

GP1S51V Datasheet



DiGi Electronics Part Number	GP1S51V-DG
Manufacturer	Sharp Microelectronics
Manufacturer Product Number	GP1S51V
Description	SENSOR OPT SLOT PHOTOTRAN PCB MT
Detailed Description	Optical Sensor Through-Beam 0.118" (3mm) Photo transistor PCB Mount

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Purchase and inquiry

Manufacturer Product Number:

GP1S51V

Series:

-

Sensing Distance:

0.118" (3mm)

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:

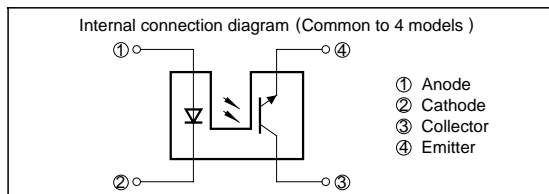
EAR99

Moisture Sensitivity Level (MSL):

1 (Unlimited)

HTSUS:

8541.49.8000



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 $\leq 100\mu s$, Duty ratio = 0.01

*2 For 5 seconds

Electro-optical Characteristics

(Ta = 25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V_F	$I_F = 20\text{mA}$	-	1.25	1.4	V	
				-	1.2	1.4		
	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	$I_F = 20\text{mA}, V_{CE} = 5\text{V}$	0.5	-	5	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	$V_{CE} = 2\text{V}, I_{CE} = 2\text{mA}$	-	3	15	μs
		Fall time	t_F	$R_L = 100\Omega$	-	4	20	μs

Fig. 1 Forward Current vs. Ambient Temperature

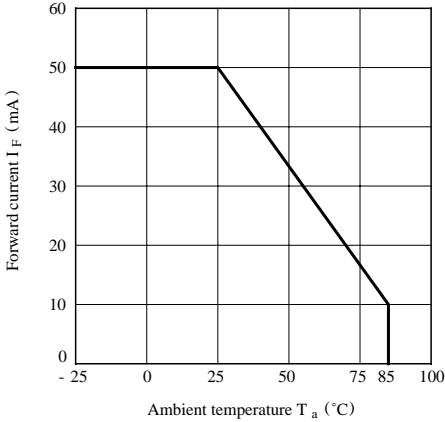


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

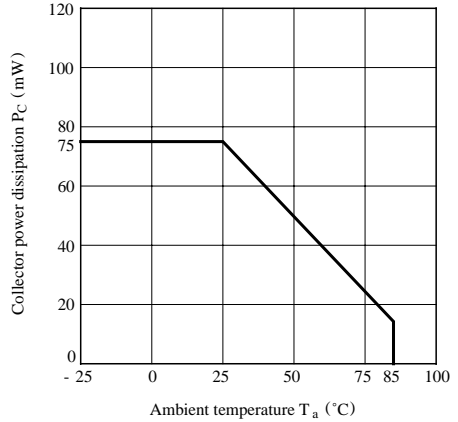


Fig. 3 Peak Forward Current vs. Duty Ratio

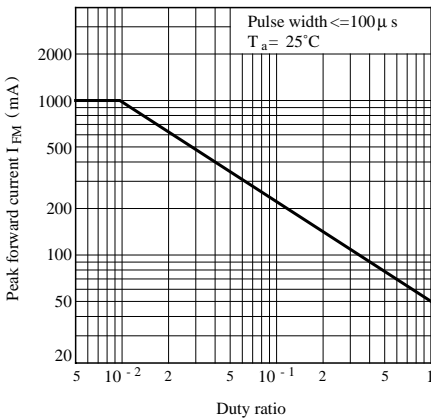


Fig. 4 Forward Current vs. Forward Voltage

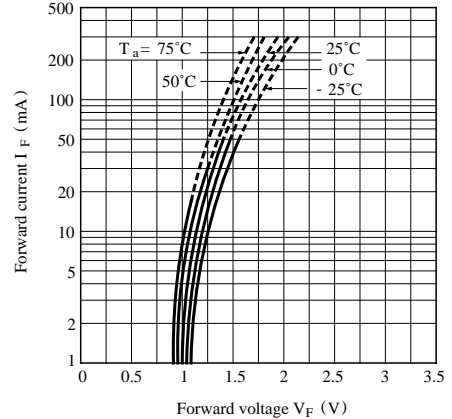


Fig. 5 Collector Current vs. Forward Current

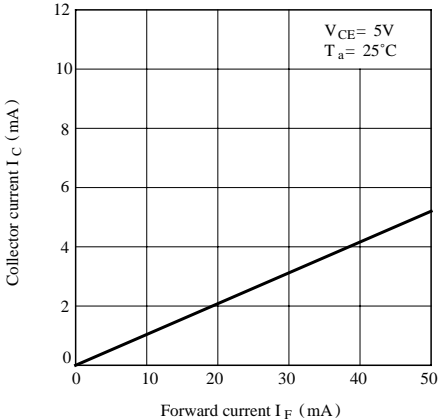


Fig. 6 Collector Current vs. Collector-emitter Voltage

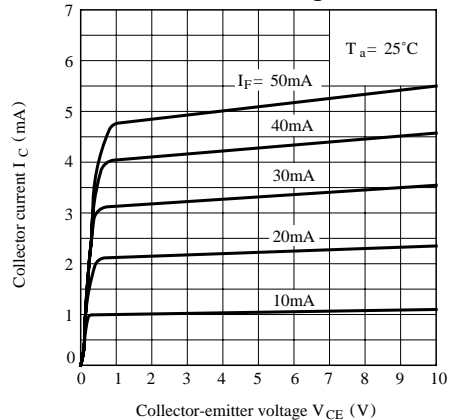


Fig. 7 Collector Current vs. Ambient Temperature

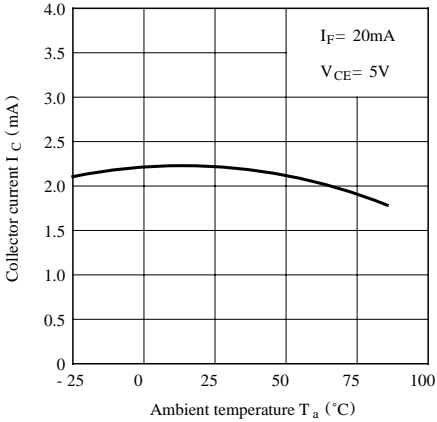


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

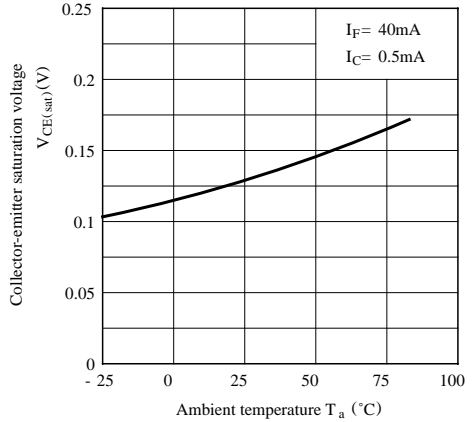
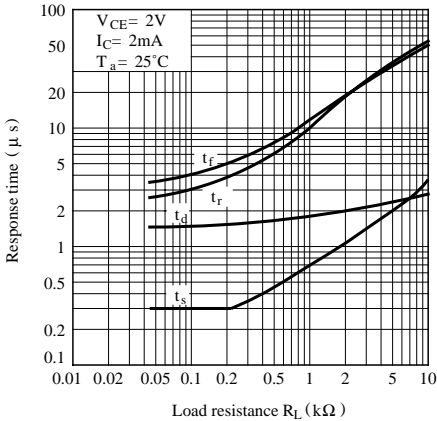


Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time

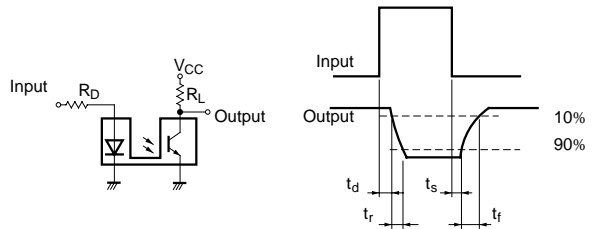


Fig.10 Frequency Response

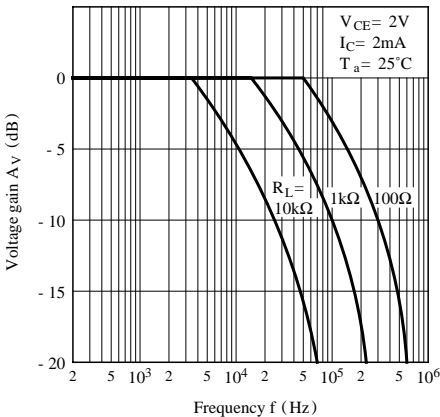


Fig.11 Collector Dark Current vs. Ambient Temperature

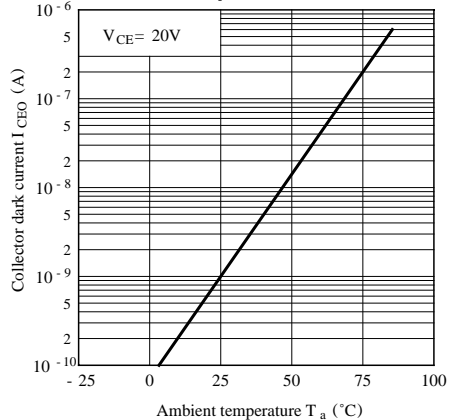


Fig.12 Relative Collector Current vs. Shield Distance (1)

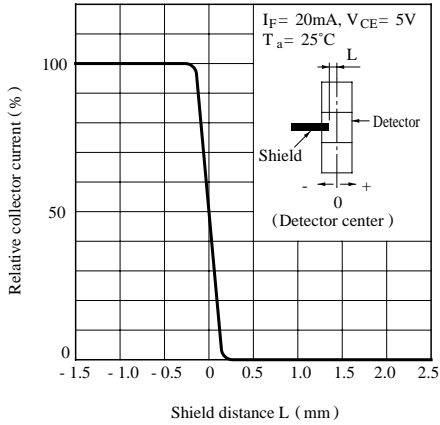
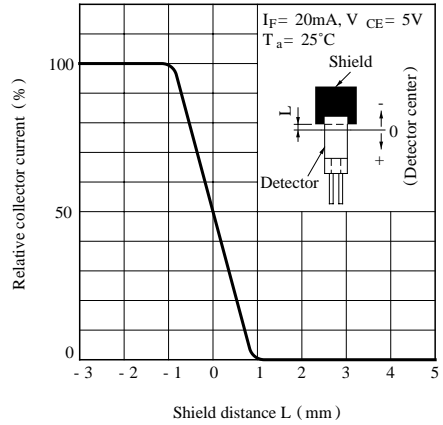


Fig.13 Relative Collector Current vs. Shield Distance (2)



■ Precautions for Use

- (1) In case of cleaning, use only the following type of cleaning solvent.
Ethyl alcohol, methyl alcohol, Isopropyl alcohol
- (2) Please refer to the chapter "Precautions for Use".

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