

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

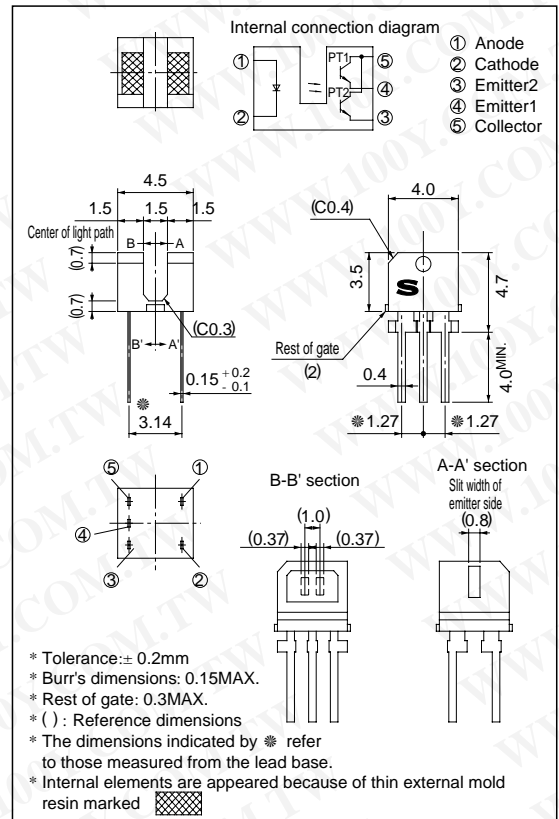
■ Applications

1. Mouses
2. Cameras

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■ Outline Dimensions

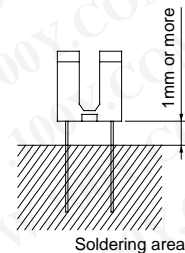
(Unit : mm)



■ 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_{CE1O}	35	V
		V_{CE2O}		
	Emitter-collector voltage	V_{E1CO}	6	V
		V_{E2CO}		
	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	
*1 Soldering temperature	T_{sol}	260	°C	

*1 For 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	μA
Output	Collector dark current	I_{CEO}	$V_{CE} = 20\text{V}$	-	-	100	nA
Transfer characteristics	Collector current	I_C	$V_{CE} = 5\text{V}, I_F = 4\text{mA}$	130	-	520	μA
	Collector current ratio	I_{C1}/I_{C2}	$V_{CE} = 5\text{V}, I_F = 4\text{mA}$	0.67	-	1.5	-
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 8\text{mA}, I_C = 50\ \mu\text{A}$	-	-	0.4	V
	Response time	Rise time	t_r	$V_{CE} = 5\text{V}, I_C = 100\ \mu\text{A}$	-	50	150
Fall time		t_f	$R_L = 1\ 000\ \Omega$		-	50	150

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Fig. 1 Forward Current vs. Ambient Temperature

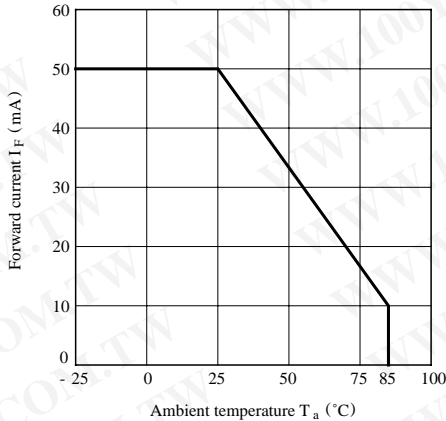


Fig. 3 Forward Current vs. Forward Voltage

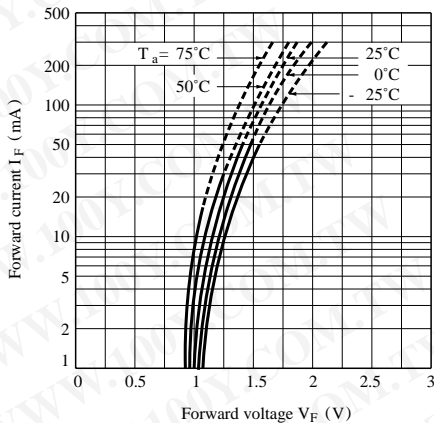


Fig. 2 Power Dissipation vs. Ambient Temperature

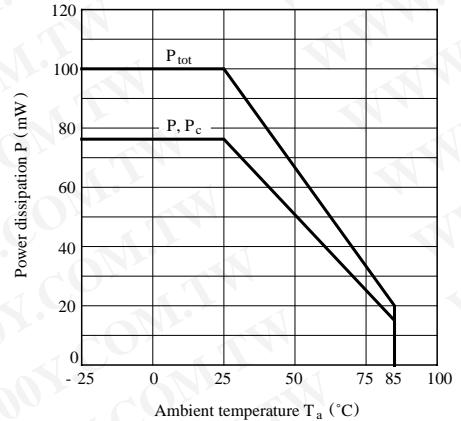


Fig. 4 Collector Current vs. Forward Current

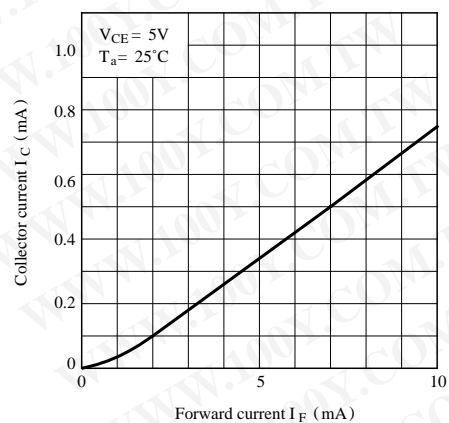


Fig. 5 Collector Current vs. Collector-emitter Voltage

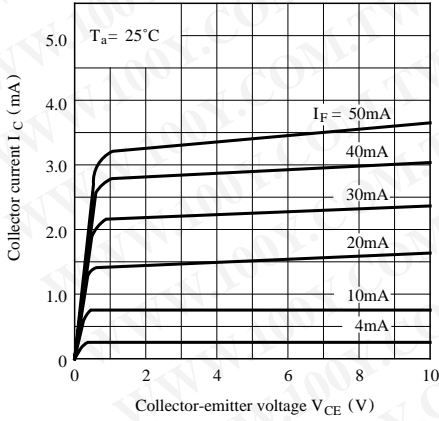


Fig. 6 Collector Current vs. Ambient Temperature

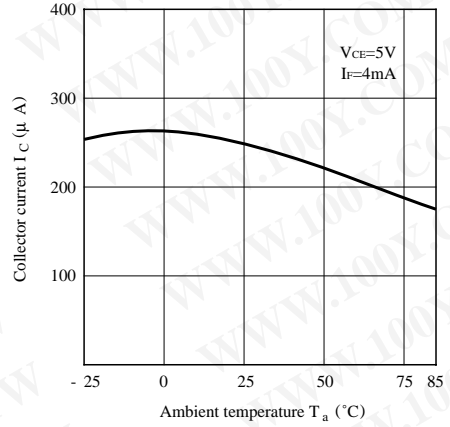


Fig. 7 Collector-emitter Saturation Voltage vs. Ambient Temperature

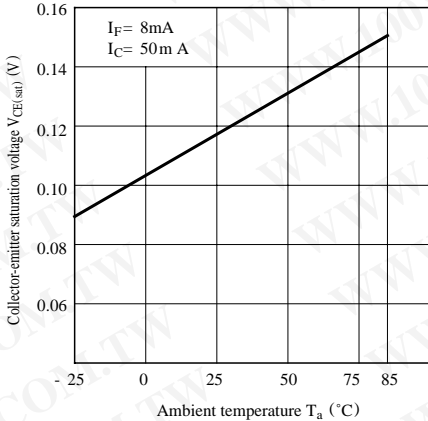


Fig. 8 Collector Dark Current vs. Ambient Temperature

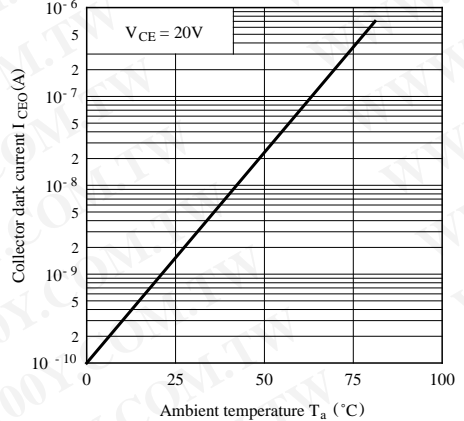
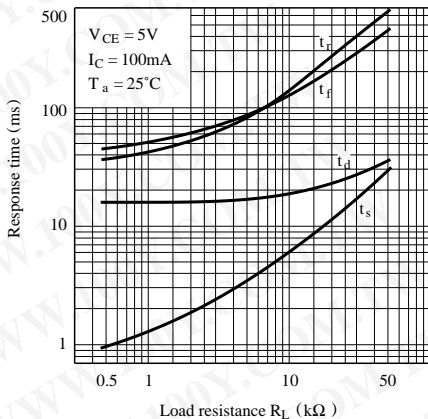
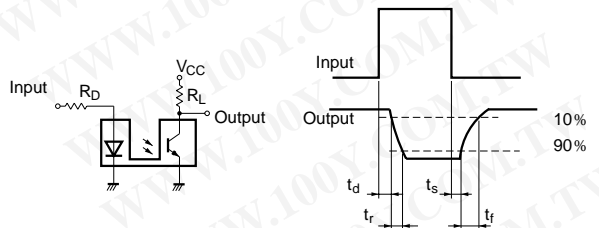


Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time



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

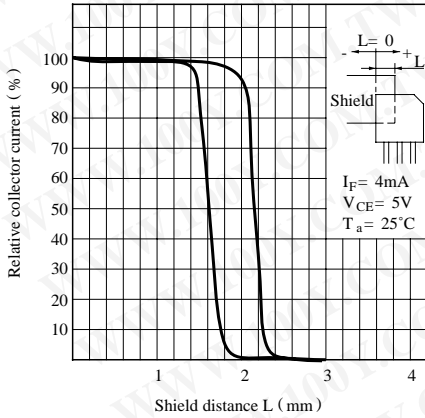
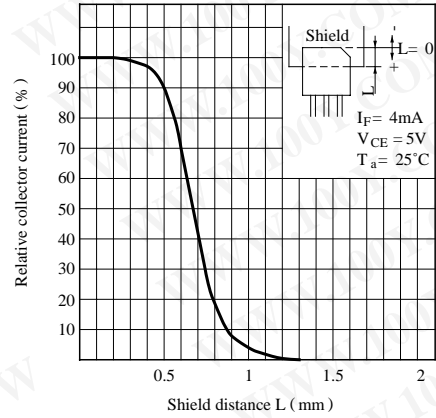


Fig.11 Relative Collector Current vs. Shield Distance (2)



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

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