TOSHIBA Infrared LED GaAs Infrared Emitter

TLN105B(F)

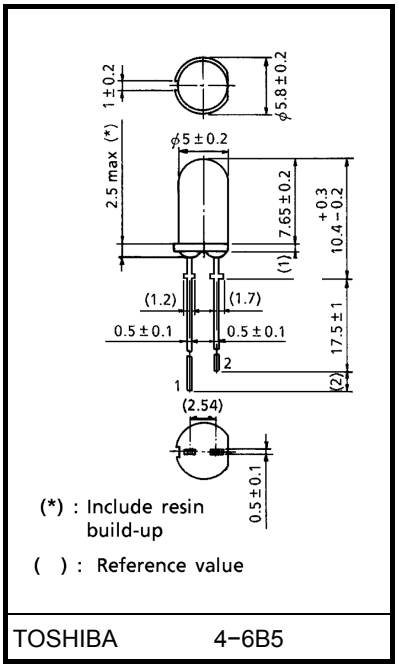
Lead(Pb)-Free

Remote−Control Systems

Opto−Electronic Switches

- High radiant intensity: I_E = 20mW / sr (typ.)
- Wide half−angle value: θ1/2 = ±23.5° (typ.)
- Excellent radiant−intensity linearity. Modulation by pulse operation and high frequency is possible.
- TPS703(F) PIN photodiode with filter to screen out visible light available as detector for remote control

Unit: mm



TOSHIBA 4−6B5

Weight: 0.3 g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Forward current	I_F	100	mA
Forward current derating (Ta > 25°C)	ΔI_F / °C	−1.33	mA / °C
Pulse forward current (Note)	I_{FP}	1	A
Reverse voltage	V_R	5	V
Power dissipation	P_D	150	mW
Operating temperature	T_{opr}	−20~75	°C
Storage temperature	T_{stg}	−30~100	°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): Pulse width ≦ 100μs, repetitive frequency = 100 Hz

Pin Connection

1. Anode
2. Cathode

Optical And Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward voltage	V_F	I_F = 100 mA	—	1.35	1.5	V
Reverse current	I_R	V_R = 5 V	—	—	10	μA
Radiant intensity	I_E	I_F = 50 mA	12	20	—	mW / sr
Radiant power	P_O	I_F = 50 mA	—	11	—	mW
Capacitance	C_T	V_R = 0, f = 1 MHz	—	20	—	pF
Peak emission wavelength	λ_P	I_F = 50 mA	—	950	—	nm
Spectral line half width	Δλ	I_F = 50 mA	—	50	—	nm
Half value angle	$\theta\frac{1}{2}$	I_F = 50 mA	—	±23.5	—	°

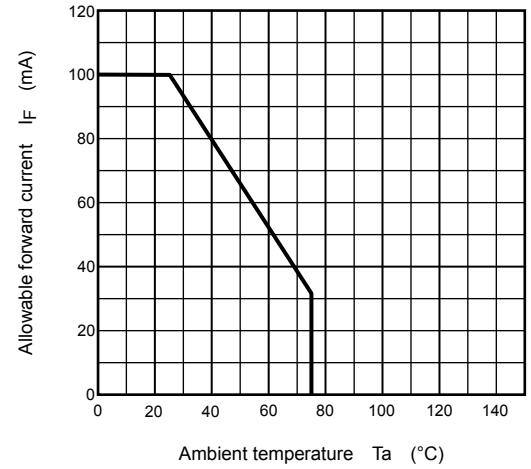
Precautions

Please be careful of the followings.

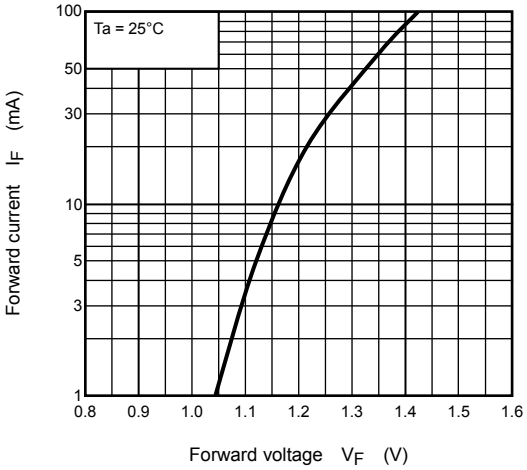
1. Soldering must be performed under the lead stopper.
2. Soldering temperature: 260°C max
   Soldering time: 5s max
3. When forming the leads, bend each lead under the stopper without leaving forming stress to the body of the device. Soldering must be performed after the leads have been formed.
4. Radiation 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.

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

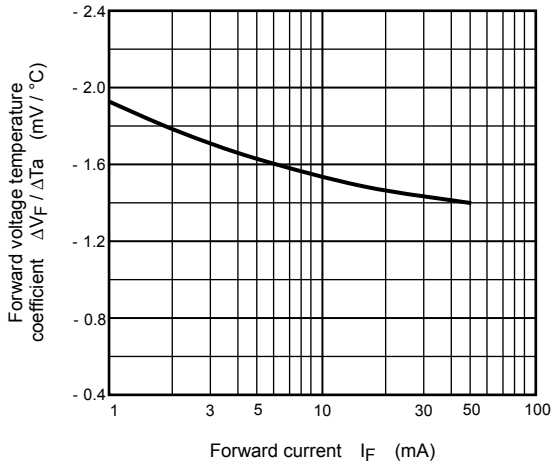
I_F – Ta



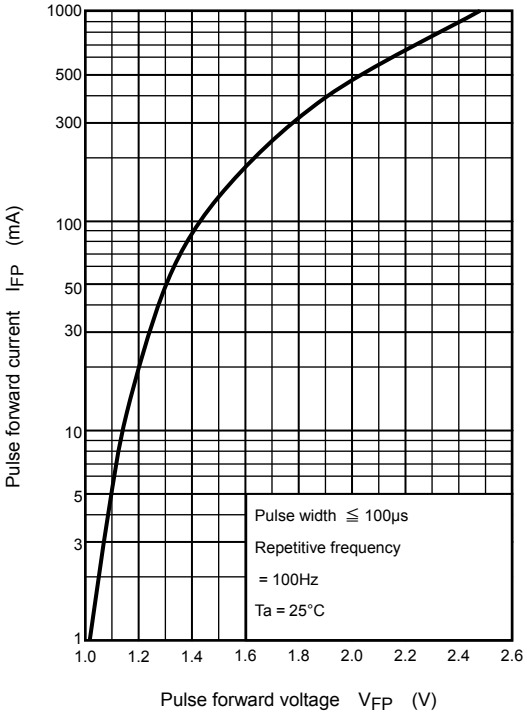
I_F – V_F (typ.)



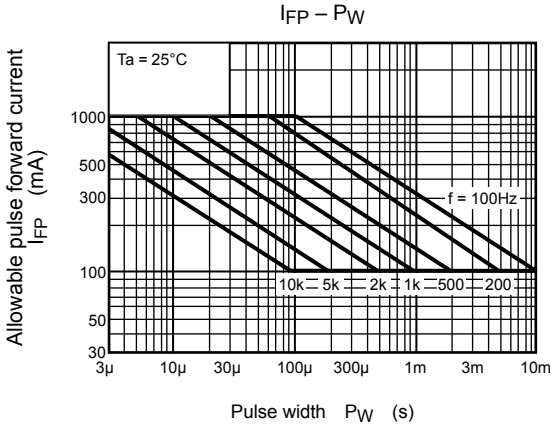
$\Delta V_F / \Delta Ta$ – I_F



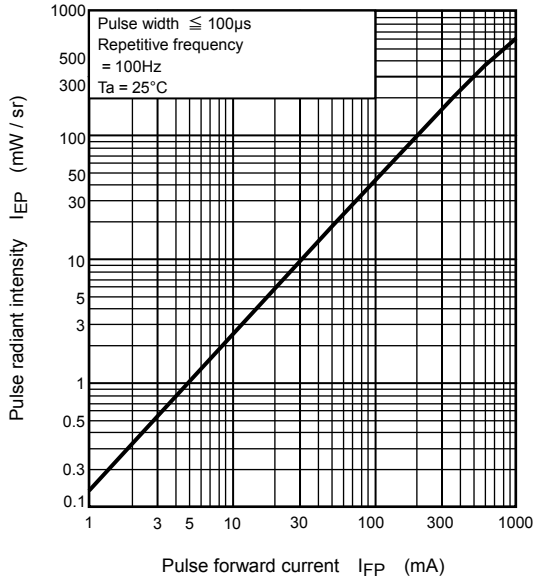
I_{FP} – V_{FP} (typ.)



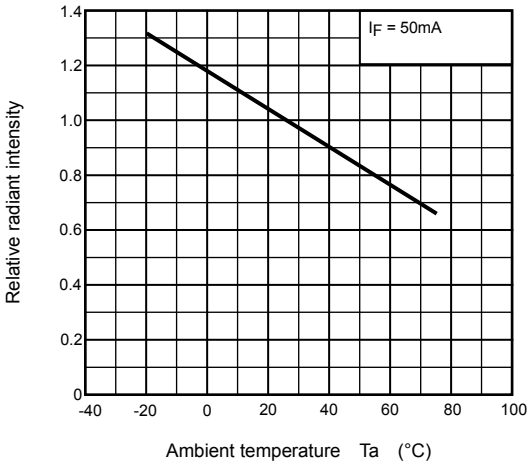
I_{FP} – P_W



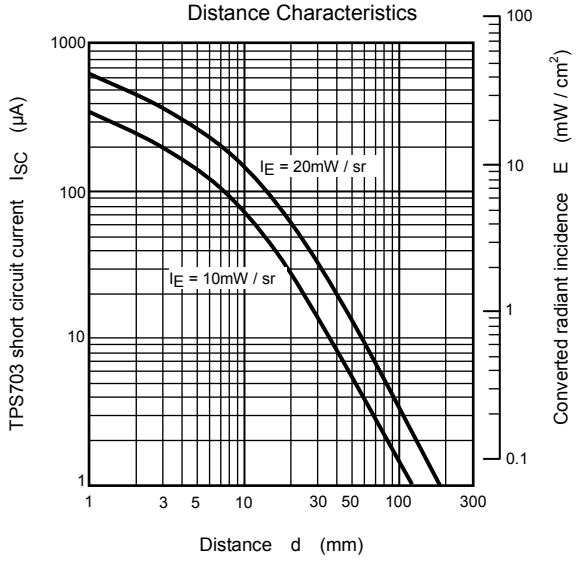
$I_{EP} - I_{FP}$ (typ.)



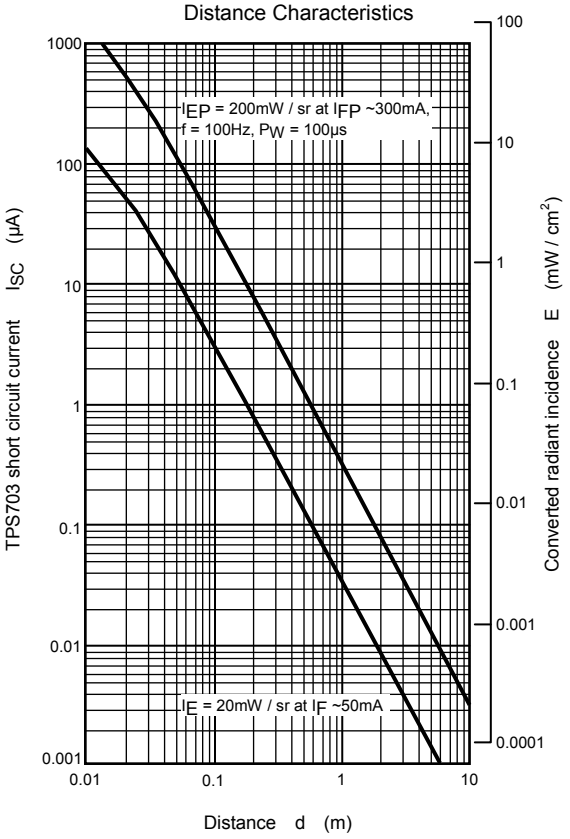
Relative I_E – Ta (typ.)



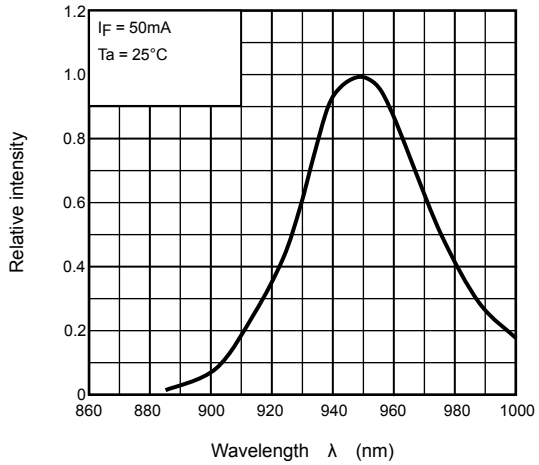
Distance Characteristics



Distance Characteristics

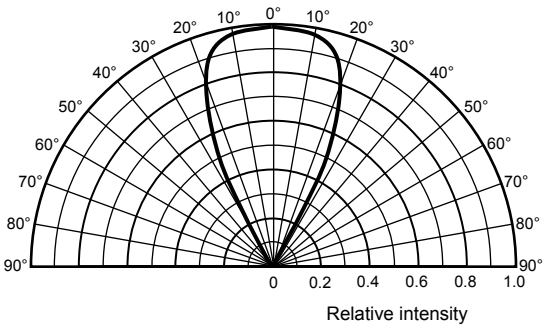


Wavelength Characteristic (typ.)



Radiation Pattern (typ.)

(Ta = 25°C)



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