

GP1S59 Datasheet




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DiGi Electronics Part Number	GP1S59-DG
Manufacturer	Sharp Microelectronics
Manufacturer Product Number	GP1S59
Description	SENSOR OPT SLOT PHOTOTRAN PCB MT
Detailed Description	Optical Sensor Through-Beam 0.165" (4.2mm) Phototransistor PCB Mount

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Manufacturer Product Number:

GP1S59

Series:

-

Sensing Distance:

0.165" (4.2mm)

Output Configuration:

Phototransistor

Current - Collector (Ic) (Max):

20 mA

Response Time:

3µs, 4µs

Mounting Type:

Through Hole

Type:

Unamplified

Manufacturer:

Sharp Microelectronics

Product Status:

Obsolete

Sensing Method:

Through-Beam

Current - DC Forward (If) (Max):

50 mA

Voltage - Collector Emitter Breakdown (Max):

35 V

Operating Temperature:

-25°C ~ 85°C

Package / Case:

PCB Mount

Environmental & Export classification

RoHS Status:

RoHS non-compliant

ECCN:

EAR99

Moisture Sensitivity Level (MSL):

1 (Unlimited)

HTSUS:

8541.49.8000

GP1S59

Horizontal Slit Type Photointerrupter

■ Features

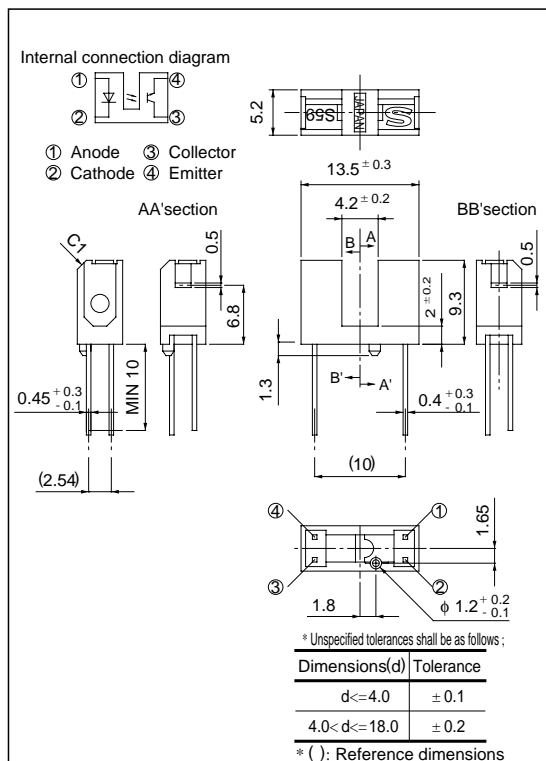
1. Horizontal slit type
2. PWB mounting type
3. Gap between light emitter and detector: 4.2mm
4. Slit width: 0.5mm
5. With a positioning boss

■ Applications

1. OA equipment, such as printers etc.

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(Ta = 25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I _F	50	mA
	*1 Peak forward current	I _{FM}	1	A
	Reverse voltage	V _R	6	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	V _{CEO}	35	V
	Emitter-collector voltage	V _{ECO}	6	V
	Collector current	I _C	20	mA
	Collector power dissipation	P _C	75	mW
Operating temperature		T _{opr}	- 25 to + 85	°C
Storage temperature		T _{stg}	- 40 to + 100	°C
*2 Soldering temperature		T _{sol}	260	°C

*1 Pulse width <= 100μs, Duty ratio: 0.01

*2 For 5 seconds

■ Electro-optical Characteristics

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

Parameter		Symbol	Condition	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V_F	$I_F = 20\text{mA}$	-	1.25	1.4	V	
	Peak forward voltage	V_{FM}	$I_{FM} = 0.5\text{A}$	-	3	4	V	
	Reverse current	I_R	$V_R = 3\text{V}$	-	-	10	μA	
Output	Collector dark current	I_{CEO}	$V_{CE} = 20\text{V}$	-	1	100	nA	
Transfer characteristics	Collector current	I_C	$V_{CE} = 5\text{V}, I_F = 20\text{mA}$	0.5	-	10.0	mA	
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 40\text{mA}, I_C = 0.5\text{mA}$	-	-	0.4	V	
	Response time	Rise time	t_r	$V_{CE} = 2\text{V}, I_C = 2\text{mA}$	-	3	15	μs
		Fall time	t_f	$R_L = 100\ \Omega$	-	4	20	μs

Fig. 1 Forward Current vs. Ambient Temperature

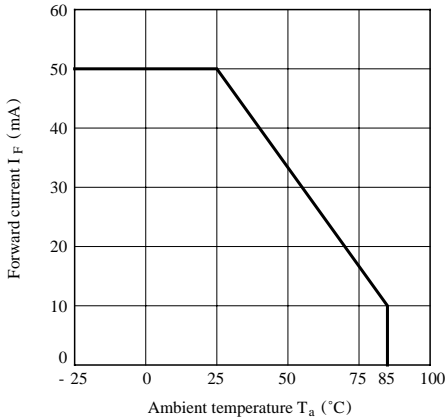


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

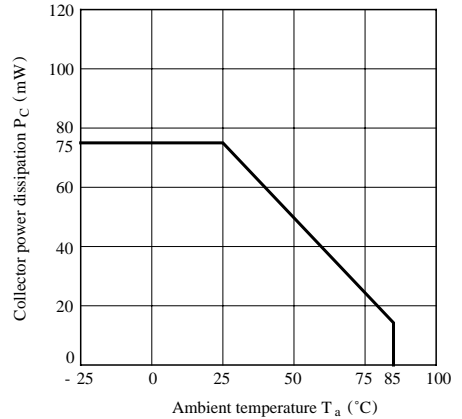


Fig. 3 Peak Forward Current vs. Duty Ratio

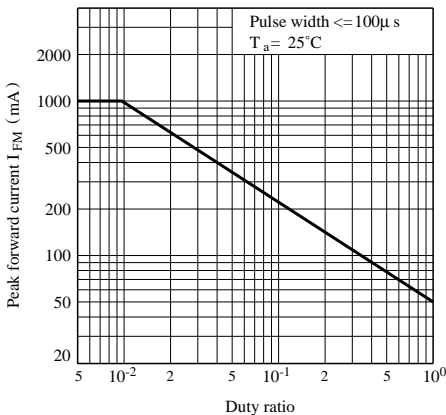


Fig. 4 Forward Current vs. Forward Voltage

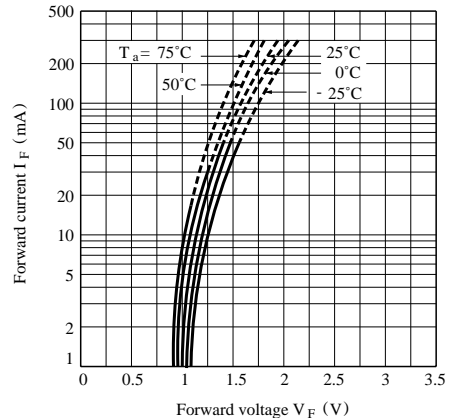


Fig. 5 Collector Current vs. Forward Current

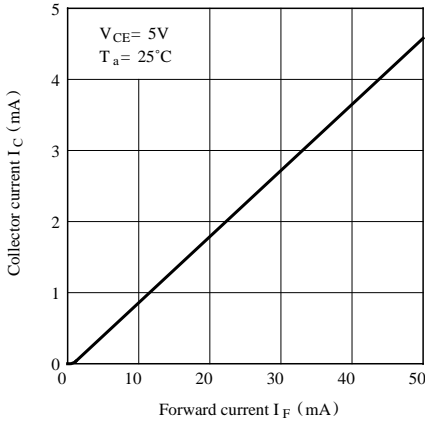


Fig. 6 Collector Current vs. Collector-emitter Voltage

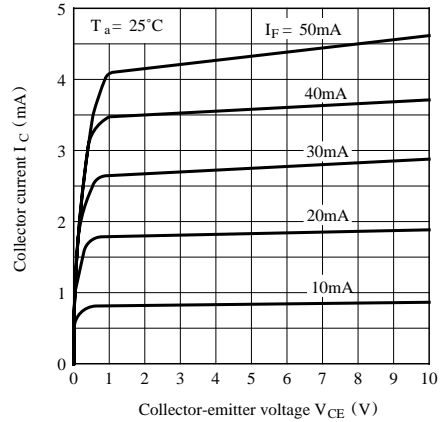


Fig. 7 Collector Current vs. Ambient Temperature

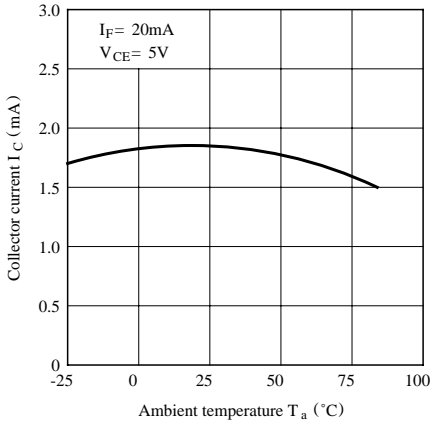


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

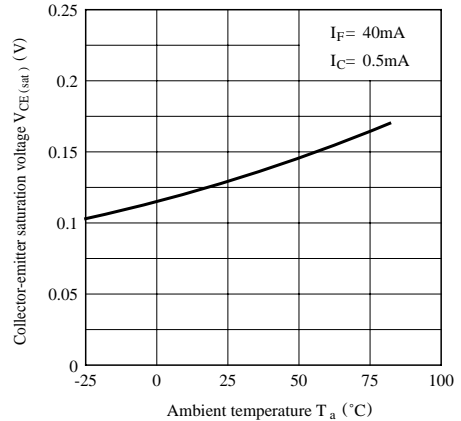
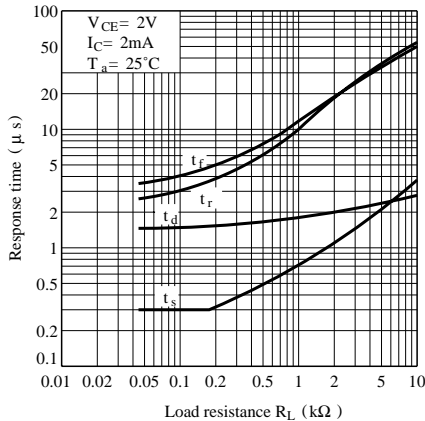


Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time

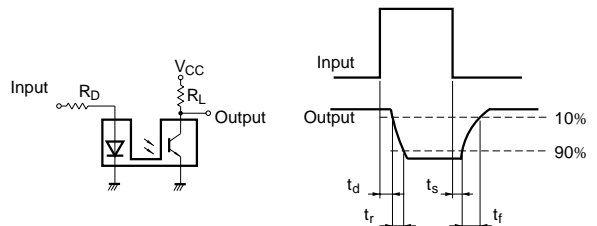


Fig.10 Frequency Response

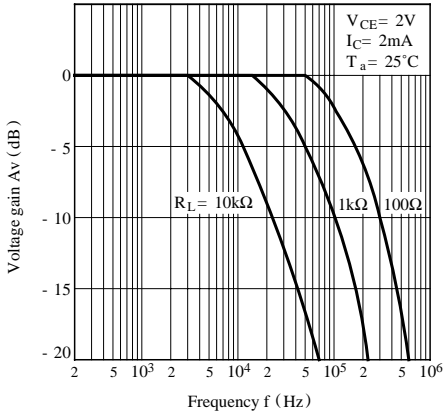


Fig.11 Collector Dark Current vs. Ambient Temperature

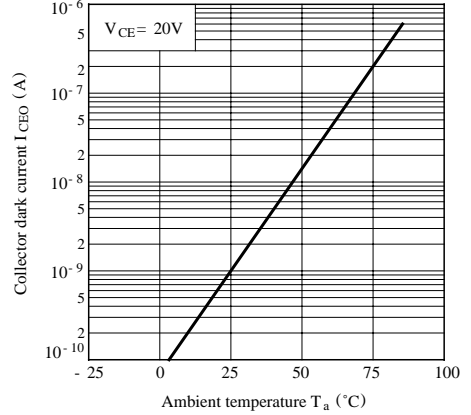


Fig.12 Relative Collector Current vs. Shield Distance (1)

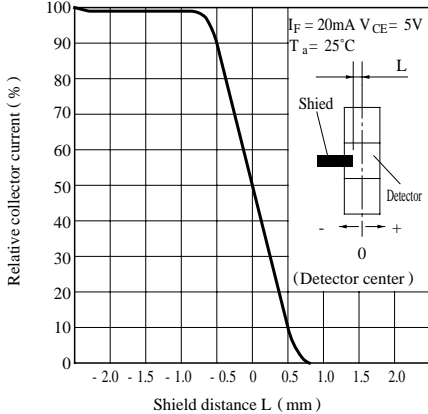
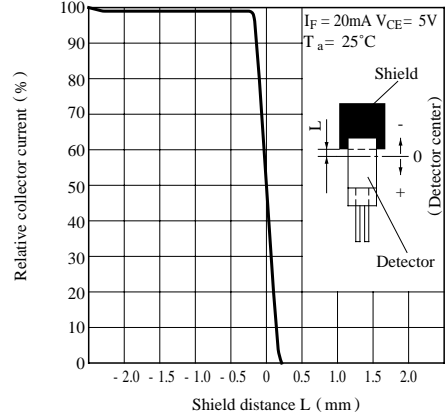


Fig.13 Relative Collector Current vs. Shield Distance (2)



■ Precautions for Use

- (1) In case of cleaning, use only the following type of cleaning solvent.
Ethyl alcohol, Methyl alcohol, Isopropyl alcohol
- (2) As for other general cautions, refer to the chapter "Precautions for Use".

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