

T-41-73

# GP1L01/GP1L01F High Sensitivity Type Photointerrupter

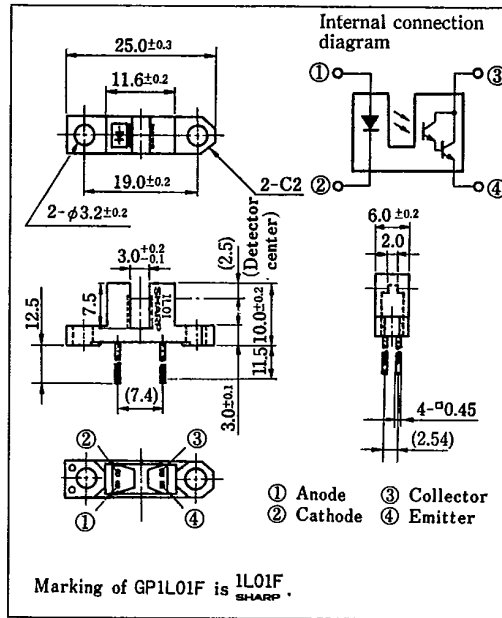
### Features

- 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	$T_{OPR}$	$-25 \sim +85$	$^\circ\text{C}$
	Storage temperature	$T_{STG}$	$-40 \sim +100$	$^\circ\text{C}$
	*2 Soldering temperature	$T_{SOL}$	260	$^\circ\text{C}$

\*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	$\mu\text{A}$
Output	Collector dark current	$I_{CEO}$	$V_{CE}=10\text{V}$	—	—	$10^{-8}$	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	$\mu\text{s}$
Response time (Fall)	$t_f$	—		70	350	$\mu\text{s}$	

Fig. 1 Forward Current vs. Ambient Temperature

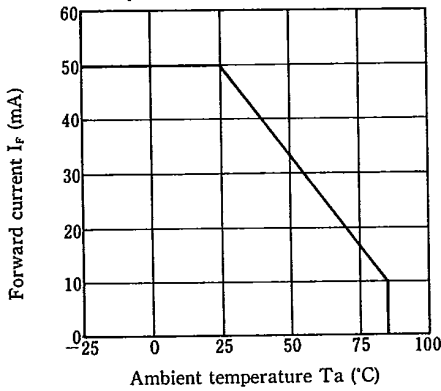


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

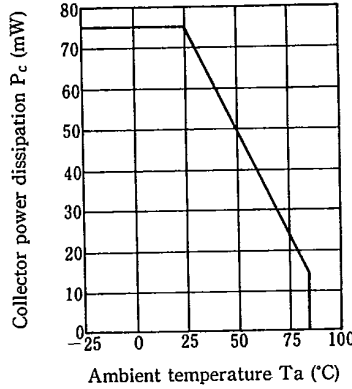


Fig. 3 Peak Forward Current vs. Duty Ratio

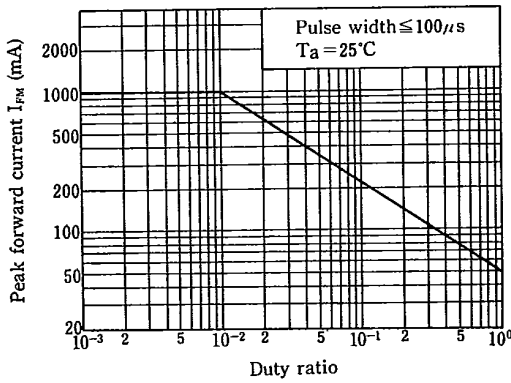
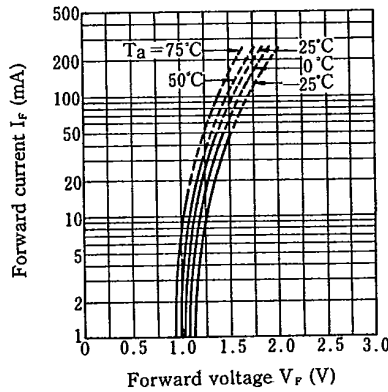
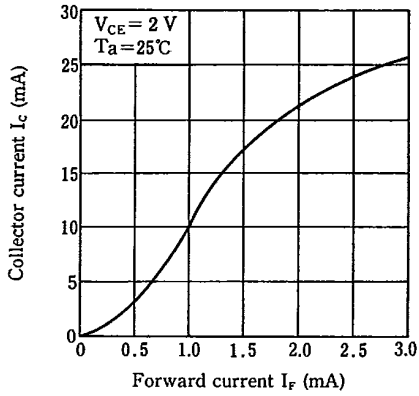


Fig. 4 Forward Current vs. Forward Voltage

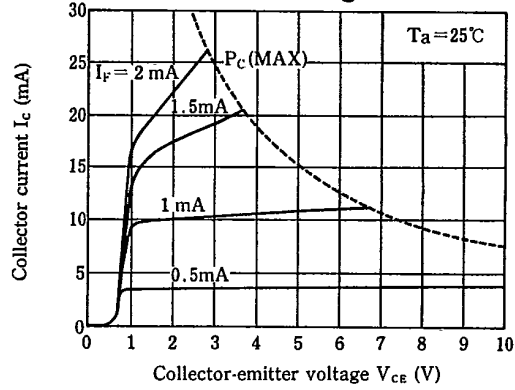


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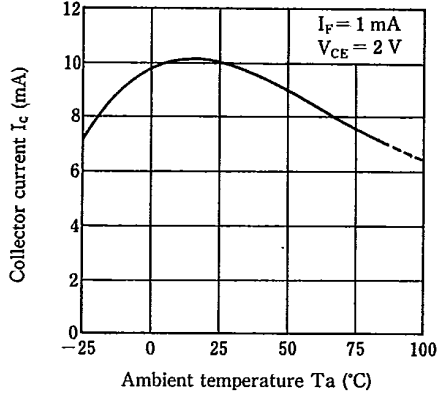
**Fig. 5 Collector Current vs. Forward Current**



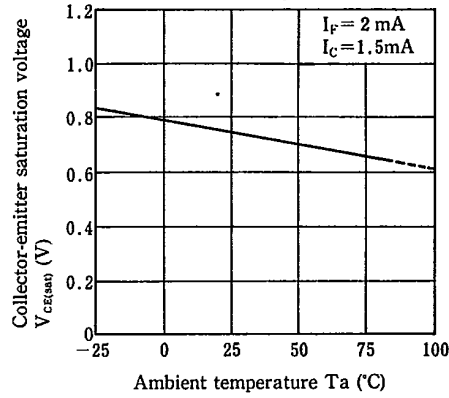
**Fig. 6 Collector Current vs. Collector-emitter Voltage**



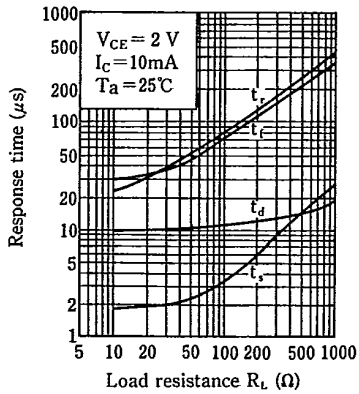
**Fig. 7 Collector Current vs. Ambient Temperature**



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



**Fig. 9 Response Time vs. Load Resistance**



**Test Circuit for Response Time**

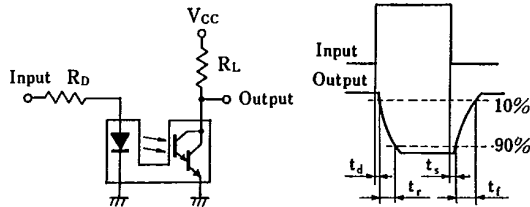


Fig. 10 Frequency Response

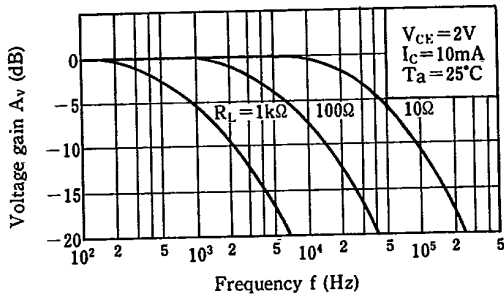


Fig. 11 Collector Dark Current vs. Ambient Temperature

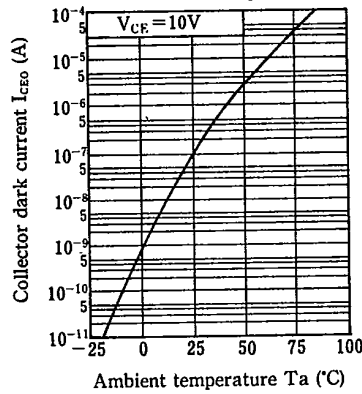


Fig. 12 Relative Collector Current vs. Shield Distance (1)

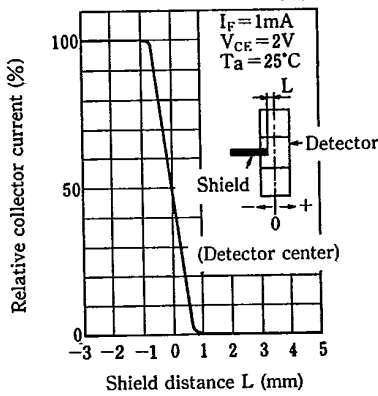


Fig. 13 Relative Collector Current vs. Shield Distance (2)

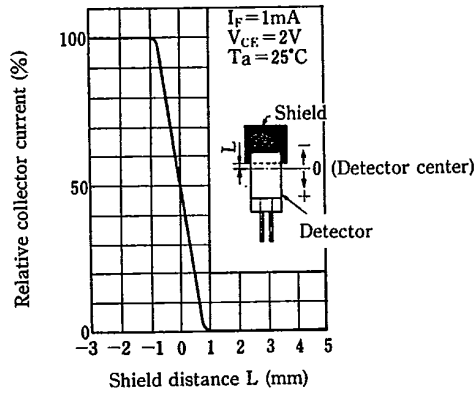


Fig. 14 Collector Current vs. Illuminance (Reference)

