TOSHIBA Infrared LED GaAs Infrared Emitter

TLN117(F)

Lead(Pb)-Free

Opto−Electoronic Switches

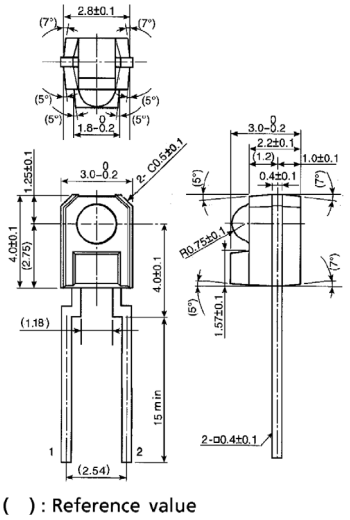
Floppy Disk Drives

Optical Mice

Optical Touch Sensors

- Small−side−view epoxy−resin package
- High radiant intensity: I_E = 0.8mW / sr(min)at I_F = 20mA
- Half−angle value: θ1 / 2 = ±15°(typ.)

Unit: mm



TOSHIBA	4−3P1

Weight: 0.1 g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Forward current	I_F	50	mA
Pulse forward current	I_{FP}	600 (Note 1)	mA
Forward current derating (Ta > 25°C)	ΔI_F / °C	−0.33	mA / °C
Reverse voltage	V_R	5	V
Operating temperature	T_{opr}	−25~85	°C
Storage temperature	T_{stg}	−40~100	°C
Soldering temperature (5s)	T_{sol}	260 (Note 2)	°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 ≦ 100μs, repetitive frequency =100Hz

Note 2: Soldering must be performed 2mm from the bottom of the package body.

Pin Connection

1. Cathode
2. Anode

Optical And Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition		Min	Typ.	Max	Unit
Forward voltage	V_F	I_F = 10mA		1.0	1.15	1.3	V
Reverse current	I_R	V_R = 5V		—	—	10	μA
Radiant intensity	I_E	I_F = 20mA	TLN117(F)	0.8	—	—	mW / sr
			TLN117(B,F)	2	—	7.5	
			TLN117(C,F)	5	—	18.7	
Radiant power	P_O	I_F = 20mA		—	2.5	—	mW
Capacitance	C_T	V_R = 0, f = 1MHz		—	30	—	pF
Peak emission wavelength	λ_P	I_F = 20mA		—	940	—	nm
Spectral line half width	$\Delta\lambda$	I_F = 20mA		—	50	—	nm
Half value angle	$\theta\frac{1}{2}$	I_F = 20mA		—	±15	—	°

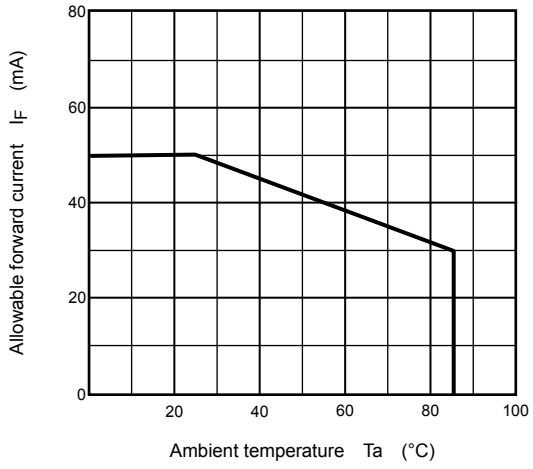
Precautions

Please be careful of the followings.

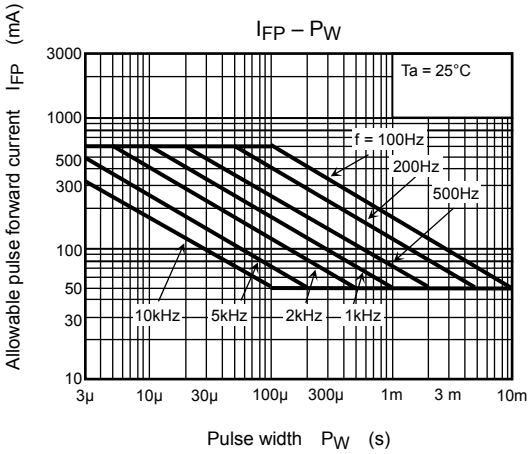
1. When forming the leads, bend each lead under the 2mm from the body of the device. Soldering must be performed after the leads have been formed.
2. Radiation intensity falls over time due to the current which flows in the infrared LED. When designing a circuit, take into account this change in radiant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

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

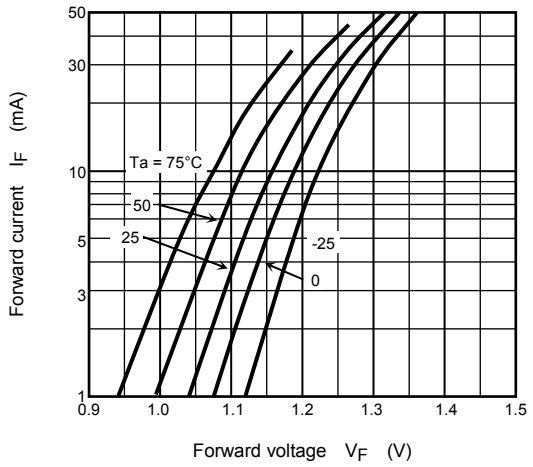
I_F – Ta



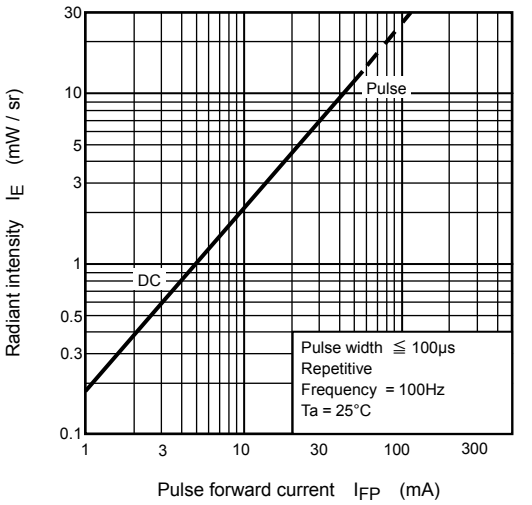
I_{FP} – P_W



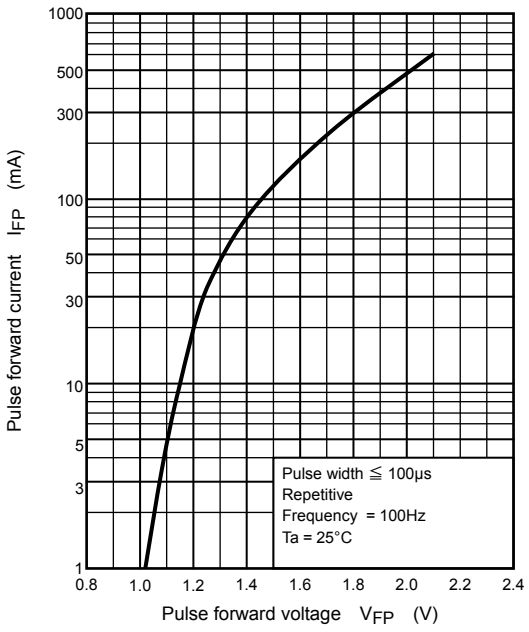
I_F – V_F (typ.)



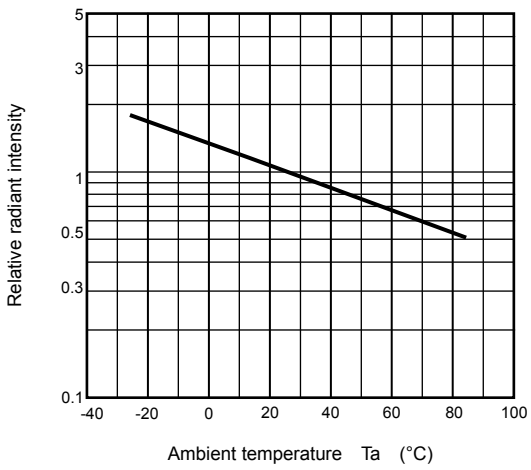
I_E – I_F (typ.)



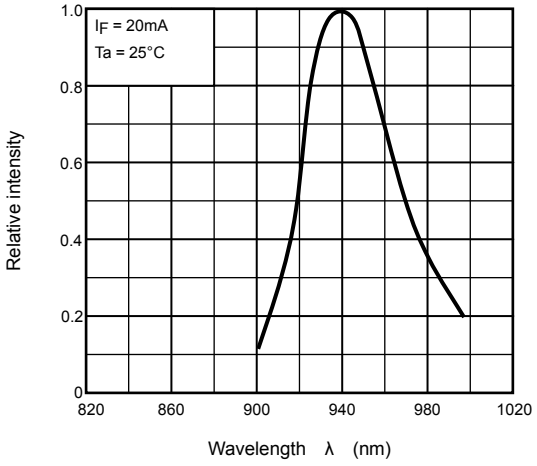
$I_{FP} - V_{FP}$ (typ.)



Relative I_E – Ta (typ.)

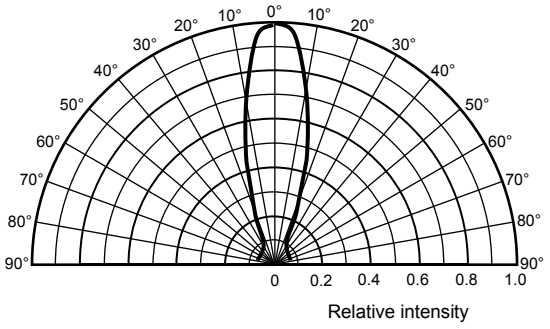


Wavelength Characteristic (typ.)



Radiation Pattern (typ.)

(Ta = 25°C)



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