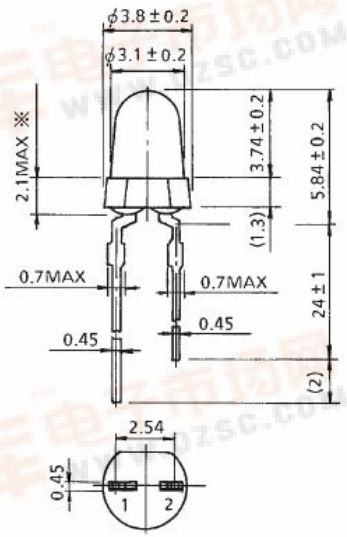
TOSHIBA Infrared LED GaAℓAs Infrared Emitter

TLN238(F)

Lead(Pb)-Free
Space-Optical-Transmission
Opto-Electronic Switches
Printers, Fax Machines
Home Electric Equipment

Unit: mm



* Includes resin-mold portion
( ) : Reference Value

TOSHIBA	4-3EA1

Weight: 0.14 g (typ.)

- High radiant intensity: 70 mW/sr (typ.) at I_F = 50 mA
- Half-angle value: θ1/2 = ±18° (typ.)
- High-speed data transmission purposes

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

Pin Connection

1. Anode
2. Cathode

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 2 mm from the bottom of the package body.

Optical and Electrical Characteristics (Ta = 25°C)

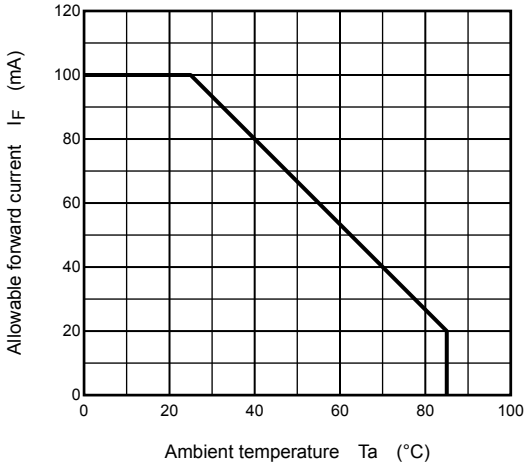
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward voltage	V_F	I_F = 100 mA	—	1.6	2.0	V
Reverse current	I_R	V_R = 4 V	—	—	60	μA
Radiant intensity	I_E	I_F = 50 mA	40	70	—	mW/sr
Cut-off frequency	f_c	I_F = 50 mA + 5 mA_{P-P} (Note 3)	—	15	—	MHz
Peak emission wavelength	λ_P	I_F = 50 mA	—	870	—	nm
Half-angle value	$\theta\frac{1}{2}$	I_F = 50 mA	—	±18	—	°

Note 3: This is the frequency when modulation light power decreases by 3 dB from 1 MHz.

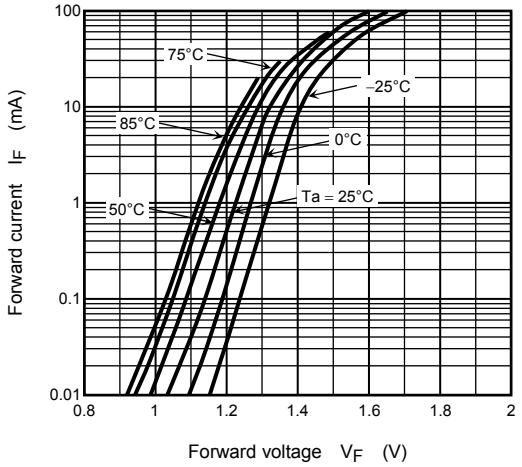
Handling Precautions

- Soldering must be performed under the stopper.
- When forming the leads, bend each lead at least 5 mm from the package body. Soldering must be performed after the leads have been formed.
- The radiant intensity decreases over time due to current flowing in the infrared LED. When designing circuits, take into account the change in radiant intensity over time.

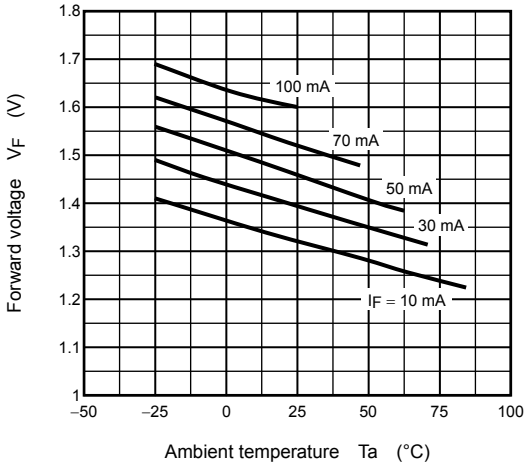
I_F – Ta



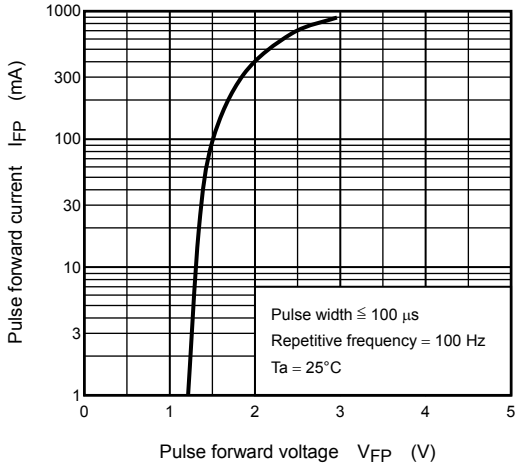
I_F – V_F (typ.)



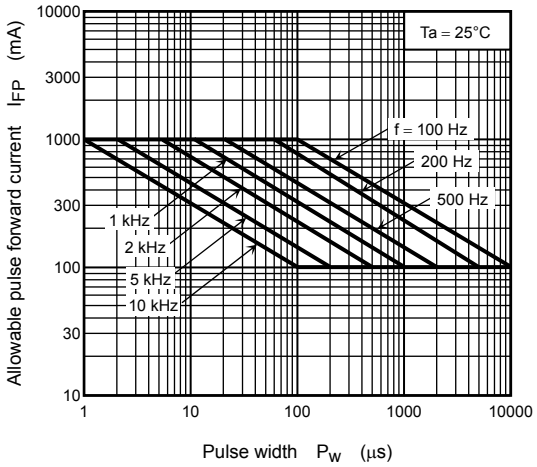
V_F – Ta (typ.)



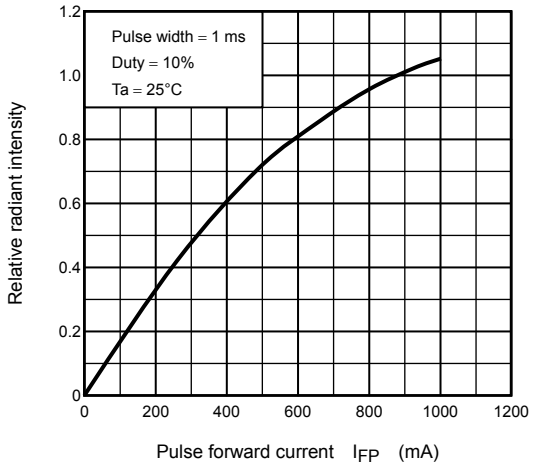
I_{FP} – V_{FP} (typ.)



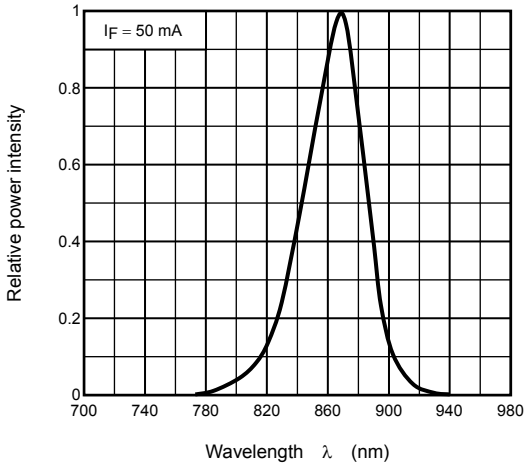
I_{FP} – P_W



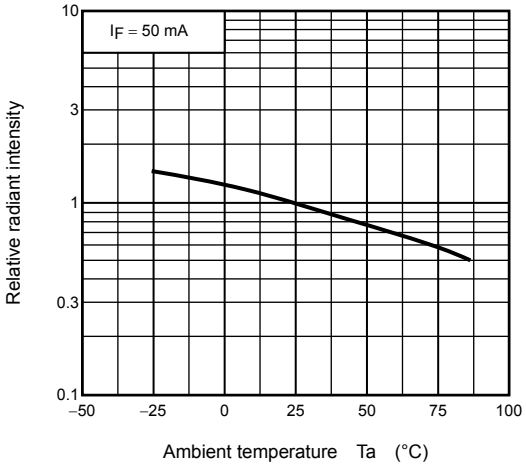
Relative I_E – I_{FP}



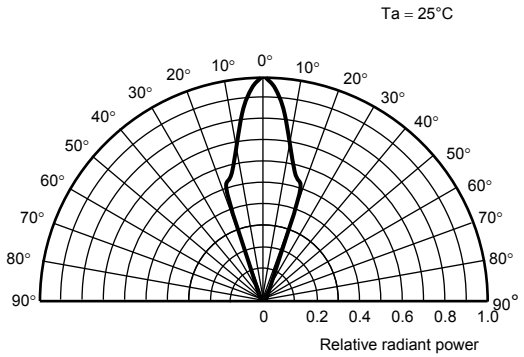
Wavelength characteristic



Relative I_E – Ta (typ.)



Radiation pattern (typ.)



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