

# SG - 105

The SG - 105 reflective sensor combines a GaAs IRED with a high - sensitivity phototransistor in a super - mini package, reducing installation space.

### FEATURES

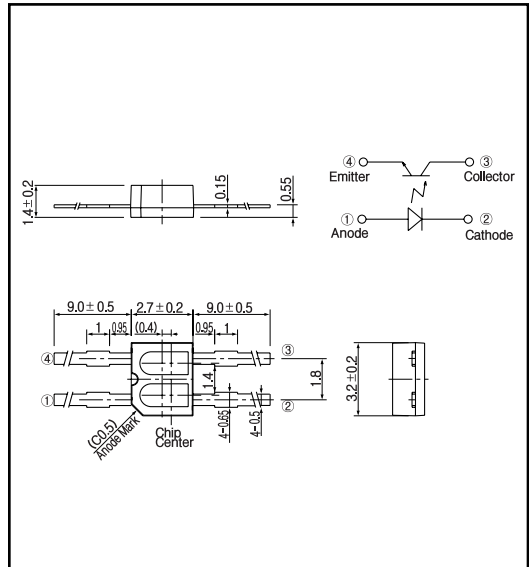
- Compact
- High performance
- High - speed response
- Easy to mount on P.C.B.
- Widely applicable

### APPLICATIONS

- Timing sensors
- Edge sensors
- Micro floppy disk drives
- Level sensors of liquid

### DIMENSIONS

(Unit : mm)



### MAXIMUM RATINGS

(Ta=25 )

	Item	Symbol	Rating	Unit
Input	Power dissipation	P <sub>D</sub>	75	mW
	Reverse voltage	V <sub>R</sub>	5	V
	Forward current	I <sub>F</sub>	50	mA
	Pulse forward current <sup>*1</sup>	I <sub>FP</sub>	1	A
Output	Collector power dissipation	P <sub>C</sub>	50	mW
	Collector current	I <sub>C</sub>	20	mA
	C - E voltage	V <sub>CE0</sub>	30	V
	E - C voltage	V <sub>E0C</sub>	3	V
	Operating temp.	T <sub>opr.</sub>	- 20 ~ + 85	
	Storage temp.	T <sub>stg</sub>	- 30 ~ + 100	
	Soldering temp. <sup>*2</sup>	T <sub>sol.</sub>	240	

\*1. t w 100 μsec.period : T=10msec.

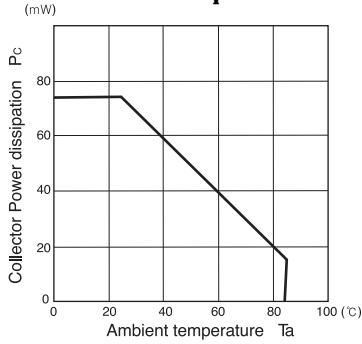
\*2. For MAX. 5 seconds at the position of 2mm from the package

### ELECTRO-OPTICAL CHARACTERISTICS

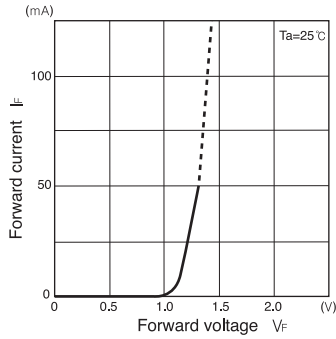
(Ta=25 )

	Item	Symbol	Conditions	Min.	Typ.	Max.	Unit.
Input	Forward voltage	V <sub>F</sub>	I <sub>F</sub> = 10mA			1.3	V
	Reverse current	I <sub>R</sub>	V <sub>R</sub> = 5V			10	μA
	Peak wavelength	λ <sub>p</sub>			940		nm
Output	Collector dark current	I <sub>CEO</sub>	V <sub>CE</sub> = 10V			0.2	μA
	Light current	I <sub>L</sub>	V <sub>CE</sub> = 5V, I <sub>F</sub> = 10mA	90			μA
	Leakage current	I <sub>CEO0</sub>	V <sub>CE</sub> = 5V, I <sub>F</sub> = 10mA			0.2	μA
Switching speeds	Rise time	t <sub>r</sub>	V <sub>CC</sub> = 2V, I <sub>L</sub> = 100μA		30		μsec.
	Fall time	t <sub>f</sub>	R <sub>L</sub> = 1K		25		μsec.

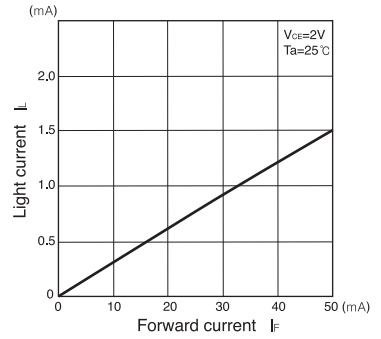
**Collector power dissipation Vs. Ambient temperature**



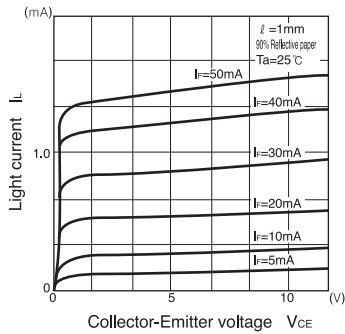
**Forward current Vs. Forward voltage**



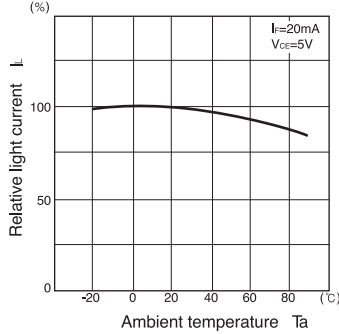
**Light current Vs. Forward current**



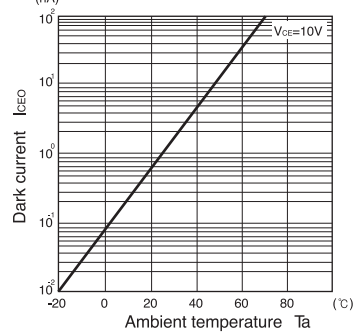
**Light current Vs. Collector-Emitter voltage**



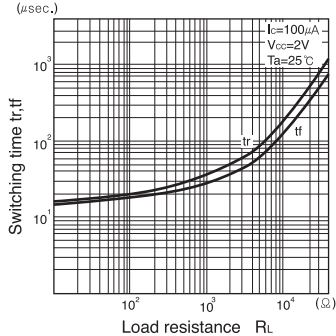
**Relative light current Vs. Ambient temperature**



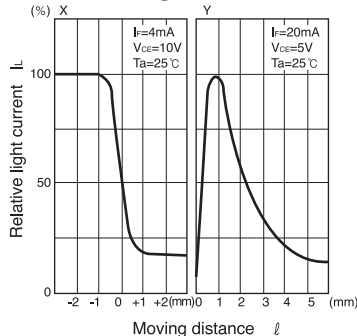
**Dark current Vs. Ambient temperature**



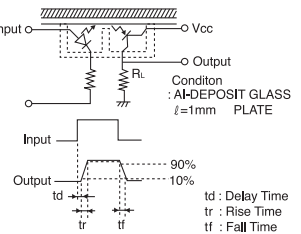
**Switching time Vs. Load resistance**



**Relative light current Vs. Moving distance**



Switching time measurement circuit



Method of measuring position characteristic

