

# GP1S41 Photointerrupter with Spring Lever Type Actuator

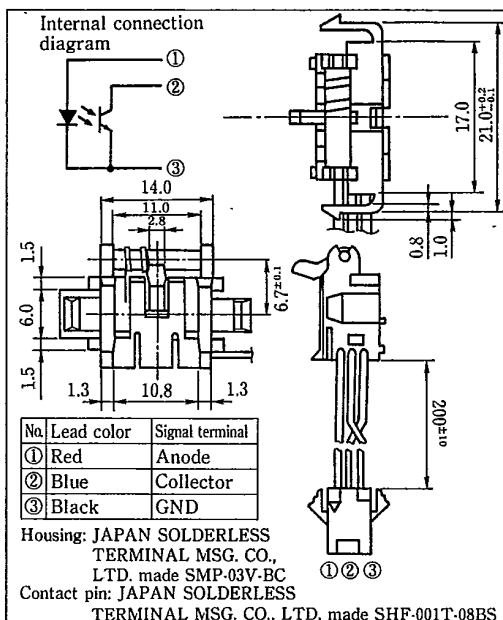
## ■ Features

1. With spring recoil type actuator
2. Connector terminal type

## ■ Applications

1. Paper detection for copiers, facsimiles

## ■ 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	$I_C$	20	mA
	Collector power dissipation	$P_C$	75	mW
	Operating temperature	$T_{OPR}$	-25 ~ +75	°C
	Storage temperature	$T_{STG}$	-30 ~ +85	°C

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

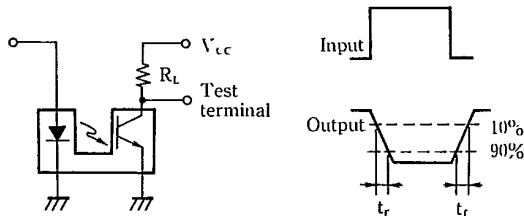
Electro-optical Characteristics

(Ta=25°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	$I_{CEO}$ $V_{CE}=20\text{V}$	—	1	100	nA
*2 Transfer characteristics	Collector current	$I_C$ $V_{CE}=5\text{V}$ , $I_F=20\text{mA}$	0.5	—	10	mA
	Collector-emitter saturation voltage	$V_{CE0}$ (sat)	—	—	0.4	V
	Response time (Rise)	$t_r$ $V_{CE}=2\text{V}$ , $I_C=2\text{mA}$	—	3	15	$\mu\text{s}$
	Response time (Fall)	$t_f$ $R_L=100\Omega$	—	4	20	$\mu\text{s}$

\*2 Measurement shall be made of the angle at which the actuator lever transmits the light going through light detector/emitter slit any more.

Test Circuit for Response Time



Mechanical Characteristics

Parameter	Conditions	MIN.	TYP.	MAX.	Unit
Lever rotational torque	With the actuator lever horizontal (Initial condition)	—	—	2	gf · cm
Lever life		100,000	—	—	Times

Fig. 1 Forward Current vs. Ambient Temperature

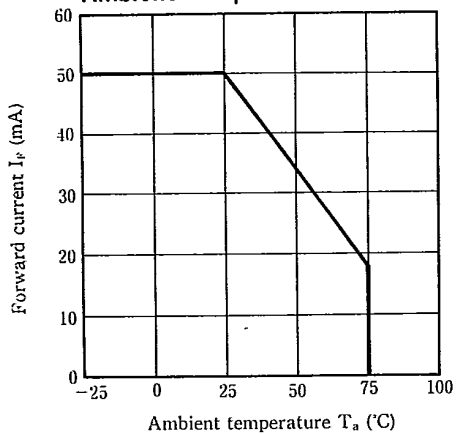
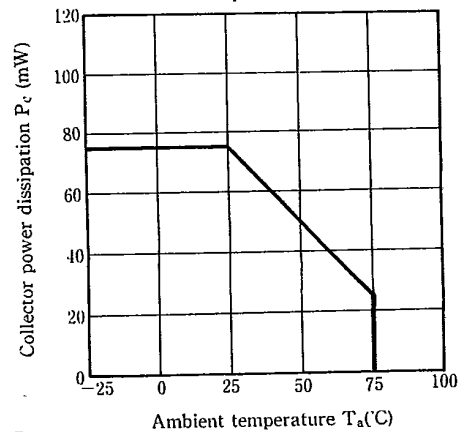
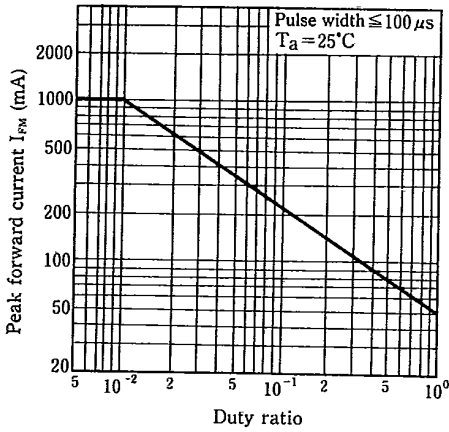


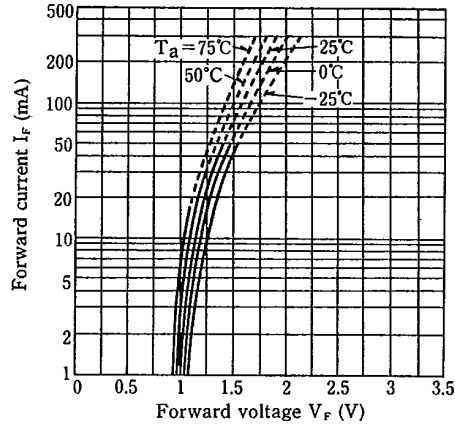
Fig. 2 Collector Power Dissipation vs. Ambient Temperature



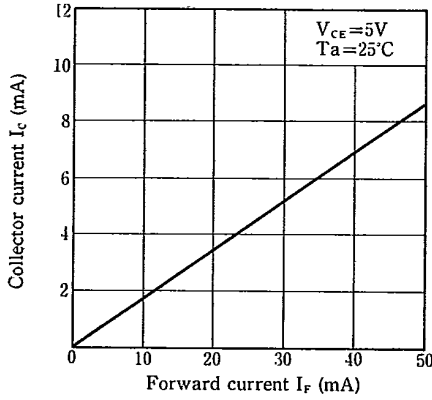
**Fig. 3 Peak Forward Current vs. Duty Ratio**



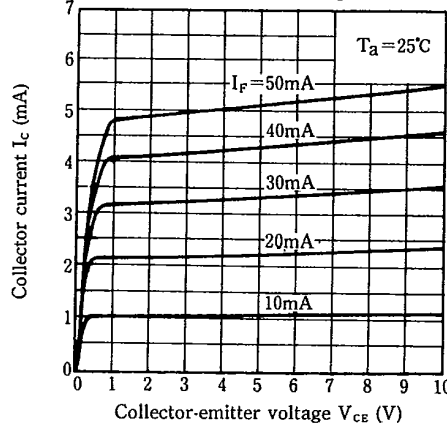
**Fig. 4 Forward Current vs. Forward Voltage**



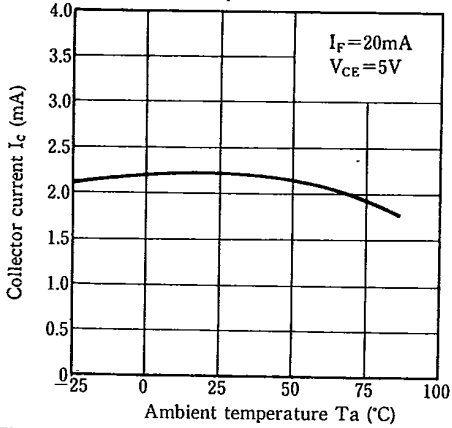
**Fig. 5 Collector Current vs. Forward Current**



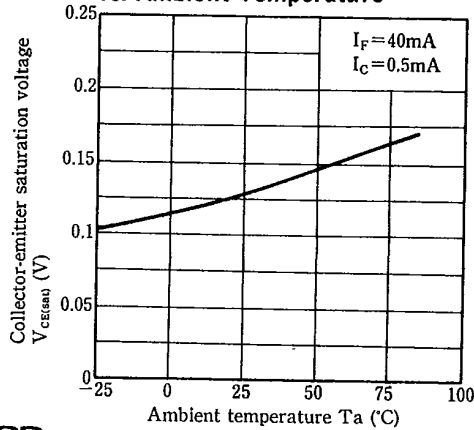
**Fig. 6 Collector Current vs. Collector-emitter Voltage**



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



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



Photointerrupter

T-41-73

Test Circuit for Response Time

Fig. 9 Response Time vs. Load Resistance

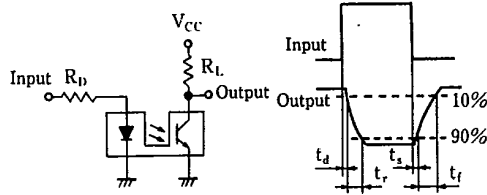
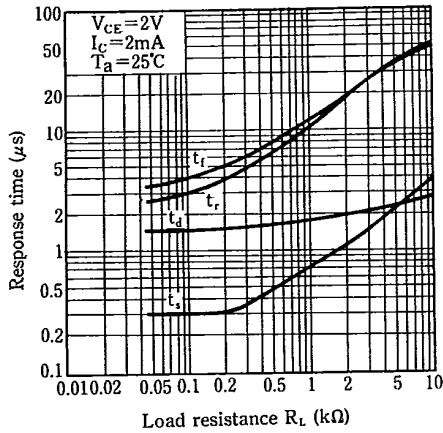


Fig. 10 Frequency Response

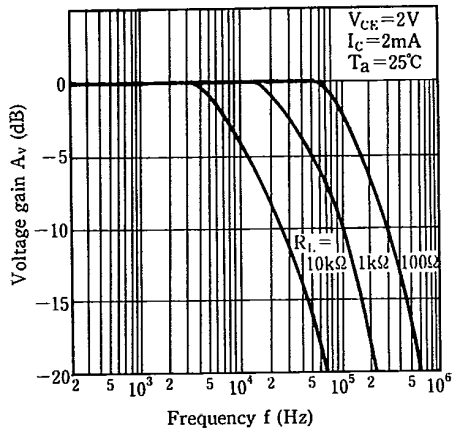


Fig. 11 Collector Dark Current vs. Ambient Temperature

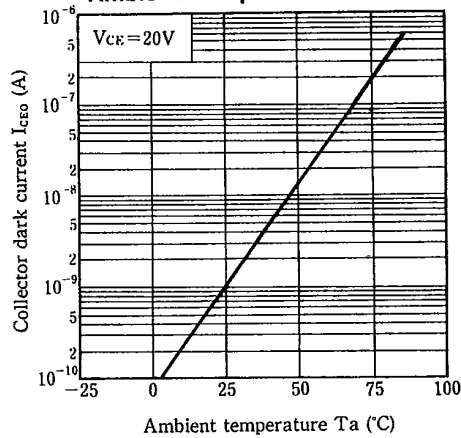
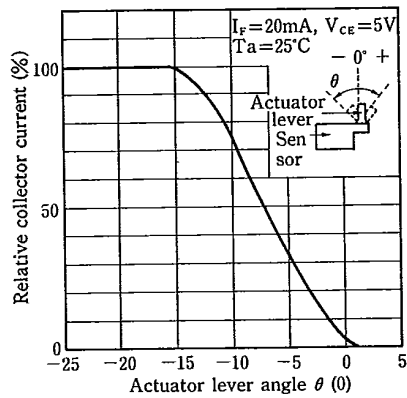


Fig. 12 Relative Collector Current vs. Actuator Lever Angle



SHARP