

# GP1S196HCZ0F GP1S196HCPSF

Gap : 1.1mm, Slit : 0.3mm  
Phototransistor Output,  
Compact Transmissive  
Photointerrupter



## ■ Description

**GP1S196HCZ0F** is a compact-package, photo-transistor output, transmissive photointerrupter, with opposing emitter and detector in a molding that provides non-contact sensing. The compact package series is a result of unique technology combining transfer and injection molding.

This device is half the size of the rest of the parts in this family.

## ■ Features

1. Transmissive with phototransistor output
2. Highlights :
  - Compact Size
  - Low Profile
  - Narrow Gap
  - Through-hole : **GP1S196HCZ0F**
  - SMT : **GP1S196HCPSF**
3. Key Parameters :
  - Gap Width : 1.1mm
  - Slit Width (detector side): 0.3mm
  - Package : 3.1×2×2.7mm
4. Lead free and RoHS directive compliant

## ■ Agency approvals/Compliance

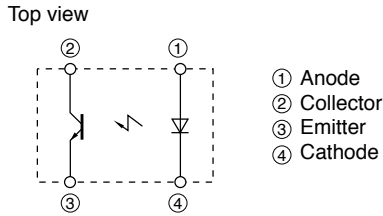
1. Compliant with RoHS directive

## ■ Applications

1. General purpose detection of object presence or motion.
2. Example : printer, lens control for camera

Notice The content of data sheet is subject to change without prior notice.  
In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that may occur in equipment using any SHARP devices shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device.

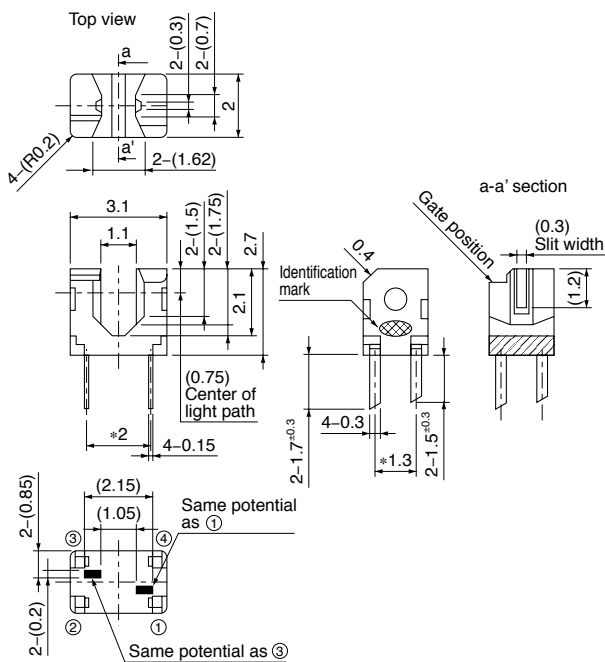
## Internal Connection Diagram



## Outline Dimensions

(Unit : mm)

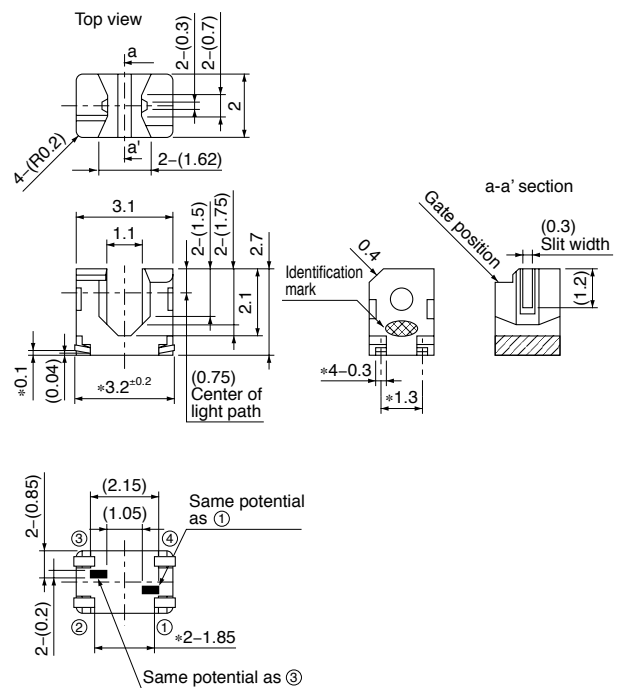
### Through-Hole [GP1S196HCZ0F]



- Unspecified tolerance :  $\pm 0.1$ mm.
- Dimensions in parenthesis are shown for reference.
- The dimensions indicated by \* refer to those measured from the lead base.
- The dimensions shown do not include those of burrs.  
Burr's dimensions : 0.15mm MAX.
- The lead may be exposed at the painting out portion.
- There is agreeer identification mark on he light emitting side.

Product mass : approx. 0.022g

### SMT Gullwing Lead-Form [GP1S196HCPSF]



- Unspecified tolerance :  $\pm 0.1$ mm.
- Dimensions in parenthesis are shown for reference.
- The dimensions indicated by \* refer to those measured lead plating portion.
- The dimensions shown do not include those of burrs.  
Burr's dimensions : 0.15mm MAX.
- The lead may be exposed at the painting out portion.
- There is agreeer identification mark on he light emitting side.

Product mass : approx. 0.02g

Plating material : SnCu (Cu : TYP. 2%)

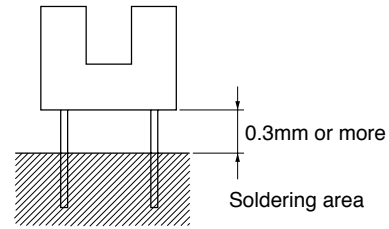
Country of origin

Japan

## ■ Absolute Maximum Ratings ( $T_a=25^{\circ}\text{C}$ )

Parameter		Symbol	Rating	Unit
Input	Forward current	$I_F$	30	mA
	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	$I_C$	20	mA
	Collector power dissipation	$P_C$	75	mW
Total power dissipation		$P_{tot}$	100	mW
Operating temperature		$T_{opr}$	-25 to +85	$^{\circ}\text{C}$
Storage temperature		$T_{stg}$	-40 to +100	$^{\circ}\text{C}$
*1 Soldering temperature		$T_{sol}$	260	$^{\circ}\text{C}$

\*1 For 3s or less

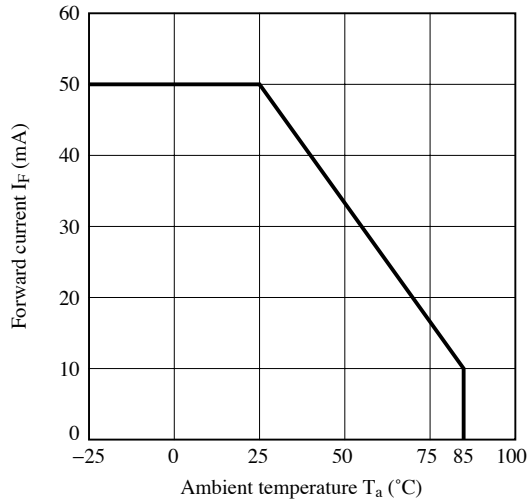


(GP1S196HCZ0F)

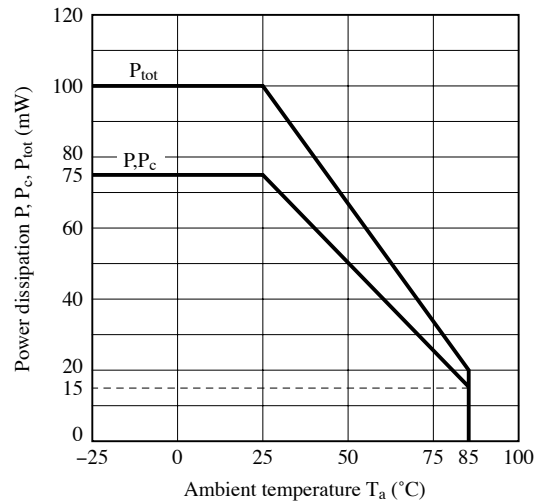
## ■ Electro-optical Characteristics ( $T_a=25^{\circ}\text{C}$ )

Parameter		Symbol	Condition	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	$V_F$	$I_F=20\text{mA}$	-	1.2	1.4	V	
	Reverse current	$I_R$	$V_R=3\text{V}$	-	-	10	$\mu\text{A}$	
Output	Collector dark current	$I_{CEO}$	$V_{CE}=20\text{V}$	-	-	100	nA	
Transfer characteristics	Collector current	$I_C$	$V_{CE}=5\text{V}, I_F=5\text{mA}$	100	-	400	$\mu\text{A}$	
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F=10\text{mA}, I_C=40\mu\text{A}$	-	-	0.4	V	
	Response time	Rise time	$t_r$	$V_{CE}=5\text{V}, I_C=100\mu\text{A}, R_L=1\text{k}\Omega$	-	50	150	$\mu\text{s}$
		Fall time	$t_f$		-	50	150	

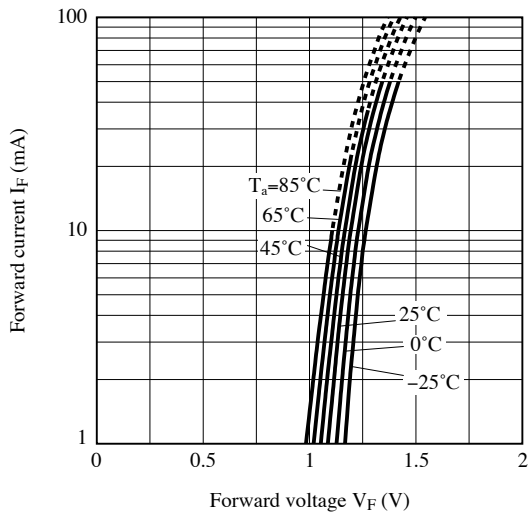
**Fig.1 Forward Current vs. Ambient Temperature**



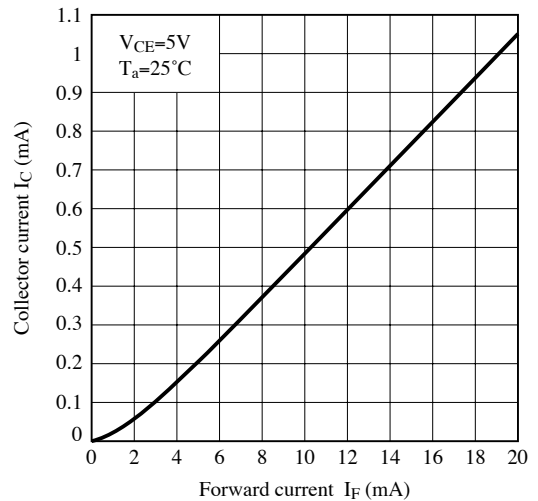
**Fig.2 Power Dissipation vs. Ambient Temperature**



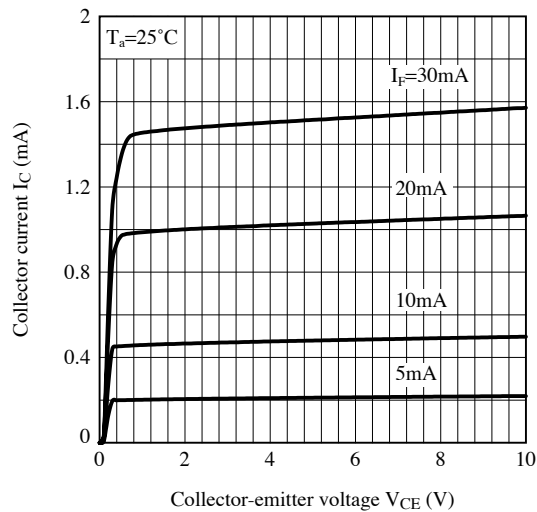
**Fig.3 Forward Current vs. Forward Voltage**



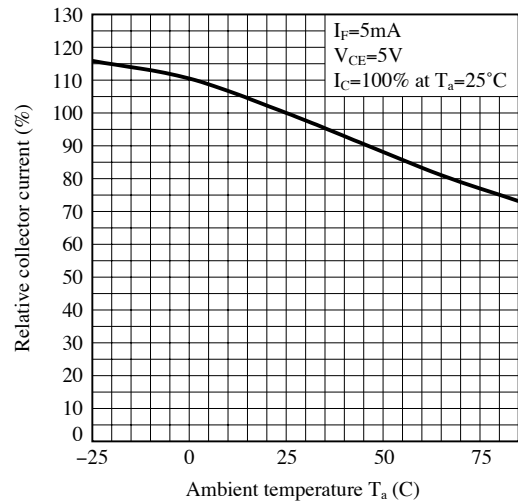
**Fig.4 Collector Current vs. Forward Current**



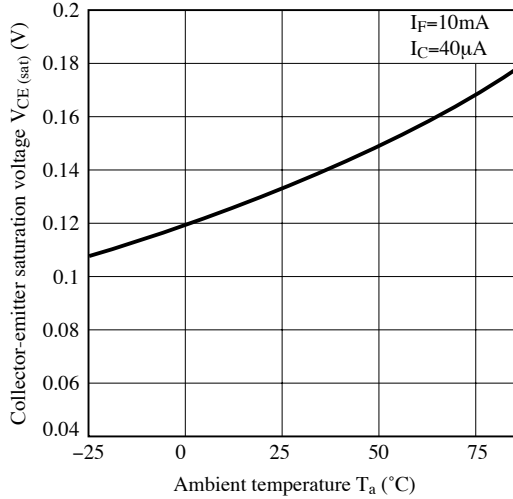
**Fig.5 Collector Current vs. Collector-emitter Voltage**



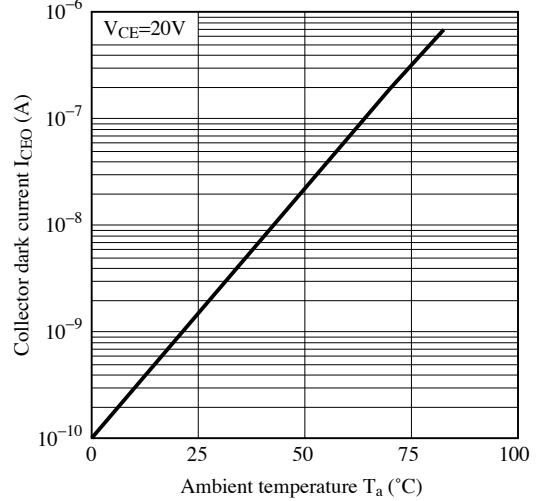
**Fig.6 Relative Collector Current vs. Ambient Temperature**



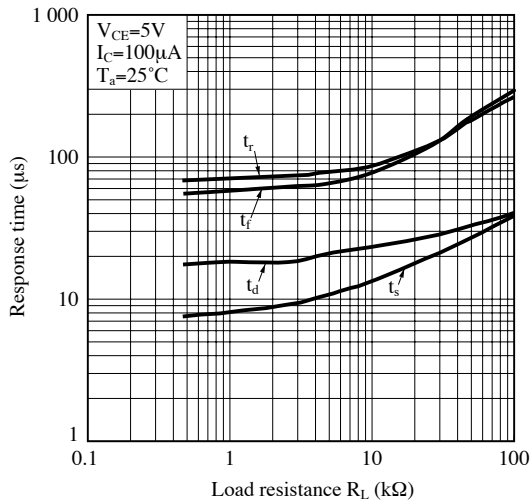
**Fig.7 Collector-emitter Saturation Voltage vs. Ambient Temperature**



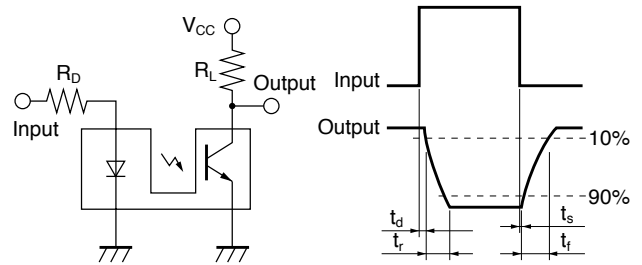
**Fig.8 Collector Dark Current vs. Ambient Temperature**



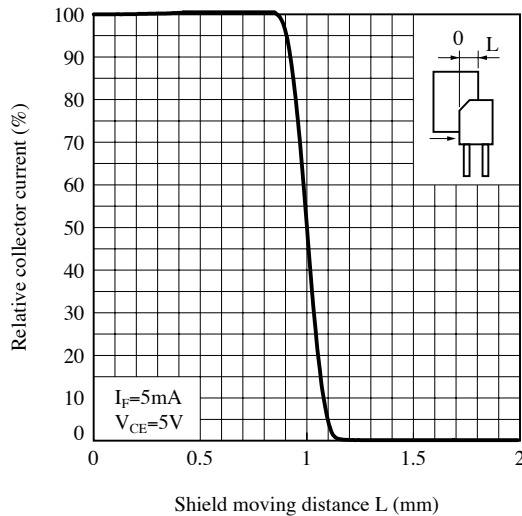
**Fig.9 Response Time vs. Load Resistance**



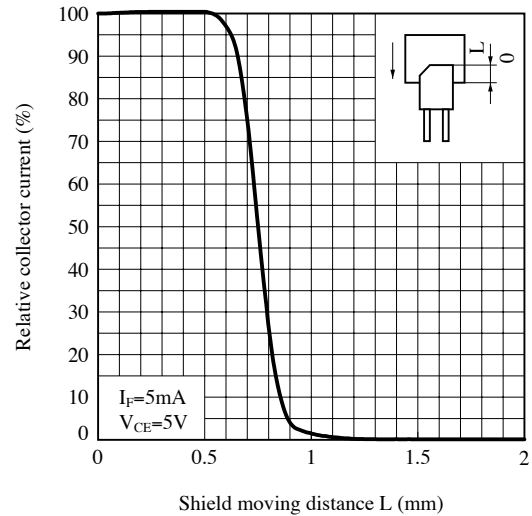
**Fig.10 Test Circuit for Response Time**



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



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



Remarks : Please be aware that all data in the graph are just for reference and not for guarantee.











