

TOSHIBA Infrared LED GaAlAs Infrared Emitter

TLN231(F)

Lead(Pb)-Free

Infrared LED for Space-Optical-Transmission

- High radiant intensity: 60 mW/sr (typ.) at $I_F = 50$ mA
- Half-angle value: $\theta_{1/2} = \pm 16^\circ$ (typ.)
- A light source for remote control
- Wireless AV-signal transmission purpose
- High speed data transmission purpose

Absolute 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

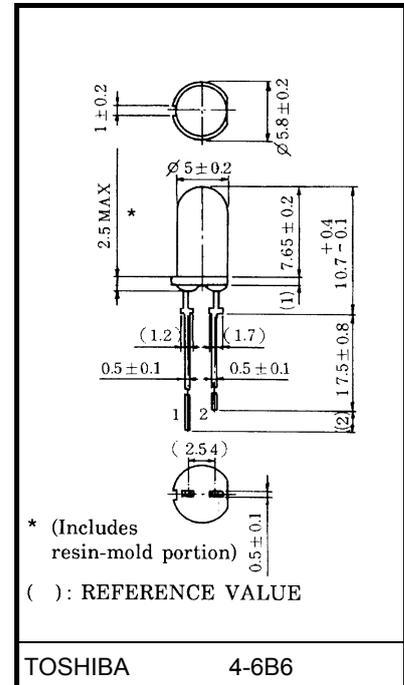
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/“Derating Concept and Methods”) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

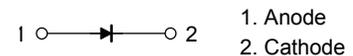
Note 1: $f = 100$ kHz, duty = 1%

Note 2: Soldering must be performed under the stopper.

Unit: mm



Pin Connection



Optical and Electrical Characteristics (Ta = 25°C)

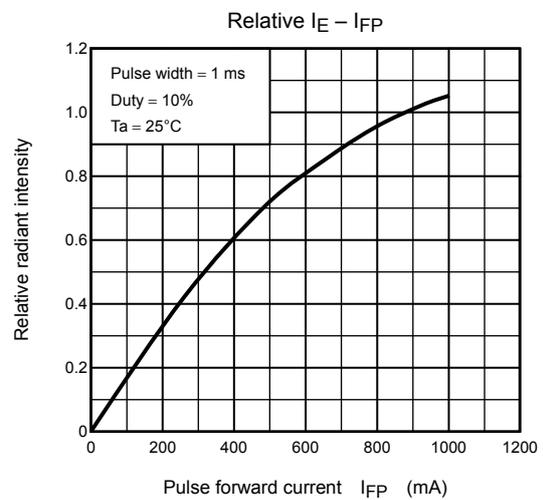
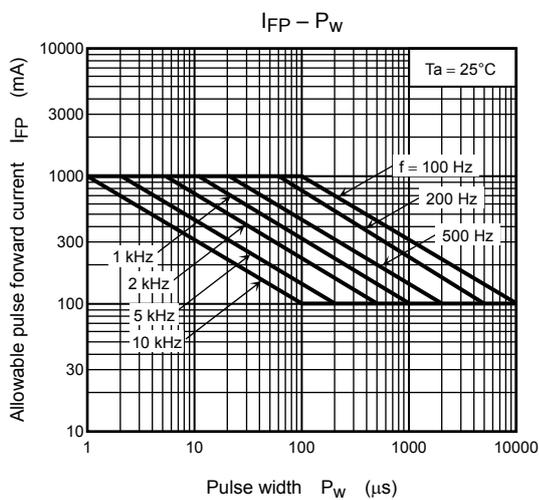
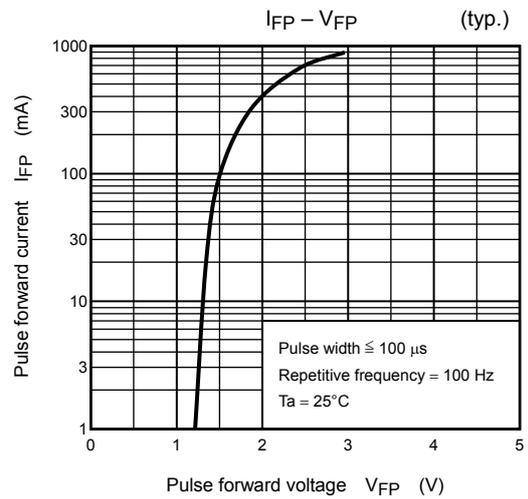
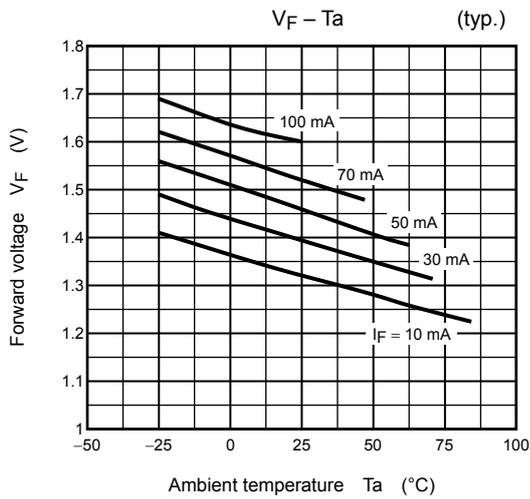
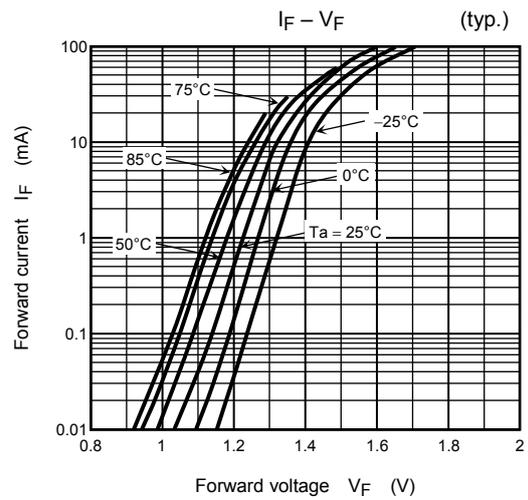
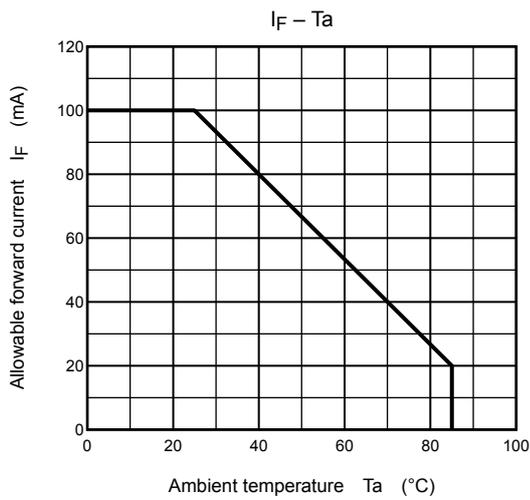
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward voltage	V_F	$I_F = 100 \text{ mA}$	—	1.6	2.0	V
Reverse current	I_R	$V_R = 4 \text{ V}$	—	—	60	μA
Radiant intensity	I_E	$I_F = 50 \text{ mA}$	35	60	—	mW/sr
Radiant power	P_O	$I_F = 50 \text{ mA}$	—	30	—	mW
Cut-off frequency	f_c	$I_F = 50 \text{ mA} + 5 \text{ mA}_{P-P}$ (Note 3)	—	15	—	MHz
Peak emission wavelength	λ_P	$I_F = 50 \text{ mA}$	—	870	—	nm
Half-angle value	$\theta \frac{1}{2}$	$I_F = 50 \text{ mA}$	—	± 16	—	°

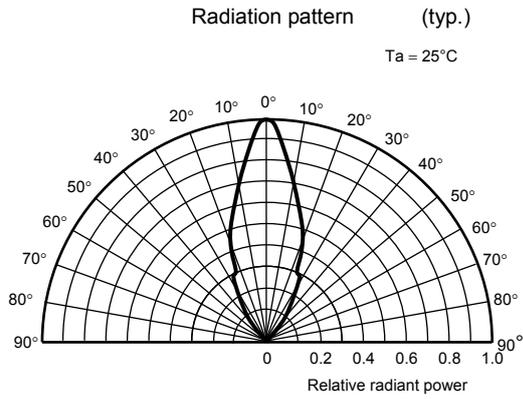
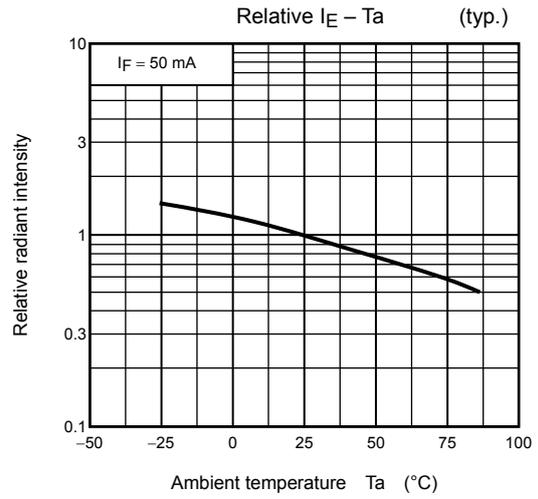
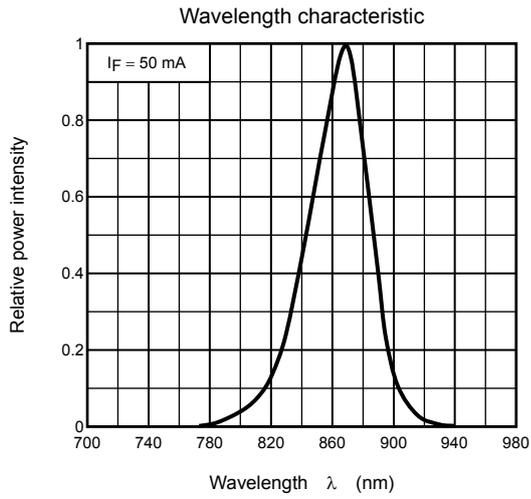
Note 3: Frequency when modulation light power decreases by 3dB from 1 MHz.

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.

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





RESTRICTIONS ON PRODUCT USE

20070701-EN

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- GaAs(Gallium Arsenide) is used in this product. The dust or vapor is harmful to the human body. Do not break, cut, crush or dissolve chemically.
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