

TLN117(F)

Opto-Electronic Switches

Floppy Disk Drives

Optical Mice

Optical Touch Sensors

- Small side-view epoxy-resin package
- High radiant intensity: $I_E = 0.8 \text{ mW / sr(min)}$ 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 ($T_a > 25^{\circ}\text{C}$)	$\Delta I_F / ^{\circ}\text{C}$	-0.33	mA / $^{\circ}\text{C}$
Reverse voltage	V_R	5	V
Operating temperature	T_{opr}	-25 to 85	$^{\circ}\text{C}$
Storage temperature	T_{stg}	-40 to 100	$^{\circ}\text{C}$
Soldering temperature (5s)	T_{sol}	260 (Note 2)	$^{\circ}\text{C}$

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).

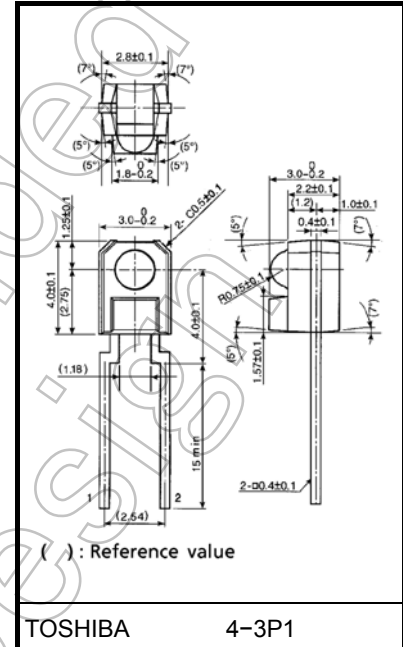
1  2

1. Cathode
2. Anode

Note 1: Pulse width $< 100 \mu\text{s}$, repetitive frequency = 100 Hz

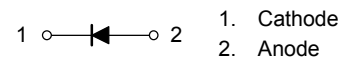
Note 2: Solder the LED no closer than 2mm from the base of the lead.

Unit: mm



Weight: 0.1 g (typ.)

Pin Connection



Optical and Electrical Characteristics (Ta = 25°C)

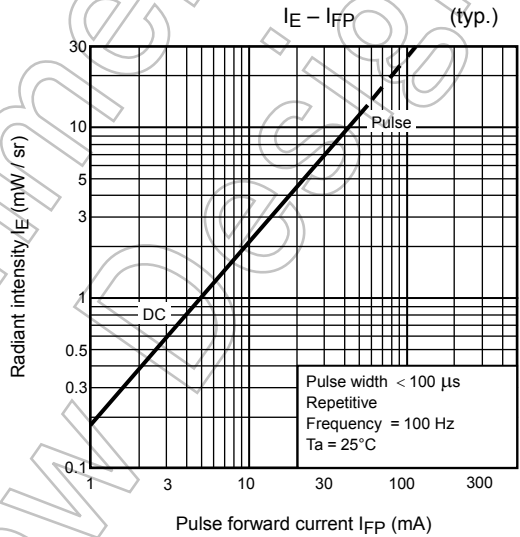
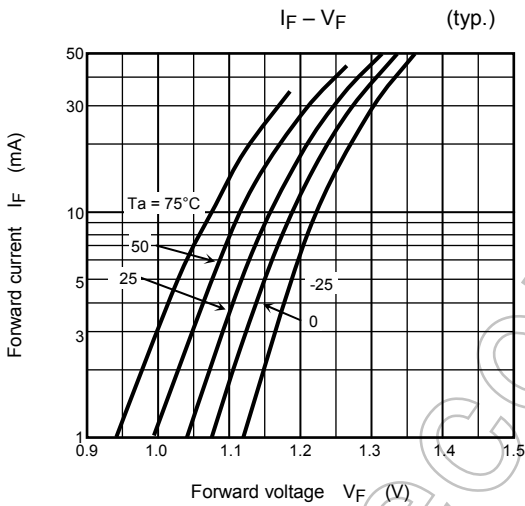
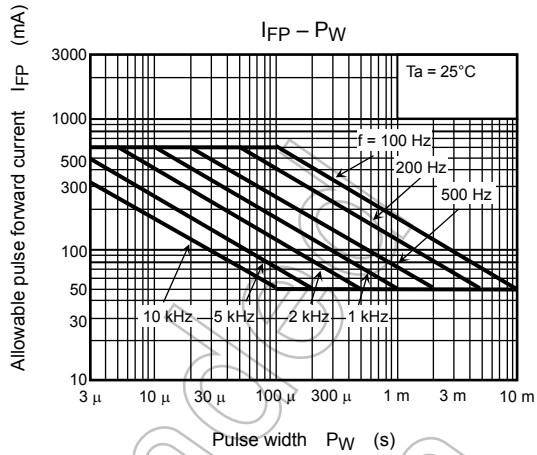
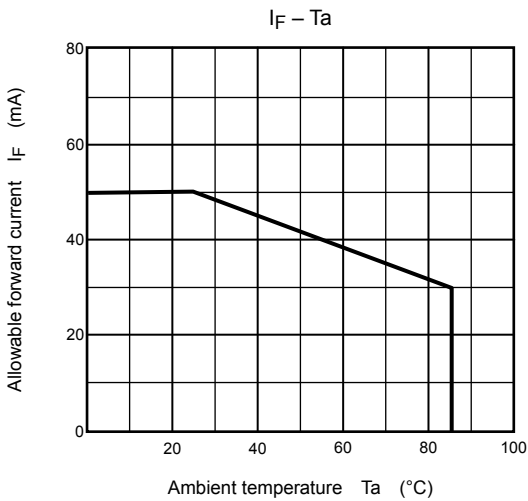
Characteristic	Symbol	Test Condition		Min	Typ.	Max	Unit
Forward voltage	V _F	I _F = 10 mA		1.0	1.15	1.3	V
Reverse current	I _R	V _R = 5 V		—	—	10	μA
Radiant intensity	I _E	I _F = 20 mA	TLN117(F)	2	—	—	mW / sr
			TLN117(B,F)	2	—	7.5	
			TLN117(C,F)	5	—	18.7	
Radiant power	P _O	I _F = 20 mA		—	2.5	—	mW
Capacitance	C _T	V _R = 0, f = 1 MHz		—	30	—	pF
Peak emission wavelength	λ _P	I _F = 20 mA		—	940	—	nm
Spectral line half width	Δλ	I _F = 20 mA		—	50	—	nm
Half value angle	θ _{1/2}	I _F = 20 mA		—	±15	—	°

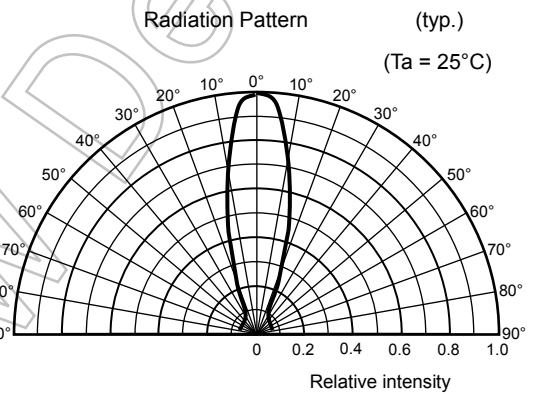
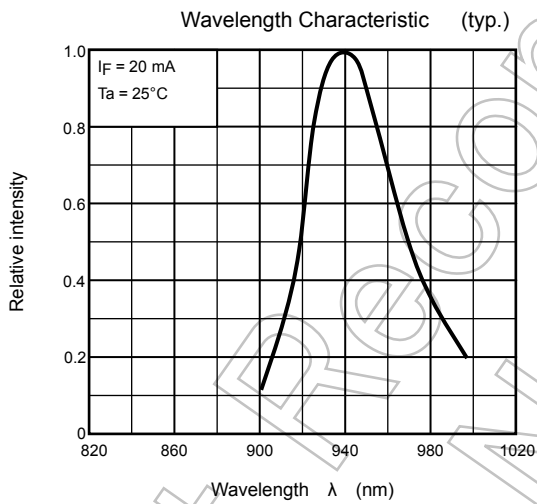
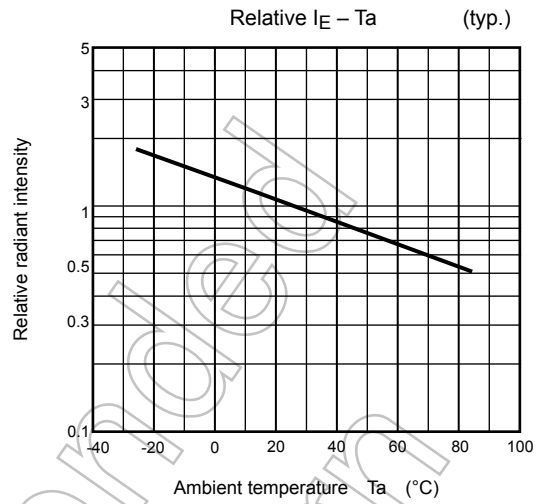
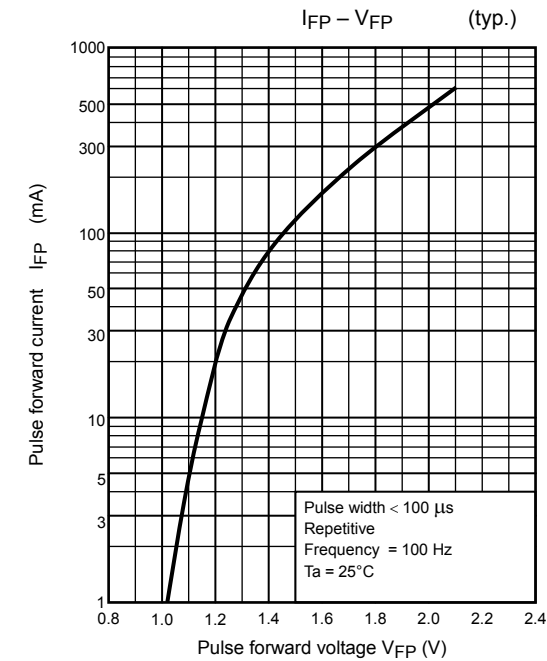
Precautions

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.

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





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