

T-41-73

GP1L01/GP1L01F High Sensitivity Type Photointerrupter

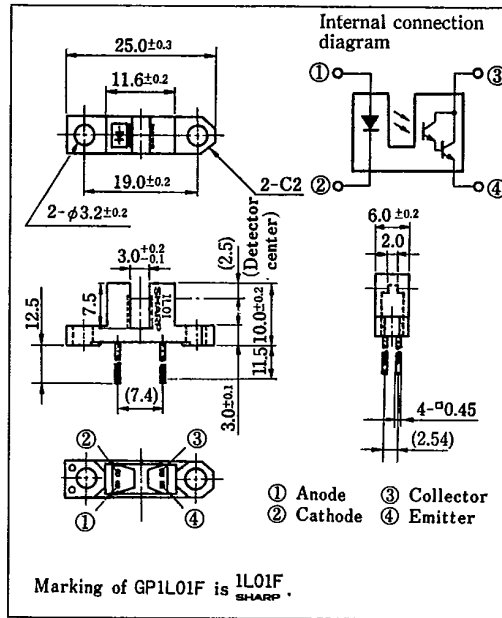
Features

- 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

T-41-73

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^{-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	μs
Response time (Fall)	t_f	—		70	350	μs	

Fig. 1 Forward Current vs. Ambient Temperature

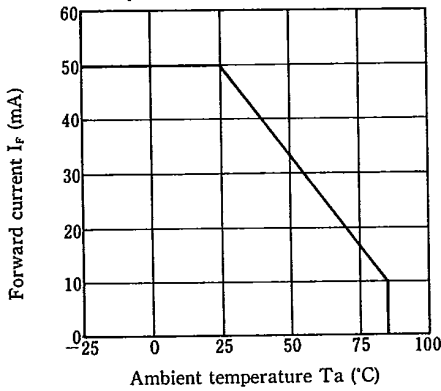


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

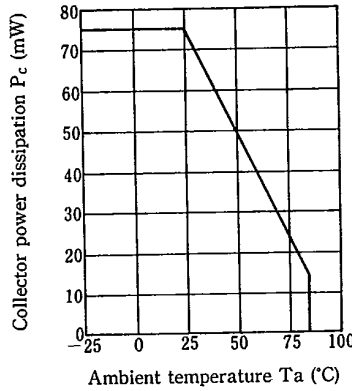


Fig. 3 Peak Forward Current vs. Duty Ratio

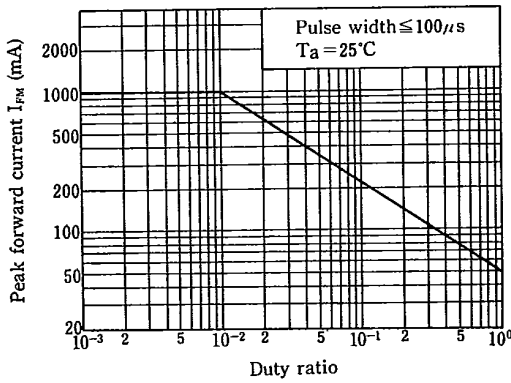
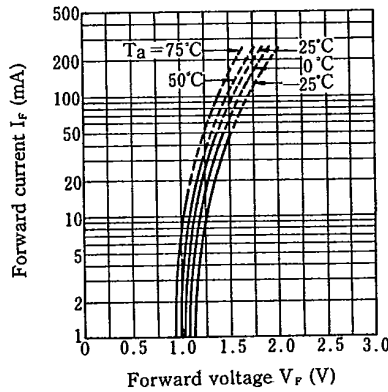


Fig. 4 Forward Current vs. Forward Voltage



SHARP ELECTRONICS CORPORATION

Fig. 5 Collector Current vs. Forward Current

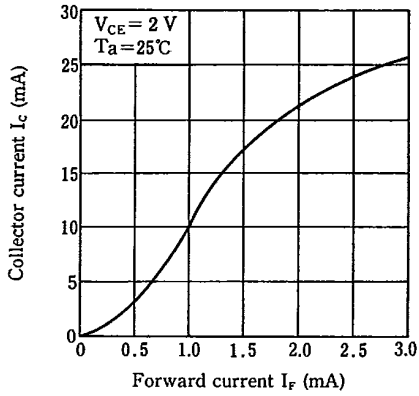


Fig. 6 Collector Current vs. Collector-emitter Voltage

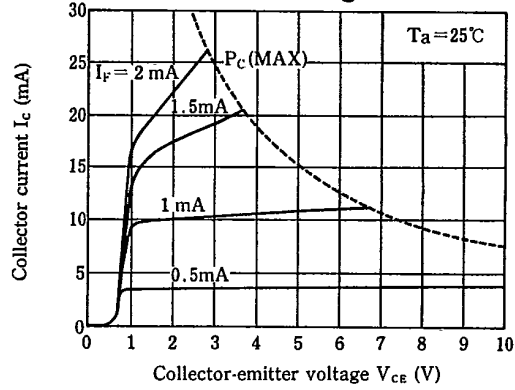


Fig. 7 Collector Current vs. Ambient Temperature

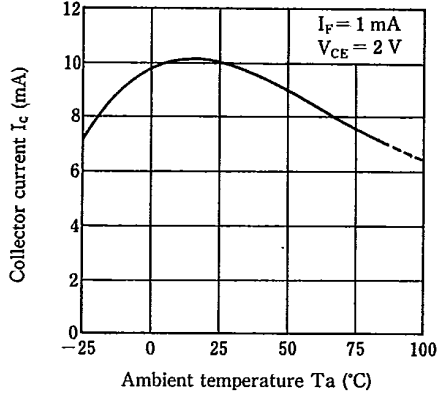


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

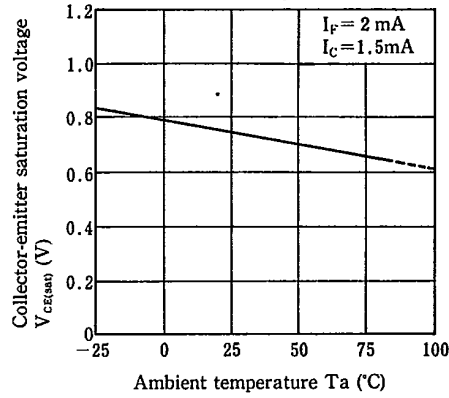
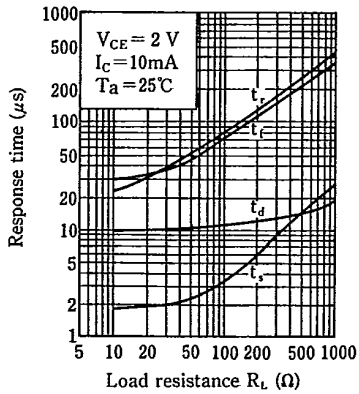


Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time

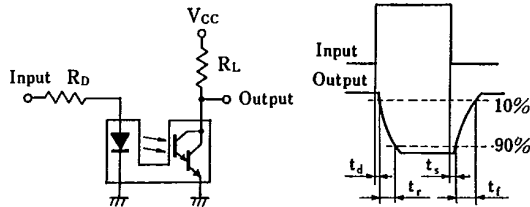


Fig. 10 Frequency Response

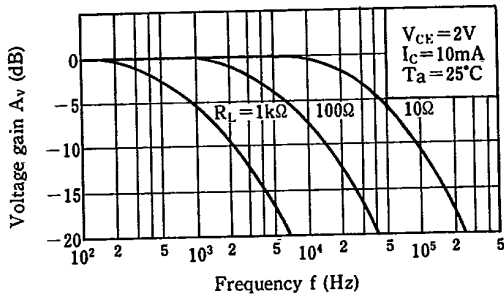


Fig. 11 Collector Dark Current vs. Ambient Temperature

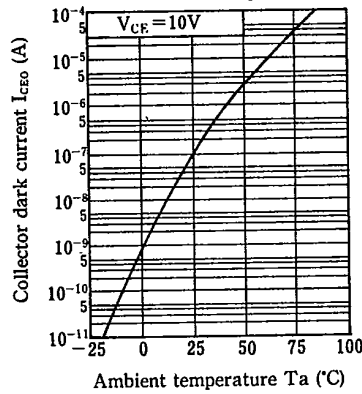


Fig. 12 Relative Collector Current vs. Shield Distance (1)

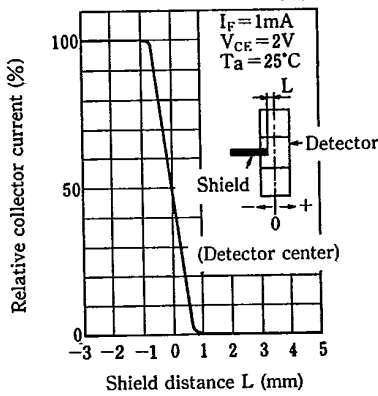


Fig. 13 Relative Collector Current vs. Shield Distance (2)

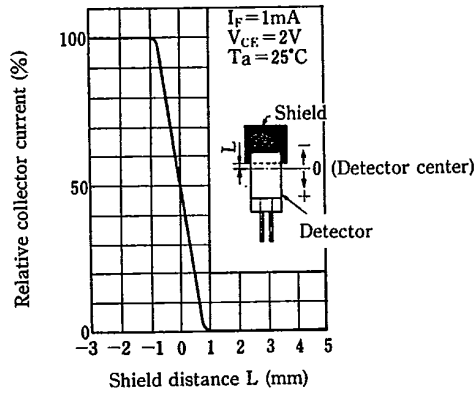


Fig. 14 Collector Current vs. Illuminance (Reference)

