

# GP1L03

## Wide Gap Type Photointerrupter

### ■ Features

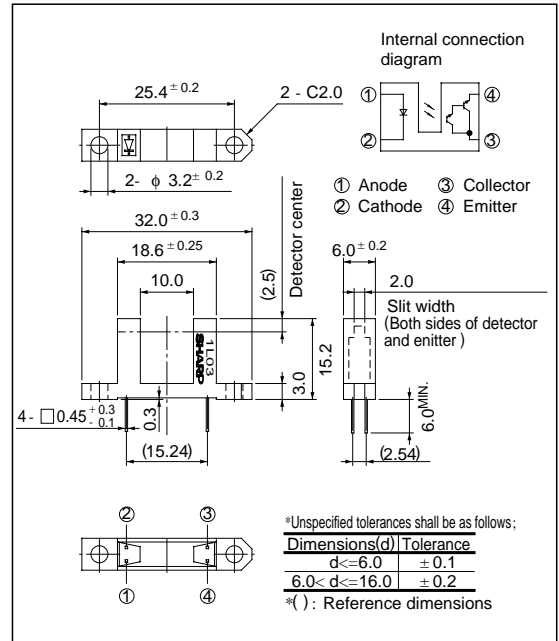
1. Wide gap between emitter and detector  
(10mm)
2. Deep gap (12.2mm)
3. High current transfer ratio  
(CTR: MIN. 100% at  $I_F = 1\text{mA}$ )

### ■ Applications

1. Analyzers, measuring instruments
2. Automatic vending machines, amusement equipment
3. Optoelectronic switches, optoelectronic counters

### ■ 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 to + 85	$^\circ\text{C}$
Storage temperature		$T_{stg}$	- 40 to + 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

■ Electro-optical Characteristics

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

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	$I_{CEO}$	$V_{CE} = 10\text{V}$	-	-	$10^{-6}$	A	
Transfer characteristics	Collector Current	$I_C$	$I_F = 1\text{mA}, V_{CE} = 2\text{V}$	1	-	20	mA	
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 2\text{mA}, I_C = 0.5\text{mA}$	-	-	1.0	V	
	Response time	Rise time	$t_r$	$I_C = 10\text{mA}, V_{CE} = 2\text{V}, R_L = 100\Omega$	-	80	400	$\mu\text{s}$
		Fall time	$t_f$		-	70	350	$\mu\text{s}$

Fig. 1 Forward Current vs. Ambient Temperature

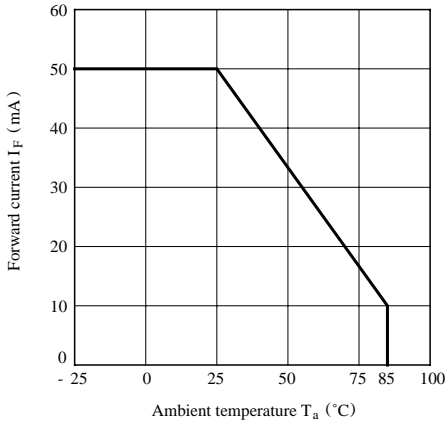


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

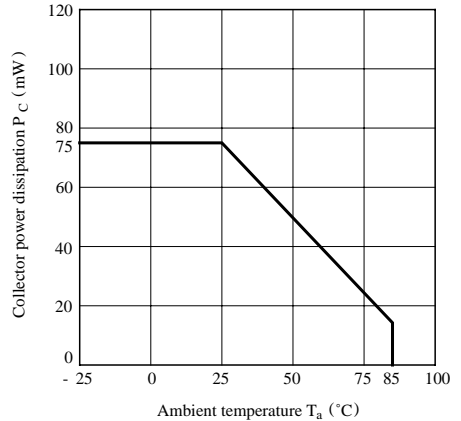


Fig. 3 Peak Forward Current vs. Duty Ratio

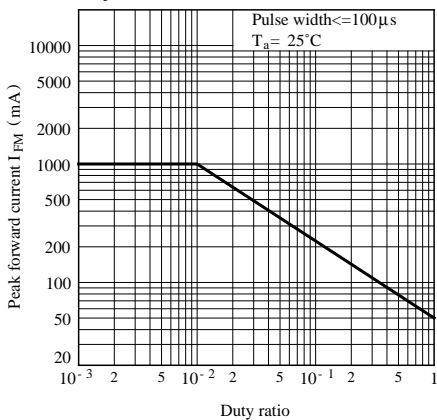
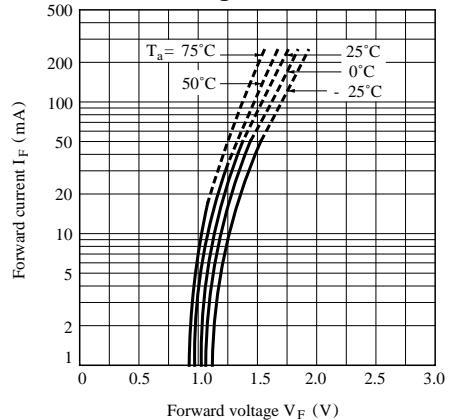
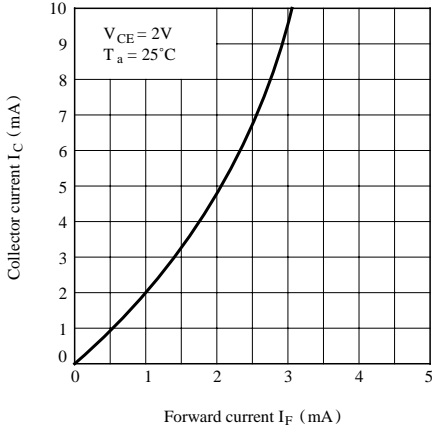


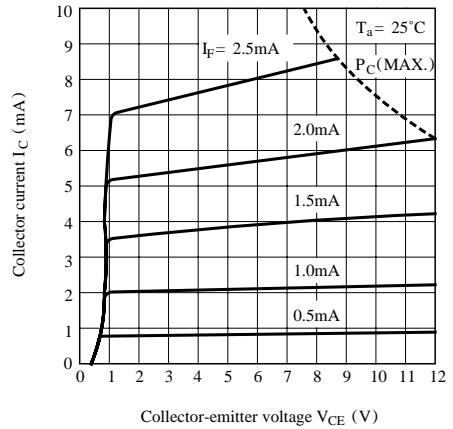
Fig. 4 Forward Current vs. Forward Voltage



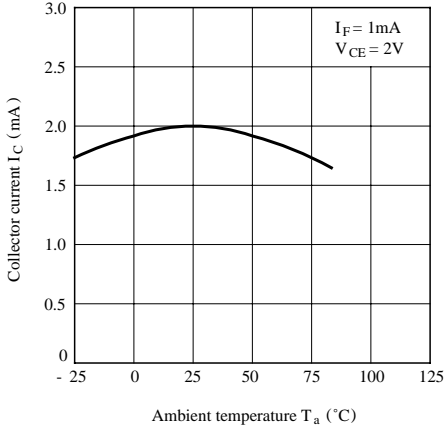
**Fig. 5 Collector Current vs. Forward Current**



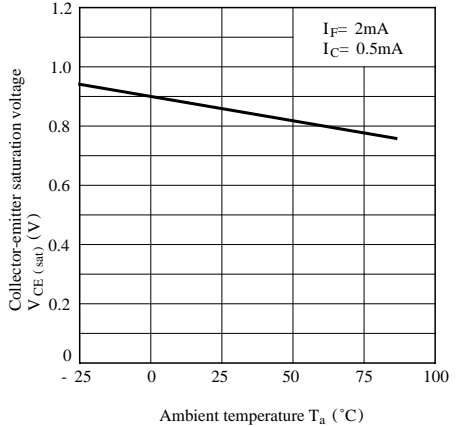
**Fig. 6 Collector Current vs. Collector-emitter Voltage**



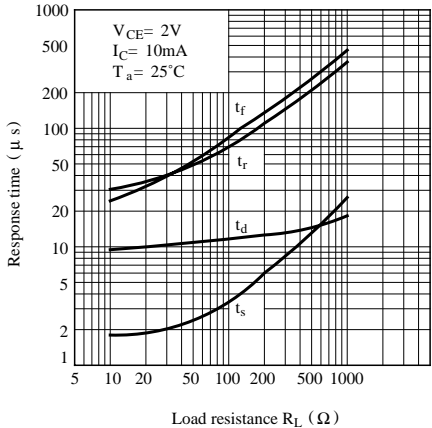
**Fig. 7 Collector Current vs. Ambient Temperature**



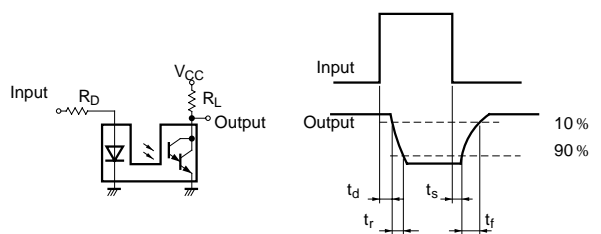
**Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature**



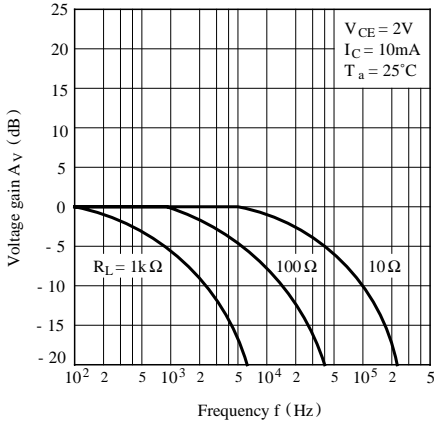
**Fig. 9 Response Time vs. Load Resistance**



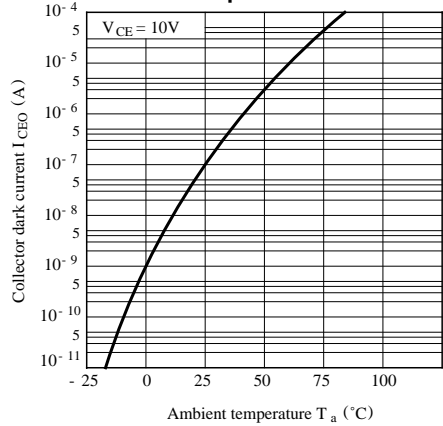
**Test Circuit for Response Time**



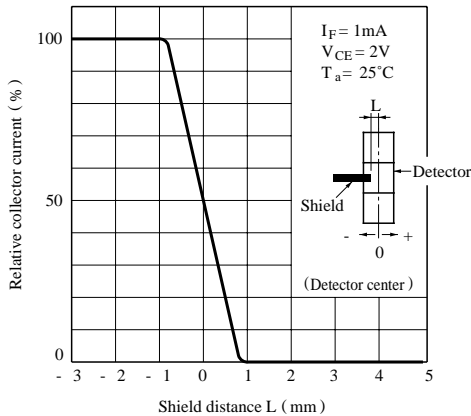
**Fig.10 Frequency Response**



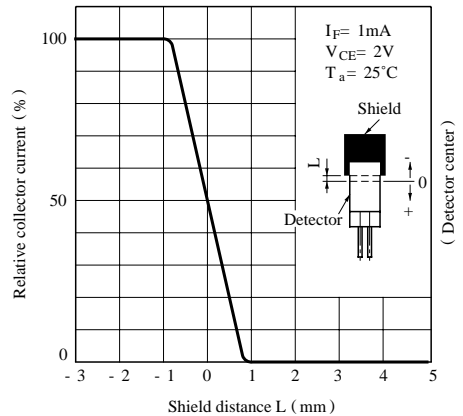
**Fig.11 Collector Dark Current vs. Ambient Temperature**



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



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



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