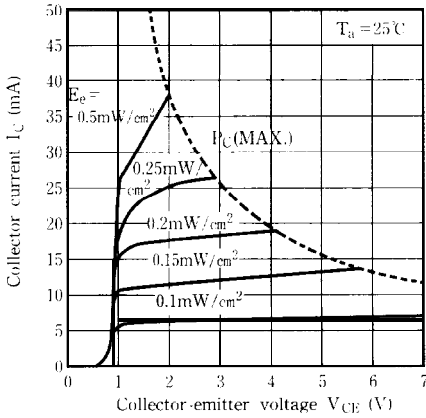
**Fig. 3 Relative Collector Current vs. Ambient Temperature**



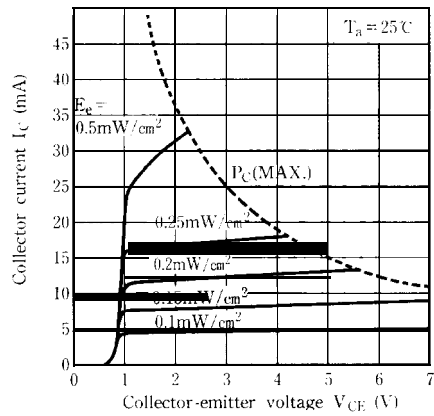
**Fig. 4 Collector Current vs. Irradiance**



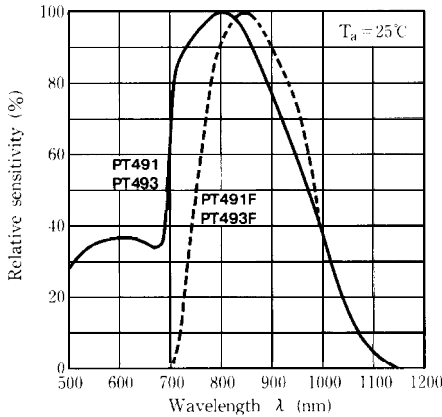
**Fig. 5-a Collector Current vs. Collector-emitter Voltage (PT491/PT493)**



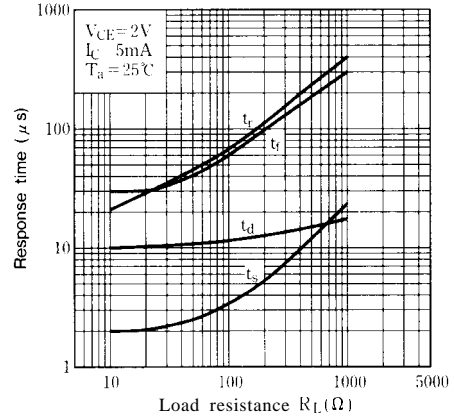
**Fig. 5-b Collector Current vs. Collector-emitter voltage (PT491F/PT493F)**



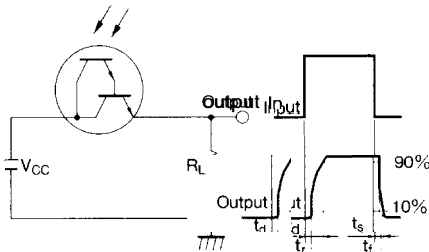
**Fig. 6 Spectral Sensitivity**



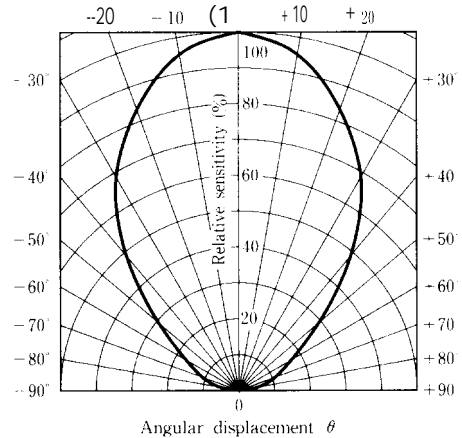
**Fig. 7 Response Time vs. Load Resistance**



**Test Circuit for Response Time**



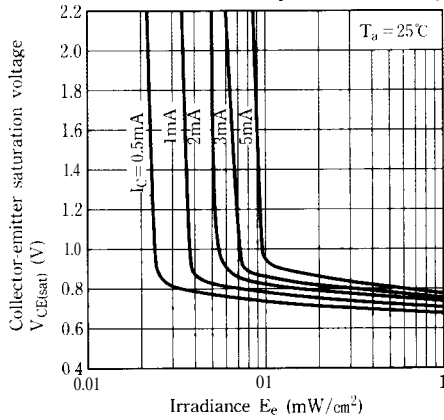
**Fig. 8 Sensitivity Diagram (T\_a = 25°C)**



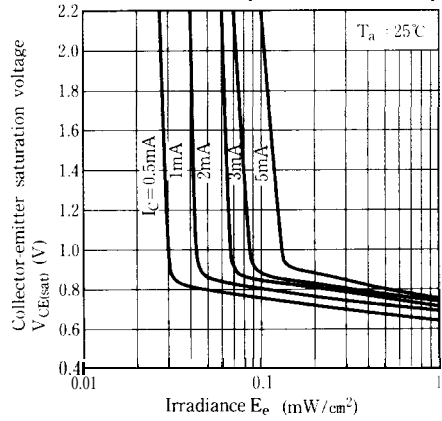
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**Fig. 9 Collector-emitter Saturation Voltage vs. Irradiance (PT491/PT493)**



**Fig.10 Collector-emitter Saturation Voltage vs. Irradiance (PT491F/PT493F)**



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