

# GP1L53V

## Compact, High Sensing Accuracy Type Photointerrupter

### ■ Features

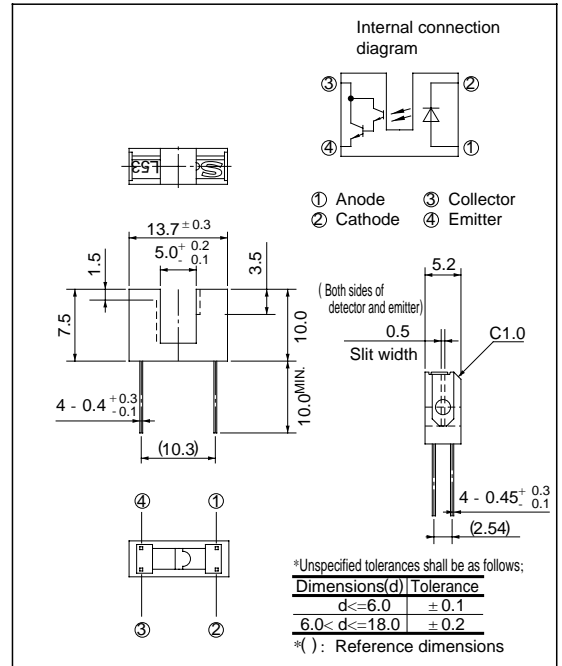
1. Compact type
2. High sensing accuracy (Slit width: 0.5mm)
3. High current transfer ratio  
(CTR: MIN. 30% at  $I_F = 1\text{mA}$ )
4. PWB direct mounting type

### ■ Applications

1. OA equipment such as FDDs, printers, facsimiles, etc.
2. VCRs
3. Optoelectronic switches

### ■ 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

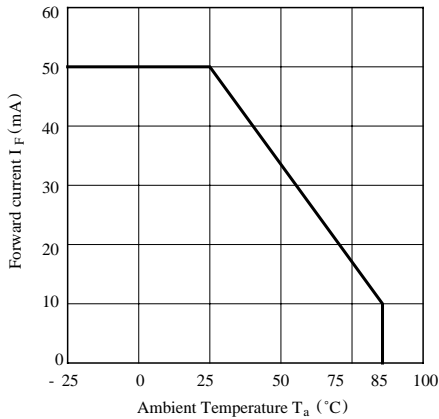
\*2 For 5 seconds

**■ Electro-optical Characteristics**

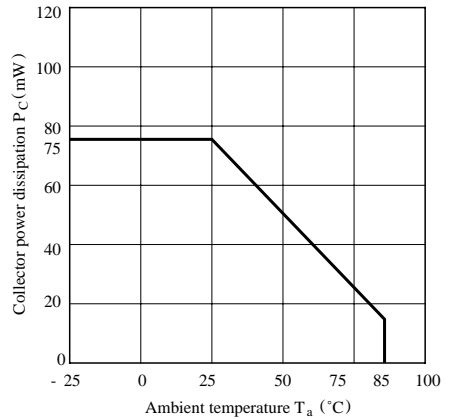
( $T_a = 25^\circ\text{C}$ )

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	$V_F$	$I_F = 20\text{mA}$	-	1.25	1.4	V	
	Peak forward voltage	$V_{FM}$	$I_{FM} = 0.5\text{A}$	-	3	4	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	$I_C$	$I_F = 1\text{mA}, V_{CE} = 2\text{V}$	0.3	-	20	mA	
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 2\text{mA}, I_C = 0.3\text{mA}$	-	-	1.0	V	
	Response time	Rise time	$t_r$	$V_{CE} = 2\text{V}, I_C = 2\text{mA}$	-	80	400	$\mu\text{s}$
		Fall time	$t_f$	$R_L = 100\Omega$	-	70	350	$\mu\text{s}$

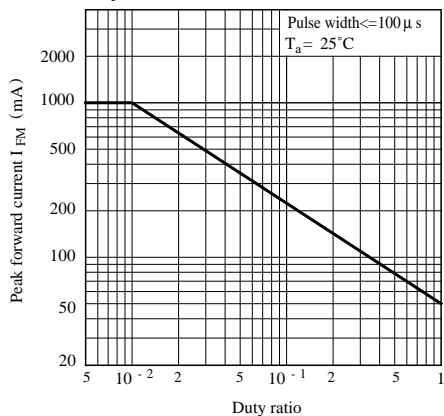
**Fig. 1 Forward Current vs. Ambient Temperature**



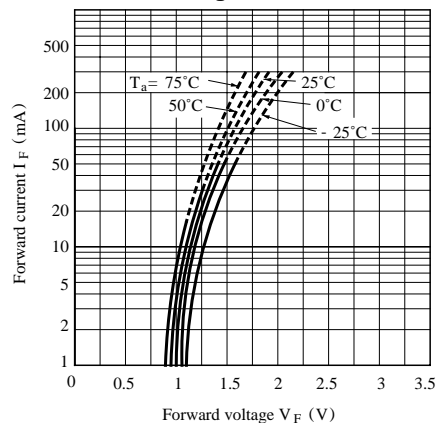
**Fig. 2 Collector Power Dissipation vs. Ambient Temperature**



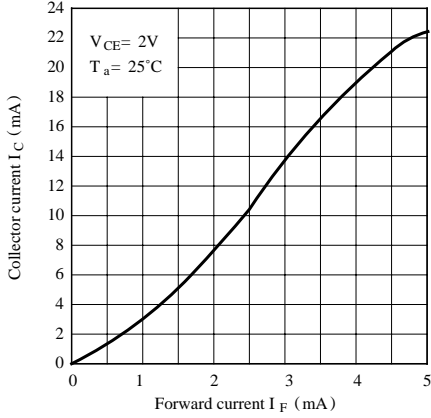
**Fig. 3 Peak Forward Current vs. Duty Ratio**



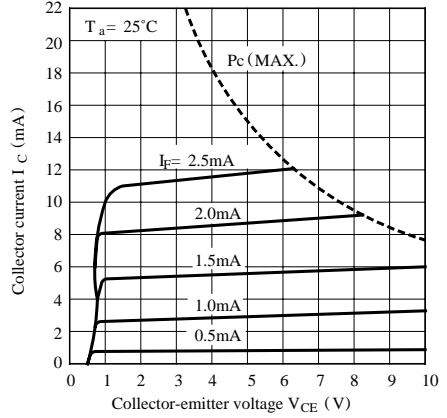
**Fig. 4 Forward Current vs. Forward Voltage**



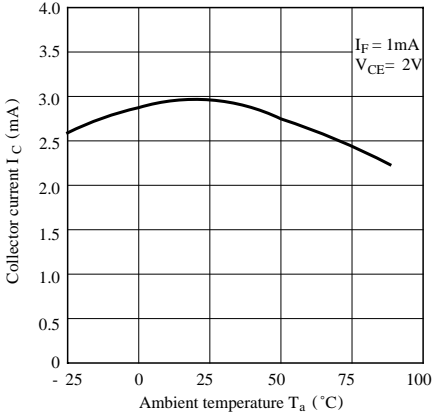
**Fig. 5 Collector Current vs. Forward Current**



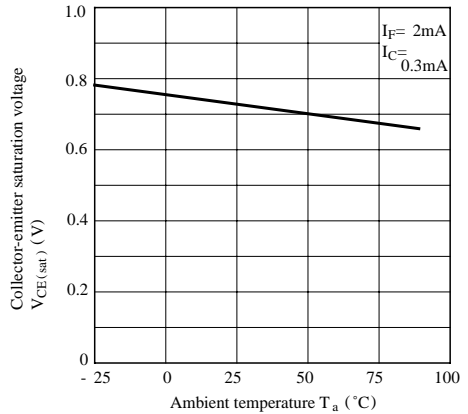
**Fig. 6 Collector Current vs. Collector-emitter Voltage**



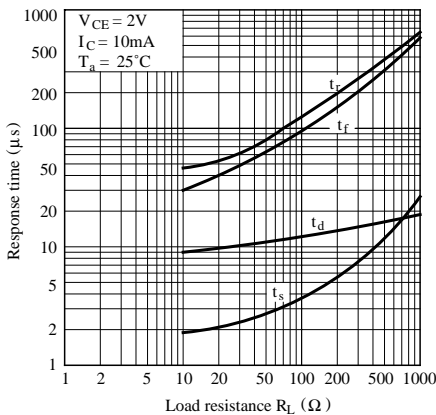
**Fig. 7 Collector Current vs. Ambient Temperature**



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



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



**Test Circuit for Response Time**

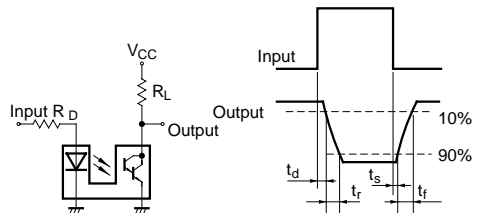


Fig.10 Frequency Response

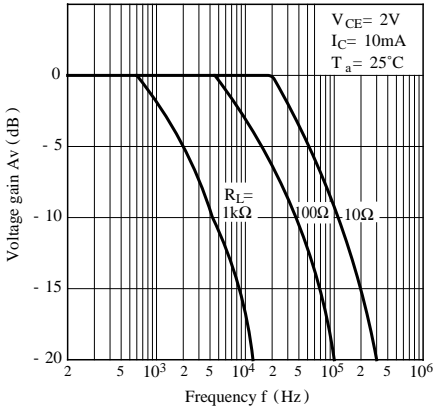


Fig.11 Collector Dark Current vs. Ambient Temperature

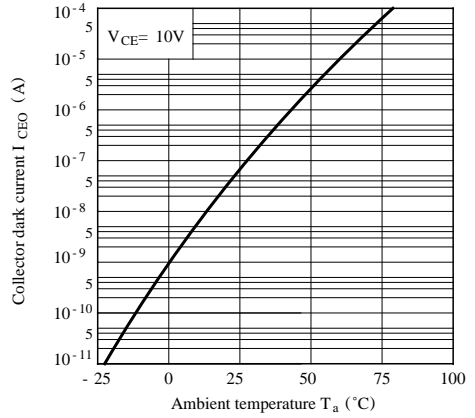


Fig.12 Relative Collector Current vs. Shield Distance (1)

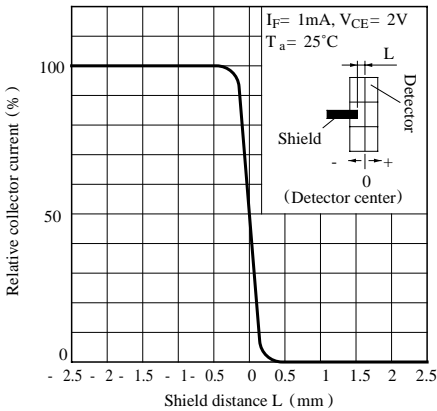
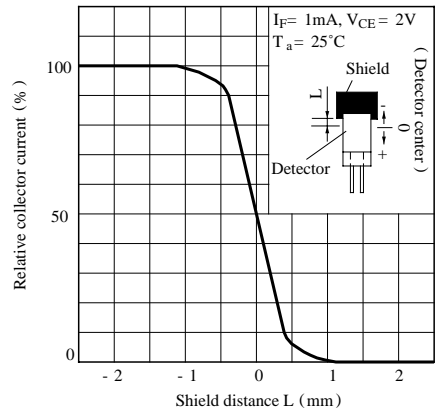


Fig.13 Relative Collector Current vs. Shield Distance (2)



■ Precautions for Use

- (1) In case of cleaning, use only the following type of cleaning solvent.  
Ethyl alcohol, Methyl alcohol, Isopropyl alcohol
- (2) As for other general cautions, refer to the chapter“Precautions for Use”.