TOSHIBA Infrared LED GaAlAs Infrared Emitter

TLN225(F)

Lead(Pb)-Free

For Space-Optical-Transmission

- High radiant power: Po = 18mW(typ.) at IF = 50mA٠
- Wide half–angle value: $\theta 1/2 = \pm 21^{\circ}(\text{typ.})$
- High-speed response: t_r, t_f = 30ns(typ.)
- Light source for remote control
- Designed for transmission of wireless AV signals
- Designed for high-speed data transmission

Absolute Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Forward current	١ _F	100	mA
Pulse forward current	I _{FP}	1000 (Note 1)	mA
Power dissipation	PD	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



Pin Connection

1	∘∽ 2	1.	Anode
		2.	Cathode

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%

Optical And Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min	Тур.	Max	Unit
Forward voltage	V _F	I _F = 50 mA	_	1.6	1.8	V
Reverse current	I _R	V _R = 4 V		_	10	μA
Radiant power	Po	I _F = 50 mA	14	18	_	mW
Radiant intensity	ΙE	I _F = 50 mA	_	40	_	mW / sr
Rise time, fall time	t _r , t _f	I _{FP} = 100 mA, P _W = 100 ns		30	—	ns
Cut–off frequency	f _c	$I_{F} = 50 \text{ mA}_{DC} + 5 \text{ mA}_{p-p} $ (Note 2)	10	15	_	MHz
Capacitance	CT	V _R = 0, f = 1 MHz	_	110	—	pF
Peak emission wavelength	λP	I _F = 50 mA	830	870	900	nm
Spectral line half width	Δλ	I _F = 50 mA	_	50	—	nm
Half value angle	$\Theta \frac{1}{2}$	I _F = 50 mA	_	±21	_	o

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

Unit: mm

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.

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Radiation Pattern (typ.) Ta = 25°C

10[°] 0 10° 20 30 4٢ 50 60° 70 80 30 90° 90 0.6 0 0.2 0.4 0.8 1.0 Relative radiant power

RESTRICTIONS ON PRODUCT USE

20070701-EN

- The information contained herein is subject to change without notice.
- 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.
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- 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.
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