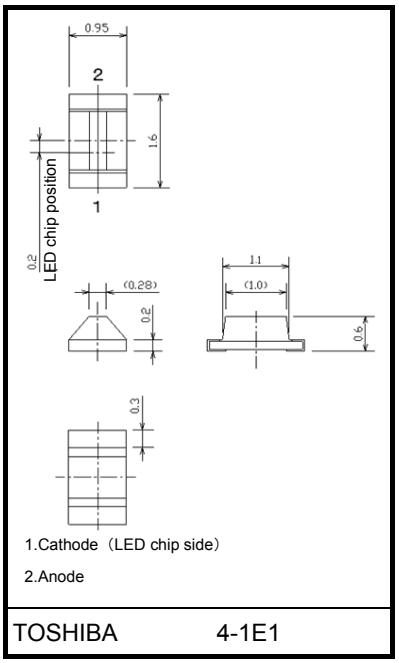
TOSHIBA Infrared LED

TLN241

○ Small type Infrared LED

- Size: 1.6 (L) mm × 0.95 (W) mm × 0.6 (H) mm
- Surface-mount device
- Transparent resin package
- Wide viewing angle
- Low-profile package (t = 0.6 mm)
  Suitable for thin equipments
- 4-mm pitch tape reel (4000 pcs/reel)



TOSHIBA 4-1E1

Weight: 1.2 mg (typ.)

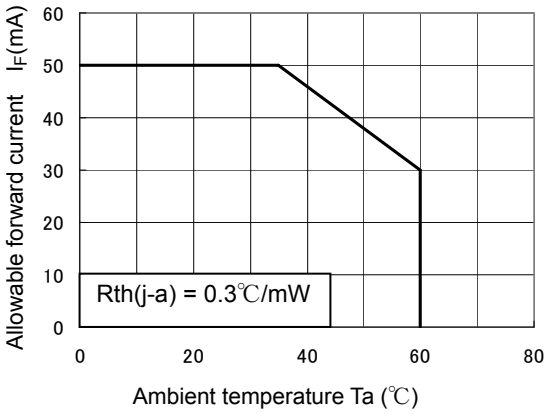
Absolute Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Forward Current	I_F	50	mA
Reverse Voltage	V_R	5	V
Power Dissipation	P_D	140	mW
Operating Temperature	T_{opr}	−20 to 60	°C
Storage Temperature	T_{stg}	−40 to 100	°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: Forward current derating
The junction-to-ambient thermal resistance, Rth(j-a),should be kept below 0.3℃/mW so that the TLN241 is not exposed to a condition beyond the absolute maximum ratings.
Rth(j-a): Thermal resistance from the LED junction to ambient temperature.

IF−Ta

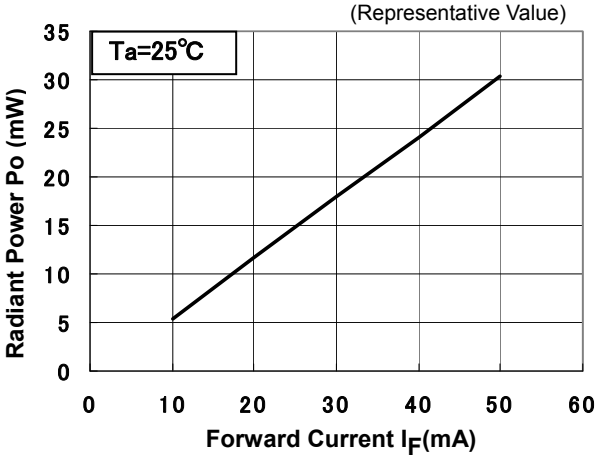


Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	V_F	I_F = 30 mA	—	2.1	2.4	V
Reverse current	I_R	V_R = 5 V	—	—	10	μA
Radiant Power	P_O	I_F = 30 mA	11	18	—	mW
Peak emission wavelength	λ_P	I_F = 30 mA	835	850	865	nm
Radiant Intensity	IE	I_F = 30 mA	—	3.0	—	mW/sr
Spectral line half width	$\Delta\lambda$	I_F = 30 mA	—	30	—	nm
Half Value Angle (Longer direction)	2θ1/2	I_F = 30 mA	—	155	—	nm
Half Value Angle (Shorter direction)	2θ1/2	I_F = 30 mA	—	175	—	nm

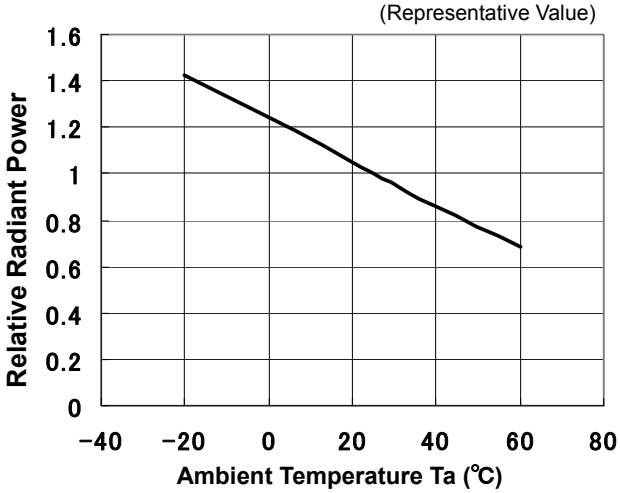
Po-I_F

(Representative Value)



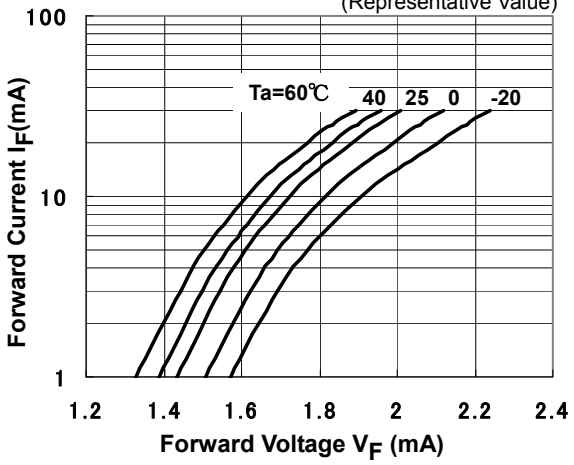
Relative Po- Ta

(Representative Value)



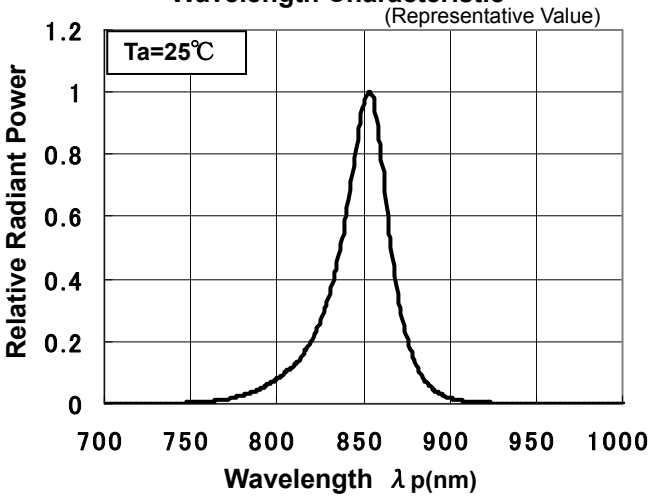
I_F-V_F

(Representative Value)



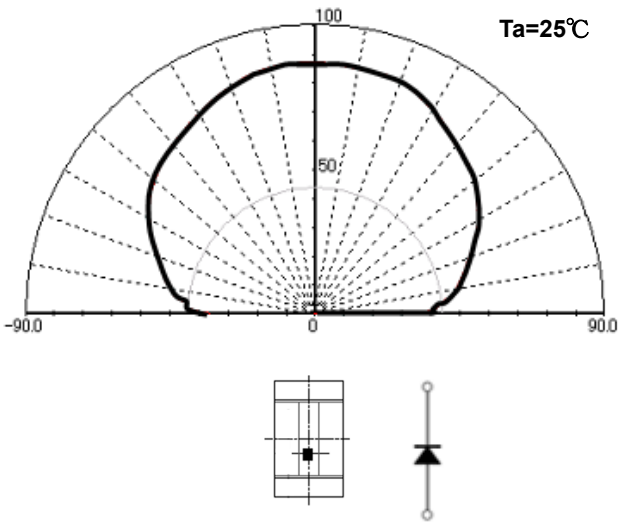
Wavelength Characteristic

(Representative Value)



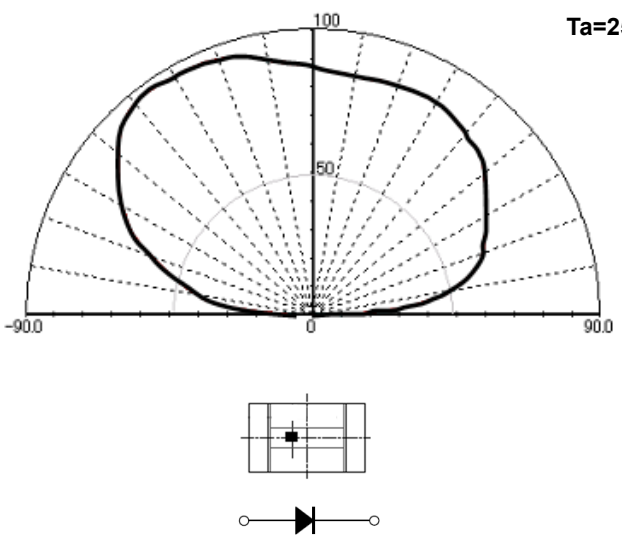
Radiation Patterns (Shorter Direction)

(Representative Value)



Radiation Patterns (Longer Direction)

(Representative Value)



Packaging

These LED devices are packed in an aluminum envelope with a silica gel and a moisture indicator to avoid moisture absorption. The optical characteristics of the devices may be affected by exposure to moisture in the air before soldering and they should therefore be stored under the following conditions:

1. This moisture proof bag may be stored unopened within 12 months at the following conditions.
   Temperature: 5°C to 30°C
   Humidity: 90% (max)
2. After opening the moisture proof bag, the devices should be assembled within 168 hours in an environment of 5°C to 30°C/70% RH or below.
3. If upon opening, the moisture indicator card shows humidity 30% or above (Color of indication changes to pink) or the expiration date has passed, the devices should be baked in taping with reel.
   After baking, use the baked devices within 72 hours, but perform baking only once.
   Baking conditions: 60±5°C, for 12 to 24 hours.
   Expiration date: 12 months from sealing date, which is imprinted on the same side as this label affixed.
4. Repeated baking can cause the peeling strength of the taping to change, then leads to trouble in mounting. Furthermore, prevent the devices from being destructed against static electricity for baking of it.
5. If the packing material of laminate would be broken, the air tightness would deteriorate. Therefore, do not throw or drop the packed devices

Precaution when mounting

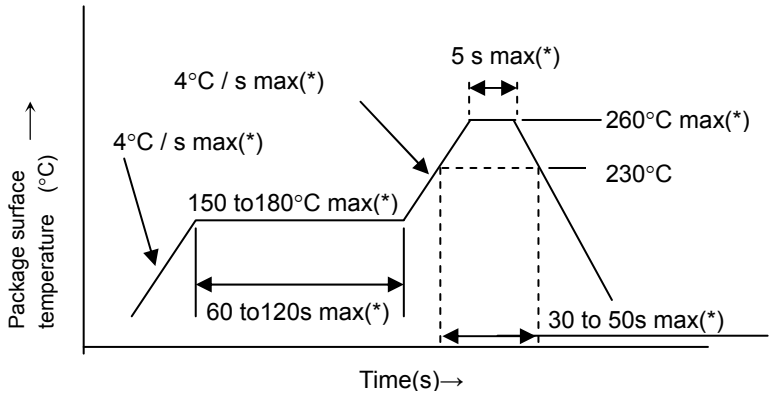
Do not apply force to the plastic part of the LED under high-temperature conditions.
To avoid damaging the LED plastic, do not apply friction using a hard material.
When installing the PCB in a product, ensure that the device does not come into contact with other cmponents.

Mounting Method

Soldering

- Reflow soldering (example)

Temperature profile for Pb-free soldering (example)



- The products are evaluated using above reflow soldering conditions. No additional test is performed exceed the condition (i.e. the condition more than (*)max values) as a evaluation. Please perform reflow soldering under the above conditions.Perform reflow soldering no more than twice.
- Please perform the first reflow soldering with reference to the above temperature profile and within 168 h of opening the package.
- Second reflow soldering
  In case of second reflow soldering should be performed within 168 h of the first reflow under the above conditions.
  Storage conditions before the second reflow soldering: 30°C, 70% RH (max)
- Manual soldering conditions.
  (only once at each soldering point)
  Soldering iron: 50 W or less
  Temperature: 300°C or less
  Time: within 3 s
- Do not perform wave soldering.

Cleaning

When cleaning is required after soldering, Toshiba recommends the following cleaning solvents.

It is confirmed that these solvents have no effect on semiconductor devices in our dipping test (under the recommended conditions). In selecting the one for your actual usage, please perform sufficient review on washing condition, using condition and etc.

ASAHI CLEAN AK-AES225:	(made by ASAHI GLASS)
KAO CLEAN THROUGH 750H:	(made by KAO)
PINE ALPHA ST-100S:	(made by ARAKAWA CHEMICAL)

Tape Specifications

1. Handling precautions

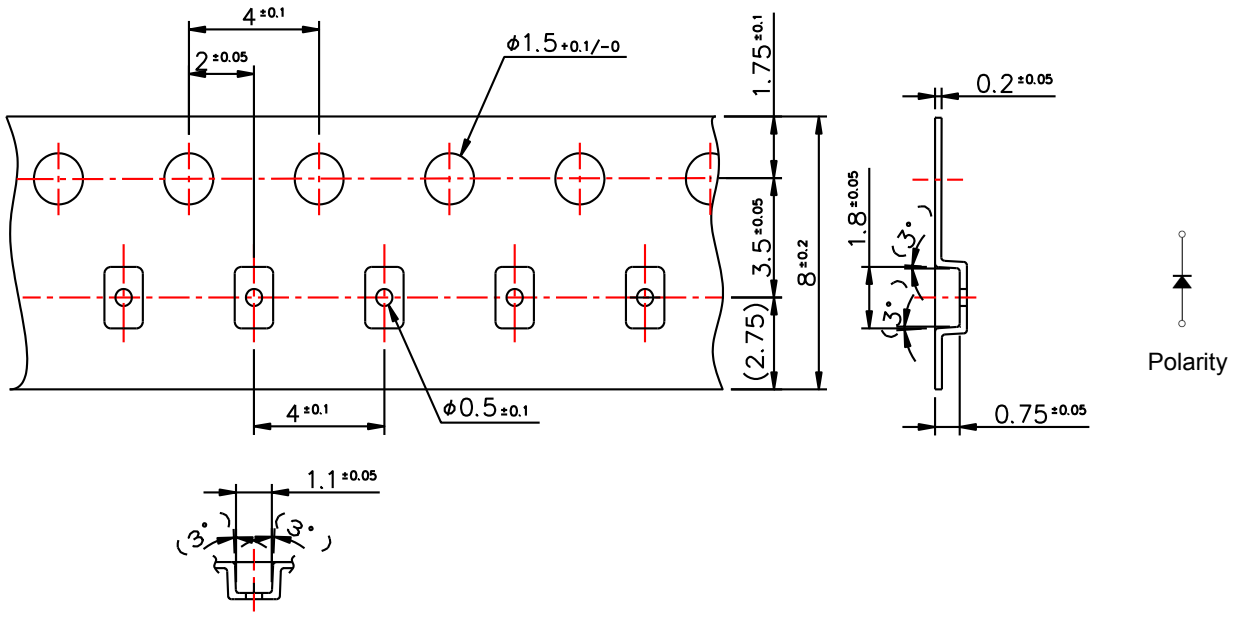
Tape material protected against static electricity. However, static electricity may occur depending on quantity of charged static electricity and a device may attach to a tape, or a device may be unstable when peeling a tape cover.

(a) Since tape materials may accumulate an electrostatic charge, use an ionizer to neutralize the ambient air.

(b) For transport and temporary storage of devices, use containers (boxes and bags) and jigs that are made of anti-static materials or of materials which dissipate electrostatic charge.

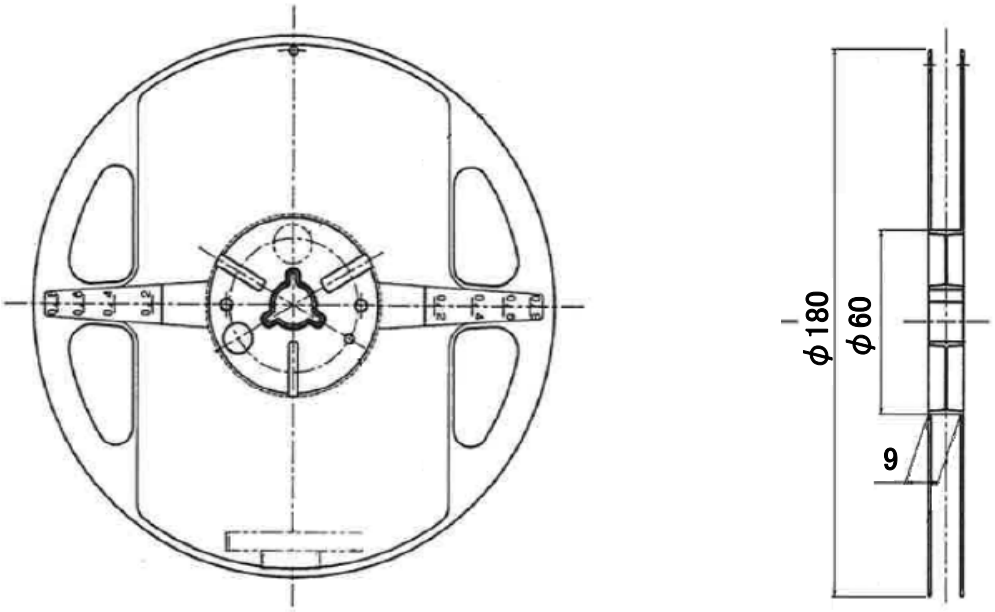
2. Tape dimensions

Unit: mm

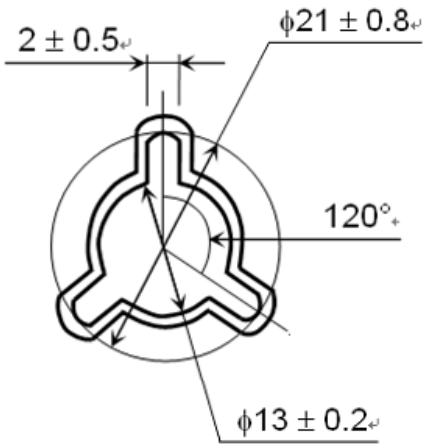


3. Reel Dimensions

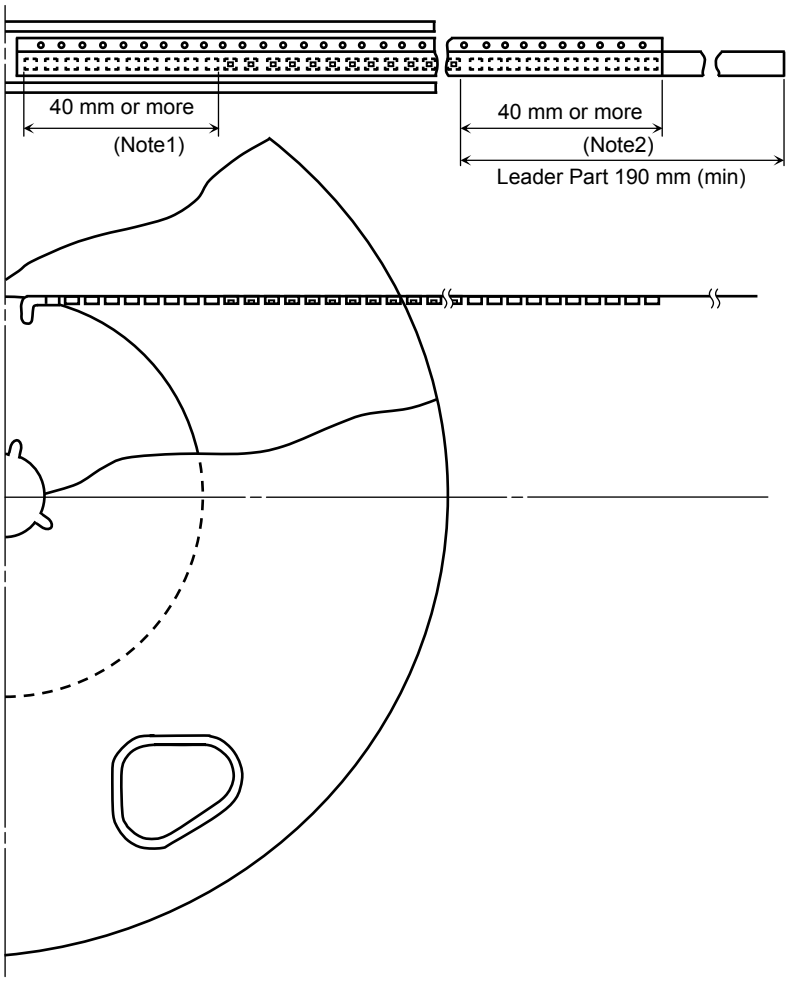
Unit: mm



Enlarged view of reel center



4. Leader and trailer section of tape



Note 1: Empty trailer section

Note 2: Empty leader section

5. Packing display

(1) Packing quantity

Reel	4000 pcs
Carton	20000pcs

(2) Package form: Each reel is sealed in an aluminum pack with silica gel

6. Label format

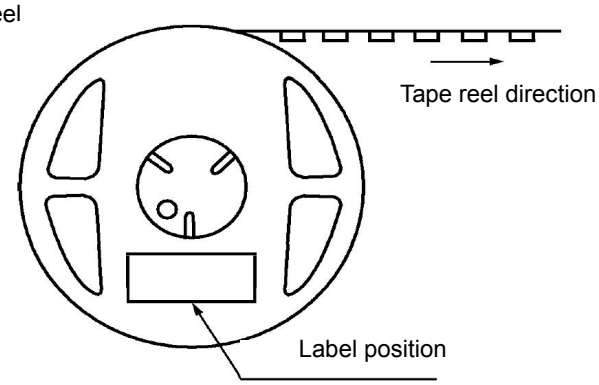
(1)Label

P/N:

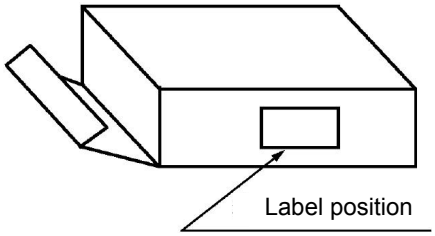
TYPE	**TLN241**		
ADDC		Q'TY	4,000 pcs

(2)Label location

・Reel



・Carton



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