

SHARP ELEK/ MELEC DIV' 15E D 8180798 0003259 2
Photointerrupters

GP1L01/GP1L01F

T-41-73

GP1L01/GP1L01F High Sensitivity Type Photointerrupter

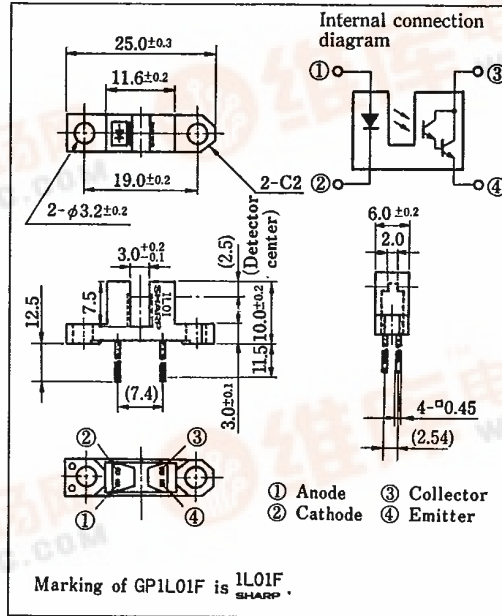
Features

- High current transfer ratio
GP1L01 CTR: MIN. 300%
GP1L01F CTR: MIN. 250% } at $I_F = 1\text{mA}$
- Visible light cut-off type: GP1L01F

Applications

- Record players, cassette decks
- Copiers, printers, facsimiles
- Telephone sets
- Fan heaters, electronic sewing machines

Outline Dimensions (Unit : mm)



Absolute Maximum Ratings

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

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	40 mA
	Collector power dissipation	P_C	75 mW
Operating temperature		T_{opr}	$-25 \sim +85$ °C
Storage temperature		T_{stg}	$-40 \sim +100$ °C
**Soldering temperature		T_{sol}	260 °C

*1 Pulse width $\leq 100\mu\text{s}$, Duty ratio = 0.01

*2 For 5 seconds

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Electro-optical Characteristics

(Ta=25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V_F	$I_F=20\text{mA}$	—	1.2	1.4	V
	Peak forward voltage	V_{FM}	$I_{FM}=0.5\text{A}$	—	3.0	4.0	V
	Reverse current	I_R	$V_R=3\text{V}$	—	—	10	μA
Output	Collector dark current	I_{CEO}	$V_{CE}=10\text{V}$	—	—	10^{-6}	A
Transfer characteristics	Current transfer ratio	GP1L01	$I_F=1\text{mA}, V_{CE}=2\text{V}$	300	1,000	—	%
		GP1L01F		250	1,000	—	%
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F=2\text{mA}, I_C=1.5\text{mA}$	—	—	1.0	V
	Response time (Rise)	t_r	$I_C=10\text{mA}, V_{CE}=2\text{V}, R_L=100\Omega$	—	80	400	μs
	Response time (Fall)	t_f		—	70	350	μs

Fig. 1 Forward Current vs. Ambient Temperature

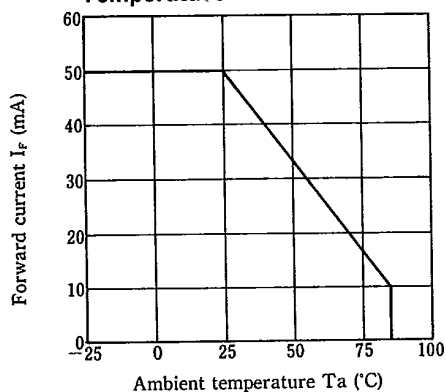


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

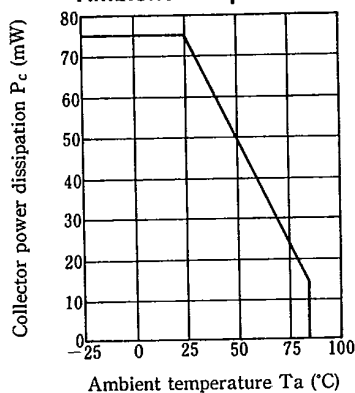


Fig. 3 Peak Forward Current vs. Duty Ratio

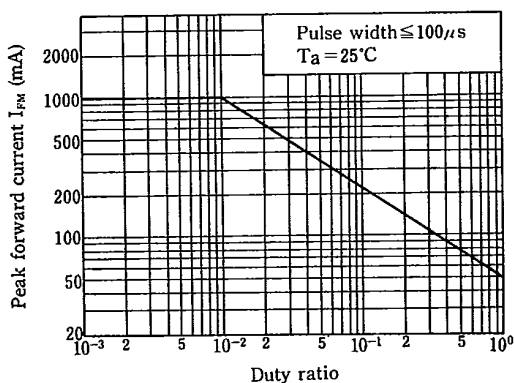
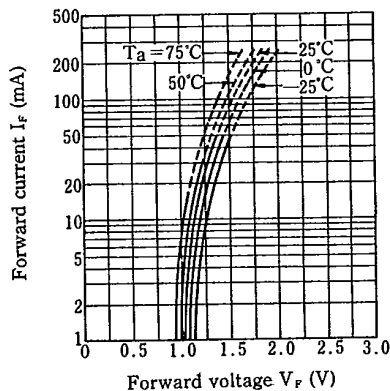


Fig. 4 Forward Current vs. Forward Voltage



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Fig. 5 Collector Current vs. Forward Current

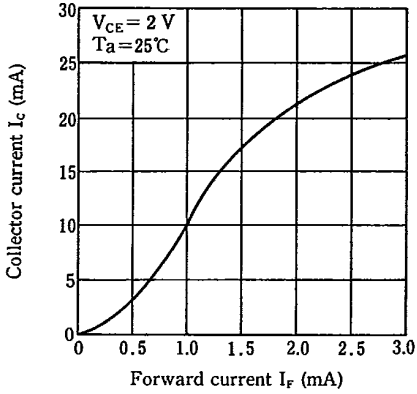


Fig. 6 Collector Current vs. Collector-emitter Voltage

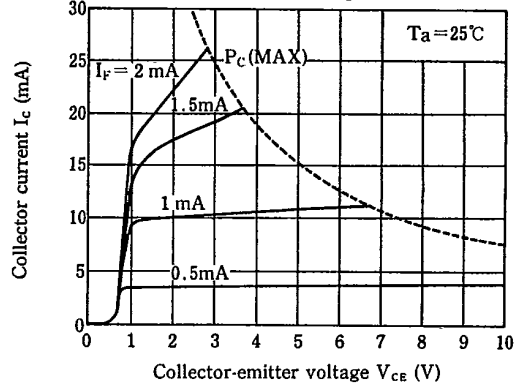


Fig. 7 Collector Current vs. Ambient Temperature

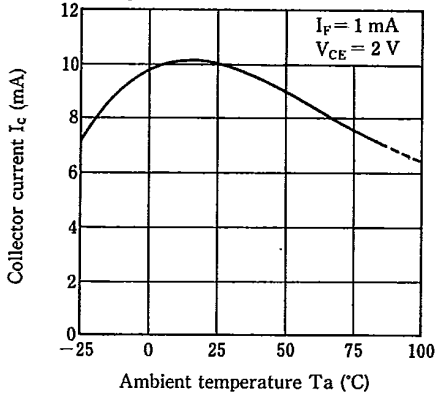
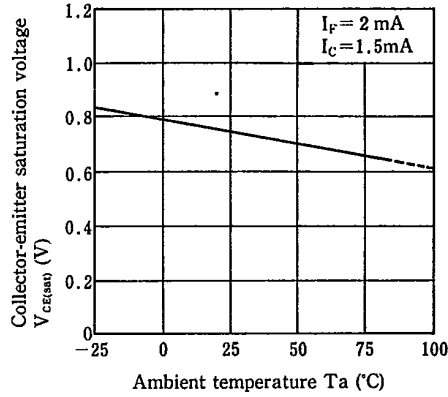
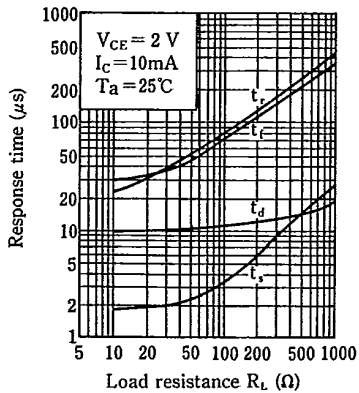


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature



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Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time

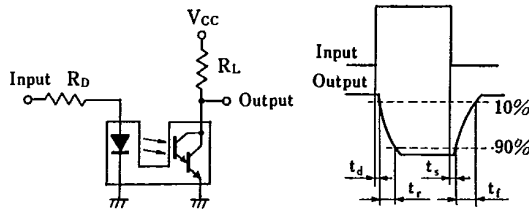


Fig. 10 Frequency Response

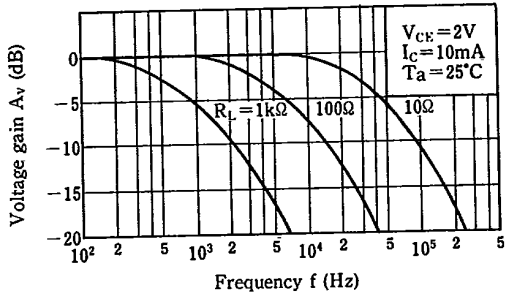


Fig. 11 Collector Dark Current vs. Ambient Temperature

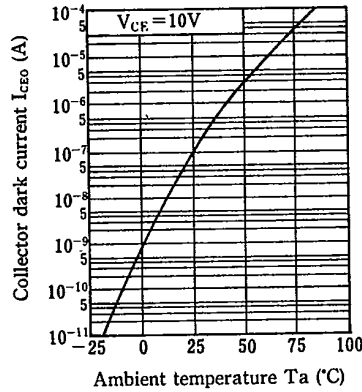


Fig. 12 Relative Collector Current vs. Shield Distance (1)

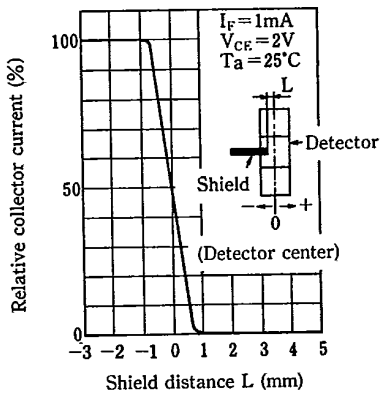


Fig. 13 Relative Collector Current vs. Shield Distance (2)

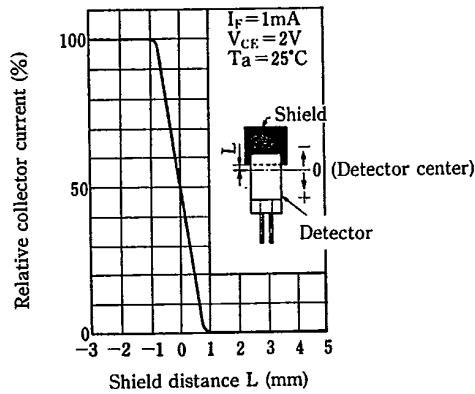


Fig. 14 Collector Current vs. Illuminance (Reference)

