

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.

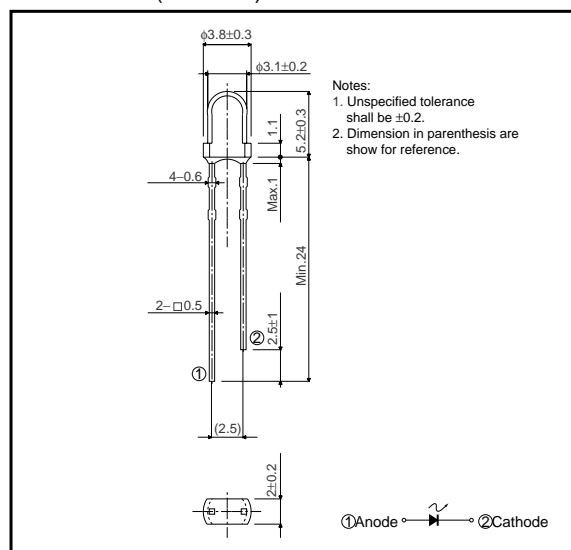
●Applications

Optical control equipment
Light source for remote control devices

●Features

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

●Dimensions (Unit : 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}^*	0.5	A
Operating temperature	T_{opr}	-25 to +85	$^\circ\text{C}$
Storage temperature	T_{stg}	-40 to +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 _o	–	9	–	mW	I _F =50mA
Emitting strength	I _E	5.6	–	–	mW/sr	I _F =50mA
Forward voltage	V _F	–	1.2	1.5	V	I _F =50mA
Reverse current	I _R	–	–	10	μA	V _R =3V
Peak light emitting wavelength	λ _P	–	940	–	nm	I _F =50mA
Spectral line half width	Δλ	–	40	–	nm	I _F =50mA
Half-viewing angle	θ _{1/2}	–	±18	–	deg	I _F =50mA
Response time	tr-tf	–	1.0	–	μs	I _F =50mA
Cut-off frequency	f _c	–	1.0	–	MHz	I _F =50mA

●Electrical and optical characteristic curves

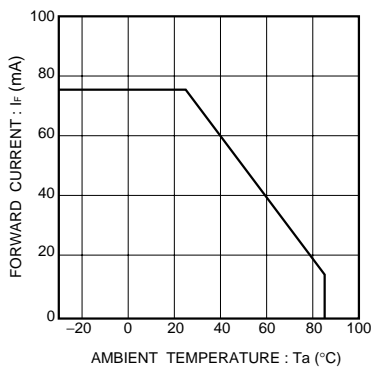


Fig.1 Forward current falloff

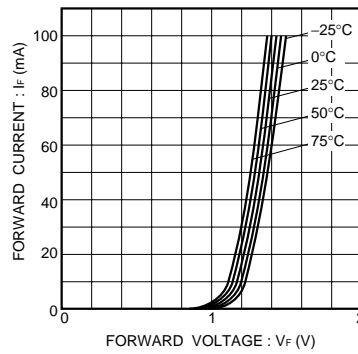


Fig.2 Forward current vs. forward voltage

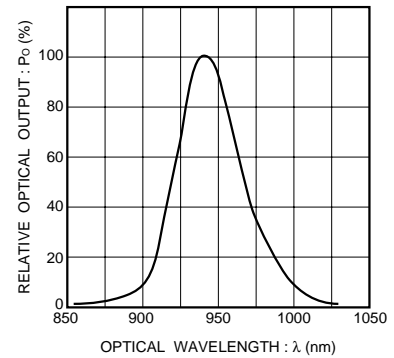


Fig.3 Wavelength

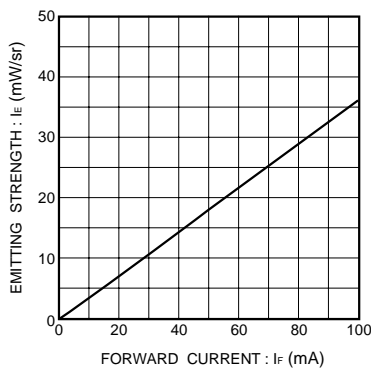


Fig.4 Emitting strength vs. forward current

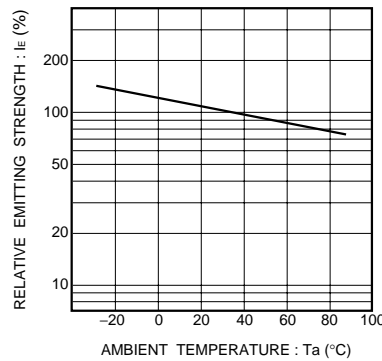


Fig.5 Radiant intensity vs. ambient temperature

Sensors

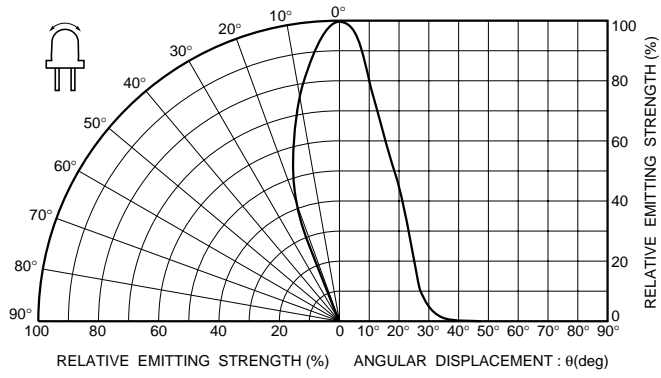


Fig.6 Directional pattern

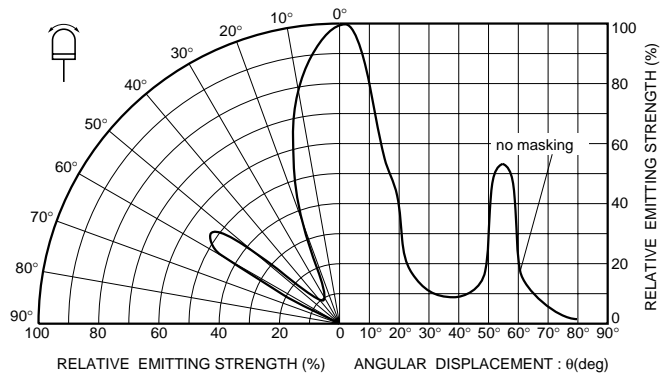


Fig.7 Directional pattern

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