

# Infrared light emitting diode, top view type

## SIR-320ST3F

The SIR-320ST3F is a GaAs infrared light emitting diode housed in clear plastic. This device has a high luminous efficiency and a 940nm spectrum suitable for silicon detectors. It is small and at the same time has a wide radiation angle, marking it ideal for compact optical control equipment.

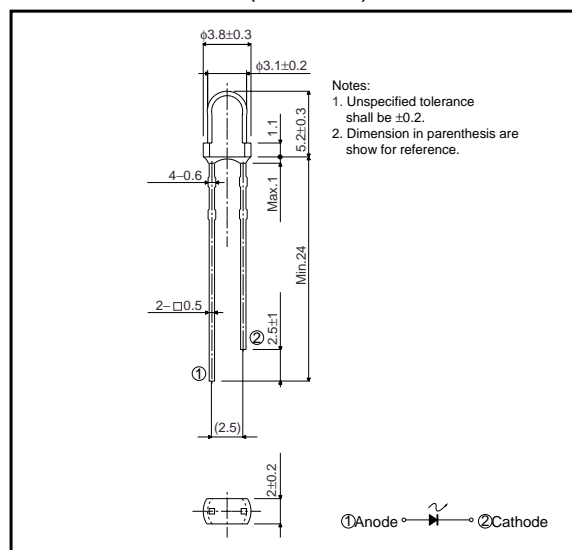
### ●Applications

Optical control equipment  
Light source for remote control devices

### ●Features

- 1) Compact ( $\phi 3.1$ mm).
- 2) High efficiency, high output  $P_o=9.0$ mW ( $I_F=50$ mA).
- 3) Wide radiation angle  $\theta=\pm 18$ deg.
- 4) Emission spectrum well suited to silicon detectors ( $\lambda_P=940$ nm).
- 5) Good current-optical output linearity.
- 6) Long life, high reliability.

### ●External dimensions (Units : mm)



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

Parameter	Symbol	Limits	Unit
Forward current	$I_F$	75	mA
Reverse voltage	$V_R$	5	V
Power dissipation	$P_D$	100	mW
Pulse forward current	$I_{FP}^*$	1.0	A
Operating temperature	$T_{opr}$	-25~+85	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-40~+85	$^\circ\text{C}$

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

Sensors

●Electrical and optical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Optical output	P <sub>o</sub>	–	9	–	mW	I <sub>F</sub> =5mA
Emitting strength	I <sub>E</sub>	5.6	–	–	mW/sr	I <sub>F</sub> =5mA
Forward voltage	V <sub>F</sub>	–	1.2	1.5	V	I <sub>F</sub> =5mA
Reverse current	I <sub>R</sub>	–	–	10	μA	V <sub>R</sub> =3V
Peak light emitting wavelength	λ <sub>P</sub>	–	940	–	nm	I <sub>F</sub> =5mA
Spectral line half width	Δλ	–	40	–	nm	I <sub>F</sub> =5mA
Half-viewing angle	θ <sub>1/2</sub>	–	±18	–	deg	I <sub>F</sub> =5mA
Response time	tr-tf	–	1.0	–	μs	I <sub>F</sub> =5mA
Cut-off frequency	f <sub>c</sub>	–	1.0	–	MHz	I <sub>F</sub> =5mA

●Electrical and optical characteristic curves

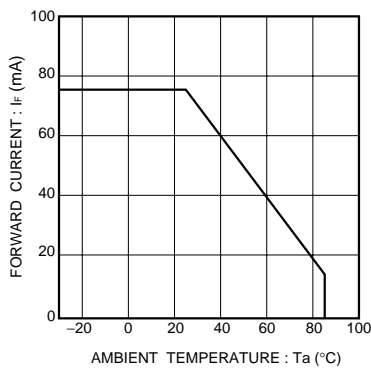


Fig.1 Forward current falloff

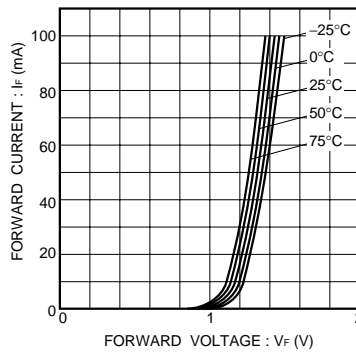


Fig.2 Forward current vs. forward voltage

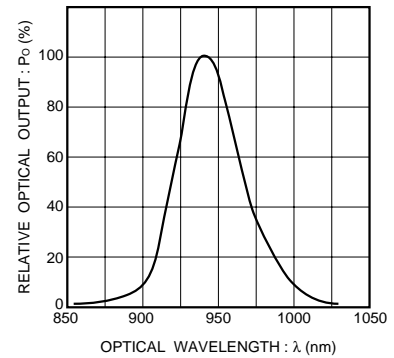


Fig.3 Wavelength

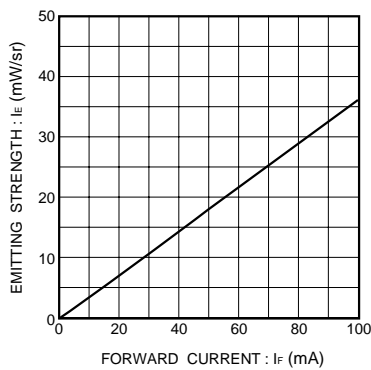


Fig.4 Emitting strength vs. forward current

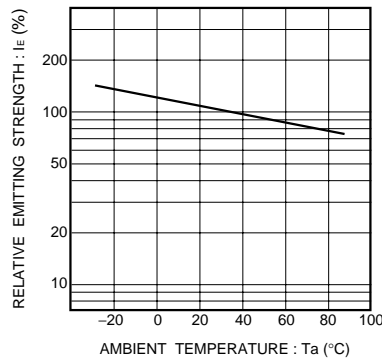


Fig.5 Radiant intensity vs. ambient temperature

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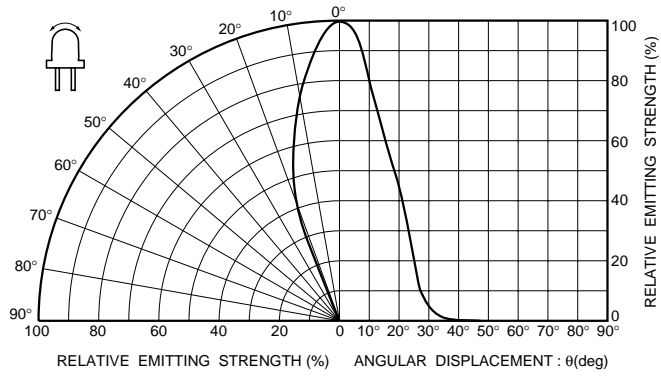


Fig.6 Directional pattern

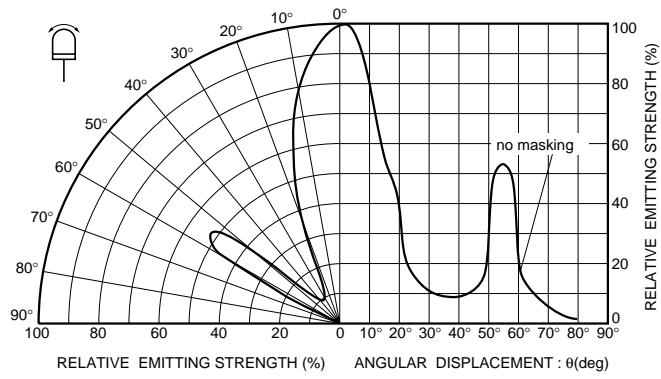


Fig.7 Directional pattern

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