TOSHIBA Infrared LED GaAs Infrared Emitter

TLN108(F)

Lead(Pb)-Free

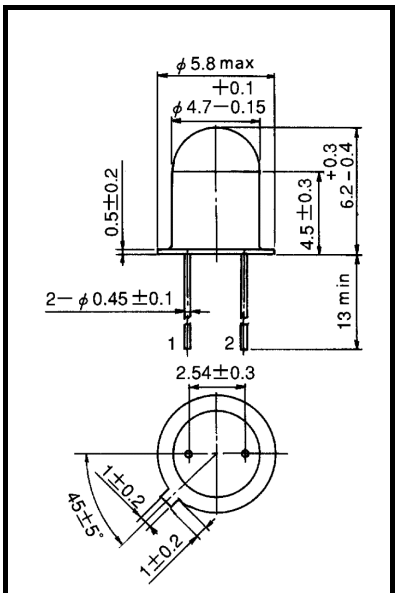
Opto−Electronic Switches

Tape And Card Readers

Equipment Using Infrared Transmission

- TO−18 metal package
- High radiant intensity: I_E = 20 mW/sr (typ.)
- Excellent radiant−intensity linearity. Modulation by pulse operation and high frequency is possible.
- Highly reliable due to hermetic seal

Unit: mm



TOSHIBA 4−5Q2

Weight: 0.33 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	mA / °C
Pulse forward current (Note 1)	I_{FP}	1	A
Reverse voltage	V_R	5	V
Operating temperature range	T_{opr}	−40~125	°C
Storage temperature range	T_{stg}	−55~150	°C

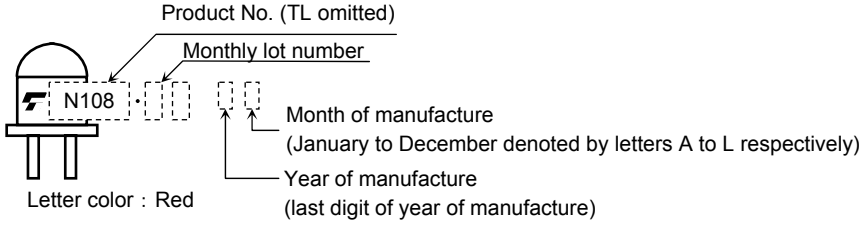
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

Pin Connection

1. Anode
2. Cathode (case)

Markings



Optical And Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward voltage	V_F	I_F = 50 mA	—	1.3	1.4	V
Pulse forward voltage	V_{FP}	I_{FP} = 1 A	—	2.4	—	V
Reverse current	I_R	V_R = 5 V	—	—	10	μA
Radiant intensity	I_E	I_F = 50 mA	10	20	—	mW / sr
Radiant power	P_O	I_F = 50 mA	—	3	—	mW
Capacitance	C_T	V_R = 0, f = 1 MHz	—	30	—	pF
Peak emission wavelength	λ_P	I_F = 50 mA	—	940	—	nm
Spectral line half width	$\Delta\lambda$	I_F = 50 mA	—	50	—	nm
Half value angle	$\theta\frac{1}{2}$	I_F = 50 mA	—	±8	—	°

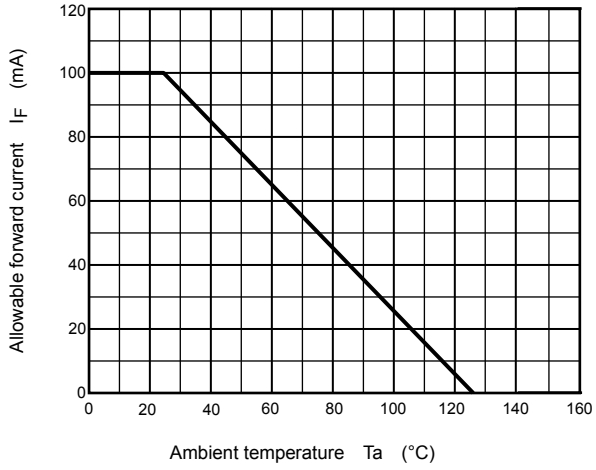
Precautions

Please be careful of the followings.

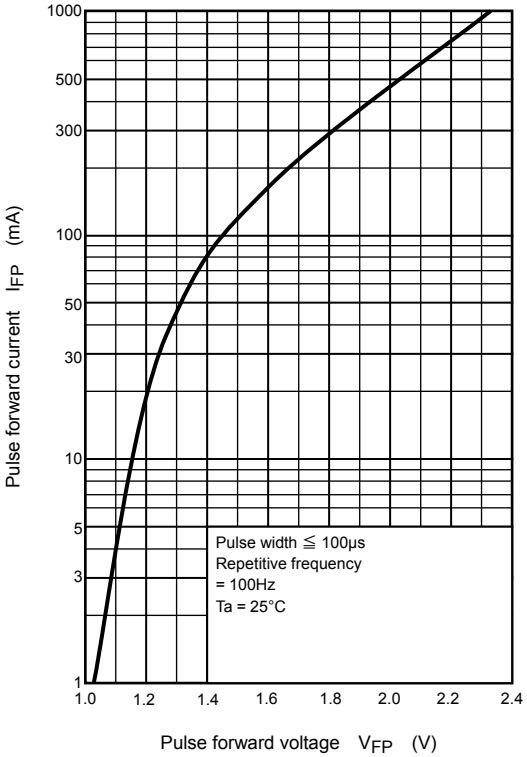
1. Soldering temperature: 260°C max
   Soldering time: 5s max
   (Soldering must be performed 1.5m from the bottom of the package.)
2. When forming the leads, bend each lead under the 2mm from the body of the device.
   Soldering must be performed after the leads have been formed.
3. Radiant intensity 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.

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

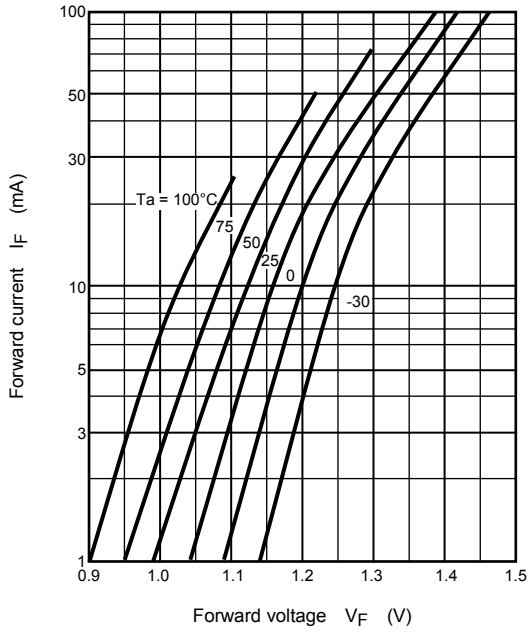
I_F – Ta



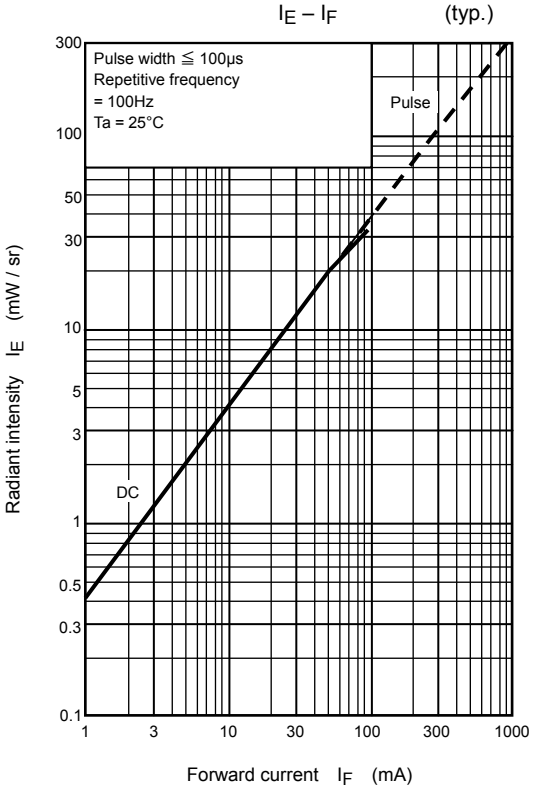
I_{FP} – V_{FP} (typ.)



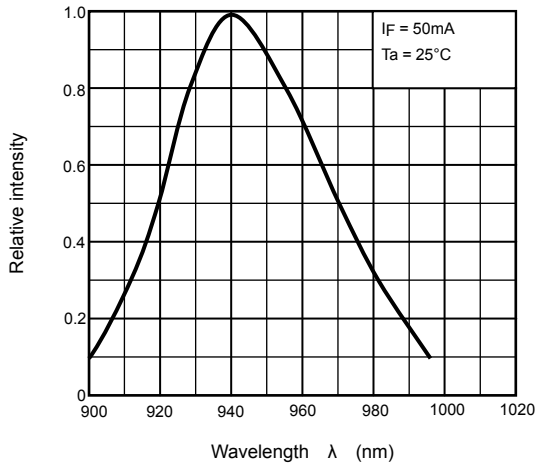
I_F – V_F (typ.)



I_E – I_F (typ.)

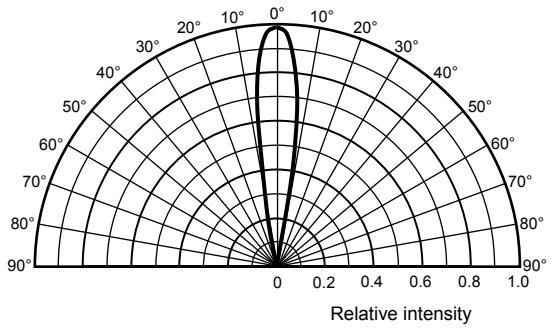


Wavelength Characteristic (typ.)

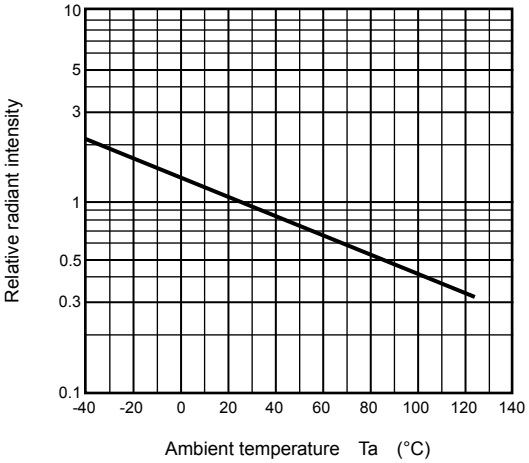


Radiation Pattern (typ.)

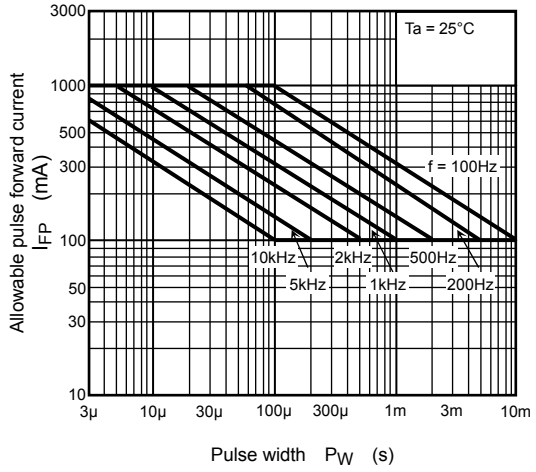
(Ta = 25°C)



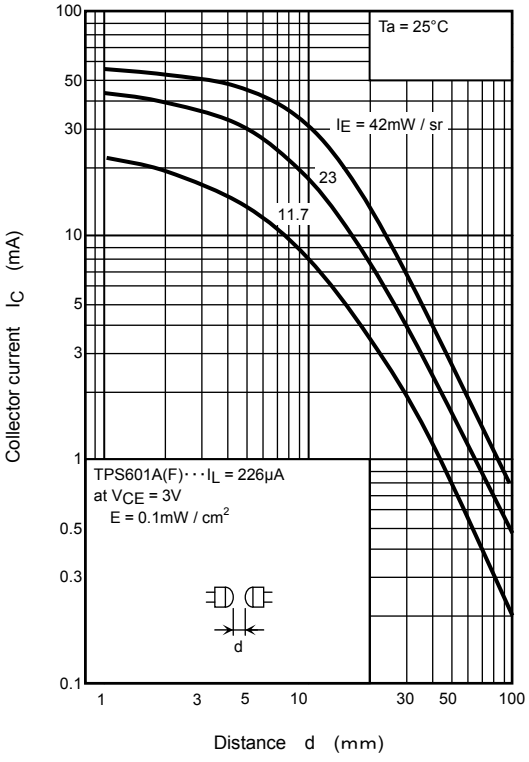
Relative I_E – Ta (typ.)



I_{FP} – P_W



Coupling Characteristics With TPS601A(F)



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