GP1S39

Subminiature, Double-phase Output, Wide Gap Photointerrupter

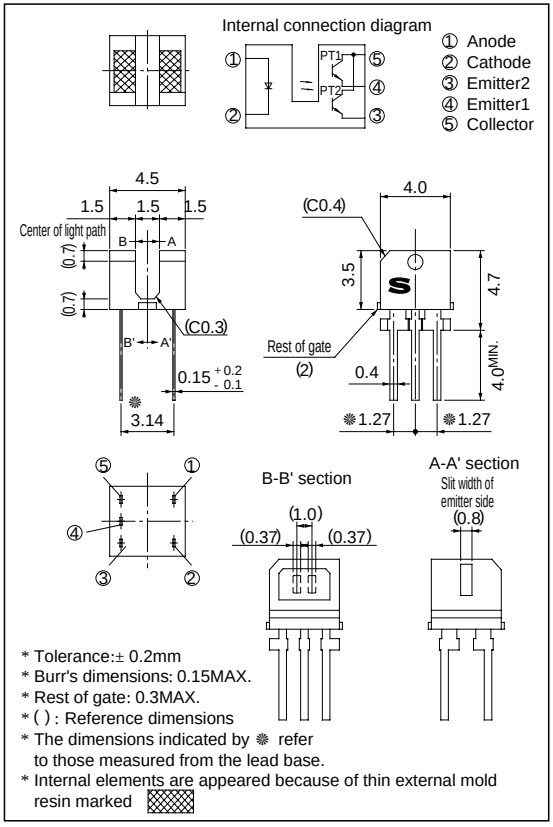
■ Features

1. Ultra-compact package
2. PWB mounting type
3. Double-phase phototransistor output type for detecting of rotation direction and count
4. Wide gap between light emitter and detector: 1.5mm
5. Slit width: 0.8mm
6. Detecting pitch: 0.6mm

■ Applications

1. Mouses
2. Cameras

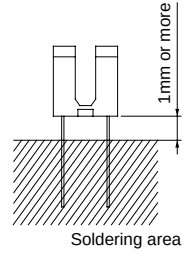
■ Outline Dimensions (Unit : mm)



■ Absolute Maximum Ratings (Ta= 25˚C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	6	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	V_{CE_1O} / V_{CE_2O}	35	V
	Emitter-collector voltage	V_{E_1CO} / V_{E_2CO}	6	V
	Collector current	I_C	20	mA
	Collector power dissipation	P_C	75	mW
Total power dissipation		P_{tot}	100	mW
Operating temperature		T_{opr}	- 25 to + 85	˚C
Storage temperature		T_{stg}	- 40 to + 100	˚C
*1Soldering temperature		T_{sol}	260	˚C

*1 For 5 seconds



■ Electro-optical Characteristics

(Ta = 25˚C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage		V_F	I_F = 20mA	-	1.2	1.4	V
	Reverse current		I_R	V_R = 3V	-	-	10	μA
Output	Collector dark current		I_{CEO}	V_{CE} = 20V	-	-	100	nA
Transfer characteristics	Collector current		I_C	V_{CE} = 5V, I_F = 4mA	130	-	520	μA
	Collector current ratio		I_{C1}/I_{C2}	V_{CE} = 5V, I_F = 4mA	0.67	-	1.5	-
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F = 8mA, I_C = 50 μA	-	-	0.4	V
	Response time	Rise time	t_r	V_{CE} = 5V, I_C = 100 μA	-	50	150	μs
		Fall time	t_f	R_L = 1 000 Ω	-	50	150	μs

Fig. 1 Forward Current vs. Ambient Temperature

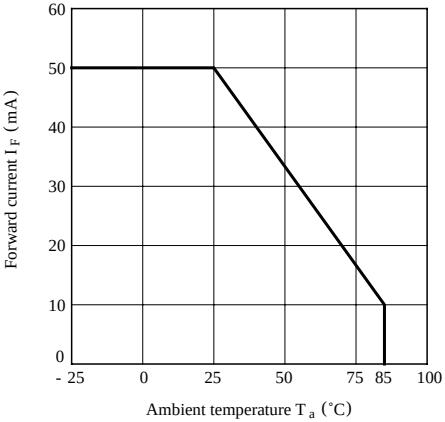


Fig. 2 Power Dissipation vs. Ambient Temperature

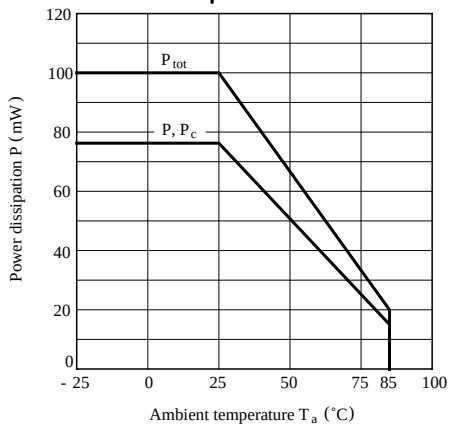


Fig. 3 Forward Current vs. Forward Voltage

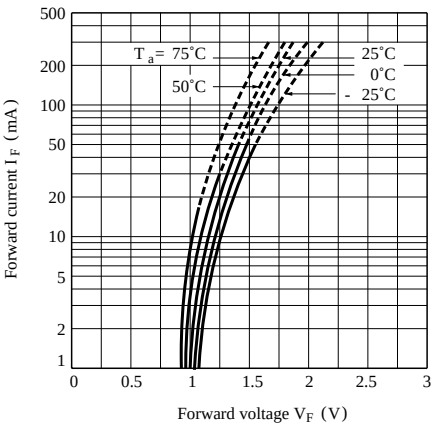


Fig. 4 Collector Current vs. Forward Current

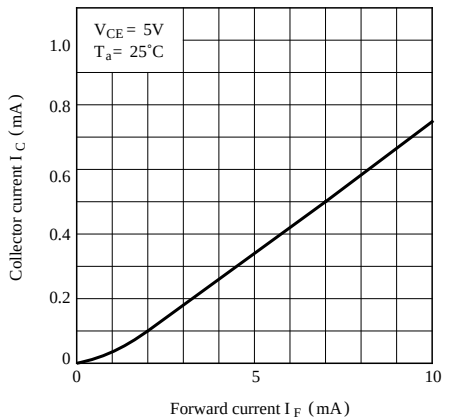


Fig. 5 Collector Current vs. Collector-emitter Voltage

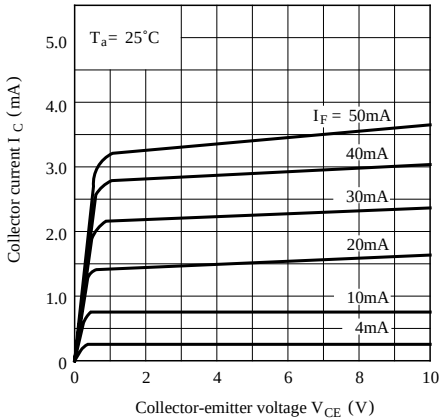


Fig. 6 Collector Current vs. Ambient Temperature

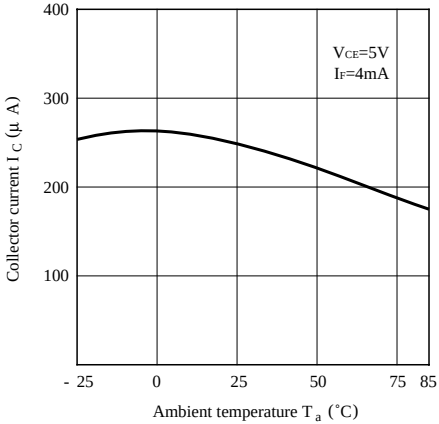


Fig. 7 Collector-emitter Saturation Voltage vs. Ambient Temperature

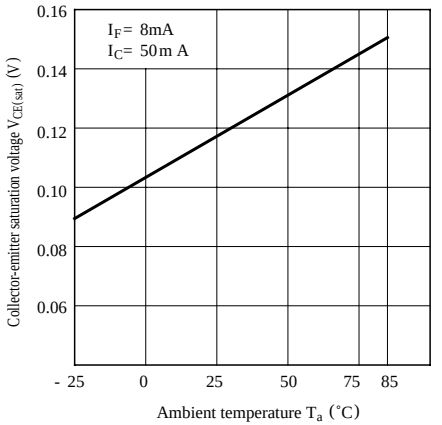


Fig. 8 Collector Dark Current vs. Ambient Temperature

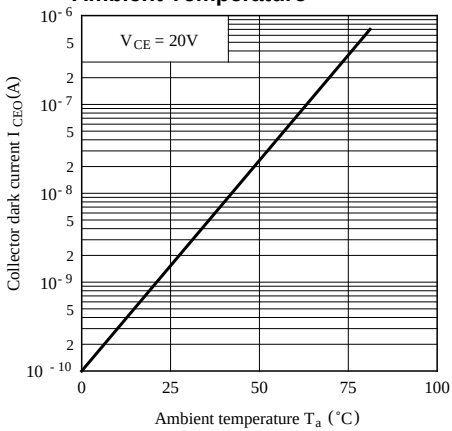
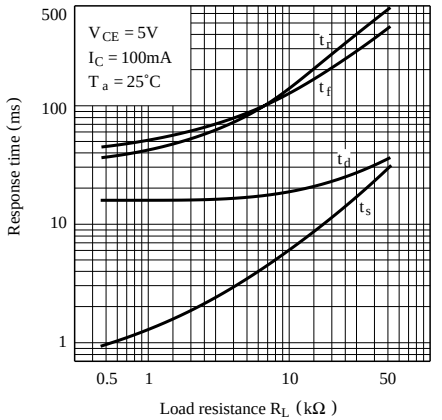


Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time

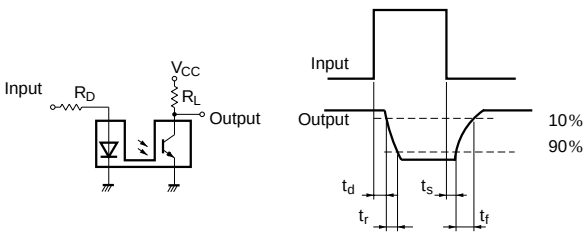


Fig.10 Relative Collector Current vs. Shield Distance (1)

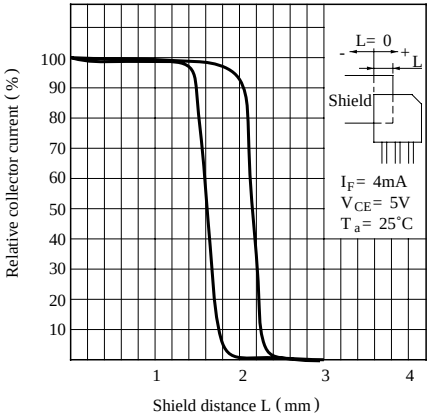
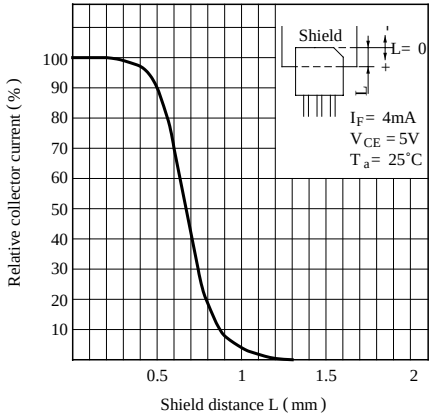


Fig.11 Relative Collector Current vs. Shield Distance (2)



- Please refer to the chapter "Precautions for Use".

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— Industrial control
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— Alarm equipment
— Various safety devices, etc.

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