

# GP2L09/GP2L24 GP2L26

## Subminiature, High Sensitivity Photointerrupter

### ■ Features

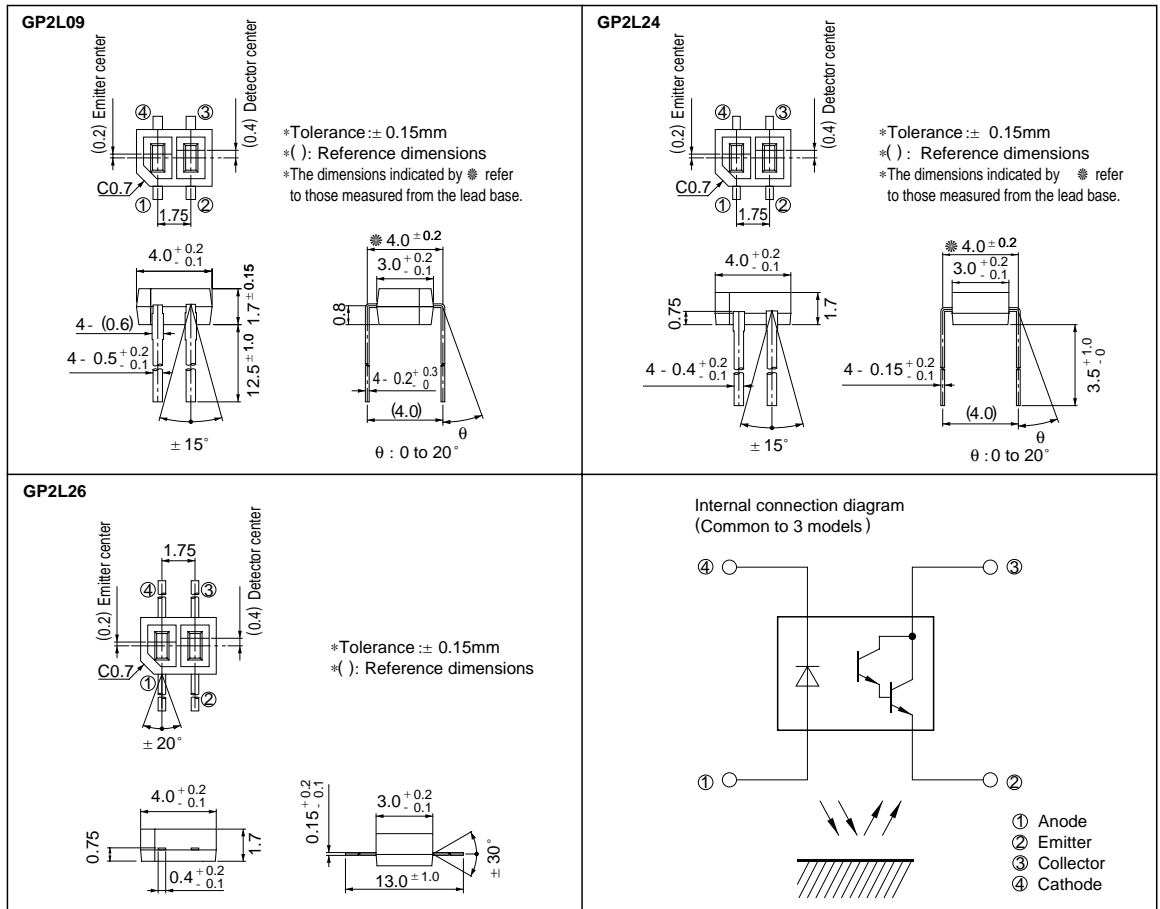
1. Compact and thin
  - GP2L09:** Compact DIP, long lead type
  - GP2L24:** Compact DIP type
  - GP2L26:** Flat lead type
2. Optimum detection distance: 0.6 to 0.8mm
3. High sensitivity  
( $I_C$ : MIN. 0.5mA at  $I_F = 4mA$ )
4. Visible light cut-off type

### ■ Applications

1. Cassette tape recorders, VCRs
2. Floppy disk drives
3. Various microcomputerized control equipment

### ■ Outline Dimensions

(Unit : mm)



## Absolute Maximum Ratings

(Ta = 25°C)

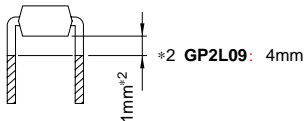
	Parameter	Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	50	mA
	Reverse voltage	V <sub>R</sub>	6	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	V <sub>CEO</sub>	35	V
	Emitter-collector voltage	V <sub>ECO</sub>	6	V
	Collector current	I <sub>C</sub>	50	mA
	Collector power dissipation	P <sub>C</sub>	75	mW
	Total power dissipation	P <sub>tot</sub>	100	mW
	Operating temperature	T <sub>opr</sub>	- 25 to + 85	°C
	Storage temperature	T <sub>stg</sub>	- 40 to + 100	°C
	*1 Soldering temperature	T <sub>sol</sub>	260	°C

\*1 Within 5 seconds (Soldering areas for each model are shown below.)

### GP2L09, GP2L24

#### Soldering area

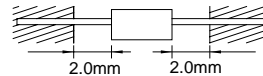
The hatched area more than 1mm<sup>\*2</sup> away from the lower edge of package as shown in the drawing below.



### GP2L26

#### Soldering area

The hatched area more than 2.0mm away from the both edge of package as shown in the drawing below.



## Electro-optical Characteristics

(Ta = 25°C)

	Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	I <sub>F</sub>	I <sub>F</sub> = 20mA	-	1.2	1.4	V	
	Reverse current	I <sub>R</sub>	V <sub>R</sub> = 6V	-	-	10	μA	
Output	Collector dark current	I <sub>CEO</sub>	V <sub>CE</sub> = 10V, I <sub>F</sub> = 0	-	-	1 × 10 <sup>-6</sup>	A	
Transfer-characteristics	*3 Collector current	I <sub>C</sub>	V <sub>CE</sub> = 2V, I <sub>F</sub> = 4mA	0.5	3.0	15.0	mA	
	Response time	Rise time	t <sub>r</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 10mA R <sub>L</sub> = 100Ω, d = 1mm	-	80	400	μs
		Fall time	t <sub>f</sub>		-	70	400	μs
	*4 Leak current	I <sub>LEAK</sub>	I <sub>F</sub> = 4mA, V <sub>CE</sub> = 5V	-	-	5.0	μA	

\*3 The condition and arrangement of the reflective object are shown in the right drawing.

\*4 Without reflective object

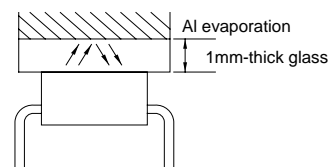
The ranking of collector current shall be classified into the following 6 ranks.

(GP2L09, GP2L24, GP2L26)

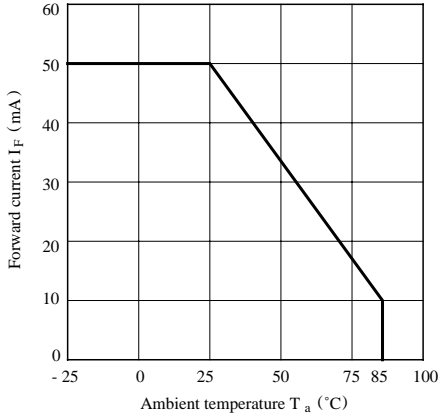
Rank	Collector current I <sub>C</sub> (mA)
*5 A	0.5 to 1.9
B	1.45 to 5.4
C	4.0 to 15.0
A or B	0.5 to 5.4
B or C	1.45 to 15.0
A, B or C	0.5 to 15.0

\*5 GP2L24 and GP2L26 don't have A rank.

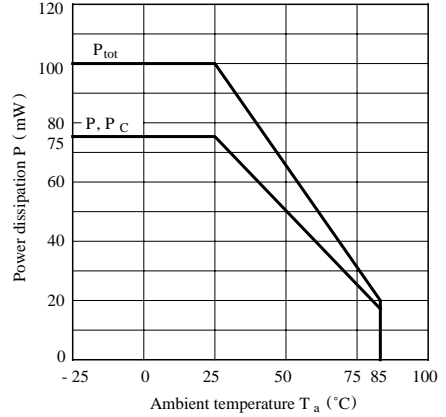
### Test Condition for Collector Current



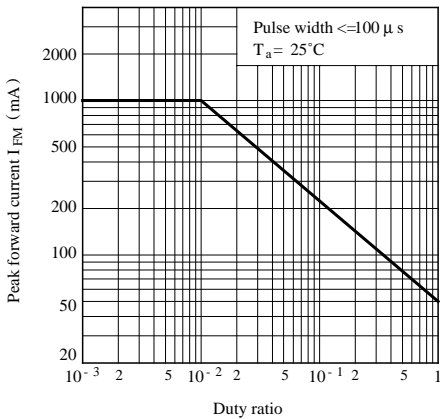
**Fig. 1 Forward Current vs. Ambient Temperature**



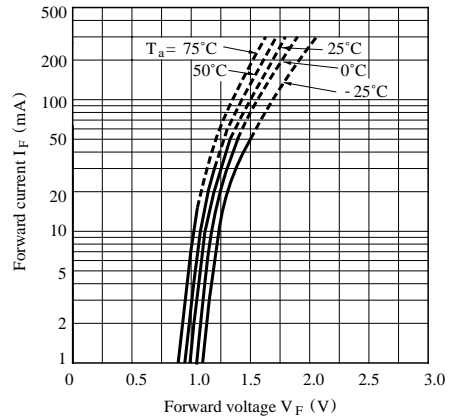
**Fig. 2 Power Dissipation vs. Ambient Temperature**



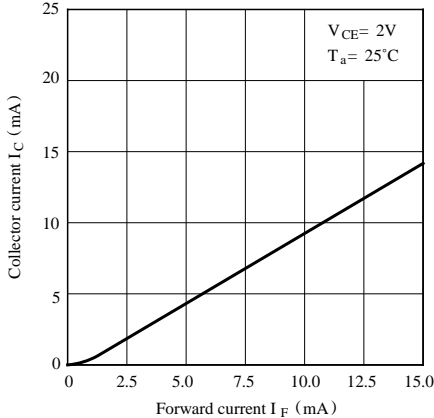
**Fig. 3 Peak Forward Current vs. Duty Ratio**



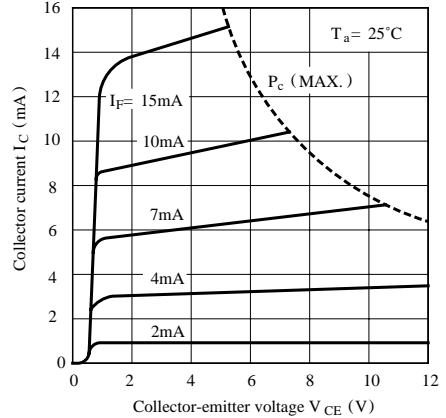
**Fig. 4 Forward Current vs. Forward Voltage**



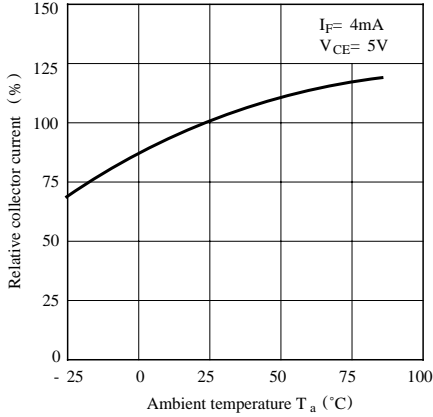
**Fig. 5 Collector Current vs. Forward Current**



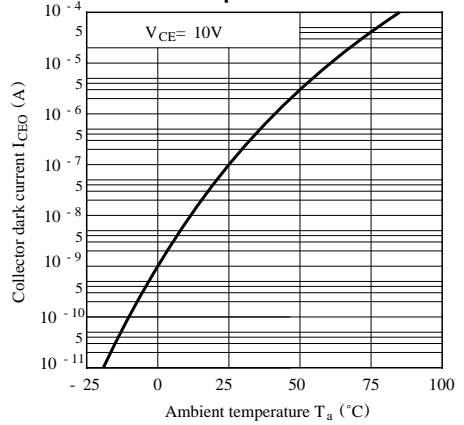
**Fig. 6 Collector Current vs. Collector-emitter Voltage**



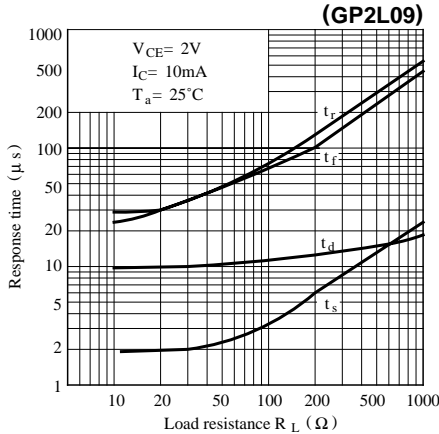
**Fig. 7 Relative Collector Current vs. Ambient Temperature**



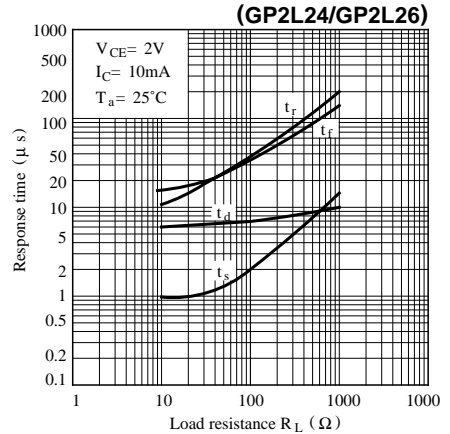
**Fig. 8 Collector Dark Current vs. Ambient Temperature**



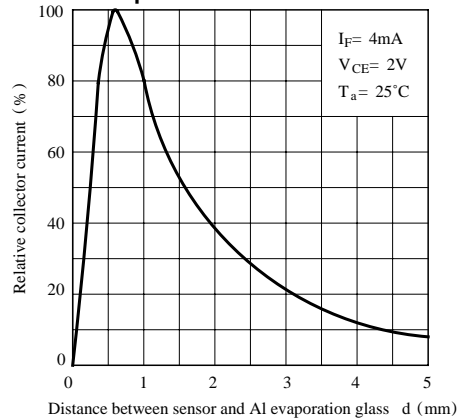
**Fig. 9-a Response Time vs. Load Resistance (GP2L09)**



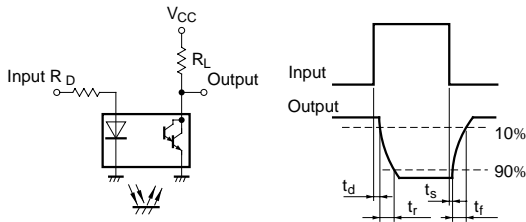
**Fig. 9-b Response Time vs. Load Resistance (GP2L24/GP2L26)**



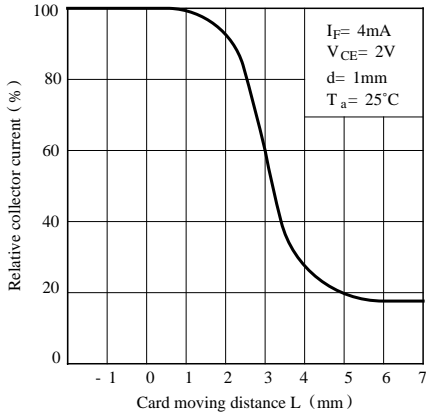
**Fig.10 Relative Collector Current vs. Distance between Sensor and Al Evaporation Glass**



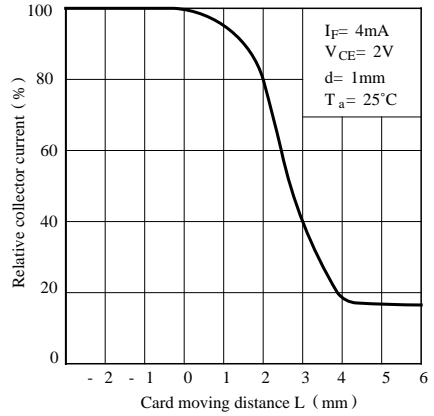
**Test Circuit for Response Time**



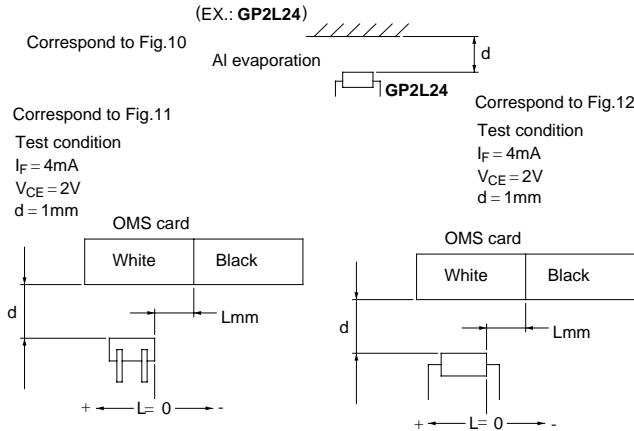
**Fig.11 Relative Collector Current vs. Card Moving Distance (1)**



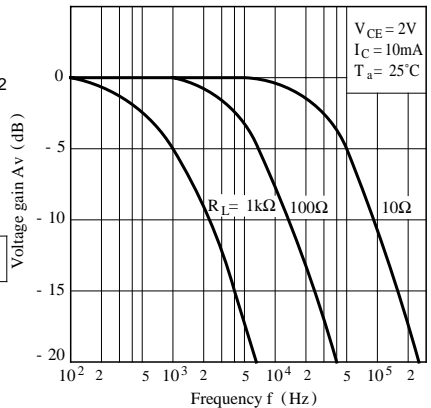
**Fig.12 Relative Collector Current vs. Card Moving Distance (2)**



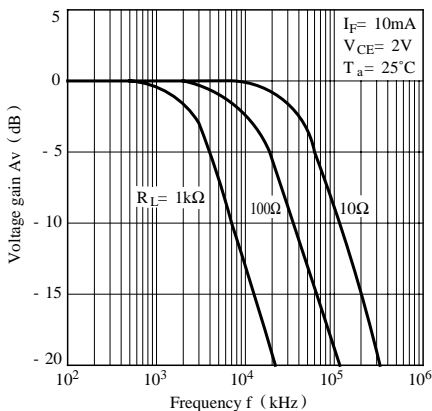
**Test Condition for Distance & Detecting Position Characteristics**



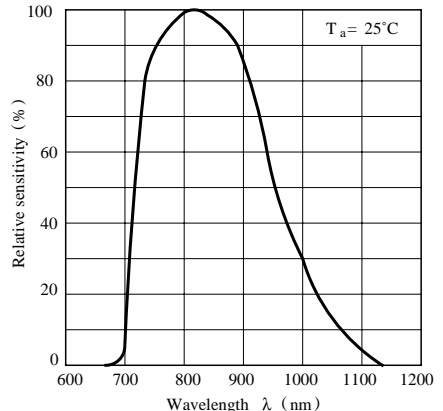
**Fig.13 Frequency Response (GP2L09)**



**Fig.14 Frequency Response (GP2L24/ GP2L26)**



**Fig.15 Spectral Sensitivity (Detecting Side)**



**■ Precautions for Use**

- (1) In order to stabilize power supply line, connect a by-pass capacitor of more than 0.01  $\mu$ F between Vcc and GND near the device.
  - (2) In this product, the PWB is fixed with a resin cover, and cleaning solvent may remain inside the case; therefore, dip cleaning or ultrasonic cleaning are prohibited.
  - (3) Remove dust or stains, using an air blower or a soft cloth moistened in cleaning solvent. However, do not perform the above cleaning using a soft cloth with cleaning solvent in the marking portion.  
In this case, use only the following type of cleaning solvent used for wiping off:  
Ethyl alcohol, Methyl alcohol, Isopropyl alcohol, Freon TE, Freon TF, Diflon solvent S3-E  
When the cleaning solvents except for specified materials are used, please consult us.
  - (4) As for other general cautions, refer to the chapter “Precautions for Use”.
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