

TOSHIBA Infrared LED GaAs Infrared Emitter

# TLN117(F)

Lead(Pb)-Free  
 Opto-Electronic Switches  
 Floppy Disk Drives  
 Optical Mice  
 Optical Touch Sensors

- Small-side-view epoxy-resin package
- High radiant intensity:  $I_E = 0.8\text{mW} / \text{sr}(\text{min})$  at  $I_F = 20\text{mA}$
- Half-angle value:  $\theta_{1/2} = \pm 15^\circ(\text{typ.})$

### 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)	$\Delta I_F / ^\circ\text{C}$	-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

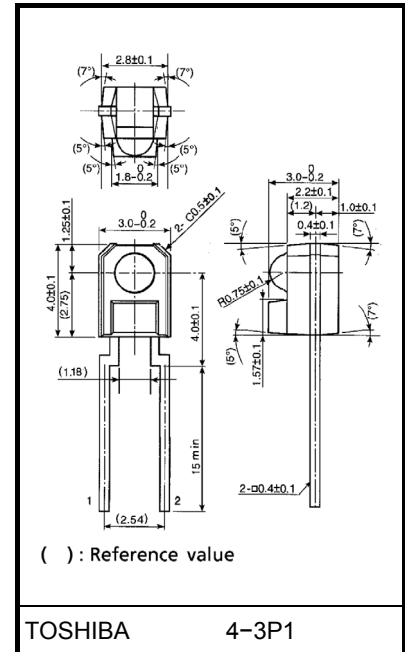
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) 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  $\leq 100\mu\text{s}$ , repetitive frequency = 100Hz

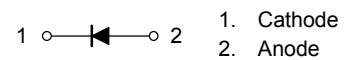
Note 2: Soldering must be performed 2mm from the bottom of the package body.

Unit: mm



Weight: 0.1 g (typ.)

### Pin Connection



## Optical And Electrical Characteristics (Ta = 25°C)

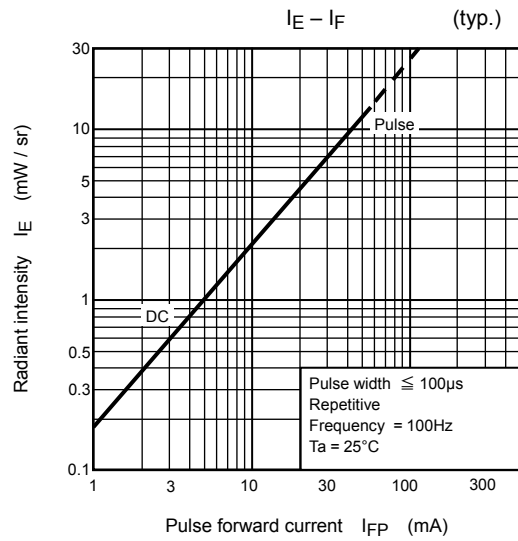
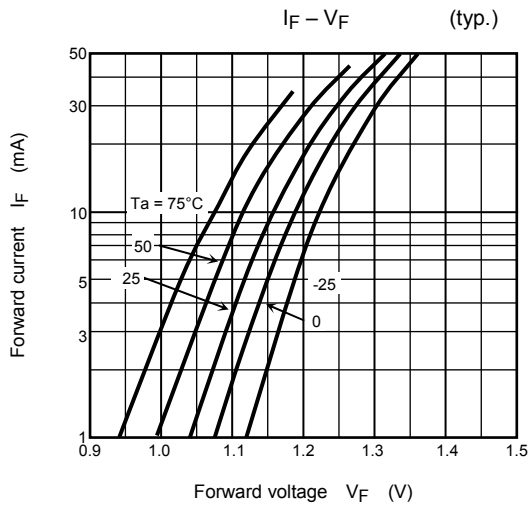
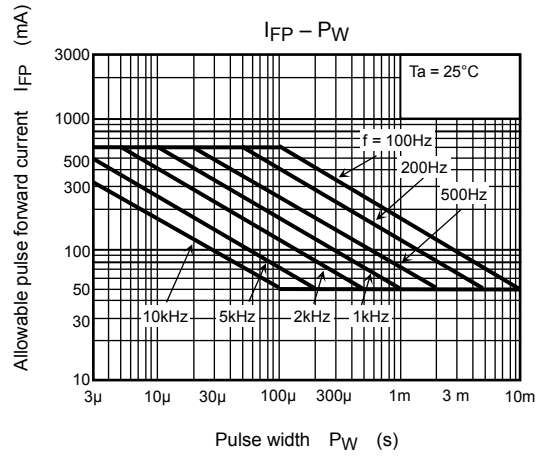
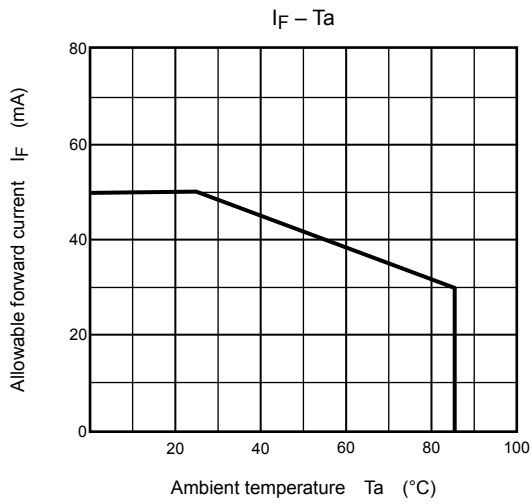
Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit	
Forward voltage	$V_F$	$I_F = 10\text{mA}$	1.0	1.15	1.3	V	
Reverse current	$I_R$	$V_R = 5\text{V}$	—	—	10	$\mu\text{A}$	
Radiant intensity	$I_E$	$I_F = 20\text{mA}$	TLN117(F)	0.8	—	—	mW / sr
			TLN117(B,F)	2	—	7.5	
			TLN117(C,F)	5	—	18.7	
Radiant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

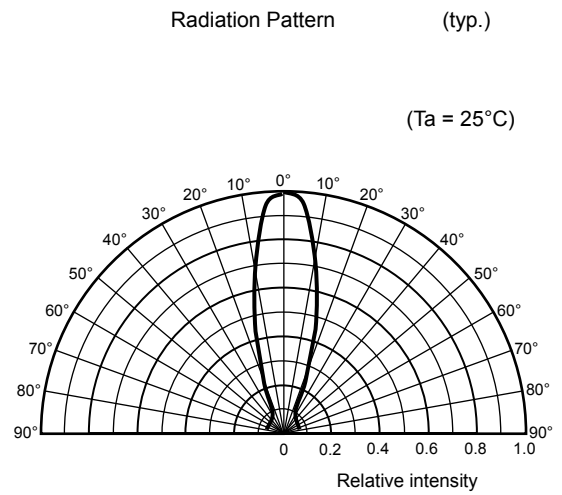
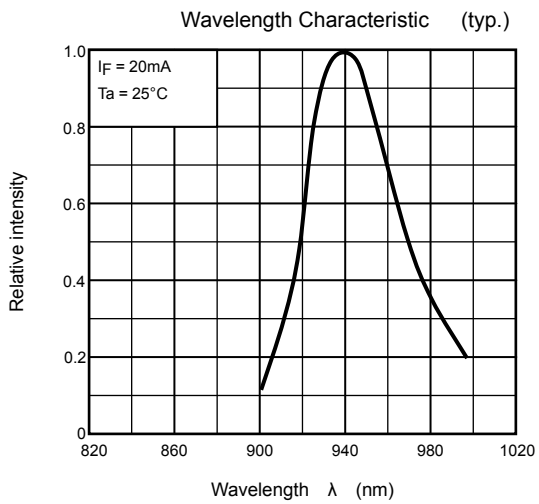
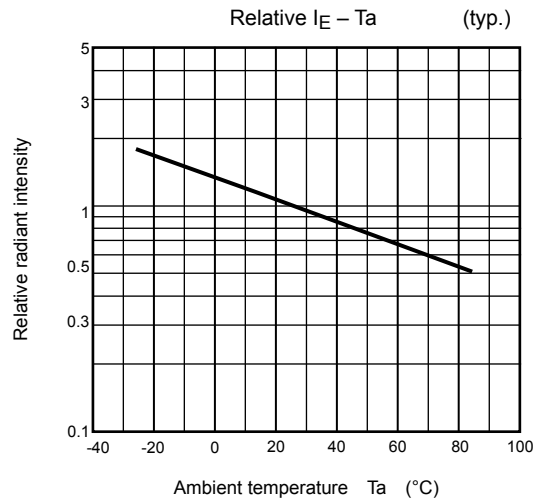
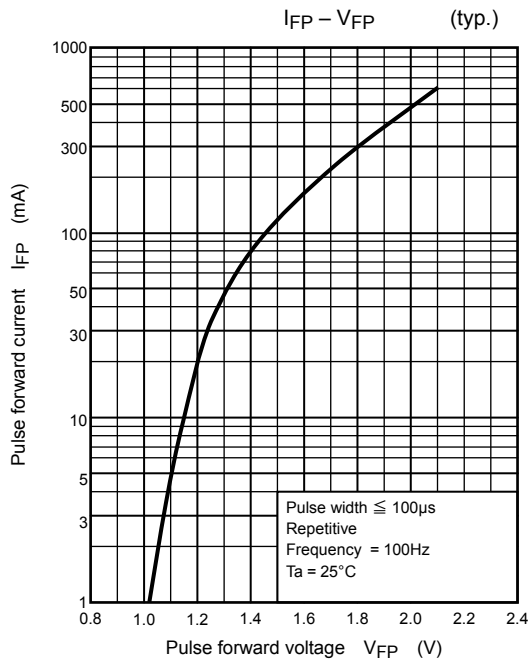
## Precautions

Please be careful of the followings.

- 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.
- 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.

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





**RESTRICTIONS ON PRODUCT USE**

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