

TOSHIBA Infrared LED GaAlAs Infrared Emitter

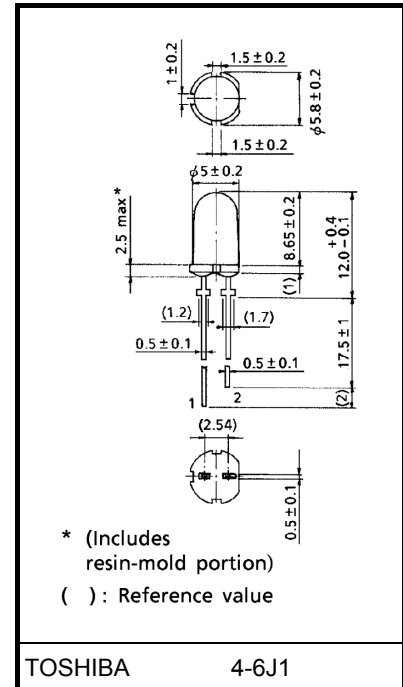
TLN227(F)

Lead(Pb)-Free

For Space-Optical-Transmission

- High radiant power: $P_o = 18\text{mW}$ (typ.) at $I_F = 50\text{mA}$
- Wide half-angle value: $\theta_{1/2} = 21^\circ$ (typ.)
- High-speed response: $t_r, t_f = 30\text{ns}$ (typ.)
- Light source for remote control
- Designed for transmission of wireless AVsignals purpose.
- Designed for high-speed data transmission

Unit: mm



Absolute Maximum Ratings (Ta = 25°C)

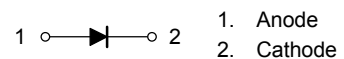
Characteristic	Symbol	Rating	Unit
Forward current	I_F	100	mA
Pulse forward current	I_{FP}	1000 (Note 1)	mA
Power dissipation	P_D	220	mW
Reverse voltage	V_R	4	V
Operating temperature	T_{opr}	-25~85	°C
Storage temperature	T_{stg}	-30~100	°C
Soldering temperature (5s)	T_{sol}	260	°C

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: Frequency = 100kHz, duty = 1%

Pin Connection



Optical And Electrical Characteristics (Ta = 25°C)

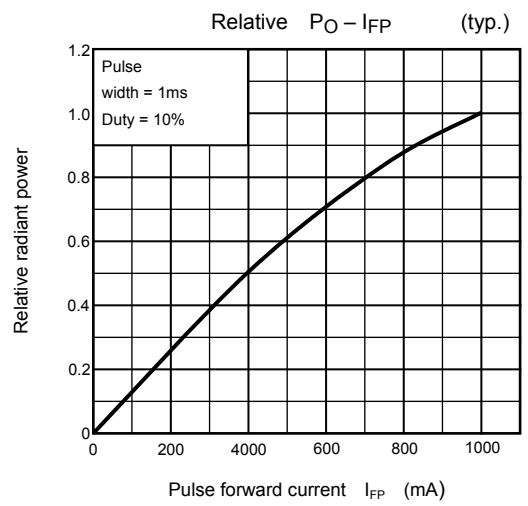
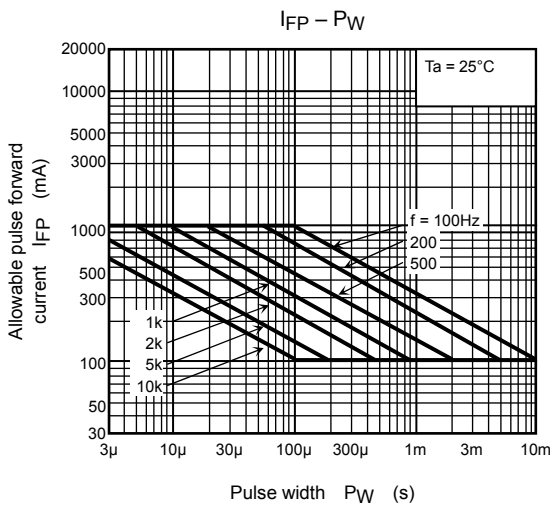
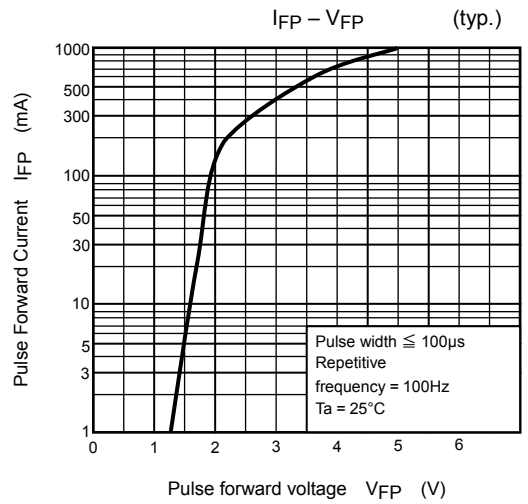
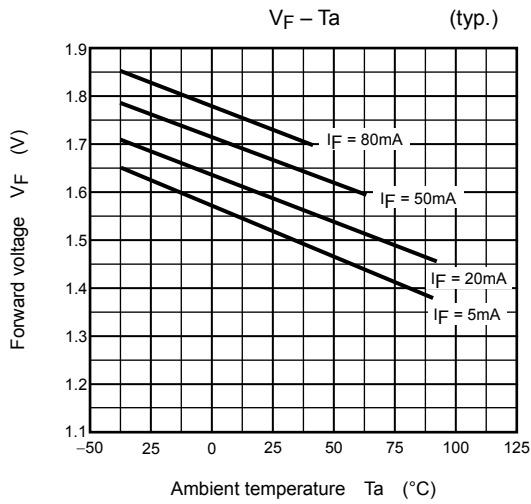
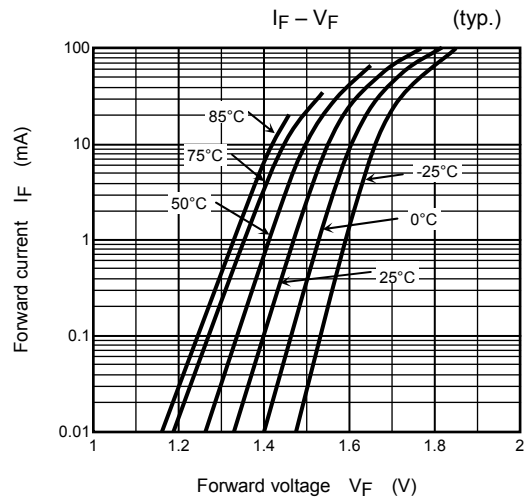
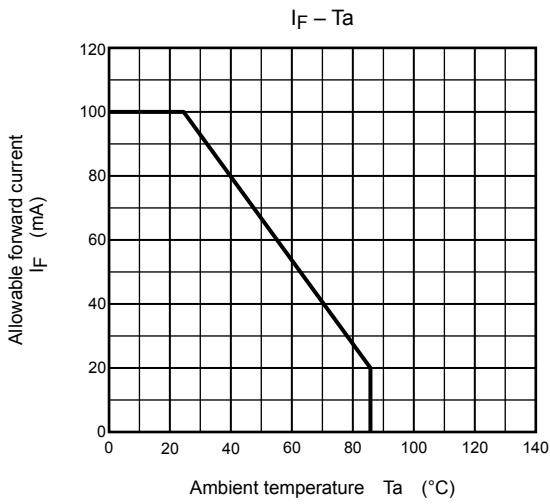
Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward voltage	V_F	$I_F = 100\text{mA}$	—	1.8	2.2	V
Reverse current	I_R	$V_R = 4\text{V}$	—	—	60	μA
Radiant power	P_O	$I_F = 50\text{mA}$	14	18	—	mW
Radiant intensity	I_E	$I_F = 50\text{mA}$	—	100	—	mW / sr
Rise time, fall time	t_r, t_f	$I_{FP} = 100\text{mA}, P_W = 100\text{ns}$	—	30	—	ns
Cut-off frequency (Note 2)	f_c	$I_F = 50\text{mA}_{DC} + 5\text{mA}_{p-p}$	10	15	—	MHz
Capacitance	C_T	$V_R = 0, f = 1\text{MHz}$	—	110	—	pF
Peak emission wavelength	λ_P	$I_F = 50\text{mA}$	830	870	900	nm
Spectral line half width	$\Delta\lambda$	$I_F = 50\text{mA}$	—	50	—	nm
Half value angle	$\theta_{1/2}$	$I_F = 50\text{mA}$	—	± 5	—	°

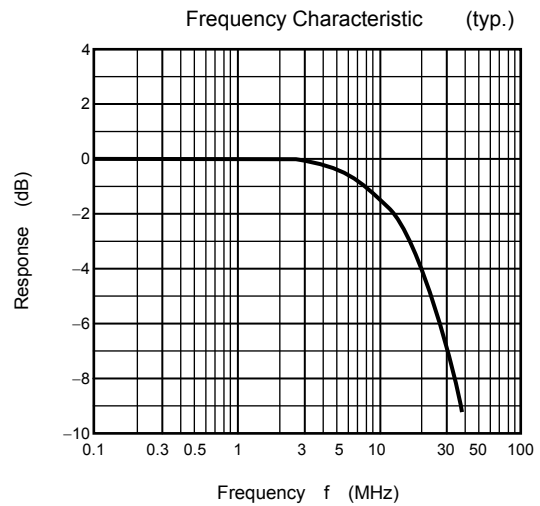
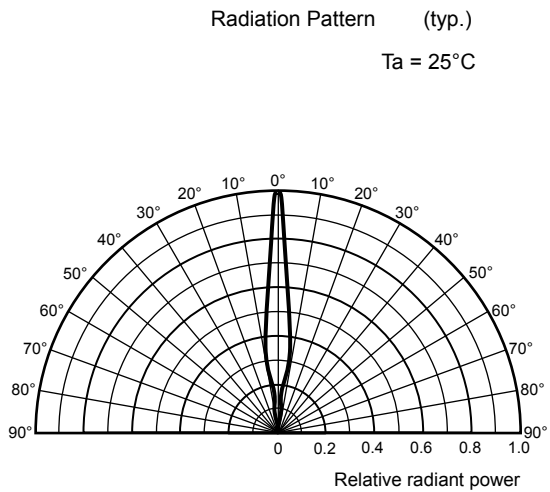
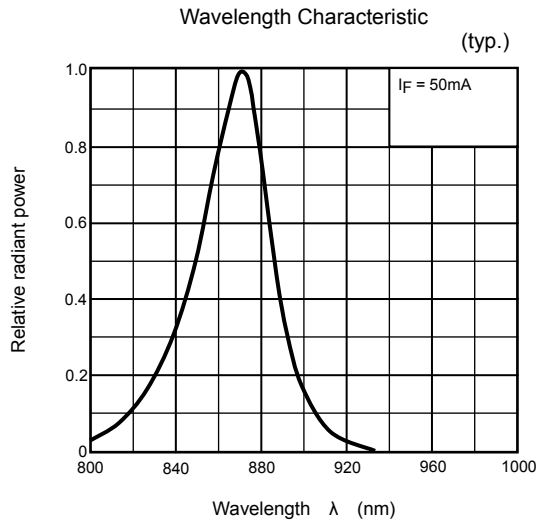
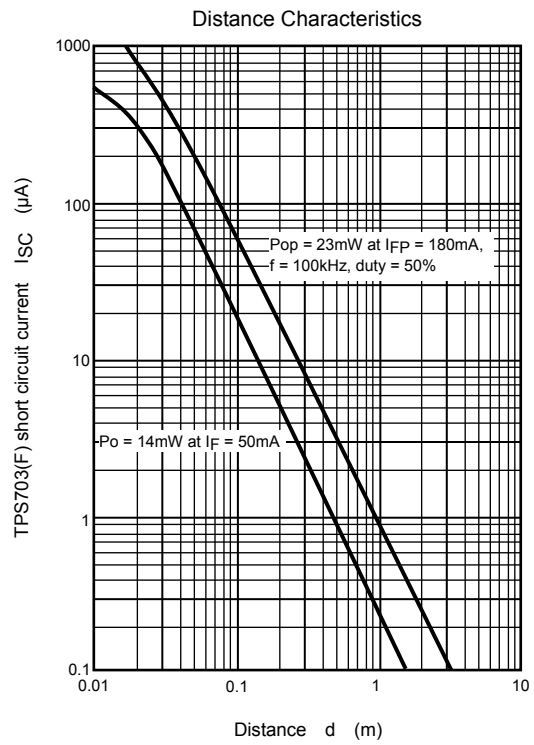
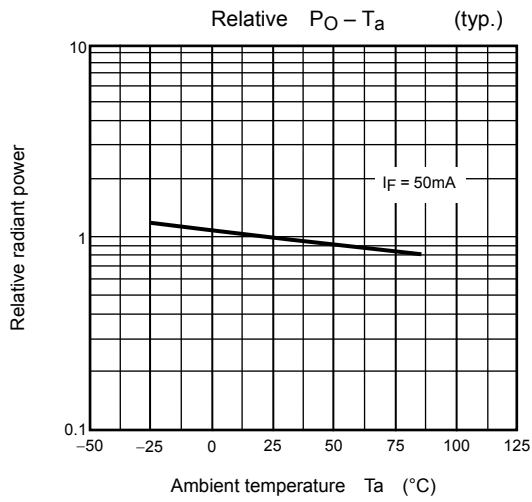
Note 2: Frequency when modulation light power decreases by 3dB from 1 MHz.

Precautions

Please be careful of the followings.

1. Soldering must be performed under the lead stopper.
2. 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.
3. Radiant power 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.





RESTRICTIONS ON PRODUCT USE

20070701-EN

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- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
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