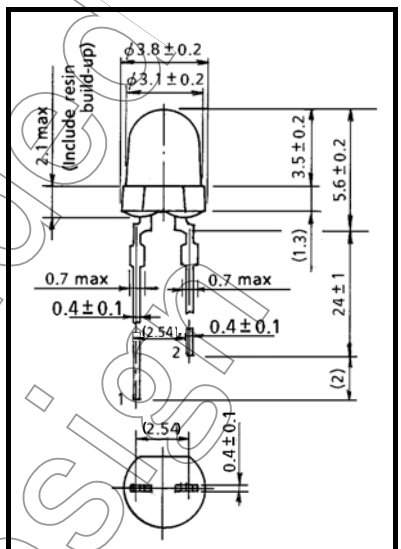
TOSHIBA Infrared LED GaAs Infrared Emitter

TLN119(F)

Printers, Fax Machines
Home Electric Appliances
Opto-Electronic Switches

- φ3.1-mm plastic package
- Radiant intensity: I_E = 5 mW / sr (typ.)
- Harf−angle value: θ1 / 2 = ±30°(typ.)

Unit: mm



TOSHIBA 4−4E1

Weight: 0.12 g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Forward current	I_F	60	mA
Forward current derating (Ta > 25°C)	ΔI_F / °C	−0.8	mA / °C
Pulse forward current (Note 1)	I_{FP}	600	mA
Reverse voltage	V_R	5	V
Operating temperature range	T_{opr}	−25 to 85	°C
Storage temperature range	T_{stg}	−30 to 100	°C
Soldering temperature (3 s)	T_{sol} (Note 2)	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: Pulse width < 100 μs, repetitive frequency = 100 Hz

Note 2: Solder the LED no closer than 2 mm from the base of the lead.

Pin Connection

1. Anode
2. Cathode

Optical and Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition		Min	Typ.	Max	Unit
Forward voltage	V_R	I_F = 10 mA		1.00	1.15	1.30	V
Reverse current	I_R	V_R = 5 V		—	—	10	μA
Radiant intensity	I_E	I_F = 20 mA	TLN119 (F)	2.5	5.0	10.0	mW / sr
			TLN119 (B,F)	4.2	—	10.0	
Radiant power	P_O	I_F = 20 mA		—	4.5	—	mW
Peak emission wavelength	λ_P	I_F = 20 mA		—	945	—	nm
Spectral line half width	$\Delta\lambda$	I_F = 20 mA		—	50	—	nm
Half value angle	θ1/2	I_F = 20 mA		—	±30	—	°

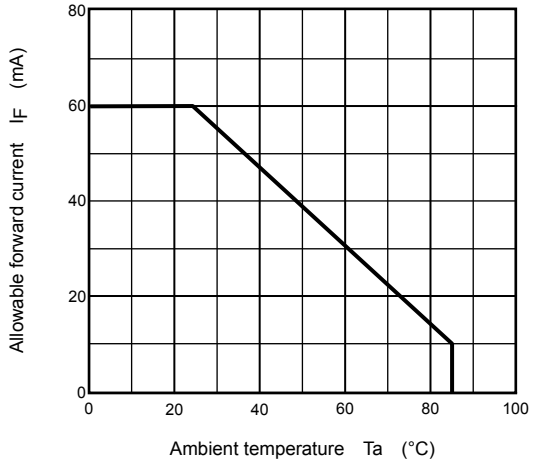
Precautions

Please be careful of the followings.

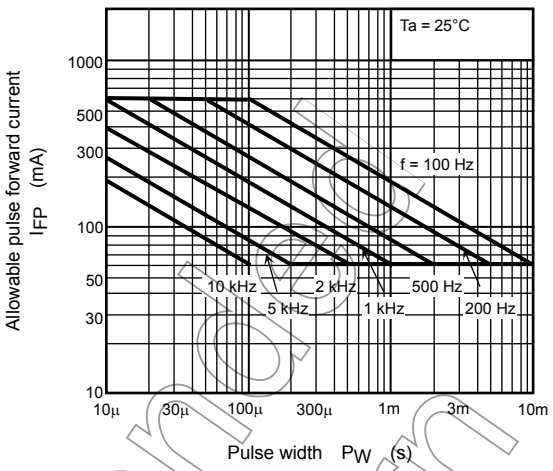
1. When forming the leads, bend each lead under the 2 mm from the body of the device. Soldering must be performed after the leads have been formed.
2. Radiant intensity falls over time due to the current which flows in the infrared LED. When designing a circuit, take into account this change in radiant power over time. The ratio of fluctuation in radiation intensity to fluctuation in optical output is 1: 1.

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

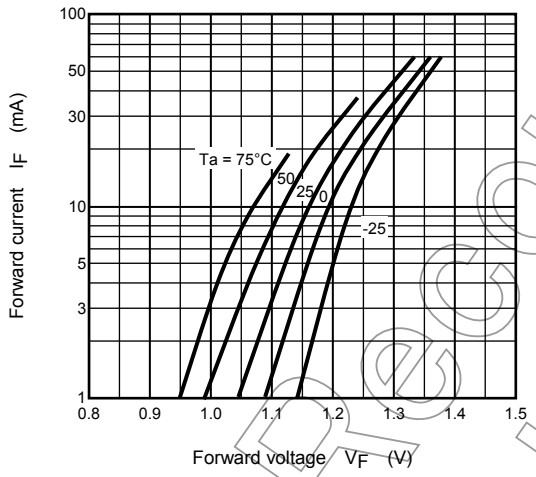
I_F – Ta



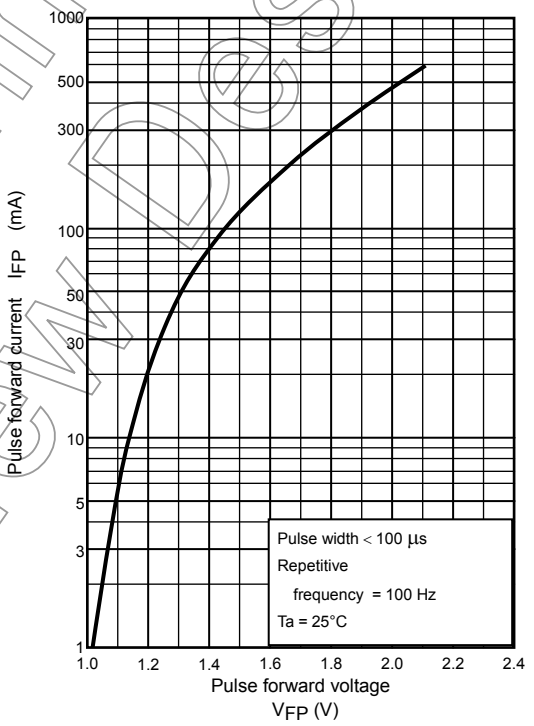
I_{FP} – P_W



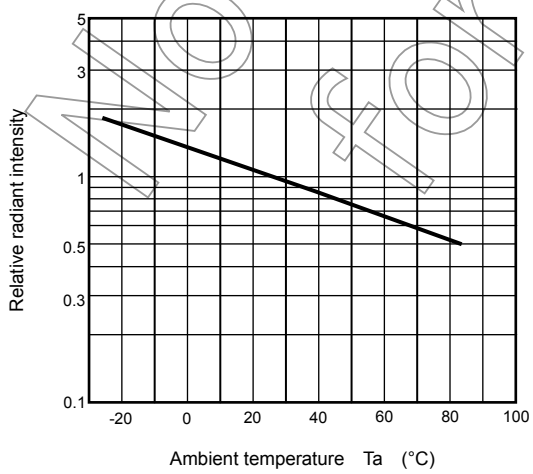
I_F – V_F (typ.)



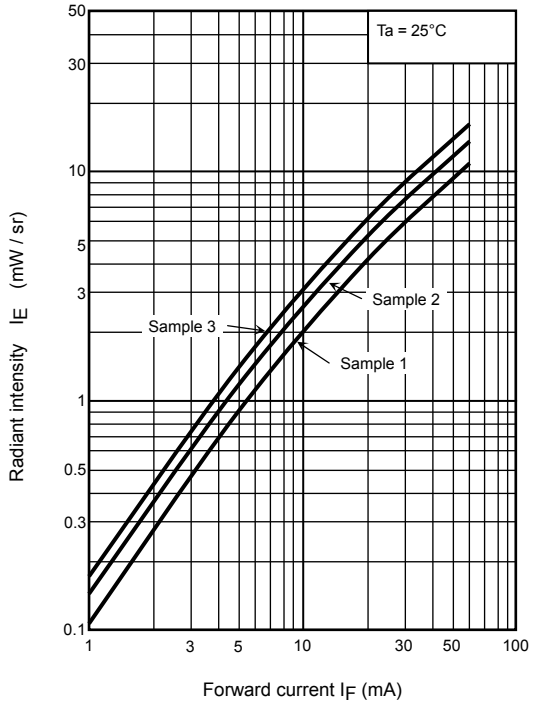
I_{FP} – V_{FP} (typ.)



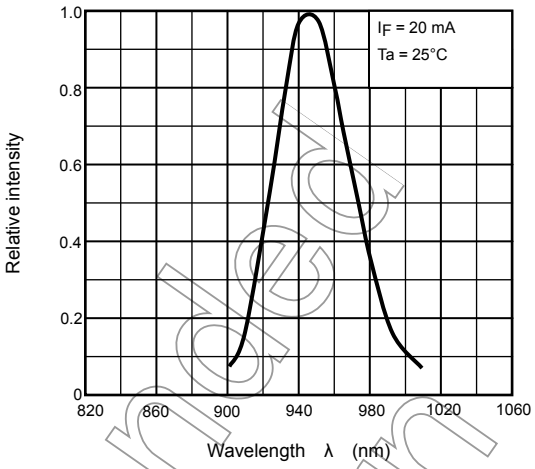
Relative I_F – Ta (typ.)



$I_E - I_F$ (typ.)

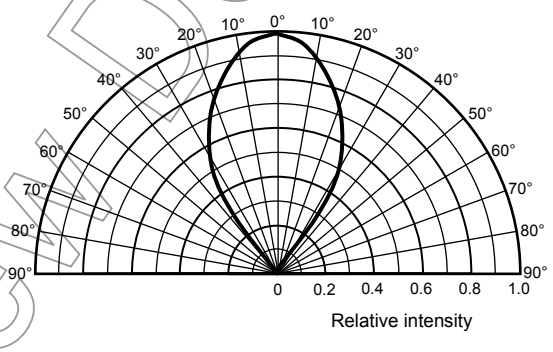


Wavelength Characteristic (typ.)



Radiation Pattern (typ.)

(Ta = 25°C)



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