

# Infrared light emitting diode, side-view type

## SIM-012SB

The SIM-20ST is a GaAs infrared light emitting diode with a side-facing detector. High output with  $\phi 1.85$  lens.

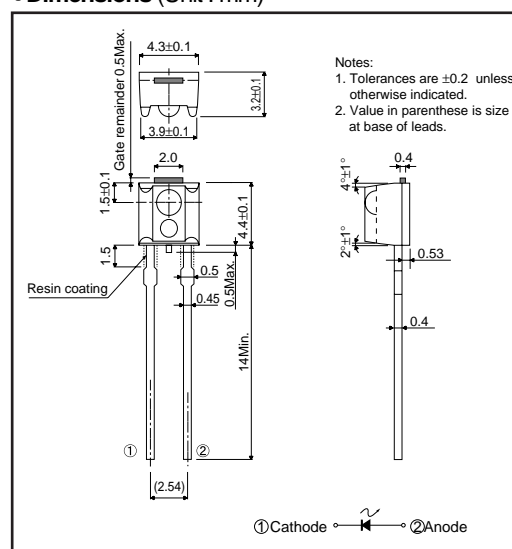
### ●Applications

Light source for sensors

### ●Features

- 1) Compact package (4.4x4.3 mm) with lens.
- 2) High efficiency, high output  $P_O = 7\text{mW}$  ( $I_F = 50\text{mA}$ ).
- 3) Emission spectrum well suited to silicon detectors ( $\lambda_P = 950\text{nm}$ ).
- 4) Good current-optical output linearity.
- 5) Long life, high reliability.

### ●Dimensions (Unit : mm)



### ●Absolute maximum ratings ( $T_a=25^\circ\text{C}$ )

Parameter	Symbol	Limits	Unit
Forward current	$I_F$	50	mA
Reverse voltage	$V_R$	5	V
Power dissipation	$P_D$	80	mW
Pulse forward current	$I_{FP}^*$	0.5	A
Operating temperature	$T_{op}$	-25 to +85	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-30 to +100	$^\circ\text{C}$

\* Pulse width = 0.1 ms, duty ratio 1%

### ●Electrical and optical characteristics ( $T_a=25^\circ\text{C}$ )

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Emitting strength	$I_E$	-	7.5	-	mW/sr	$I_F = 50\text{mA}$
Forward voltage	$V_F$	-	1.3	1.6	V	$I_F = 50\text{mA}$
Reverse current	$I_R$	-	-	10	$\mu\text{A}$	$V_R = 3\text{V}$
Peak light emitting wavelength	$\lambda_P$	-	950	-	nm	$I_F = 50\text{mA}$
Spectral line half width	$\Delta\lambda$	-	40	-	nm	$I_F = 50\text{mA}$
Half-viewing angle	$\theta_{1/2}$	-	$\pm 15$	-	deg	$I_F = 50\text{mA}$
Response time	$t_r \cdot t_f$	-	1.0	-	$\mu\text{s}$	$I_F = 50\text{mA}$
Cut-off frequency	$f_c$	-	1.0	-	MHz	$I_F = 50\text{mA}$

Sensors

●Electrical and optical characteristic curves

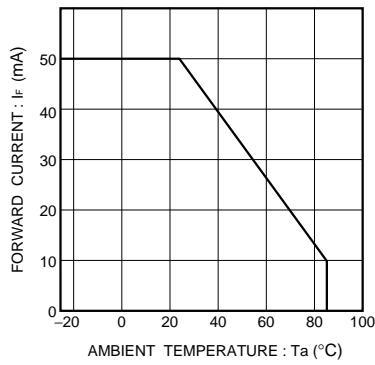


Fig.1 Forward current falloff

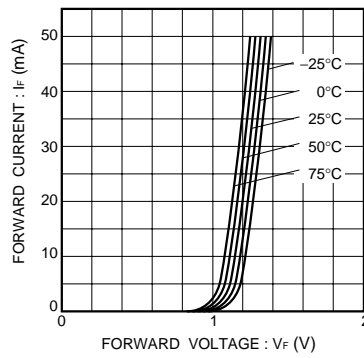


Fig.2 Forward current vs. forward voltage

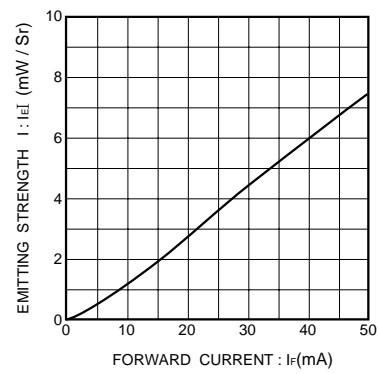


Fig.3 Emitting strength vs. forward current

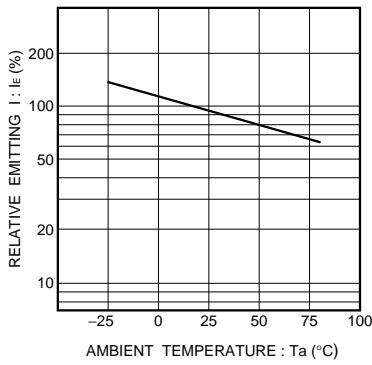


Fig. 4 Relative emitting strength vs. ambient temperature

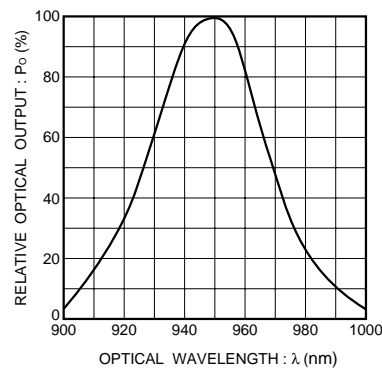


Fig.5 Wavelength

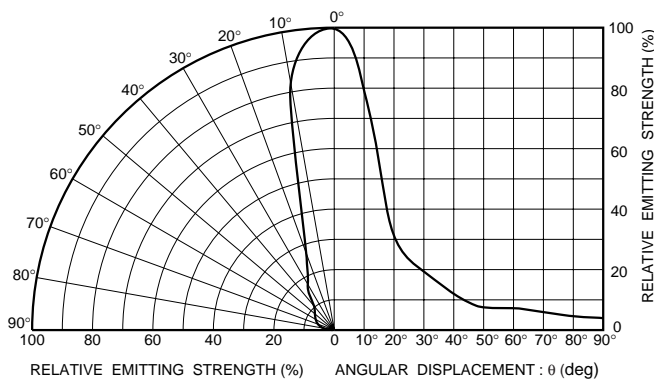


Fig. 6 Directional pattern

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