SG· 205

The SG· 205 photointerrupter high- performance standard type, combines high- output GaAs IRED with high sensitive phototransistor.

## FEATURES

• High performance
• High- speed response
• 5mm gap.
• Widely applicable

APPLICATIONS

• Tape- end sensors
• Timing sensors
• Edge sensors
• Copiers

DIMENSIONS

(Unit : mm)
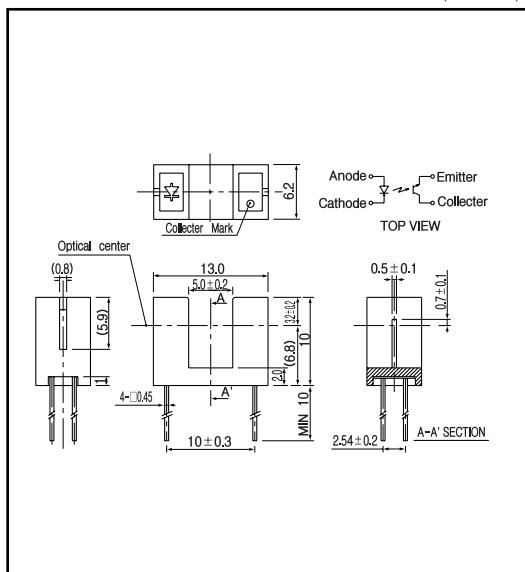
MAXIMUM RATINGS

(Ta= 25)

	Item	Symbol	Rating	Unit
Input	Power dissipation	P_D	100	mW
	Reverse voltage	V_R	5	V
	Forward current	I_F	60	mA
	Pulse forward current [1]	I_{FP}	1	A
Output	Collector power dissipation	P_C	100	mW
	Collector current	I_C	40	mA
	C- E voltage	V_{CEO}	30	V
	E- C voltage	V_{ECO}	5	V
	Operating temp.	Topr.	- 20~ + 85	
	Storage temp.	Tstg.	- 30~ + 85	
	Soldering temp. [2]	Tsol.	240	

*1.　　100 μsec. period　T= 10msec.
*2. For MAX. 5 seconds at the position of 2mm from the package

ELECTRO-OPTICAL CHARACTERISTICS

(Ta= 25)

	Item	Symbol	Conditions	Min.	Typ.	Max.	Unit.
Input	Forward voltage	V_F	I_F= 30mA		1.2	1.5	V
	Reverse current	I_R	V_R= 5V			10	μA
	Capacitance	Ct	V= 0, f= 1KHz		25		pF
	Peak wavelength	p			940		nm
Output	Collector dark current	I_{CEO}	V_{CE}= 10V			0.1	μA
Light current		I_L	V_{CE}= 5V, I_F= 20mA	0.5			mA
C- E saturation voltage		$V_{CE(sat)}$	I_F= 30mA, I_C= 0.2mA			0.4	V
Switching speeds	Rise time	tr	V_{CC}= 5V, I_C= 2mA		5		μsec.
	Fall time	tf	R_L= 100		5		μsec.

SG·205

Collector power dissipation Vs. Ambient temperature

(mW)

Collector Power dissipation P_C

100

50

0

0   20   40   60   80   100 (℃)

Ambient temperature   Ta
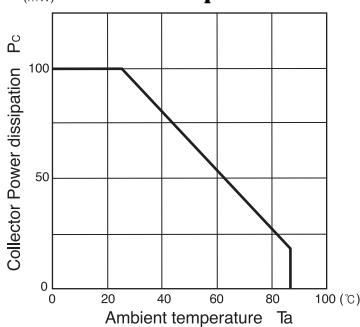
Forward current Vs. Forward voltage

(mA)

Ta=25℃

Forward current I_F

100

50

0

0   0.5   1.0   1.5   2.0   (V)
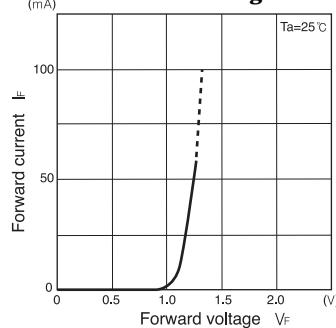
Forward voltage V_F

Light current Vs. Forward current

(mA)

V_{CE}=5V
Ta=25℃

Light current I_L

4

3

2

1

0

0   10   20   30   40   50 (mA)

Forward current I_F
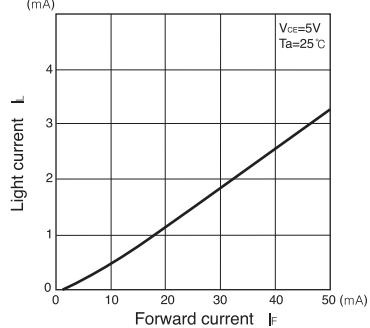
Light current Vs. Collector-Emitter voltage

(mA)

Ta=25℃

Light current I_L

5

4

3

2

1

0

I_F=50mA
I_F=40mA
I_F=30mA
I_F=20mA
I_F=10mA

0   2   4   6   8   10   12 (V)

Collector-Emitter voltage V_{CE}
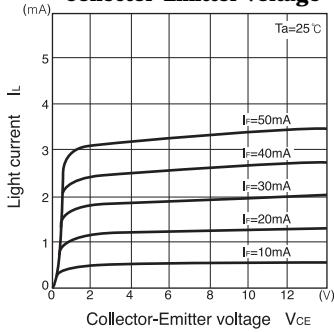
Relative light current Vs. Ambient temperature

(%)

I_F=20mA
V_{CE}=5V

Relative light current I_L

100

50

0

-20   0   20   40   60   80   (℃)

Ambient temperature   Ta

Dark current Vs. Ambient temperature

(nA)

V_{CE}=10V

Dark current I_{CEO}

10^2

10^1

10^0

10^1

10^2

-20   0   20   40   60   80   (℃)
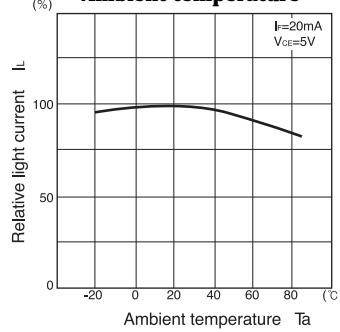
Ambient temperature   Ta
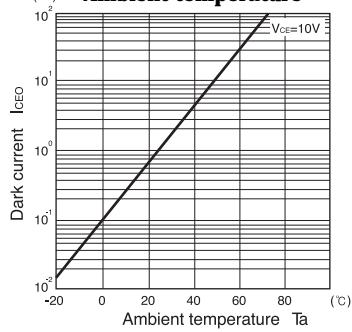
Switching time Vs. Load resistance

(μsec.)

Switching time tr,tf

10^3

10^2

10

I_C=2mA
V_{CC}=5V
Ta=25℃

tf   tr

td

10^2 10^3 10^4 (Ω)

Load resistance R_L
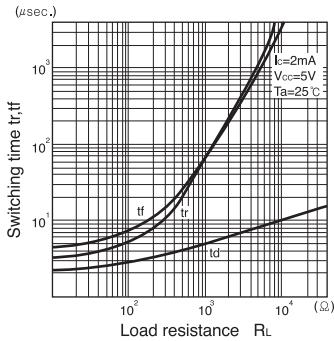
Relative light current Vs. Moving distance

(%)   X   Y

Relative light current I_L

100

50

0

I_F=20mA
V_{CE}=5V
Ta=25℃

I_F=20mA
V_{CE}=5V
Ta=25℃

-2 -1   0 +1 +2(mm) -2 -1   0 +1 +2(mm)

Moving distance ℓ
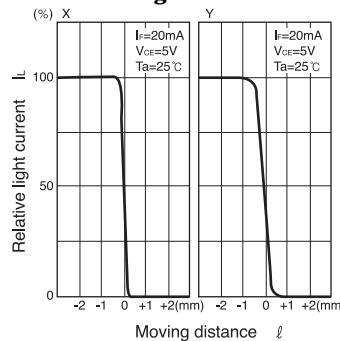
Switching time measurement circuit

Input   Vcc

Output

R_L

Input

Output   90%
10%

td   tr   tf

td : Delay Time
tr : Rise Time
tf : Fall Time
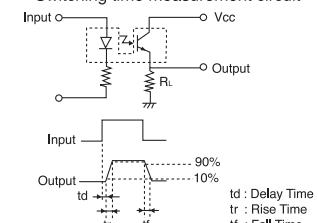
Method of measuring position characteristic

X   Y

Center of slit

Center of slit   0

- 0 - +   +