

# PT4120

## Side View and Thin Flat Type 2-Phase Output Phototransistor

### ■ Features

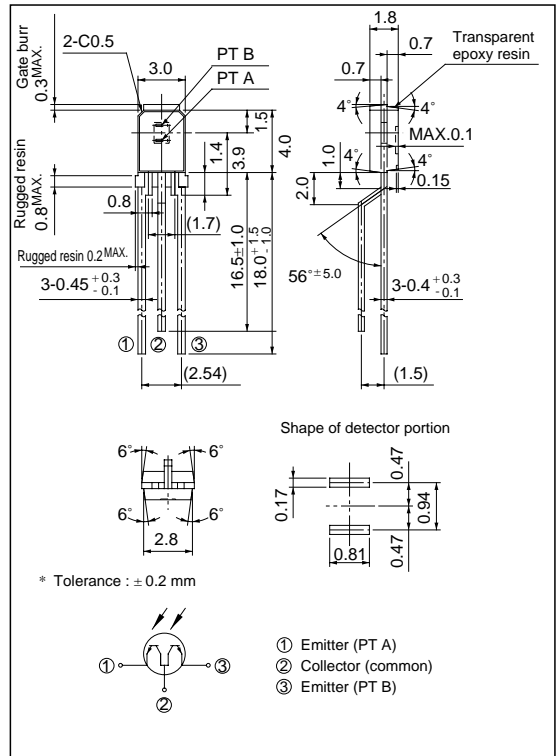
1. 2-phase PT output type  
(Read pitch : 0.94 mm)
2. Compact, thin and flat package

### ■ Applications

1. Mouses
2. Track balls
3. Encoders

### ■ Outline Dimensions

(Unit : mm)

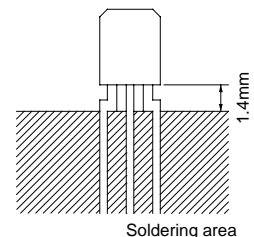


### ■ Absolute Maximum Ratings

(Ta = 25°C)

Parameter	Symbol	Rating	Unit
Collector-emitter voltage	V <sub>CEO</sub>	35	V
Emitter-collector voltage	V <sub>ECO</sub>	6	V
Collector current	I <sub>C</sub>	20	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 MAX. 5 seconds at the position of 1.4 mm from the resin edge



**Electro-optical Characteristics**

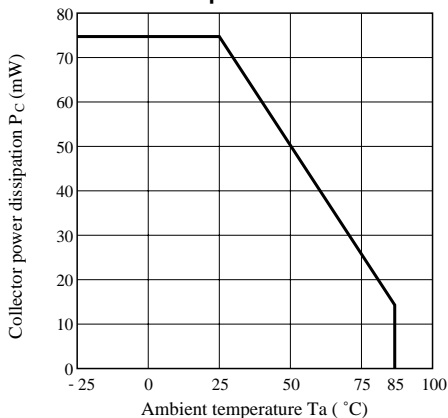
(Ta = 25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector current		I <sub>C</sub>	<sup>*2</sup> E <sub>V</sub> = 1 000 lx V <sub>CE</sub> = 5V	0.45	-	1.8	mA
Dark current		I <sub>CEO</sub>	<sup>*2</sup> E <sub>e</sub> = 0, V <sub>CE</sub> = 20V	-	-	0.1	μA
Collector-emitter saturation voltage		V <sub>CE(sat)</sub>	<sup>*2</sup> E <sub>V</sub> = 1 000 lx I <sub>C</sub> = 0.1mA	-	0.1	0.4	V
Collector-emitter breakdown voltage		BV <sub>CEO</sub>	I <sub>C</sub> = 0.1mA <sup>*2</sup> E <sub>e</sub> = 0	35	-	-	V
Emitter-collector breakdown voltage		BV <sub>ECO</sub>	I <sub>E</sub> = 0.01mA <sup>*2</sup> E <sub>e</sub> = 0	6	-	-	V
Peak sensitivity wavelength		λ <sub>p</sub>		-	800	-	nm
Response time	Rise Time	t <sub>r</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 2mA R <sub>L</sub> = 100Ω	-	3.0	-	μs
	Fall Time	t <sub>f</sub>		-	3.5	-	μs
2-element I <sub>C</sub> variation		R	I <sub>C(a)</sub> /I <sub>C(b)</sub>	0.7	-	1.3	-

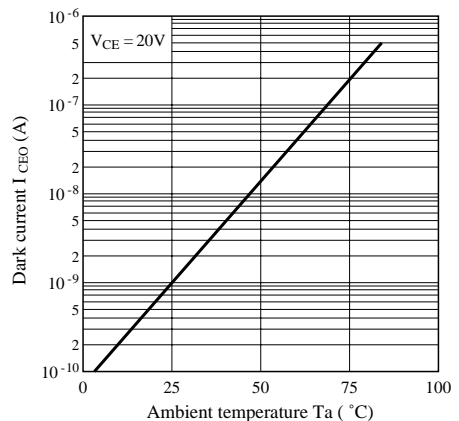
\*2 E<sub>V</sub>, E<sub>e</sub> : Illuminance, irradiance by CIE standard light source A (tungsten lamp)

\*3 Terminals other than test terminal shall be released.

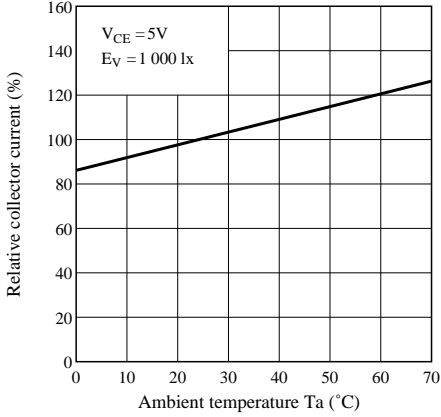
**Fig. 1 Collector Power Dissipation vs. Ambient Temperature**



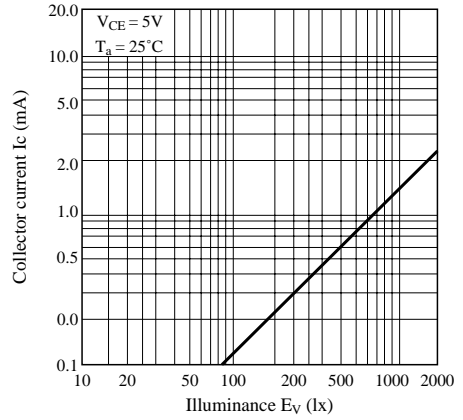
**Fig. 2 Dark Current vs. Ambient Temperature**



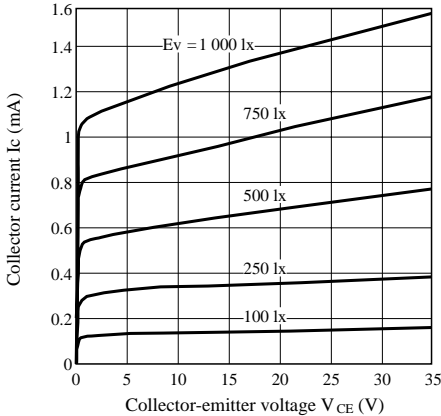
**Fig. 3 Relative Collector Current vs. Ambient Temperature**



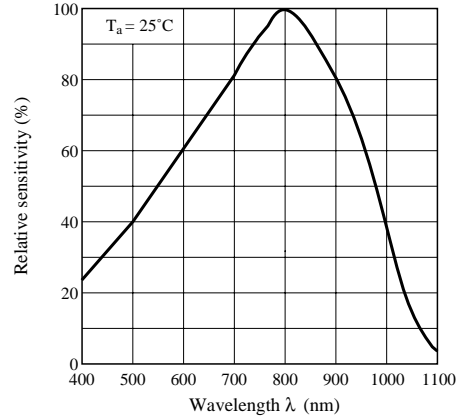
**Fig. 4 Collector Current vs. Illuminance**



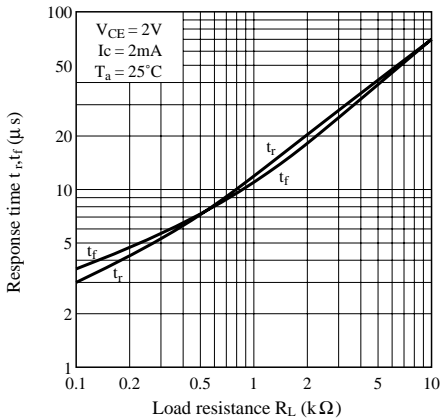
**Fig. 5 Collector Current vs. Collector-emitter Voltage**



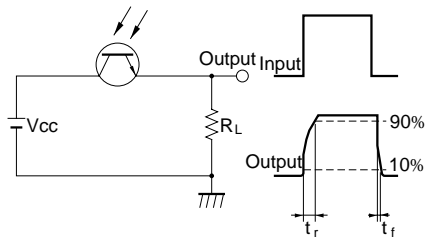
**Fig. 6 Spectral Sensitivity**



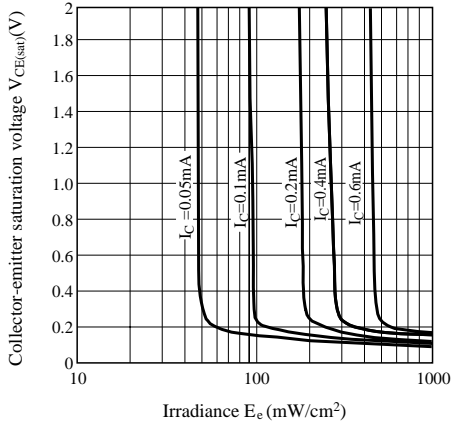
**Fig. 7 Response Time vs. Load Resistance**



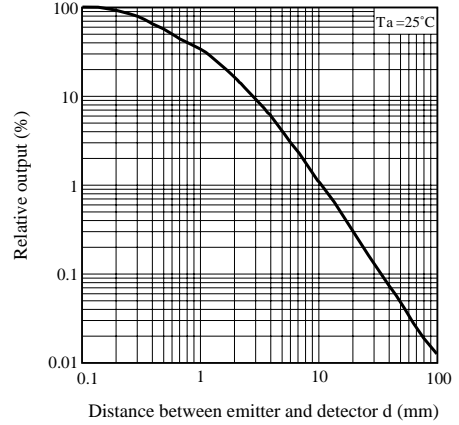
**Test Circuit for Response Time**



**Fig. 9 Collector-emitter Saturation Voltage vs. Irradiance**



**Fig. 10 Relative Output vs. Distance (Detector : GL4100)**



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