TOSHIBA Infrared LED GaAℓAs Infrared Emitter

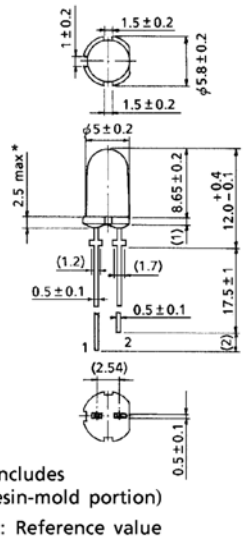
TLN227(F)

Lead Free Product

For Space−Optical−Transmission

- High radiant power: Po = 18mW (typ.) at I_F = 50mA
- Wide half−angle value: = θ1 / 2 ± 21° (typ.)
- High−speed response: t_r, t_f = 30ns (typ.)
- Light source for remote control
- Designed for transmission of wireless AVsignals purpose.
- Designed for high−speed data transmission

Unit: mm



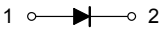
TOSHIBA 4-6J1

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 1): Frequency = 100kHz, duty = 1%

Pin Connection



1. Anode
2. Cathode

Optical And Electrical Characteristics (Ta = 25°C)

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

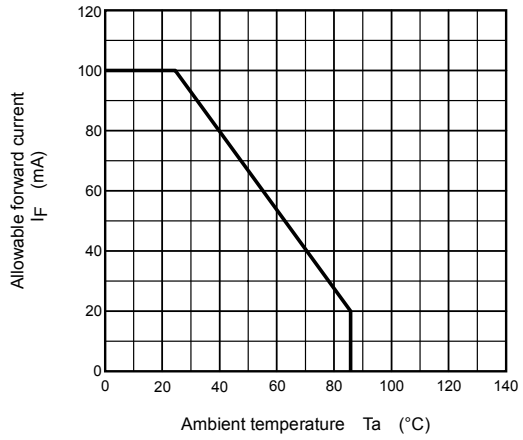
(Note 2): Frequency when modulation light power decreases by 3dB from 1 MHz.

Precautions

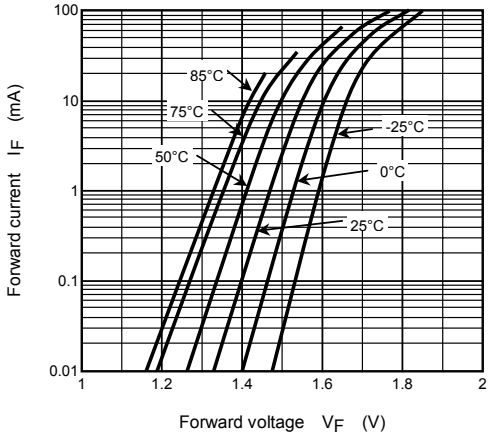
Please be careful of the followings.

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.

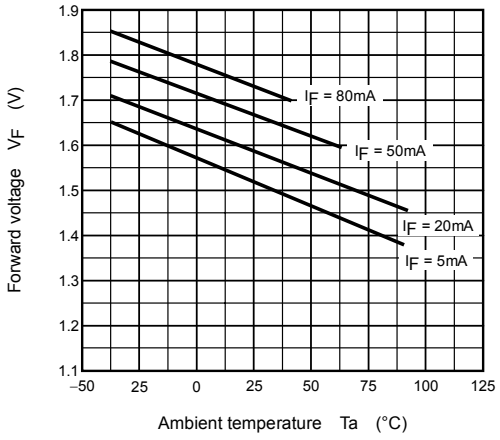
I_F – Ta



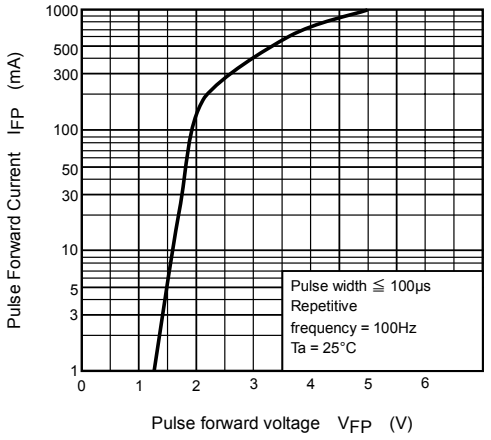
I_F – V_F (typ.)



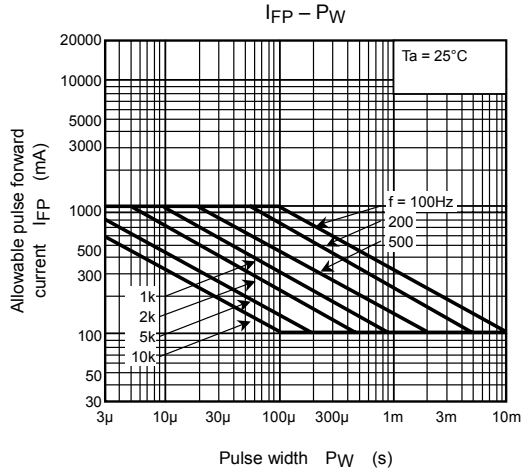
V_F – Ta (typ.)



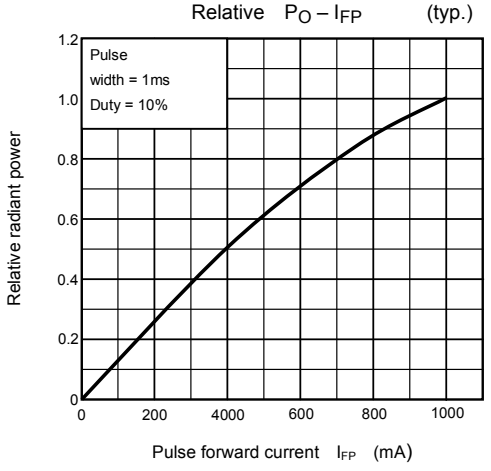
I_{FP} – V_{FP} (typ.)



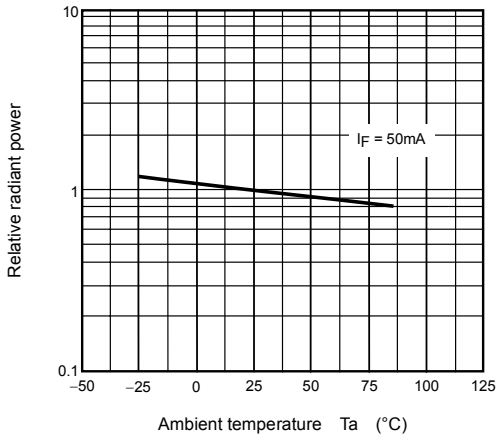
I_{FP} – P_W



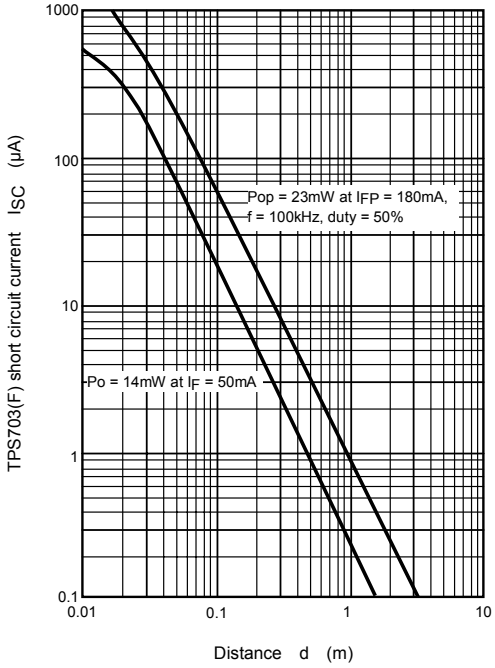
Relative P_O – I_{FP} (typ.)



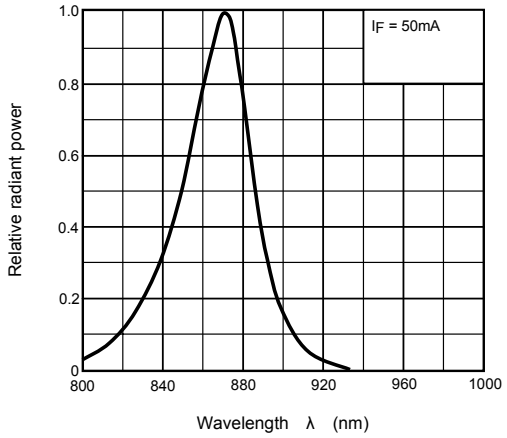
Relative $P_O - T_a$ (typ.)



Distance Characteristics

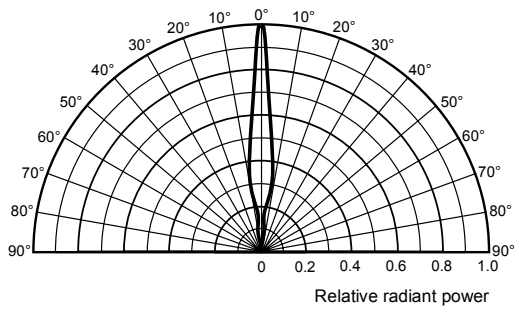


Wavelength Characteristic (typ.)

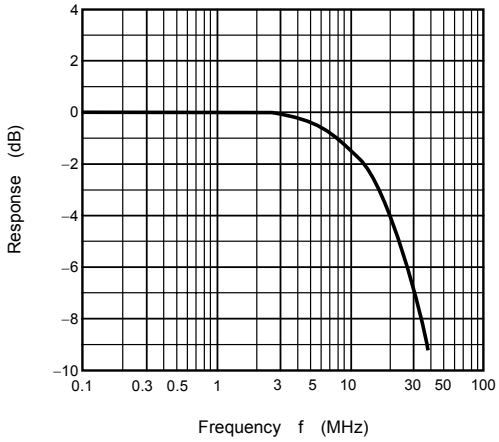


Radiation Pattern (typ.)

Ta = 25°C



Frequency Characteristic (typ.)



RESTRICTIONS ON PRODUCT USE

030619EAC

- The information contained herein is subject to change without notice.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA for any infringements of patents or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of TOSHIBA or others.
- 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.
  In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the “Handling Guide for Semiconductor Devices,” or “TOSHIBA Semiconductor Reliability Handbook” etc..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury (“Unintended Usage”). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer’s own risk.
- TOSHIBA products should not be embedded to the downstream products which are prohibited to be produced and sold, under any law and regulations.
- GaAs(Gallium Arsenide) is used in this product. The dust or vapor is harmful to the human body. Do not break, cut, crush or dissolve chemically.