

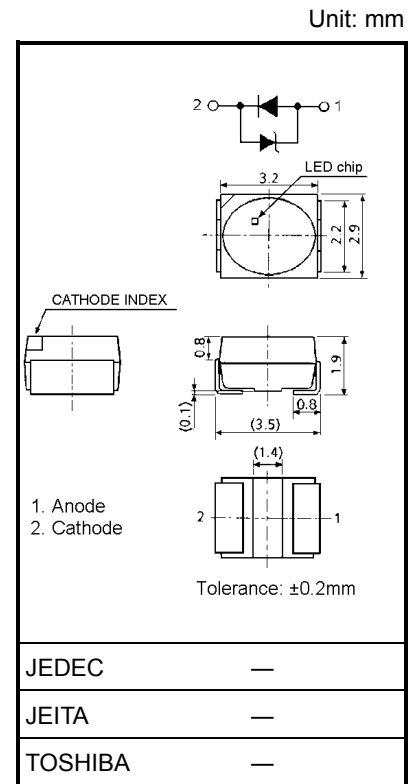
TOSHIBA LED Lamps TLWA1100(T11)

Panel Circuit Indicator

- Surface-mount devices
- 3.2 (L) × 2.8 (W) × 1.9 (H) mm
- UV LED chip + RGB phosphor
- Colors: White
- Topr / Tstg = -40 to 100°C
- Reflow soldering possible
- Applications: automotive use, backlighting etc.
- Standard embossed tape packing: T11 (2000/reel)
8-mm tape reel

Color and Material

Product Name	Color	Material
TLWA1100	White	InGaN



Weight: 0.035 g (typ.)

Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Forward Current	I_F	30	mA
Power Dissipation	P_D	126	mW
Operating Temperature	T_{opr}	-40~100	°C
Storage Temperature	T_{stg}	-40~100	°C

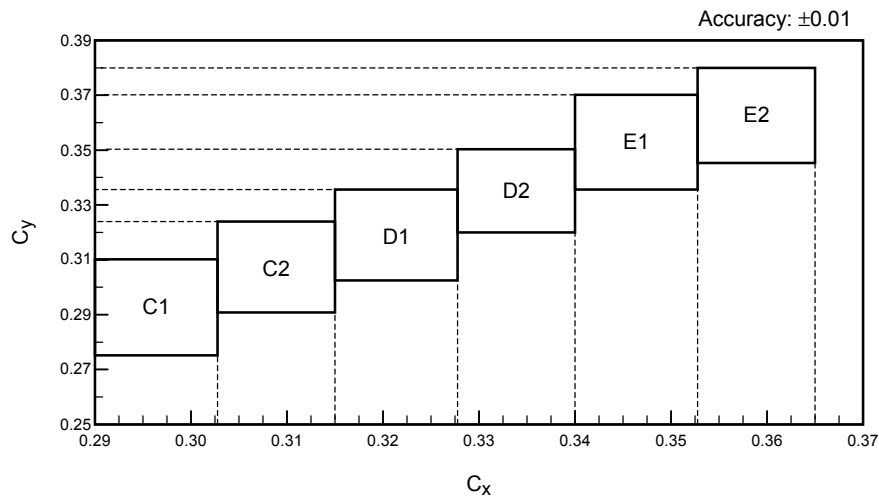
Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test condition	Min.	Typ.	Max.	Unit
Forward Current	V_F	$I_F = 20 \text{ mA}$	—	3.5	4.2	V
Reverse Voltage	V_R	$I_R = 10 \text{ mA}$	—	0.75	—	V

Optical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test condition	Min.	Typ.	Max.	Unit
Chromaticity	C _x	I _F = 20 mA	(note 1)			—
	C _y	I _F = 20 mA	(note1)			—
Luminous Intensity	I _V	I _F = 20 mA	63	100	—	mcd

Note 1: The product is tested at the following chromaticity coordinate groups.



Note 2: Ultraviolet light luminescence

This white LED lamp also emits some UV light. (Around 360~400nm)

When this LED lamp is used for general indicator, it is no problem. However the LED is not recommended for the following applications.

(1) Prohibition

- Human eye is damaged by the condensed light. (Ex. microscope, outer lens, etc)

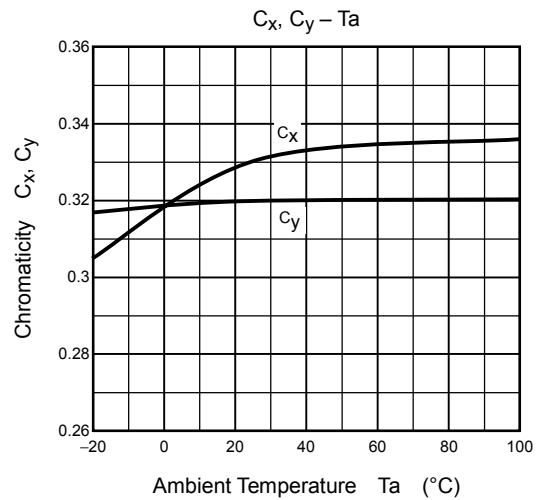
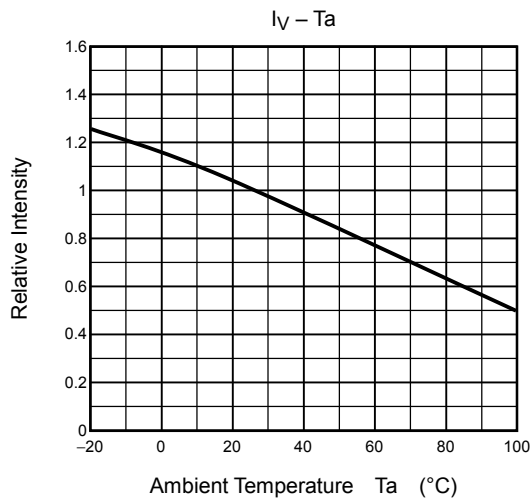
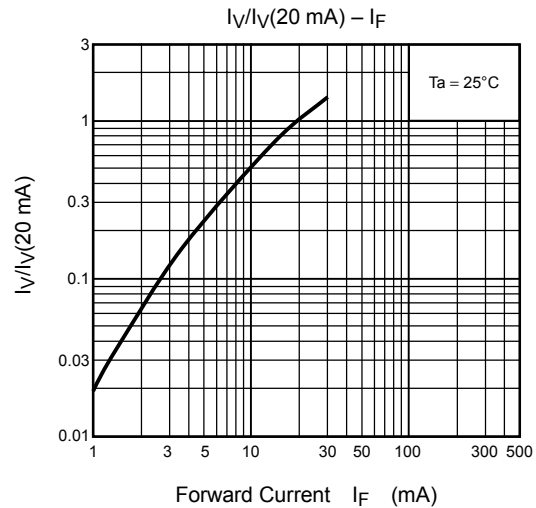
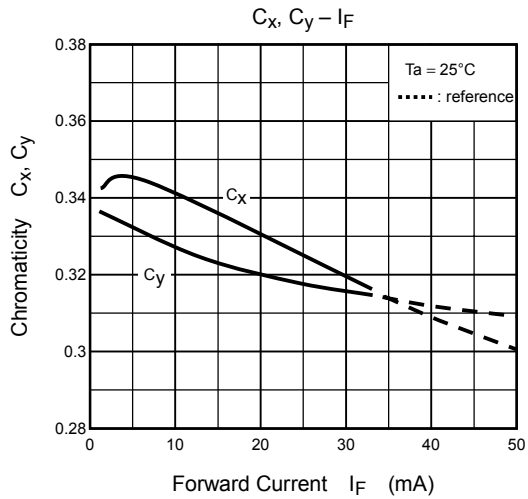
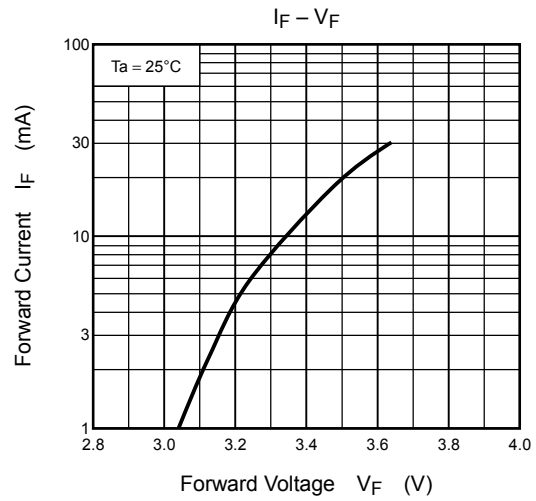
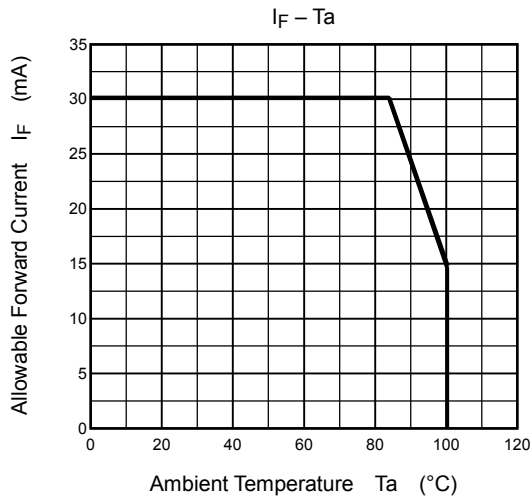
(2) Notice

- LED is located at near a skin (the distance is less than 20mm), and exposure time is more than 120 min.

- Photosensitive material is used with this LED in a set. It might be damaged by the light.

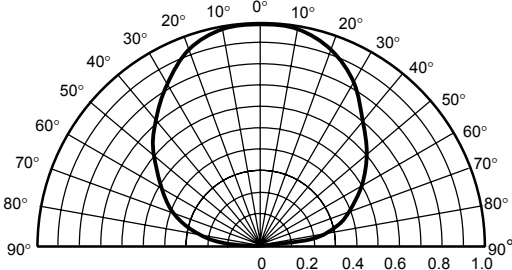
Note 3: Do not break, cut or pulverize the product.

TLWA1100

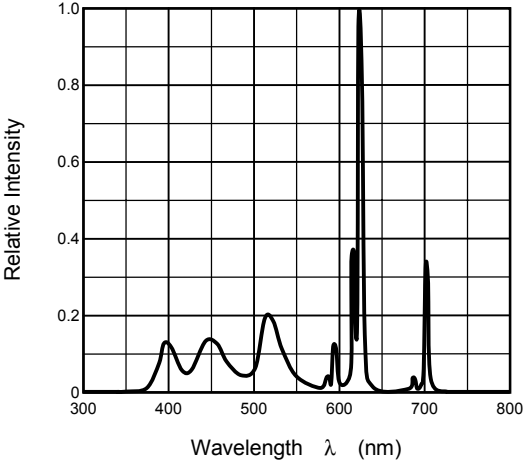


Radiation Pattern

Ta = 25°C



Wavelength characteristic



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:

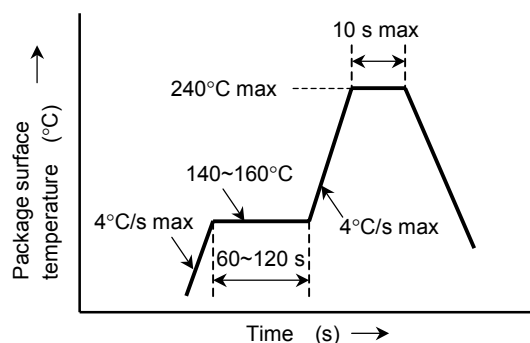
1. This moisture proof bag may be stored unopened within 12 months at the following conditions.
 Temperature: 5°C~30°C
 Humidity: 90% (max)
2. After opening the moisture proof bag, the devices should be assembled within 168 hours in an environment of 5°C to 30°C/60% RH or below.
3. If upon opening, the 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 hermeticity would deteriorate. Therefore, do not throw or drop the packed devices.

Mounting Method

Soldering

- Reflow soldering

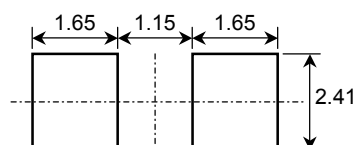
Temperature profile



- 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, 60% RH max
- Make any necessary soldering corrections manually.
 (only once at each soldering point)
 Soldering iron: 25 W
 Temperature : 300°C or less
 Time : within 3 s

Recommended soldering pattern

Unit: mm



Cleaning

When cleaning is required after soldering, Toshiba recommends the following conditions:

Cleaning solvents: AK225 or alcohol

Temperature : 50°C (max) for 30 s (max) or 30°C (max) for 3 min (max)

Ultrasonic : 300 W max

Precautions 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 components.

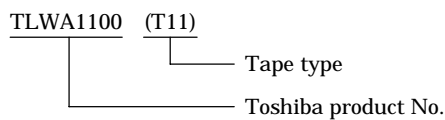
Tape Specifications

1. Product number format

The type of package used for shipment is denoted by a symbol suffix after the product number. The method of classification is as below. (this method, however does not apply to products whose electrical characteristics differ from standard Toshiba specifications)

(1) Tape Type: T11 (4-mm pitch)

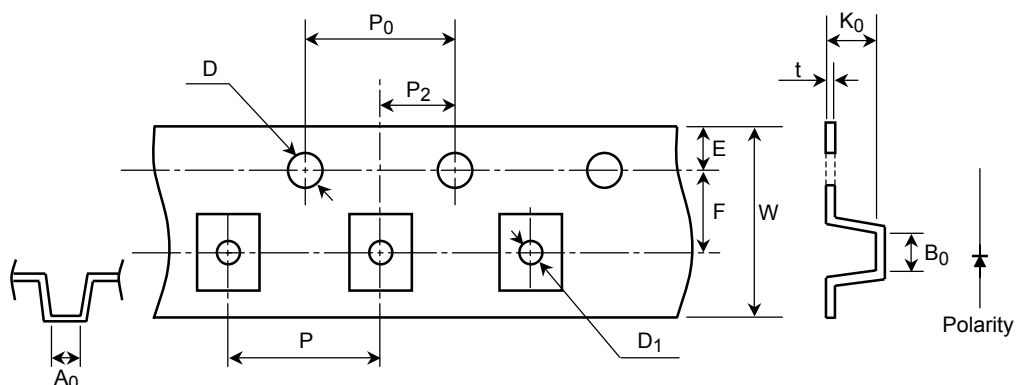
(2) Example



2. Tape dimensions

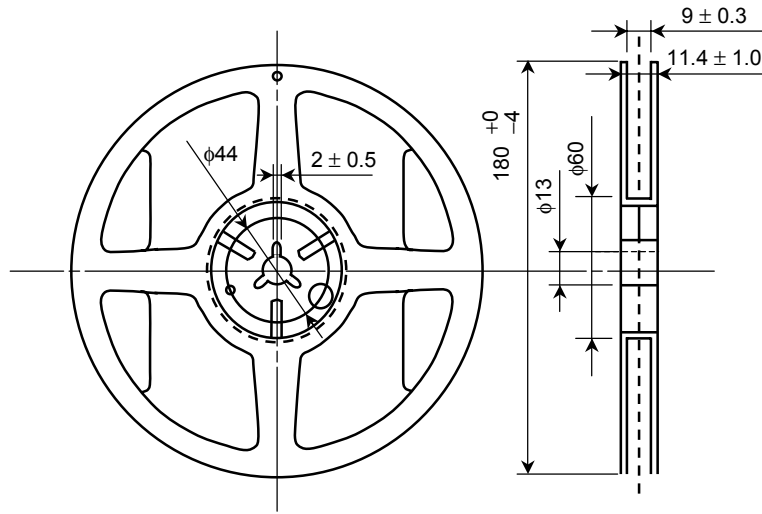
Unit: mm

Symbol	Dimension	Tolerance	Symbol	Dimension	Tolerance
D	1.5	+0.1/-0	P ₂	2.0	±0.05
E	1.75	±0.1	W	8.0	±0.3
P ₀	4.0	±0.1	P	4.0	±0.1
t	0.3	±0.05	A ₀	2.9	±0.1
F	3.5	±0.05	B ₀	3.7	±0.1
D ₁	1.5	±0.1	K ₀	2.3	±0.1

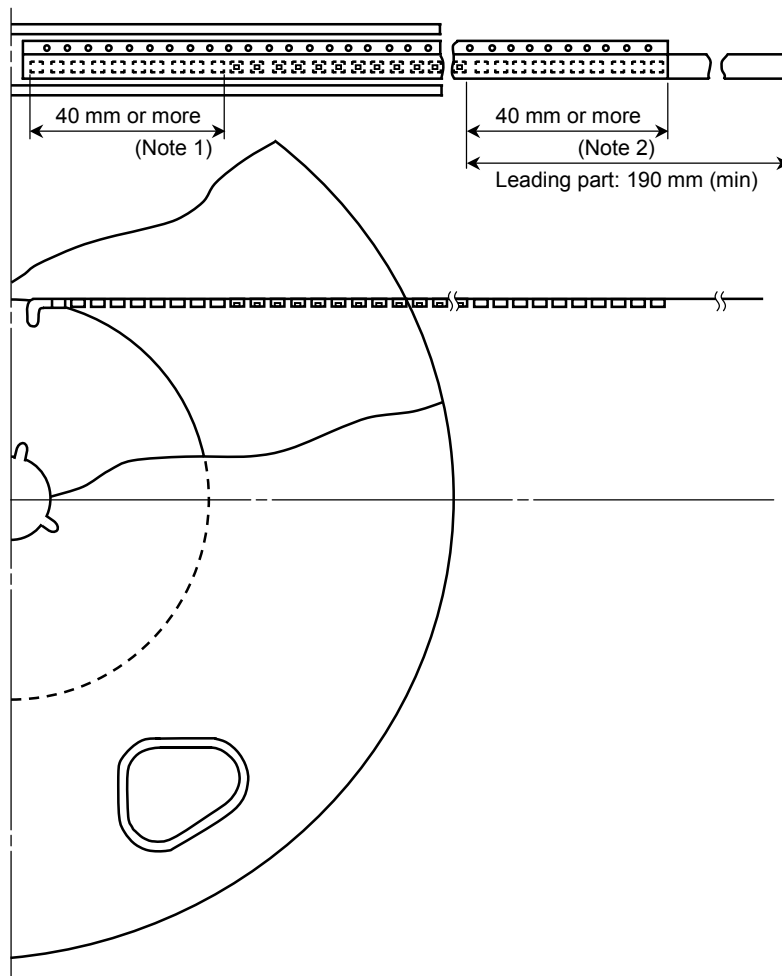


3. Reel dimensions

Unit: mm



4. Leader and trailer sections of tape



Note1: Empty trailer section

Note2: Empty leader section

5. Packing display

(1) Packing quantity

Reel	2,000 pcs
Carton	10,000 pcs

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

6. Label format

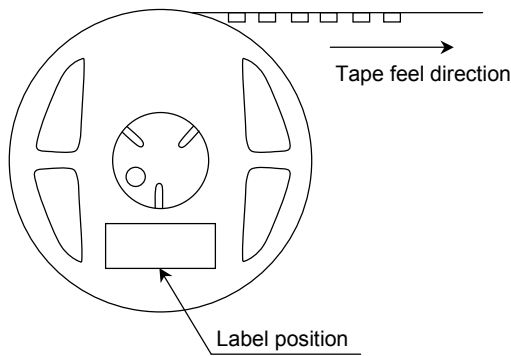
(1) Example: TLWA1100 (T11)

P/N:

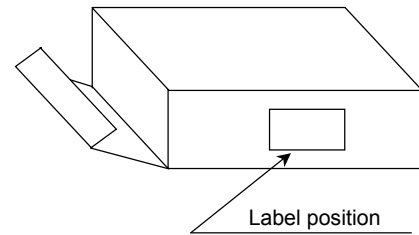
TYPE	TLWA1100		
ADD.C	(T11)	Q'TY	2,000 pcs
NOTE	Lot Number		
(RANK SYMBOL)	SEAL DATE:		

(2) Label location

- Reel



- Carton



- The aluminum package in which the reel is supplied also has the label attached to center of one side.

RESTRICTIONS ON PRODUCT USE

000707EAC

- 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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