GP2S01/GP2S01F

Long Focal Distance Type Photointerrupter

■ Features

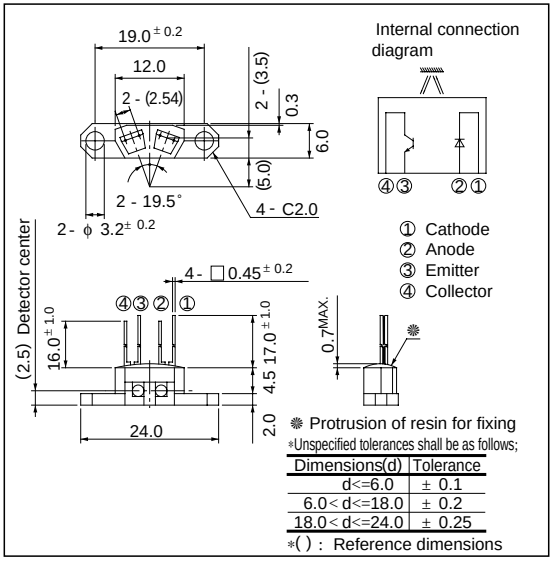
1. Long focal distance
2. Visible light cut-off type: **GP2S01F**

■ Applications

1. Copiers, printers
2. Automatic vending machines, ticket vending machines
3. Optoelectronic switches, optoelectronic counters

■ Outline Dimensions

(Unit : mm)



∗Unspecified tolerances shall be as follows;

Dimensions(d)	Tolerance
d<=6.0	± 0.1
6.0< d<=18.0	± 0.2
18.0< d<=24.0	± 0.25

∗( ) : Reference dimensions

■ Absolute Maximum Ratings

(Ta= 25˚C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	∗1Peak 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	20	mA
	Collector power dissipation	P_C	75	mW
Operating temperature		T_{opr}	- 25 to + 85	˚C
Storage temperature		T_{stg}	- 40 to + 100	˚C
∗2Soldering temperature		T_{sol}	260	˚C

∗1 Pulse width<=100μs, Duty ratio= 0.01
∗2 For 5 seconds

" 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."

■ Electro-optical Characteristics

(Ta = 25˚C)

Parameter				Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage			V_F	I_F = 20mA	-	1.2	1.4	V
	Peak forward voltage			V_{FM}	I_{FM} = 0.5A	-	3.0	4.0	V
	Reverse current			I_R	V_R = 3V	-	-	10	μA
Output	Collector dark current			I_{CEO}	V_{CE} = 20V	-	10^{-9}	10^{-7}	A
Transfer characteristics	*3Collector Current		**GP2S01**	Ic	I_F = 20mA	0.2	-	2	mA
			GP2S01F		V_{CE} = 5V	0.2	-	0.9	
	Response time	Rise time	**GP2S01**	t_r	I_C = 0.2mA, V_{CE} = 2V	-	30	90	μs
			GP2S01F			-	30	120	
		Fall time	**GP2S01**	t_f	R_L = 1kΩ, d = 5mm	-	40	120	μs
			GP2S01F			-	40	160	
	*4Leak current			I_{LEAK}	I_F = 20mA, V_{CE} = 5V	-	-	10	μA

*3 Test method: A reflective object shall be an OMS test card (white) specified by Sharp, and be 5.0mm away from the sensor
*4 Without reflective object

Fig. 1 Forward Current vs. Ambient Temperature

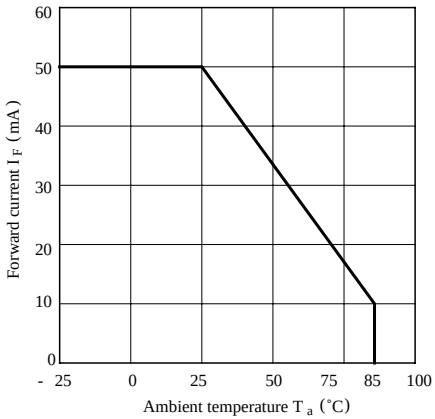


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

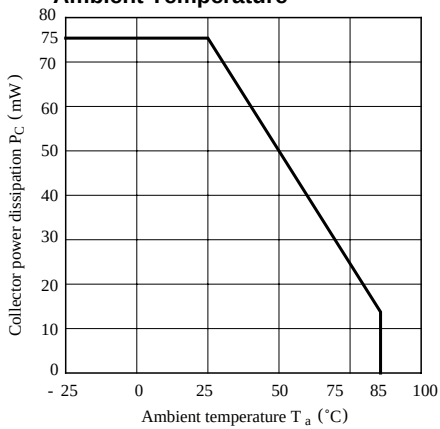


Fig. 3 Peak Forward Current vs. Duty Ratio

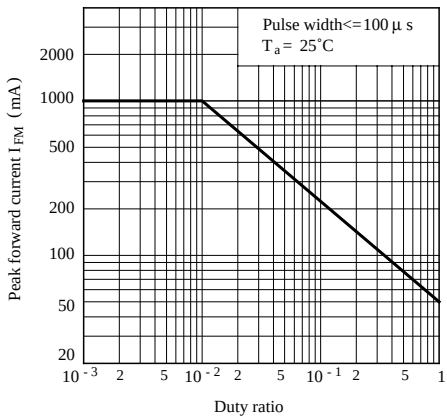


Fig. 4 Forward Current vs. Forward Voltage

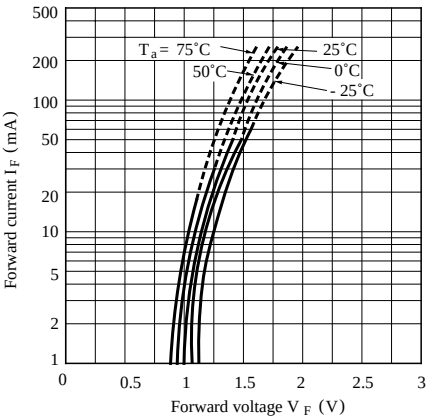


Fig. 5 Collector Current vs. Forward Current

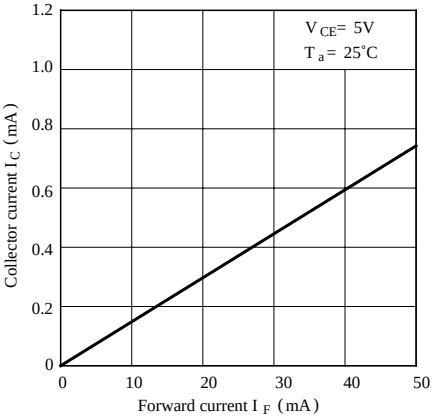


Fig. 6 Collector Current vs. Collector-emitter Voltage

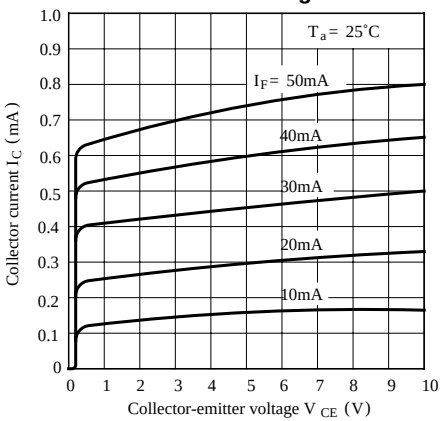


Fig. 7 Collector Current vs. Ambient Temperature

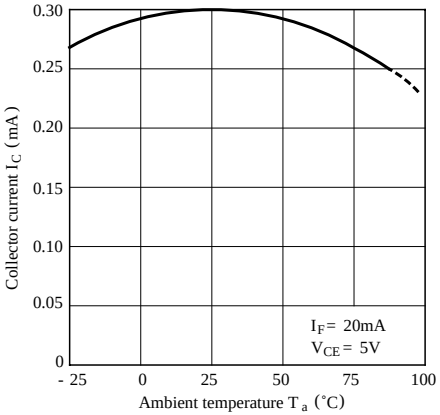


Fig. 8 Collector Dark Current vs. Ambient Temperature

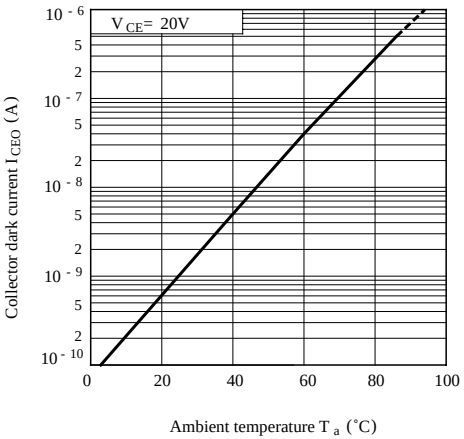
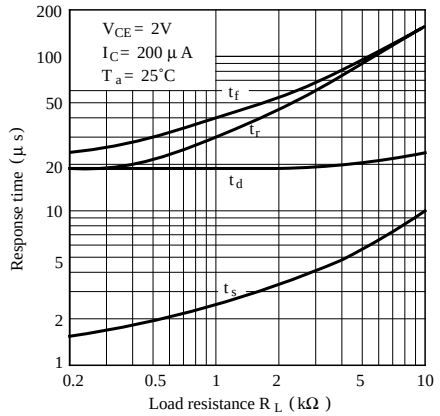


Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time

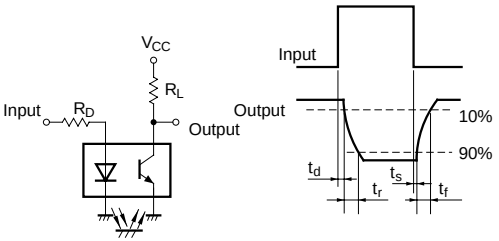


Fig.10 Frequency Response

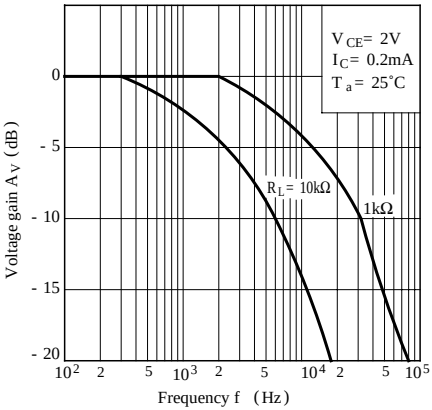


Fig.11 Relative Collector Current vs. Distance between GP2S01(F) and Test Card

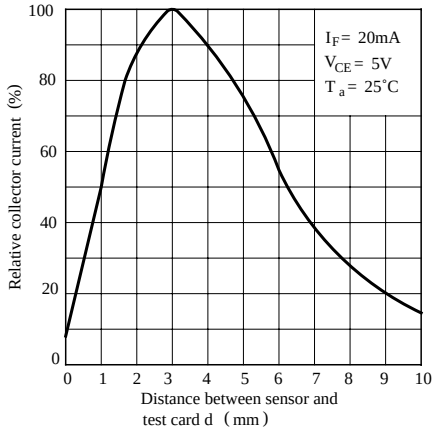
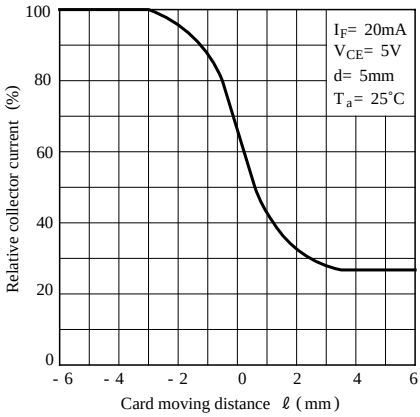


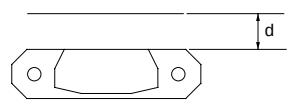
Fig.12 Relative Collector Current vs. Card Moving Distance



Distance Characteristic Test Condition

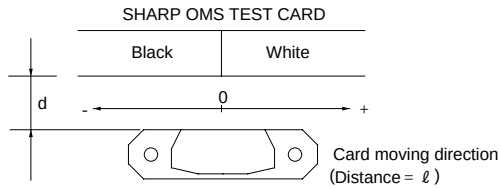
Correspond to Fig.11

SHARP OMS TEST CARD
(White)



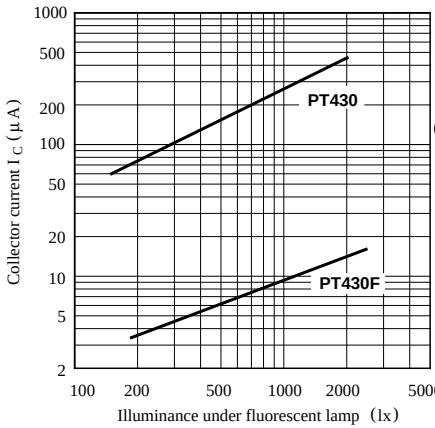
GP2S01
(GP2S01F)

Correspond to Fig.12



GP2S01
(GP2S01F)

Fig.13 Collector Current vs. Illuminance (Reference)



(Test condtion)
Light source: White fluorescent lamp
Sharp FLR-40 SW/M
V_{CE}= 2V, T_a= 25°C
(Note) Comparison between outputs of transparent resin molded type photo-transistor (**PT430**) and visible light cut-off type (**PT430F**)

- Please refer to the chapter "Precautions for use".