

SHARP ELEK/ MELEC DIV 15E D 8180798 0003227 0
Photointerrupter

GP1S41

T-41-73

GP1S41 Photointerrupter with Spring Lever Type Actuator

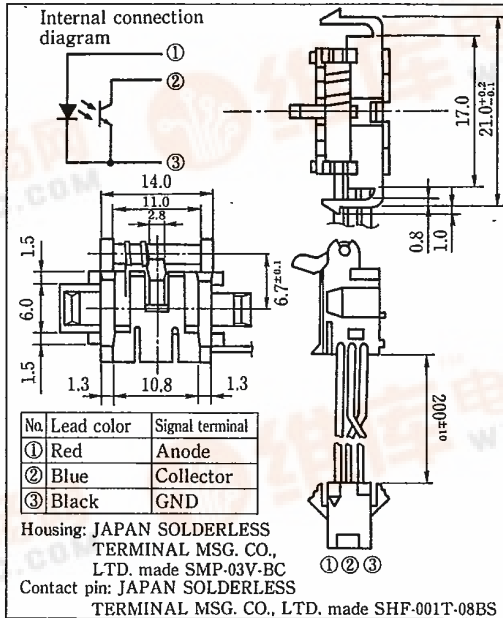
Features

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
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
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



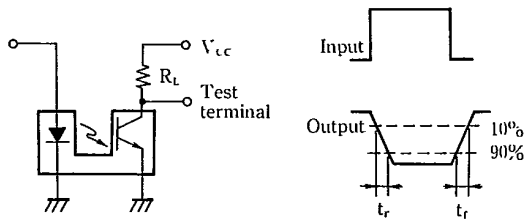
Electro-optical Characteristics

(Ta=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V_F $I_F=20mA$	—	1.25	1.4	V
	Peak forward voltage	V_{FM} $I_{FM}=0.5A$	—	3	4	V
	Reverse current	I_R $V_R=3V$	—	—	10	μA
Output	Collector dark current	I_{CEO} $V_{CE}=20V$	—	1	100	nA
	Collector current	I_C $V_{CE}=5V, I_F=20mA$	0.5	—	10	mA
*2 Transfer characteristics	Collector-emitter saturation voltage	V_{CE0} (sat) $I_F=40mA, I_C=0.05mA$	—	—	0.4	V
	Response time (Rise)	t_r $V_{CE}=2V, I_C=2mA$	—	3	15	μs
	Response time (Fall)	t_f $R_L=100\Omega$	—	4	20	μs

*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

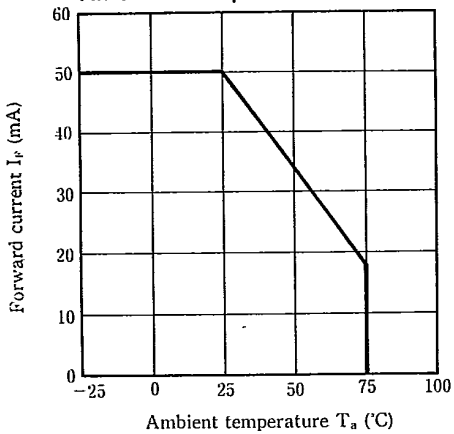


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

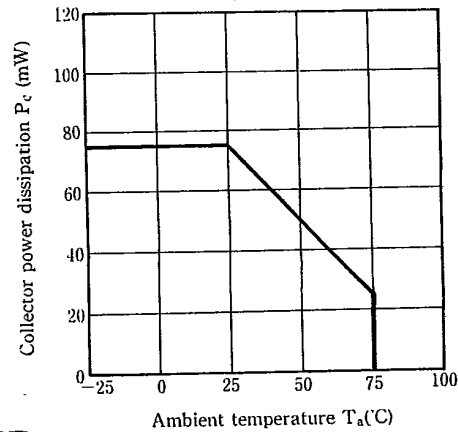


Fig. 3 Peak Forward Current vs. Duty Ratio

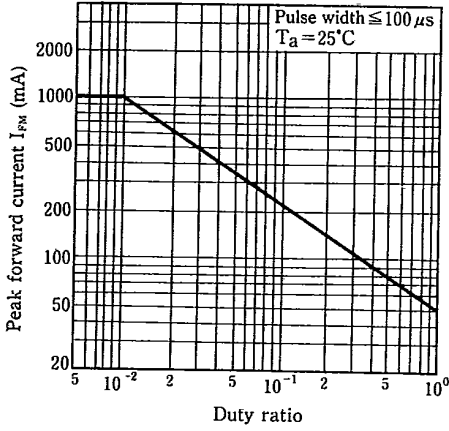


Fig. 4 Forward Current vs. Forward Voltage

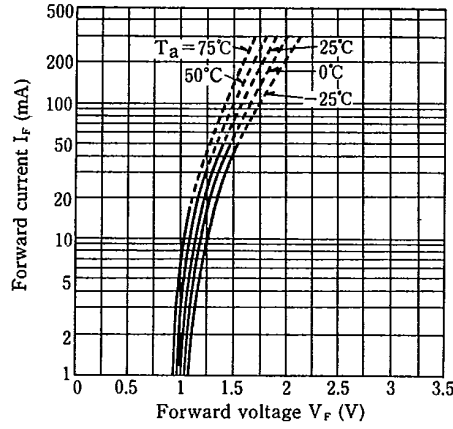


Fig. 5 Collector Current vs. Forward Current

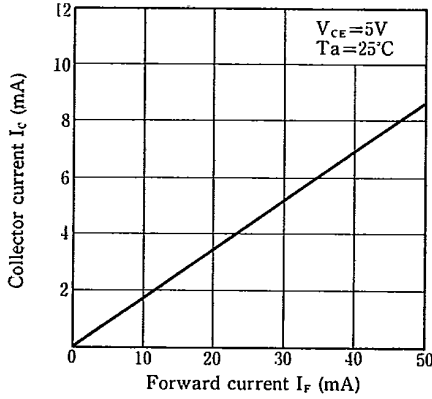


Fig. 6 Collector Current vs. Collector-emitter Voltage

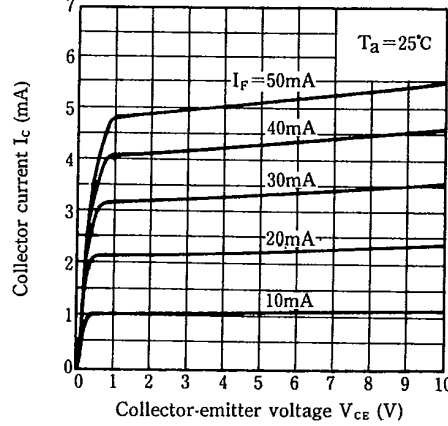


Fig. 7 Collector Current vs. Ambient Temperature

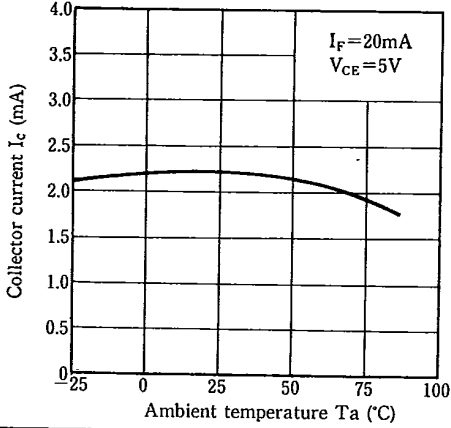


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

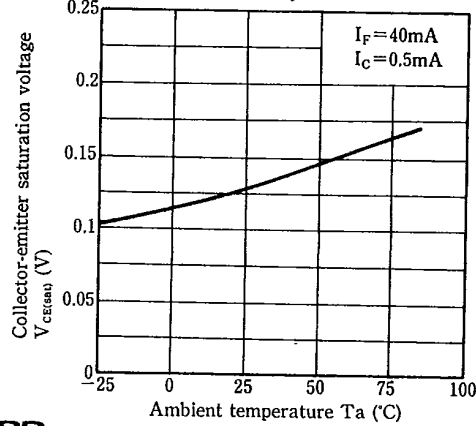
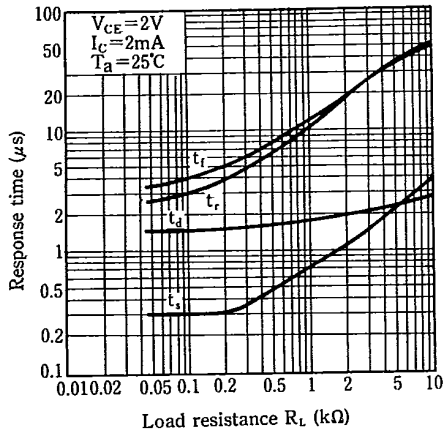


Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time

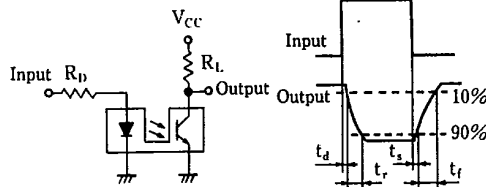


Fig. 10 Frequency Response

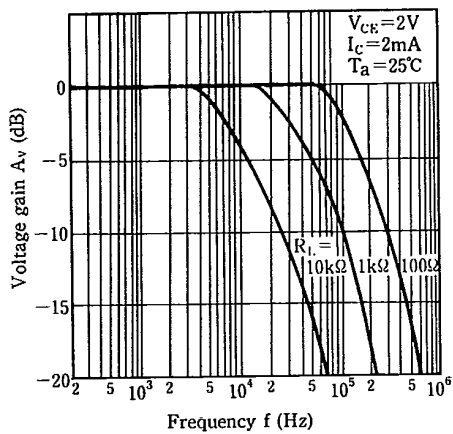


Fig. 11 Collector Dark Current vs. Ambient Temperature

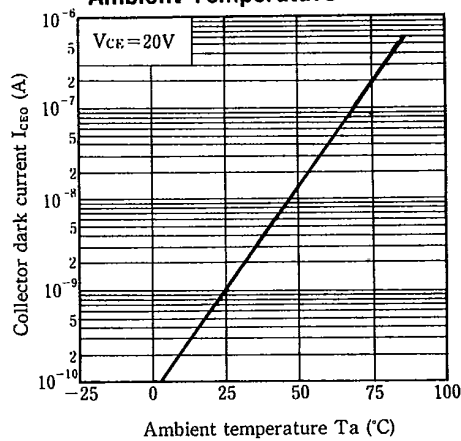


Fig. 12 Relative Collector Current vs. Actuator Lever Angle

