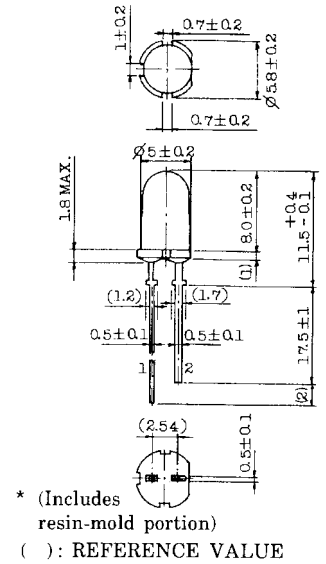
TOSHIBA Infrared LED GaAℓAs Infrared Emitter

TLN233

Infrared LED for Space-Optical-Transmission

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	4-5V3

- High radiant intensity: 80 mW/sr (typ.) at I_F = 50 mA
- Half-angle value: θ1/2 = ±13° (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



1. Anode
2. Cathode

Optical and Electrical Characteristics (Ta = 25°C)

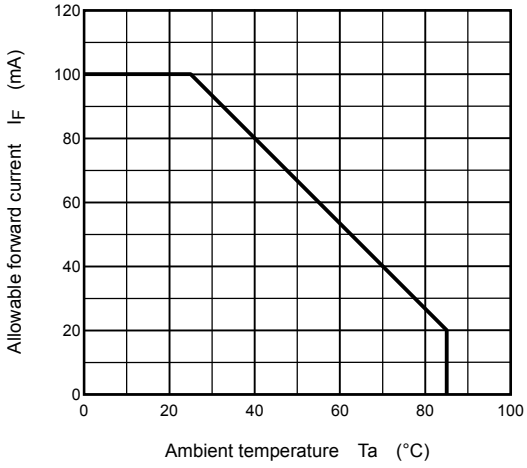
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward voltage	V_F	I_F = 100 mA	—	1.6	2.0	V
Reverse current	I_R	V_R = 4 V	—	—	60	μA
Radiant intensity	I_E	I_F = 50 mA	46	80	—	mW/sr
Radiant power	P_O	I_F = 50 mA	—	30	—	mW
Cut-off frequency	f_c	I_F = 50 mA + 5 mA_{P-P} (Note 3)	—	15	—	MHz
Peak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

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

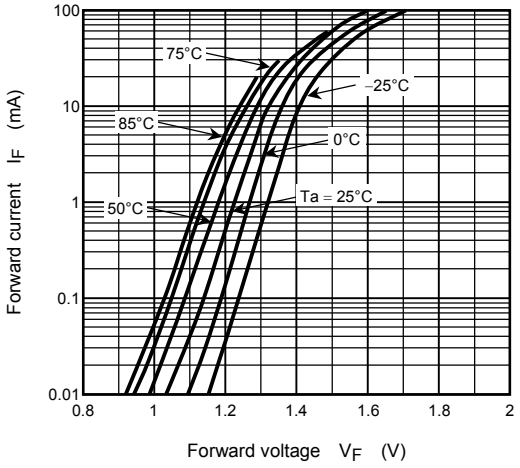
Handling Precautions

- 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. $\frac{I_{E(t)}}{I_{E(0)}} = \frac{P_{O(t)}}{P_{O(0)}}$

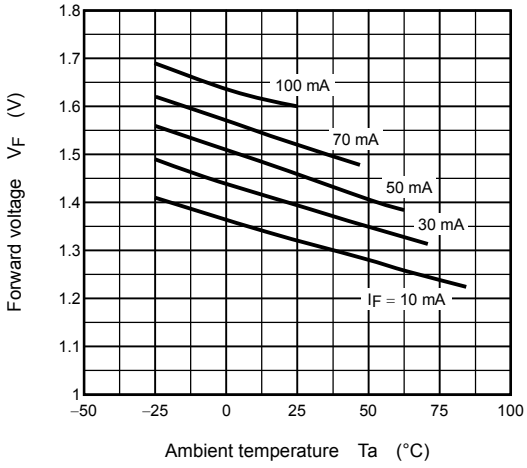
I_F – Ta



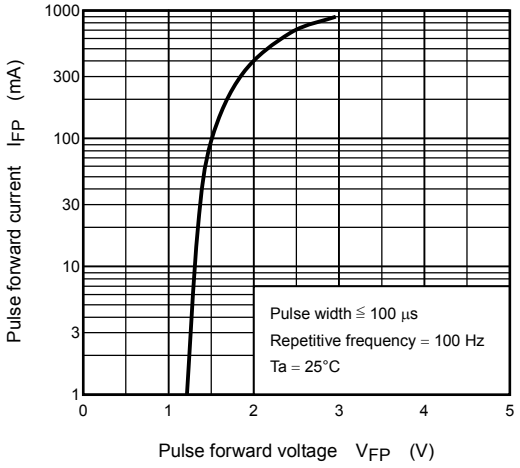
I_F – V_F (typ.)



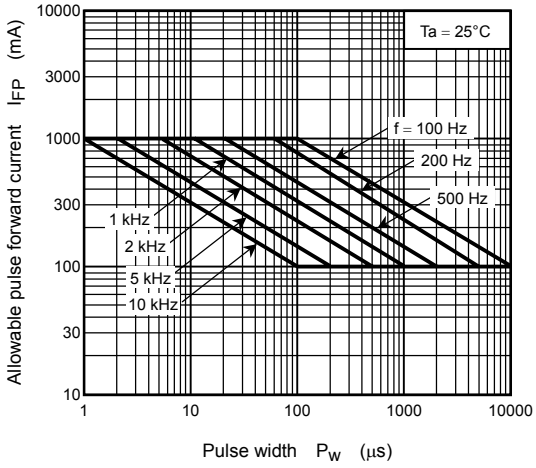
V_F – Ta (typ.)



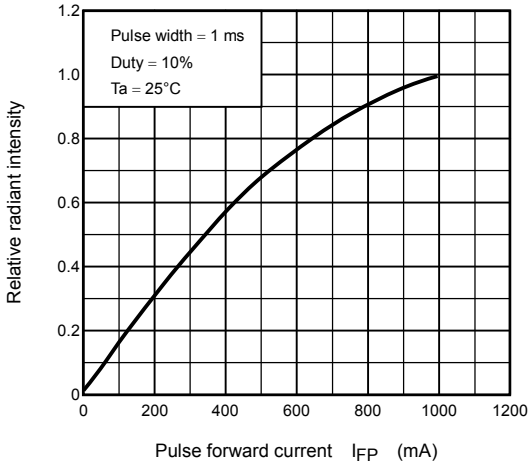
I_{FP} – V_{FP} (typ.)



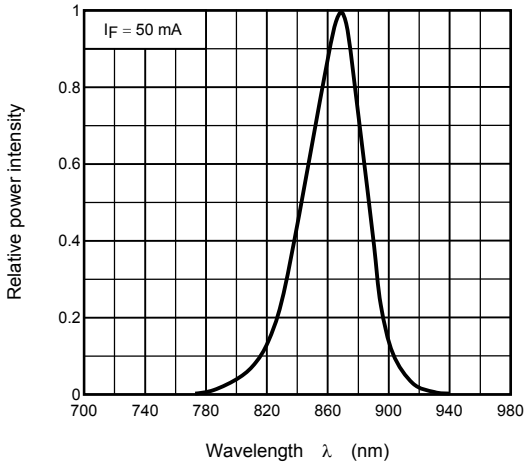
I_{FP} – P_W



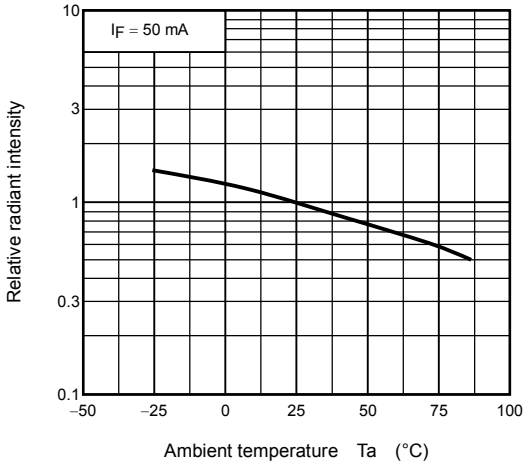
Relative I_E – I_{FP}



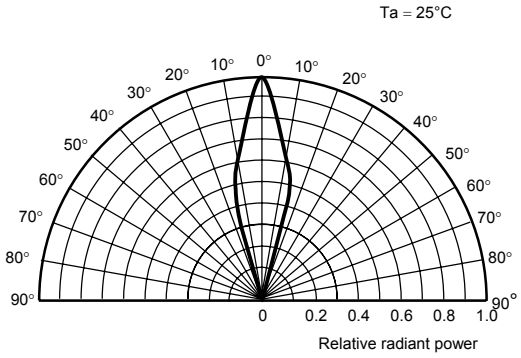
Wavelength characteristic



Relative I_E – Ta (typ.)



Radiation pattern (typ.)



RESTRICTIONS ON PRODUCT USE

000707EAC

- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
  In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the “Handling Guide for Semiconductor Devices,” or “TOSHIBA Semiconductor Reliability Handbook” etc..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury (“Unintended Usage”). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer’s own risk.
- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.