

GP2L01/GP2L01F

High Sensitivity, Long Focal Distance Type Photointerrupter

■ Features

1. Long focal distance
2. High current transfer ratio

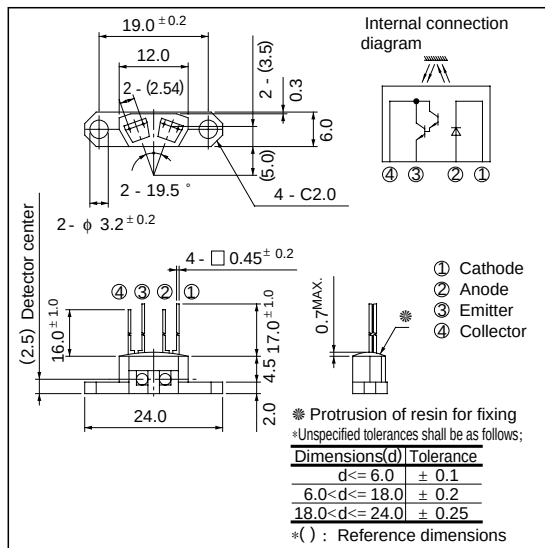
GP2L01 CTR: MIN. 30%	}	at $I_F = 10\text{mA}$
GP2L01F CTR: MIN. 25%		
2. Visible light cut-off type: **GP2L01F**

■ Applications

1. Copiers, printers
2. Automatic vending machines, ticket vending machines
3. Optoelectronic switches, optoelectronic counters

■ 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	40	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 ≤ 100 μs, Duty ratio = 0.01

*2 For 3 seconds

■ Electro-optical Characteristics

(Ta = 25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V_F	$I_F = 20\text{mA}$	-	1.2	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	*3Collector Current	GP2L01	$I_F = 10\text{mA}, V_{CE} = 2\text{V}$	3	-	-	mA
		GP2L01F		2.5	-	25	mA
	Response time	Rise time	$I_C = 10\text{mA}, V_{CE} = 2\text{V}, R_L = 100\Omega$ $d = 5\text{mm}$	-	80	400	μs
		Fall time		-	70	350	μs
	*4Leak current	I_{LEAK}	$I_F = 10\text{mA}, V_{CE} = 2\text{V}$	-	-	100	μA

*3 Test method : A reflective object shall be an OMS test card (white) specified by Sharp, and be 5.0mm away from the sensor.

*4 Wihtout reflective object

Fig. 1 Forward Current vs. Ambient Temperature

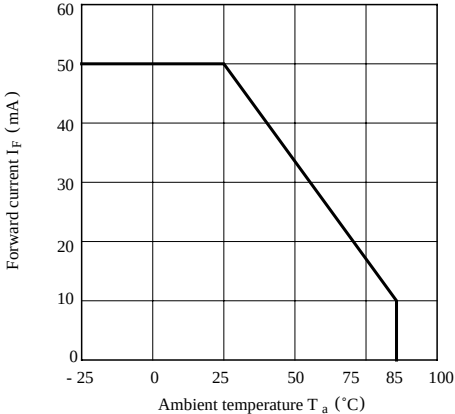


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

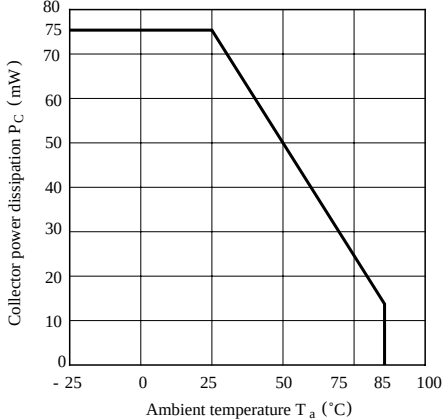


Fig. 3 Peak Forward Current vs. Duty Ratio

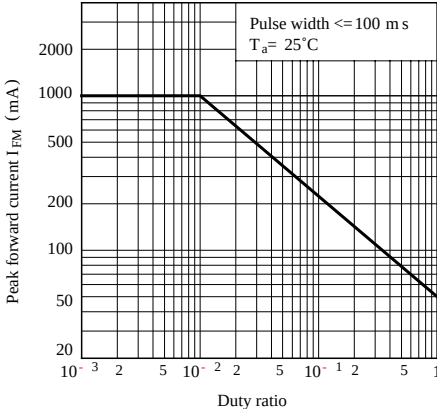


Fig. 4 Forward Current vs. Forward Voltage

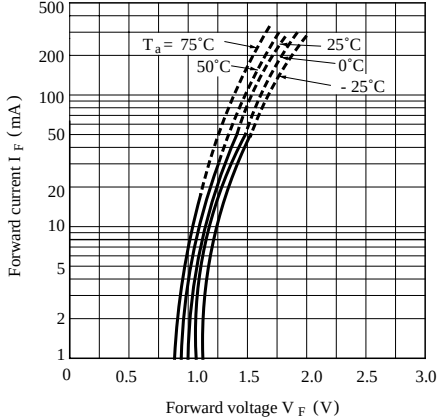


Fig. 5 Collector Current vs. Forward Current

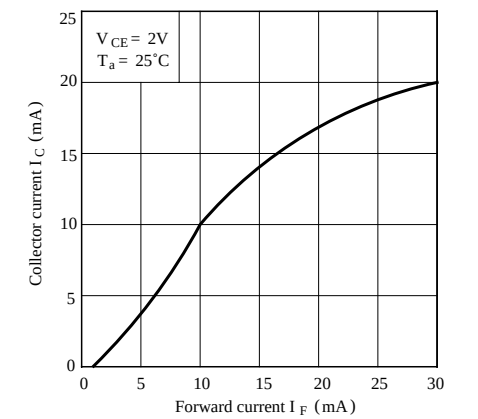


Fig. 6 Collector Current vs. Collector-emitter Voltage

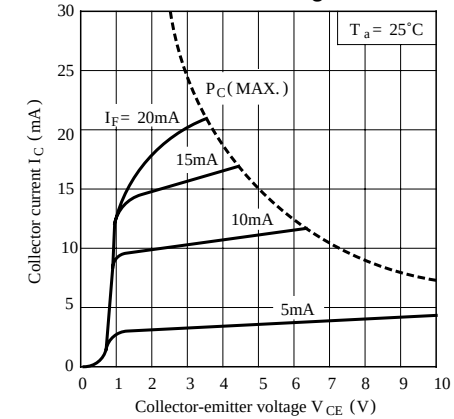


Fig. 7 Relative Collector Current vs. Ambient Temperature

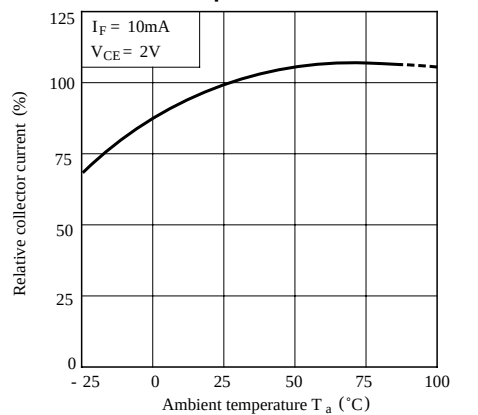


Fig. 8 Collector Dark Current vs. Ambient Temperature

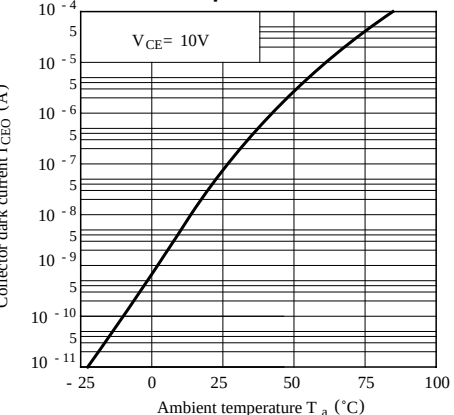
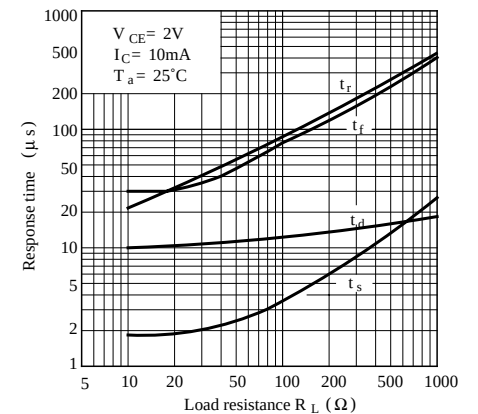


Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time

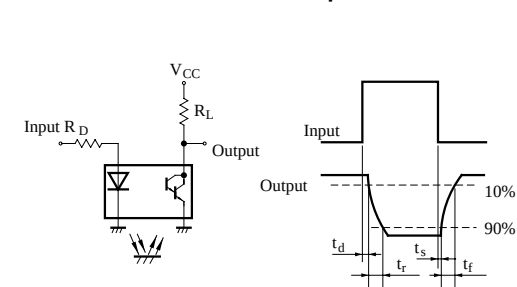


Fig.10 Frequency Response

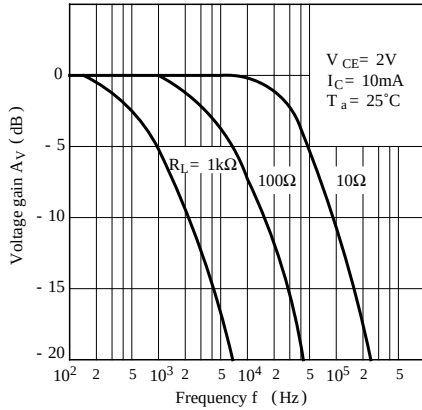


Fig.11 Relative Collector Current vs. Distance between GP2L01 (F) and Test Card

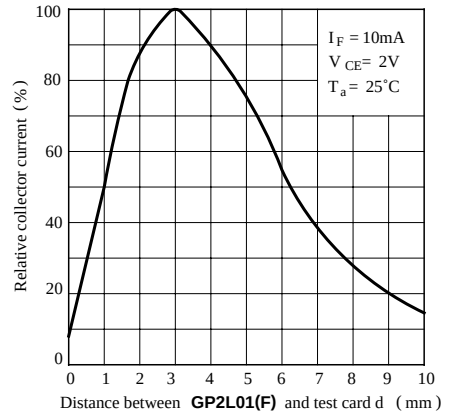
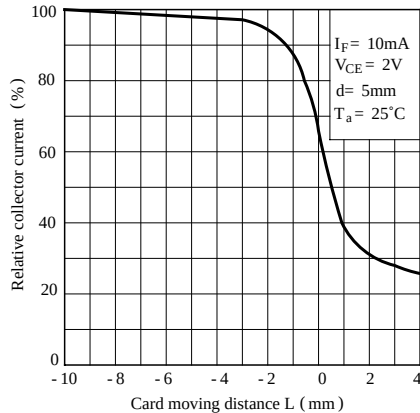
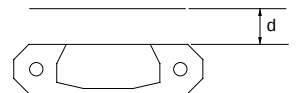


Fig.12 Relative Collector Current vs. Card Moving Distance



Distance Characteristic Test Conditions

Correspond to Fig.11

SHARP OMS TEST CARD
(White)GP2L01
(GP2L01F)

Correspond to Fig.12

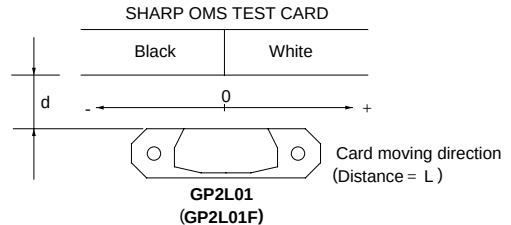
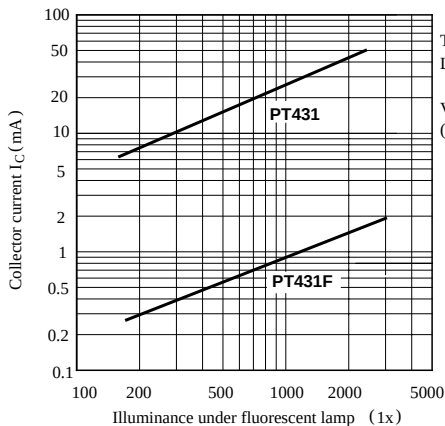


Fig.13 Collector Current vs. Illuminance (Reference)



Test condition

Light source: White fluorescent lamp

Sharp FLR-40SW/M

 $V_{CE} = 2V, T_a = 25^\circ C$

(Note) Comparison between outputs of transparent resin molded type photo-transistor (PT431) and visible light cut-off type (PT431F)

- Please refer to the chapter “Precautions for Use”.