

TOSHIBA Infrared LED GaAlAs Infrared Emitter

## TLN233

Infrared LED for Space-Optical-Transmission

Unit: mm

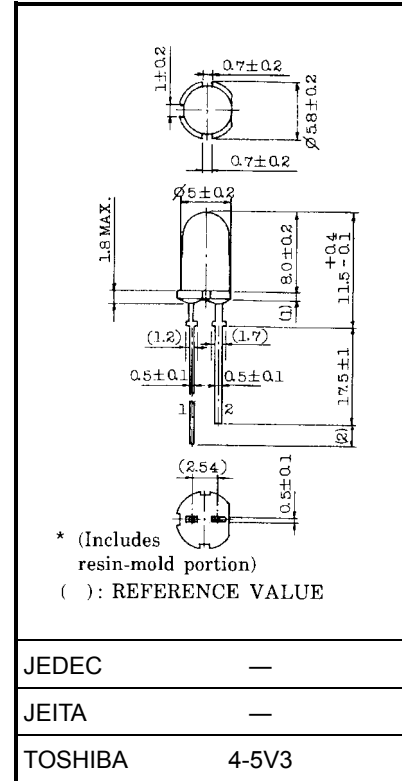
- High radiant intensity: 80 mW/sr (typ.) at  $I_F = 50$  mA
- Half-angle value:  $\theta_{1/2} = \pm 13^\circ$  (typ.)
- A light source for remote control
- Wireless AV-signal transmission purpose
- High speed data transmission purpose

### Maximum Ratings (Ta = 25°C)

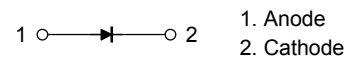
Characteristics	Symbol	Rating	Unit
Forward current	$I_F$	100	mA
Pulse forward current	$I_{FP}$	1000 (Note 1)	mA
Power dissipation	$P_D$	200	mW
Reverse voltage	$V_R$	4	V
Operating temperature range	$T_{opr}$	-25~85	°C
Storage temperature range	$T_{stg}$	-30~100	°C
Soldering temperature (5 s), (Note 2)	$T_{sol}$	260	°C

Note 1:  $f = 100$  kHz, duty = 1%

Note 2: Soldering must be performed under the stopper.



### Pin Connection



## Optical and Electrical Characteristics (Ta = 25°C)

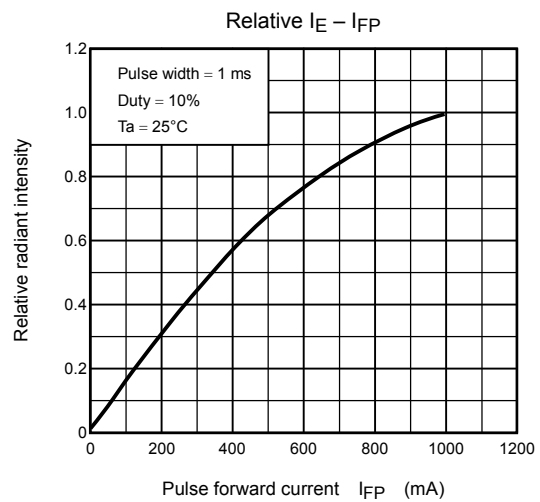
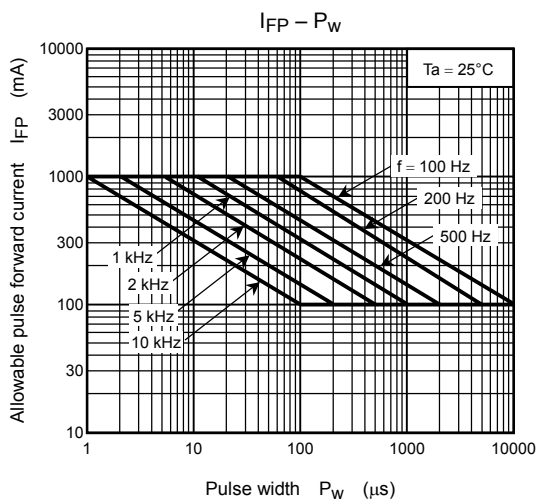
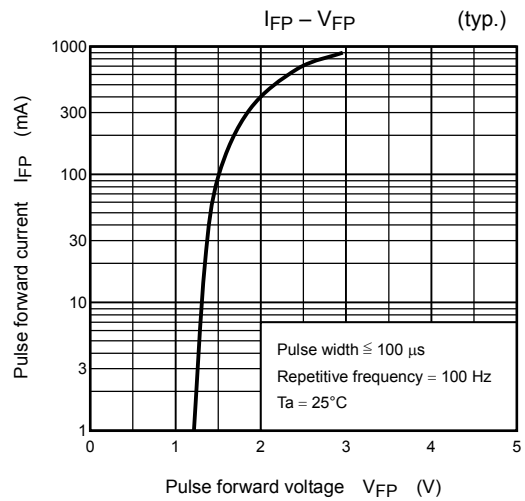
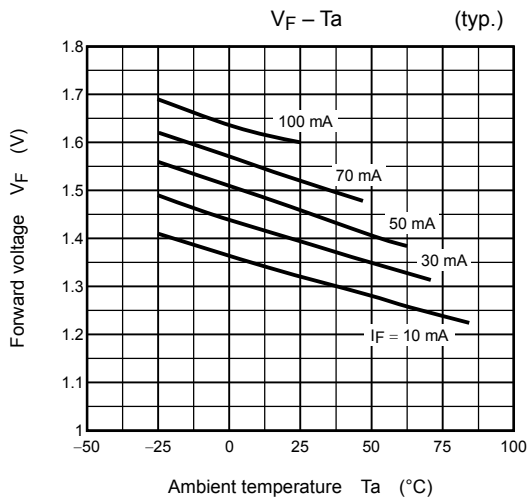
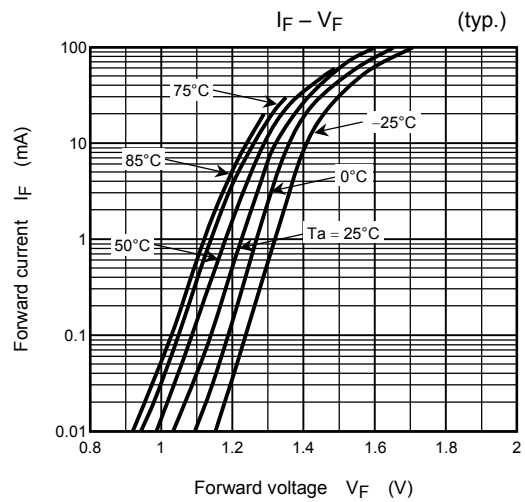
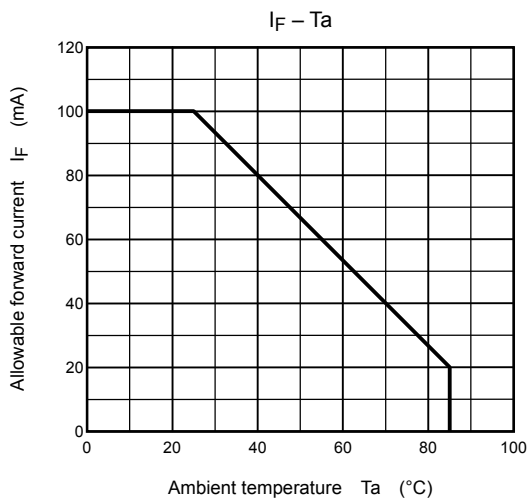
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward voltage	$V_F$	$I_F = 100 \text{ mA}$	—	1.6	2.0	V
Reverse current	$I_R$	$V_R = 4 \text{ V}$	—	—	60	$\mu\text{A}$
Radiant intensity	$I_E$	$I_F = 50 \text{ mA}$	46	80	—	mW/sr
Radiant power	$P_O$	$I_F = 50 \text{ mA}$	—	30	—	mW
Cut-off frequency	$f_c$	$I_F = 50 \text{ mA} + 5 \text{ mA}_{P-P}$ (Note 3)	—	15	—	MHz
Peak emission wavelength	$\lambda_P$	$I_F = 50 \text{ mA}$	—	870	—	nm
Half-angle value	$\theta \frac{1}{2}$	$I_F = 50 \text{ mA}$	—	$\pm 13$	—	°

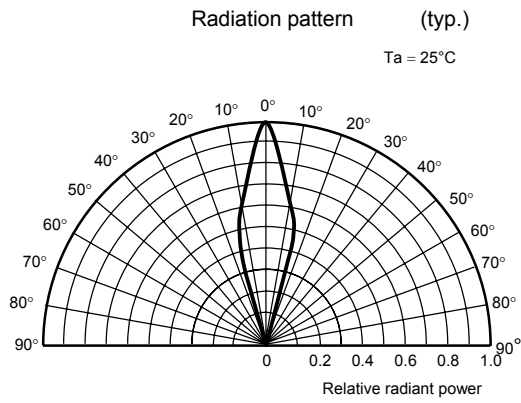
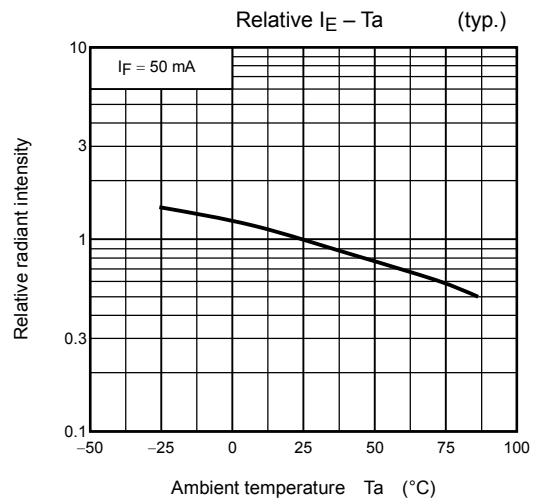
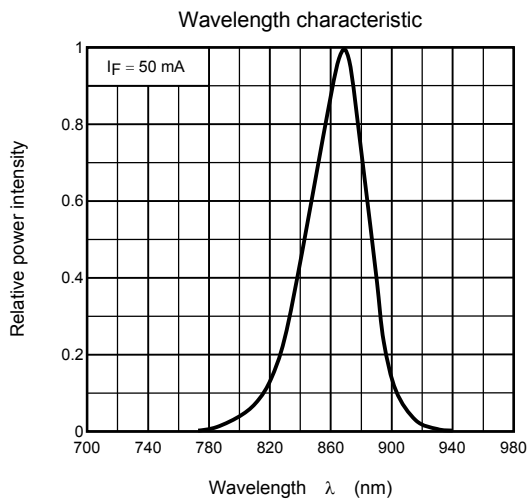
Note 3: Frequency when modulation light power decreases by 3dB from 1 MHz.

## Handling Precautions

- Soldering must be performed under the stopper.
- When forming the leads, bend each lead under the 5 mm of package body. Soldering must be performed after the leads have been formed.
- The radiant intensity decrease over time due to current flowing in the infrared LED. When designing circuits, the device must take into account the change in radiant intensity over time. The change in radiant intensity is equal to the reciprocal of the change in LED infrared optical output.

$$\frac{I_E(t)}{I_E(0)} = \frac{P_O(t)}{P_O(0)}$$





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