

# GP1S38/GP1S381

## Optical Guide Photointerrupter

### ■ Features

- Optical guide for setting detecting position that can be divided into Assy substrate (mather substrate) without leads, connectors, etc.
- PWB mounting type
- Easy mounting to PWB due to the holder with hook
- Gap between light emitter and detector

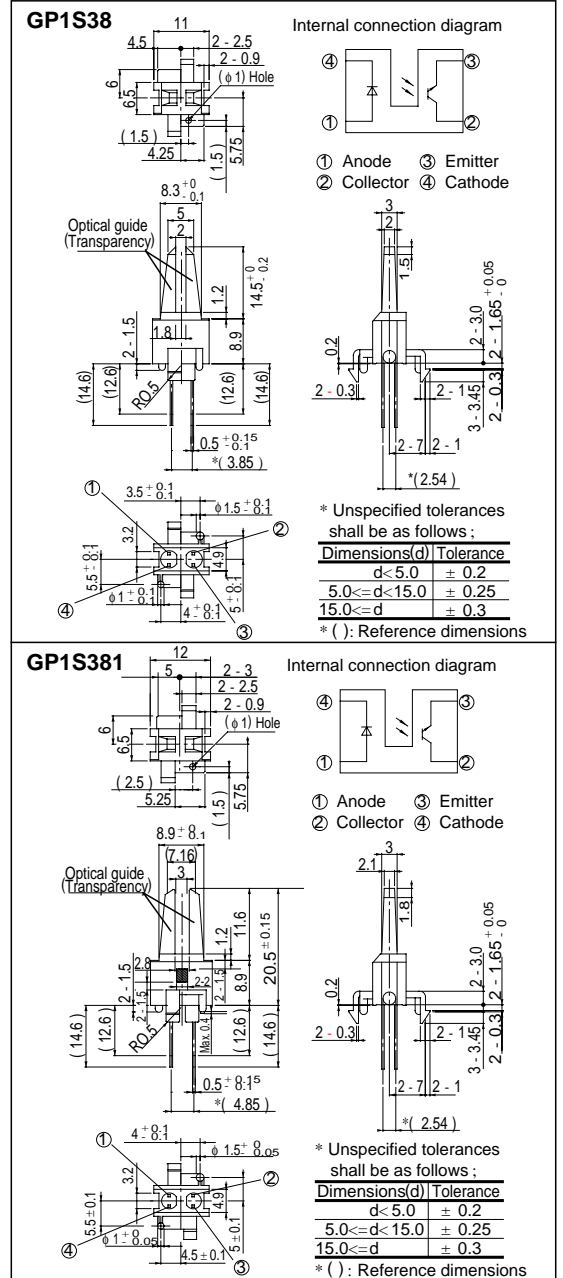
GP1S38:2mm  
GP1S381:3mm

### ■ Applications

- VCRs

### ■ Outline Dimensions

(Unit : mm)



"In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that occur in equipment using any of SHARP's devices, shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest version of the device specification sheets before using any SHARP's device."

## Absolute Maximum Ratings

(Ta = 25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	$I_F$	60	mA
	*1 Peak forward current	$I_{FM}$	1	A
	Reverse voltage	$V_R$	6	V
	Power dissipation	$P$	150	mW
Output	Collector-emitter voltage	$V_{CEO}$	35	V
	Emitter-collector voltage	$V_{ECO}$	6	V
	Collector current	$I_C$	20	mA
	Collector power dissipation	$P_C$	50	mW
Operating temperature		$T_{opr}$	- 25 to + 80	°C
Storage temperature		$T_{stg}$	- 40 to + 80	°C
*2 Soldering temperature		$T_{sol}$	260	°C

\*1 Pulse width  $\leq 100\mu s$ , Duty ratio: 0.01

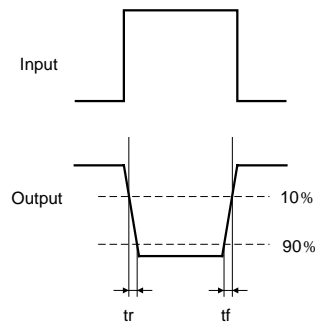
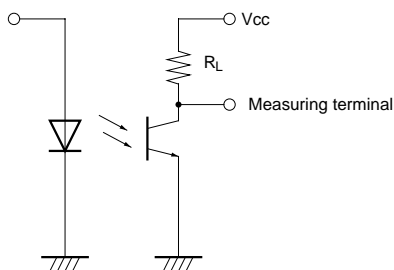
\*2 3 seconds or less at the position of 1mm or more from the surface of resin

## Electro-optical Characteristics

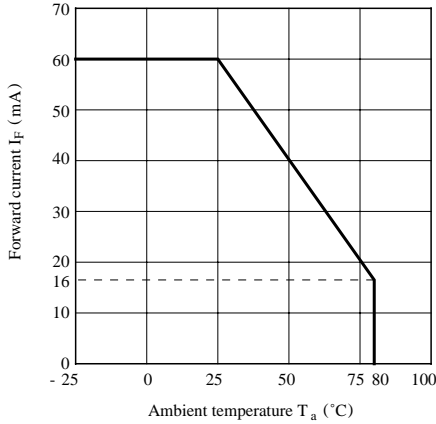
(Ta = 25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	$V_F$	$I_F = 50mA$	-	-	1.5	V	
	Peak forward voltage	$V_{FM}$	$I_{FM} = 0.5A$	-	-	3.5	V	
	Reverse current	$I_R$	$V_R = 3V$	-	-	10	$\mu A$	
Output	Collector dark current	$I_{CEO}$	$V_{CE} = 20V$	-	-	100	nA	
Transfer characteristics	Collector current	$I_C$	$V_{CE} = 5V, I_F = 20mA$	100	-	-	$\mu A$	
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 40mA, I_C = 30\mu A$	-	-	0.4	V	
	Response time	Rise time	$t_r$	$V_{CE} = 10V, I_C = 50\mu A$	-	0.85	2.5	ms
		Fall time	$t_f$	$R_L = 100k\Omega$	-	0.75	2.1	ms

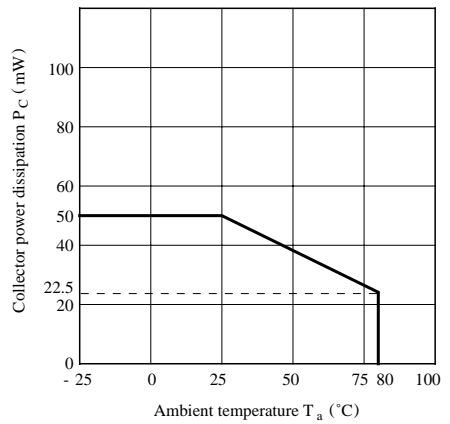
## Test Circuit for Response Time



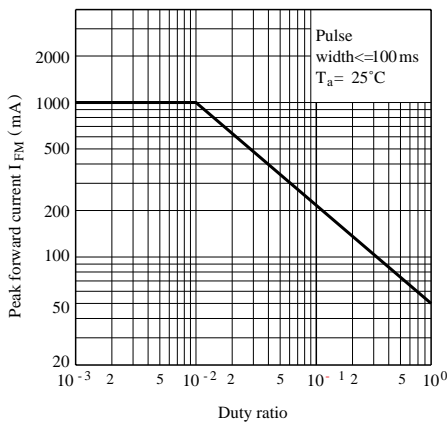
**Fig. 1 Forward Current vs. Ambient Temperature**



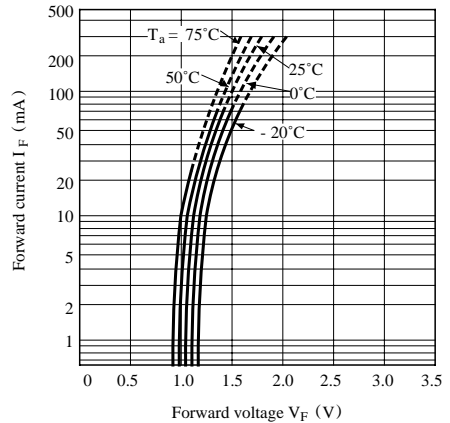
**Fig. 2 Collector Power Dissipation vs. Ambient Temperature**



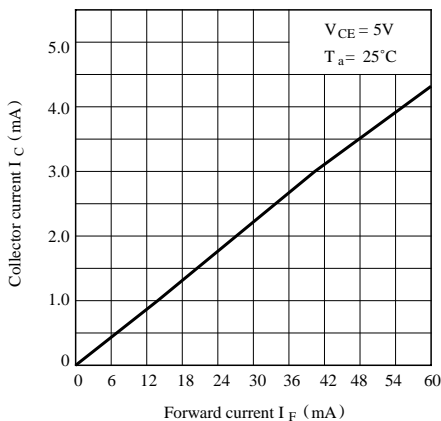
**Fig. 3 Peak Forward Current vs. Duty Ratio**



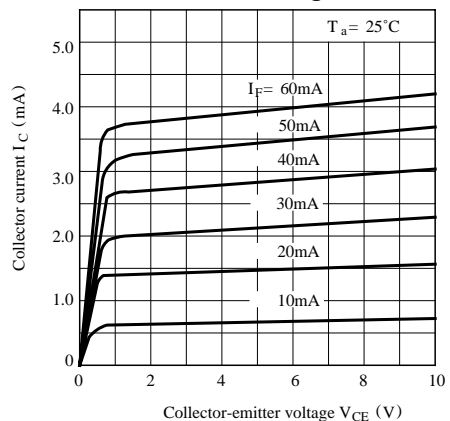
**Fig. 4 Forward Current vs. Forward Voltage**



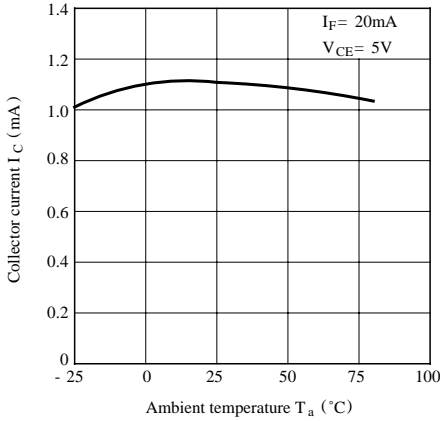
**Fig. 5 Collector Current vs. Forward Current**



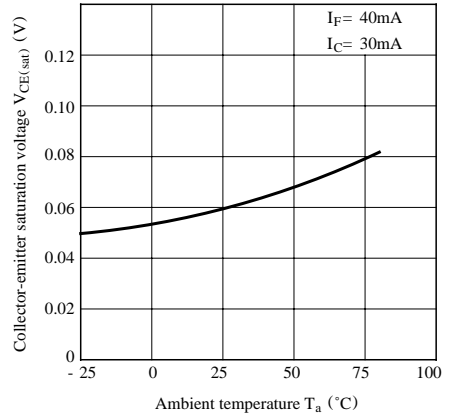
**Fig. 6 Collector Current vs. Collector-emitter Voltage**



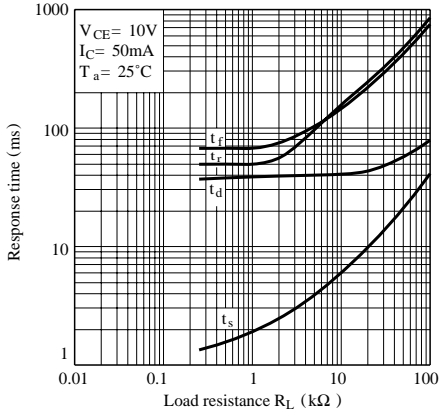
**Fig. 7 Collector Current vs. Ambient Temperature**



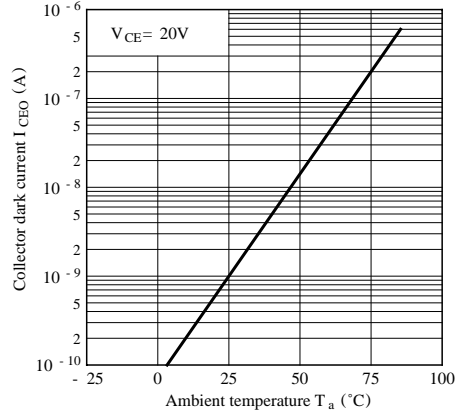
**Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature**



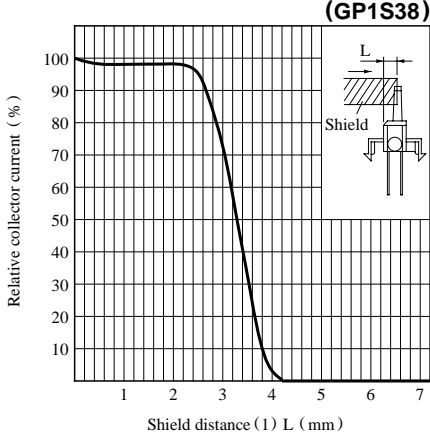
**Fig. 9 Response Time vs. Load Resistance**



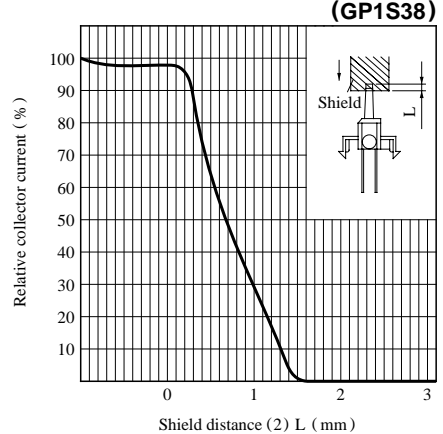
**Fig.10 Collector Dark Current vs. Ambient Temperature**



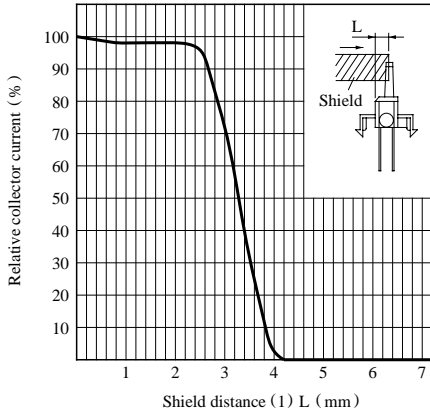
**Fig.11 Relative Collector Current vs. Shield Distance (1)**



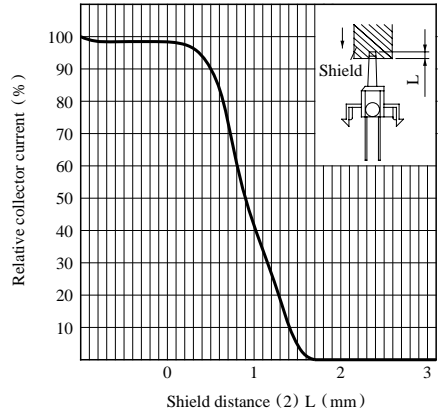
**Fig.12 Relative Collector Current vs. Shield Distance (2)**



**Fig.13 Relative Collector Current vs. Shield Distance (1)**  
(GP1S381)



**Fig.14 Relative Collector Current vs. Shield Distance (2)**  
(GP1S381)



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