

# GP1S30

## Subminiature Photointerrupter

### ■ Features

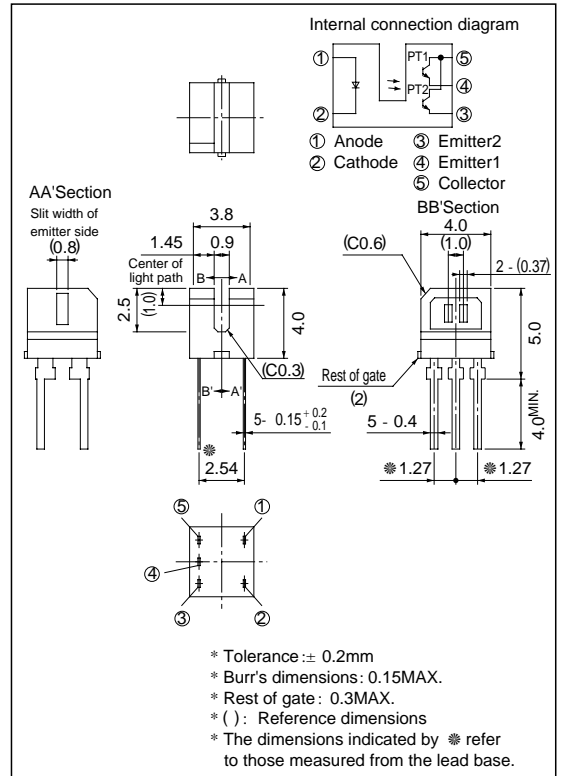
1. Compact package
2. PWB mounting type
3. Double-phase phototransistor output type for detecting of rotation direction and count
4. Detecting pitch: 0.6mm

### ■ Applications

1. Mouses
2. Cameras

### ■ Outline Dimensions

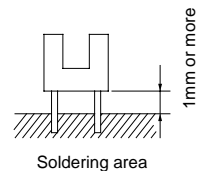
(Unit : mm)



### ■ Absolute Maximum Ratings

(Ta = 25°C)

	Parameter	Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	50	mA
	Reverse voltage	V <sub>R</sub>	6	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	V <sub>CE1O</sub>	35	V
		V <sub>CE2O</sub>		
	Emitter-collector Voltage	V <sub>E1CO</sub>	6	V
		V <sub>E2CO</sub>		
	Collector current	I <sub>C</sub>	20	mA
Collector power dissipation	P <sub>C</sub>	75	mW	
Total power dissipation	P <sub>tot</sub>	100	mW	
Operating temperature	T <sub>opr</sub>	- 25 to + 85	°C	
Storage temperature	T <sub>stg</sub>	- 40 to + 100	°C	
*1 Soldering temperature	T <sub>sol</sub>	260	°C	



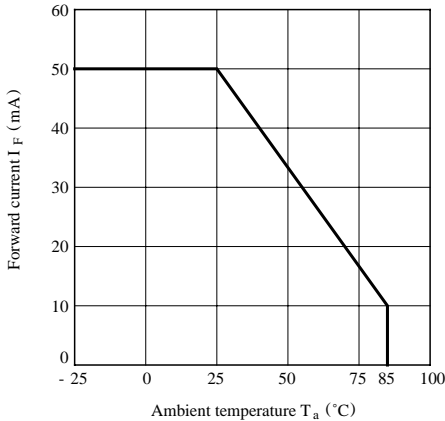
\*1 For MAX. 5 seconds

**Electro-optical Characteristics**

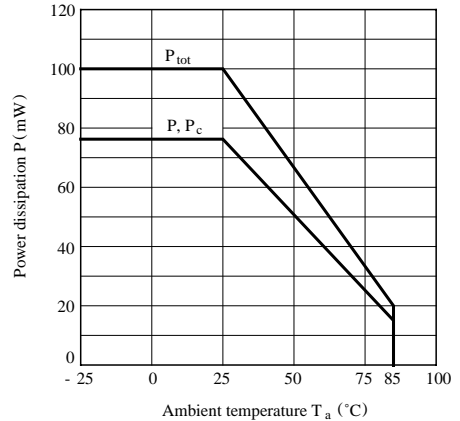
( $T_a = 25^\circ\text{C}$ )

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	$V_F$	$I_F = 20\text{mA}$	-	1.2	1.4	V	
	Reverse current	$I_R$	$V_R = 3\text{V}$	-	-	10	$\mu\text{A}$	
Output	Collector dark current	$I_{CEO}$	$V_{CE} = 20\text{V}$	-	-	100	nA	
Transfer characteristics	Collector current	$I_C$	$V_{CE} = 5\text{V}, I_F = 4\text{mA}$	250	-	1 000	$\mu\text{A}$	
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 8\text{mA}, I_C = 125\mu\text{A}$	-	-	0.4	V	
	Response time	Rise time	$t_r$	$V_{CC} = 5\text{V}, I_C = 100\mu\text{A}$	-	50	150	$\mu\text{s}$
		Fall time	$t_f$	$R_L = 1\ 000\ \Omega$	-	50	150	$\mu\text{s}$

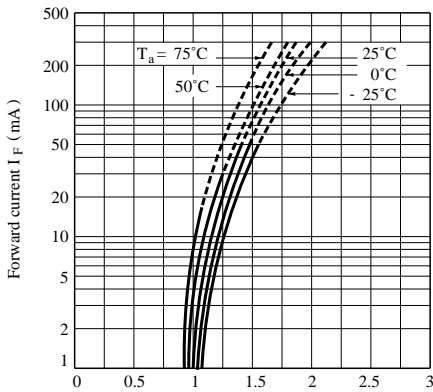
**Fig. 1 Forward Current vs. Ambient Temperature**



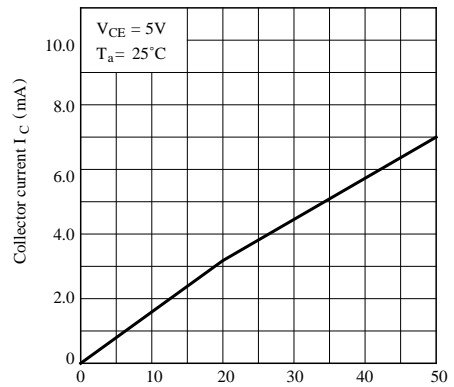
**Fig. 2 Power Dissipation vs. Ambient Temperature**



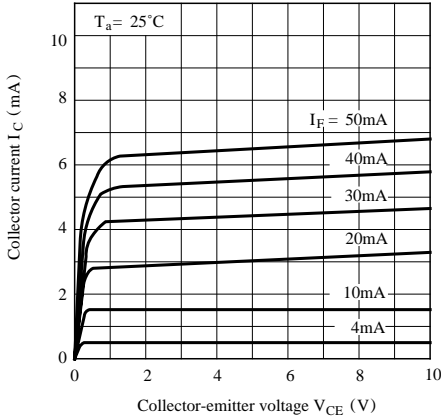
**Fig. 3 Forward Current vs. Forward Voltage**



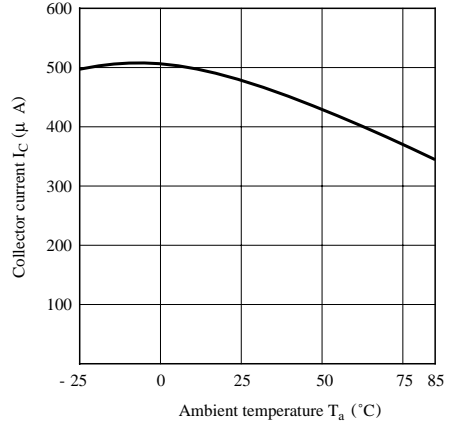
**Fig. 4 Collector Current vs. Forward Current**



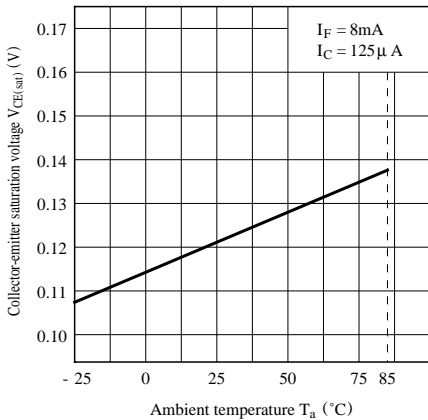
**Fig. 5 Collector Current vs. Collector-emitter Voltage**



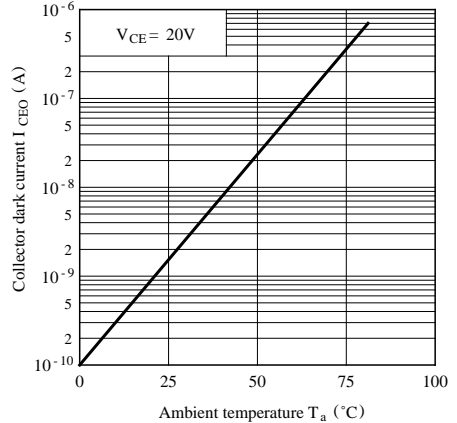
**Fig. 6 Collector Current vs. Ambient Temperature**



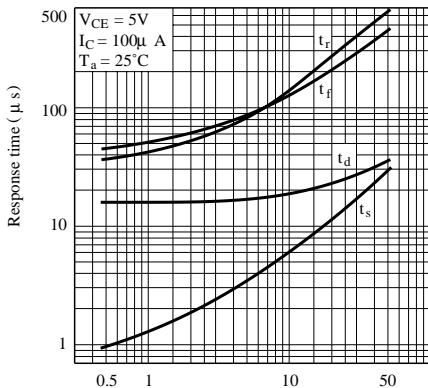
**Fig. 7 Collector-emitter Saturation Voltage vs. Ambient Temperature**



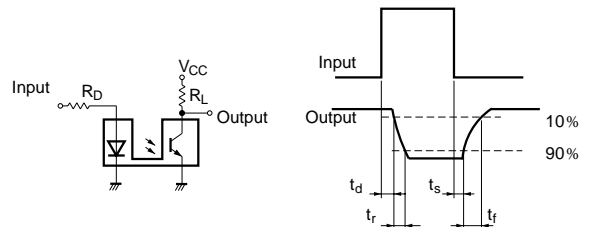
**Fig. 8 Collector Dark Current vs. Ambient Temperature**



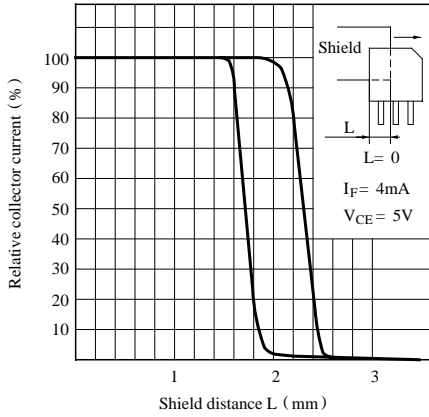
**Fig. 9 Response Time vs. Load Resistance**



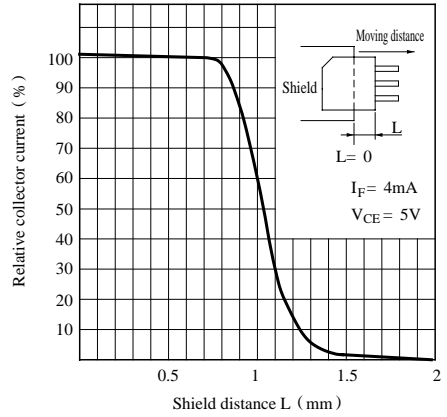
**Test Circuit for Response Time**



**Fig.10 Relative Collector Current vs. Shield Distance (1)**



**Fig.11 Relative Collector Current vs. Shield Distance (2)**



- Please refer to the chapter “Precautions for Use”.