

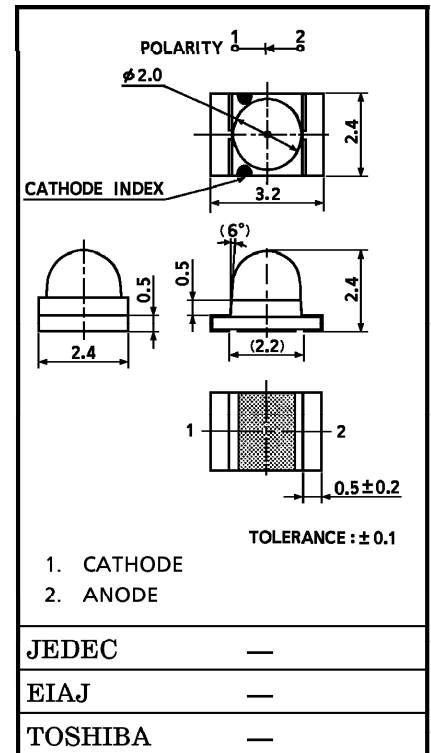
TOSHIBA LED LAMP

**TLRE1005A (T03), TLOE1005A (T03), TLYE1005A (T03), TLSU1005A (T03)  
TLOU1005A (T03), TLYU1005A (T03), TLGD1005A (T03)**

PANEL CIRCUIT INDICATOR

Unit in mm

- Surface Mount Device
- 3.2 (L) × 2.4 (W) × 2.4 (H) mm Size
- $\phi 2$  mm Lens-top type
- Small Package - High Density Mounting is Available
- It can be manufactured high-luminosity of equipment or reduce of electric power consumption by change in the high-luminosity LED from general-luminosity one.
- Colors : Red, Orange, Yellow, Green
- Suitable Auto-mounting Machine Use
- Reflow Soldering is possible.
- Standard Embossed Taping  
4 mm Pitch : T03 (1000 pcs / Reel)
- Applications : Portable Equipment  
Message Signboards  
High Intensity Backlight  
Battery-Driven Equipment, etc.



LINE-UP

| PRODUCT NAME | COLOR  | MATERIAL |
|--------------|--------|----------|
| TLRE1005A    | Red    | InGaAlP  |
| TLSU1005A    | Red    | InGaAlP  |
| TLOE1005A    | Orange | InGaAlP  |
| TLOU1005A    | Orange | InGaAlP  |
| TLYE1005A    | Yellow | InGaAlP  |
| TLYU1005A    | Yellow | InGaAlP  |
| TLGD1005A    | Green  | GaP      |

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## MAXIMUM RATINGS (Ta = 25°C)

| PRODUCT NAME | FORWARD CURRENT (DC)<br>I <sub>F</sub> (mA) | REVERSE VOLTAGE<br>V <sub>R</sub> (V) | POWER DISSIPATION<br>P <sub>D</sub> (mW) | OPERATING TEMPERATURE<br>T <sub>opr</sub> (°C) | STORAGE TEMPERATURE<br>T <sub>stg</sub> (°C) |
|--------------|---------------------------------------------|---------------------------------------|------------------------------------------|------------------------------------------------|----------------------------------------------|
| TLRE1005A    | 25                                          | 4                                     | 60                                       | -25~80                                         | -30~85                                       |
| TLSU1005A    | 25                                          | 4                                     | 60                                       |                                                |                                              |
| TLOE1005A    | 25                                          | 4                                     | 60                                       |                                                |                                              |
| TLOU1005A    | 25                                          | 4                                     | 60                                       |                                                |                                              |
| TLYE1005A    | 25                                          | 4                                     | 62.5                                     |                                                |                                              |
| TLYU1005A    | 25                                          | 4                                     | 62.5                                     |                                                |                                              |
| TLGD1005A    | 25                                          | 4                                     | 62.5                                     |                                                |                                              |

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| PRODUCT NAME | FORWARD VOLTAGE<br>V <sub>F</sub> |      |     |                | REVERSE CURRENT<br>I <sub>R</sub> |                |
|--------------|-----------------------------------|------|-----|----------------|-----------------------------------|----------------|
|              | MIN                               | TYP. | MAX | I <sub>F</sub> | MAX                               | V <sub>R</sub> |
| TLRE1005A    | —                                 | 1.85 | 2.4 | 20             | 50                                | 4              |
| TLSU1005A    | —                                 | 2.0  | 2.4 | 20             | 50                                | 4              |
| TLOE1005A    | —                                 | 1.95 | 2.4 | 20             | 50                                | 4              |
| TLOU1005A    | —                                 | 2.0  | 2.4 | 20             | 50                                | 4              |
| TLYE1005A    | —                                 | 2.1  | 2.5 | 20             | 50                                | 4              |
| TLYU1005A    | —                                 | 2.1  | 2.5 | 20             | 50                                | 4              |
| TLGD1005A    | —                                 | 2.1  | 2.5 | 20             | 5                                 | 4              |
| Unit         | V                                 |      |     | mA             | μA                                | V              |

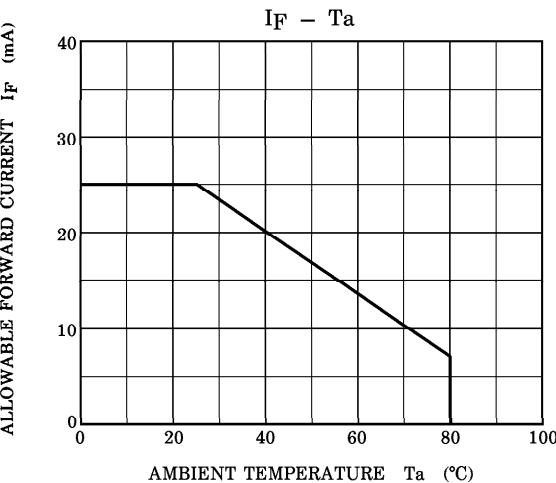
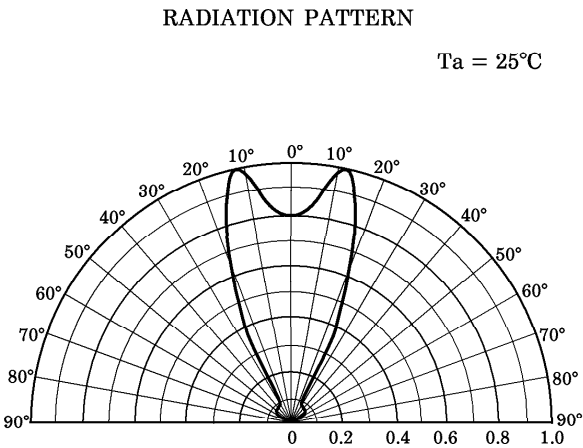
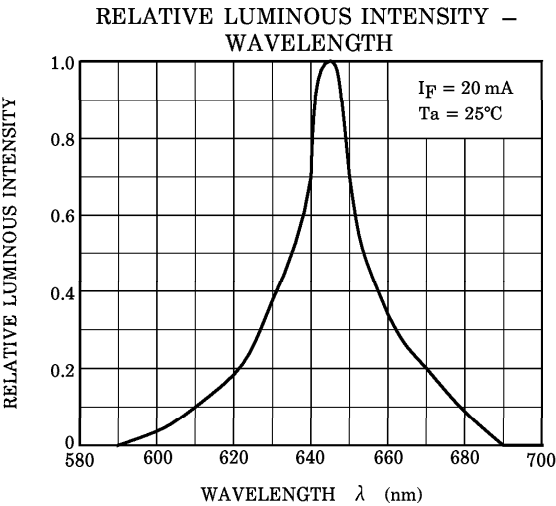
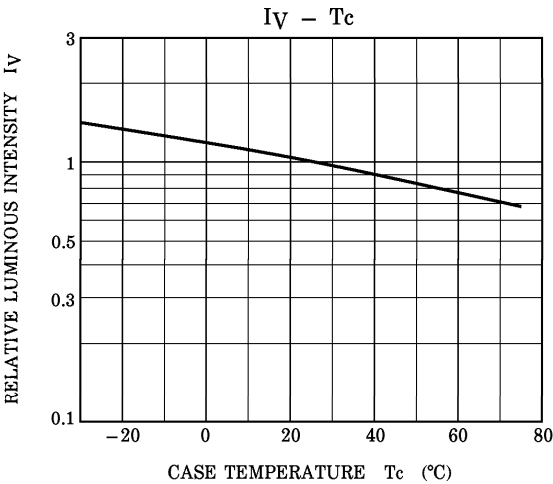
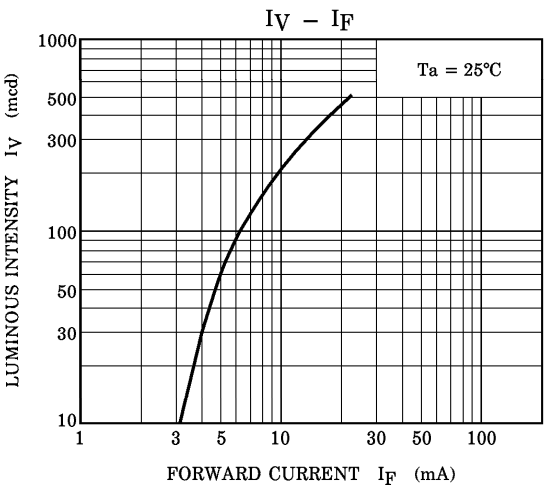
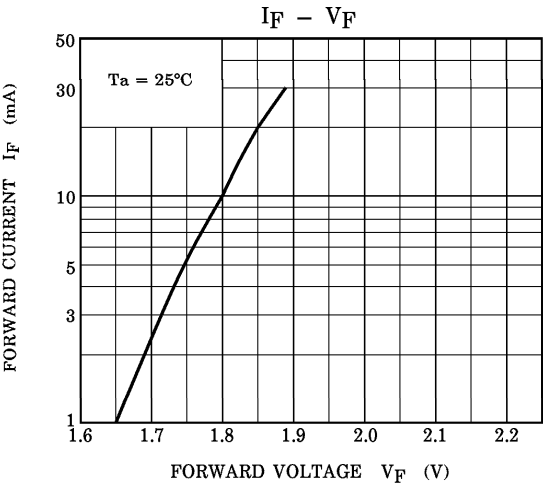
## OPTICAL CHARACTERISTICS (Ta = 25°C)

| PRODUCT NAME | LUMINOUS INTENSITY<br>I <sub>v</sub> |      |     |                |
|--------------|--------------------------------------|------|-----|----------------|
|              | MIN                                  | TYP. | MAX | I <sub>F</sub> |
| TLRE1005A    | 153                                  | 450  | —   | 20             |
| TLSU1005A    | 153                                  | 450  | —   | 20             |
| TLOE1005A    | 153                                  | 400  | —   | 20             |
| TLOU1005A    | 153                                  | 450  | —   | 20             |
| TLYE1005A    | 85                                   | 300  | —   | 20             |
| TLYU1005A    | 47.6                                 | 140  | —   | 20             |
| TLGD1005A    | 27.2                                 | 75   | —   | 20             |
| Unit         | mcd                                  |      |     | mA             |

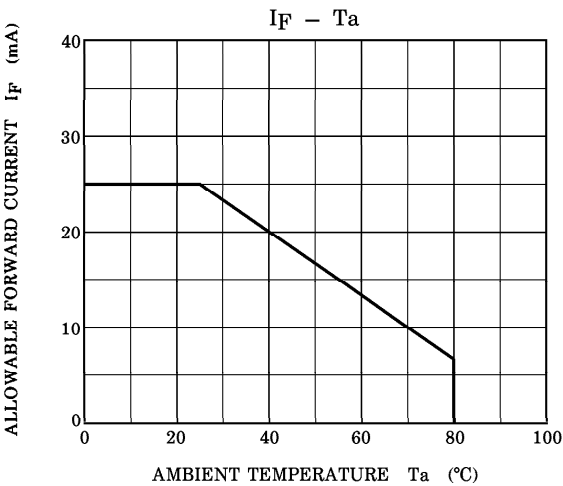
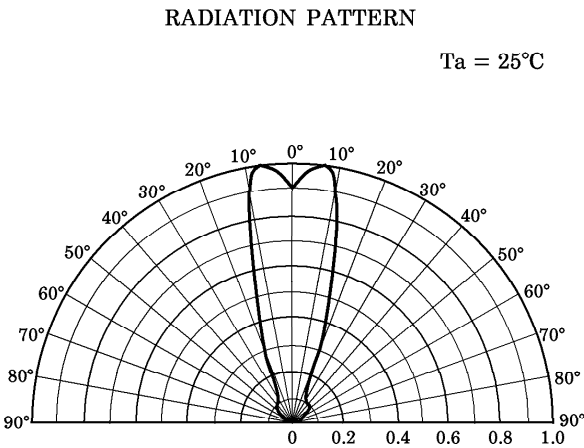
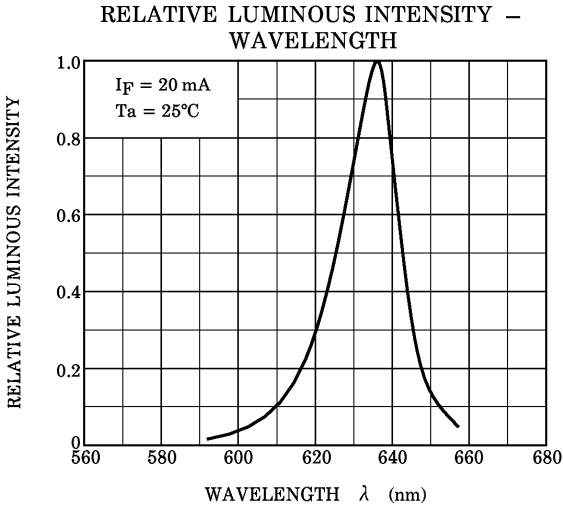
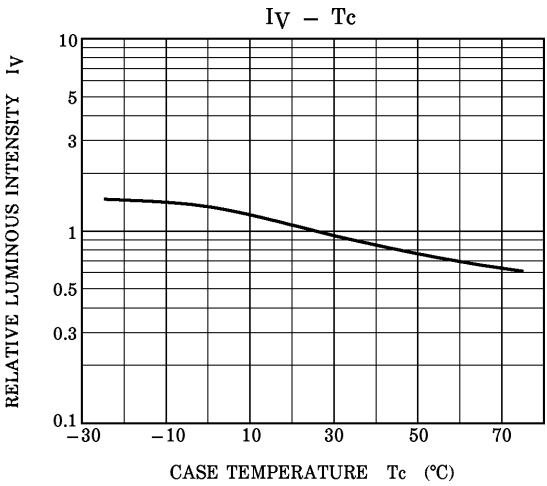
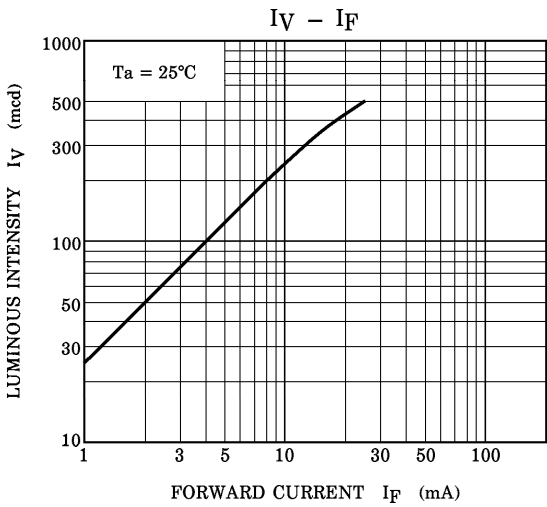
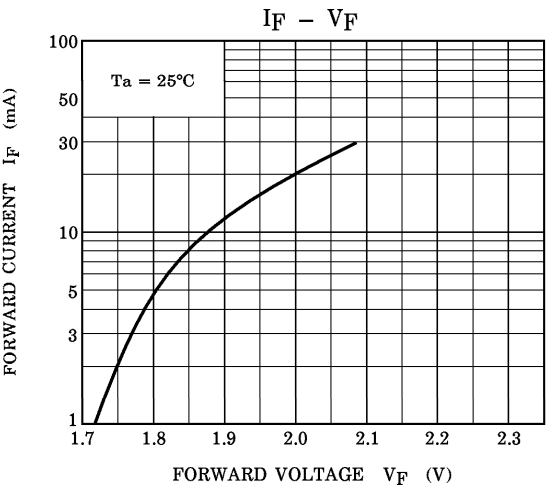
| PRODUCT<br>NAME | EMISSION SPECTRUM                          |      |     |            |                                       |       |     | I <sub>F</sub> |
|-----------------|--------------------------------------------|------|-----|------------|---------------------------------------|-------|-----|----------------|
|                 | Peak Emission<br>Wavelength λ <sub>p</sub> |      |     | Δλ<br>TYP. | Dominant<br>Wavelength λ <sub>d</sub> |       |     |                |
|                 | MIN                                        | TYP. | MAX |            | MIN                                   | TYP.  | MAX |                |
| TLRE1005A       | —                                          | 644  | —   | 18         | —                                     | 630   | —   | 20             |
| TLSU1005A       | —                                          | 636  | —   | 17         | —                                     | 623   | —   | 20             |
| TLOE1005A       | —                                          | 612  | —   | 15         | —                                     | 605   | —   | 20             |
| TLOU1005A       | —                                          | 612  | —   | 15         | —                                     | 605   | —   | 20             |
| TLYE1005A       | —                                          | 590  | —   | 13         | —                                     | 587   | —   | 20             |
| TLYU1005A       | —                                          | 590  | —   | 13         | —                                     | 587   | —   | 20             |
| TLGD1005A       | —                                          | 570  | —   | 20         | —                                     | (571) | —   | 20             |
| Unit            | nm                                         |      |     | nm         | nm                                    |       |     | mA             |

(Note) : This visible LED lamp also emits some IR light.  
 If a photodetector is located near the LED lamp, please ensure that it will not be affected by this IR light.

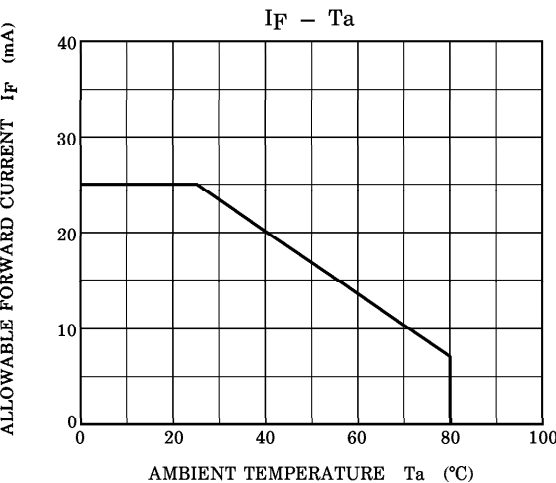
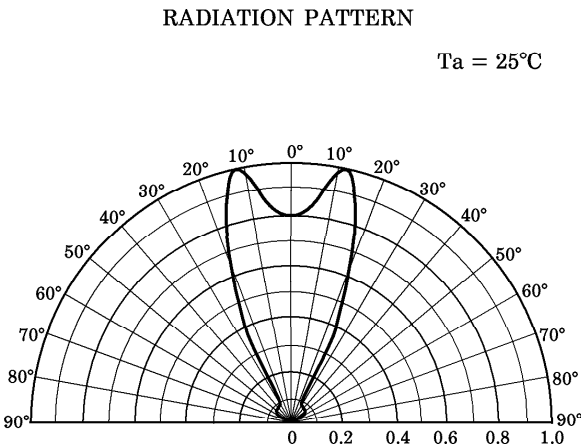
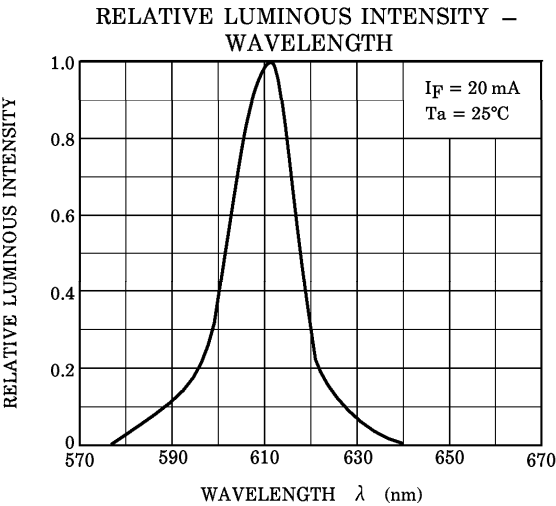
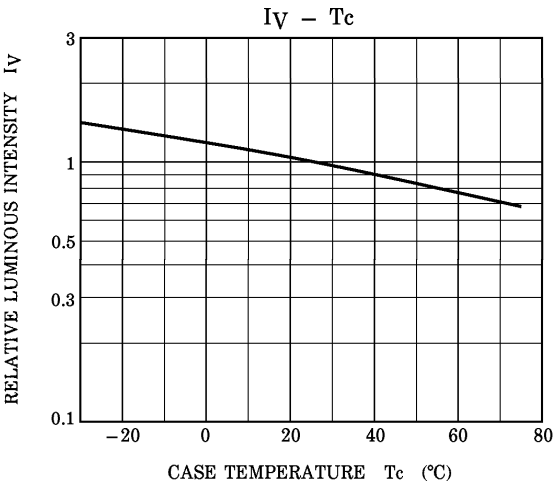
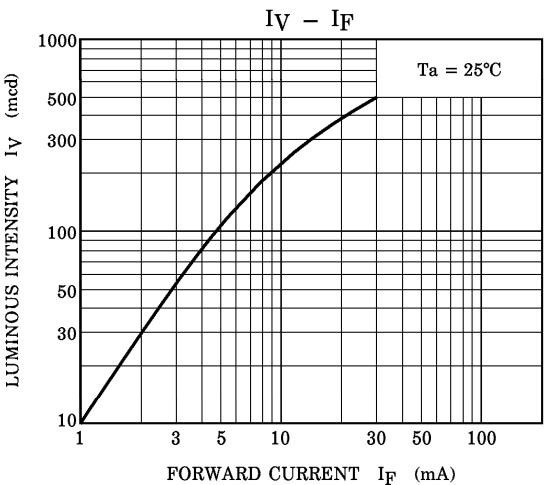
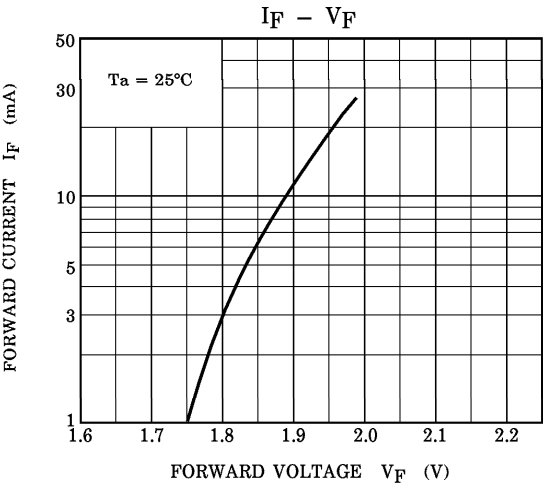
TLRE1005A



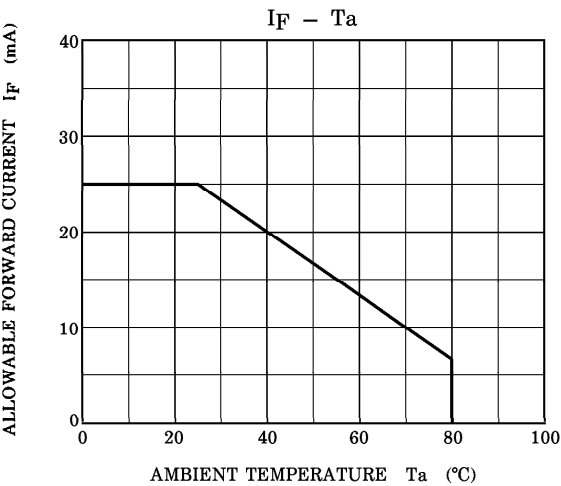
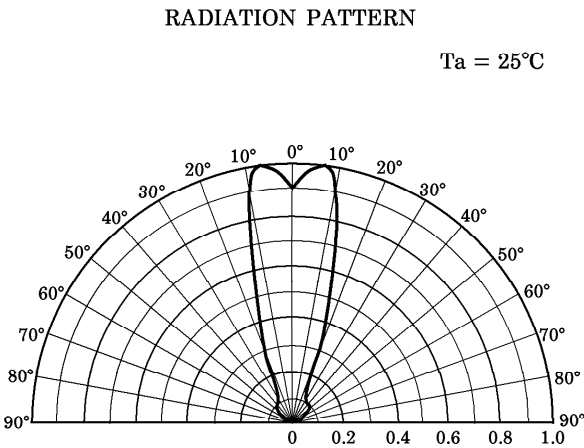
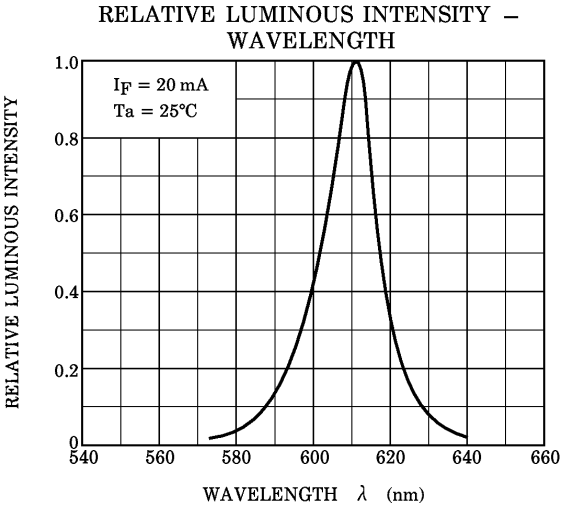
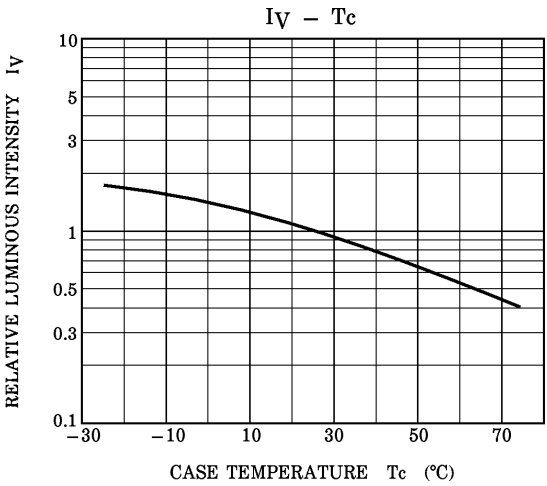
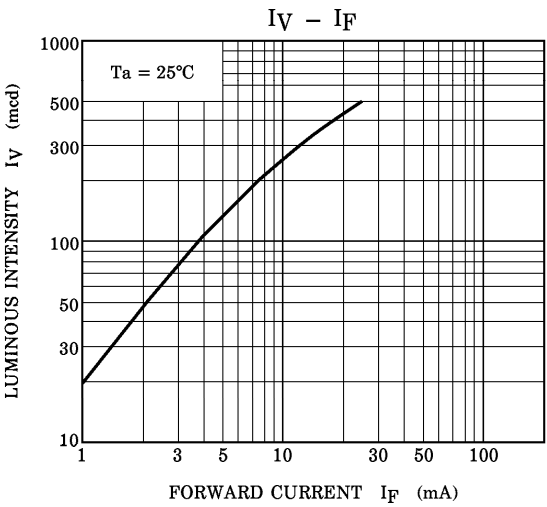
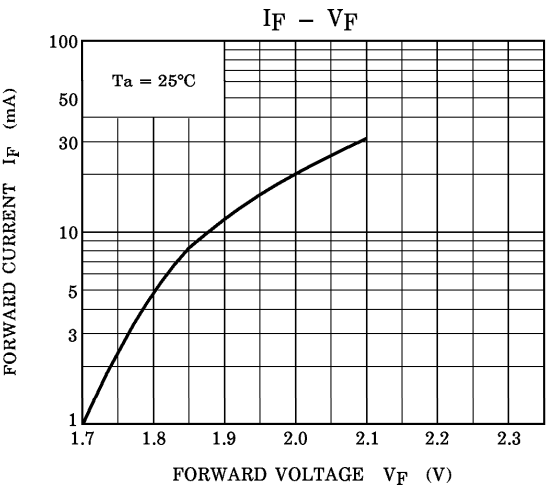
TLSU1005A



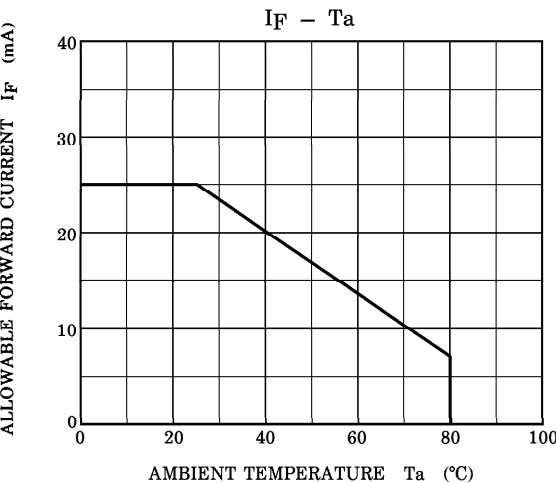
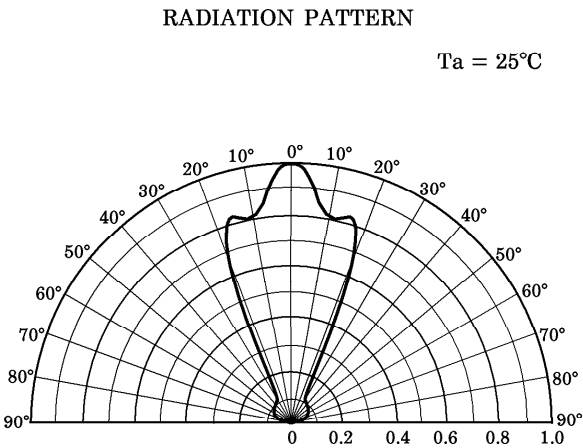
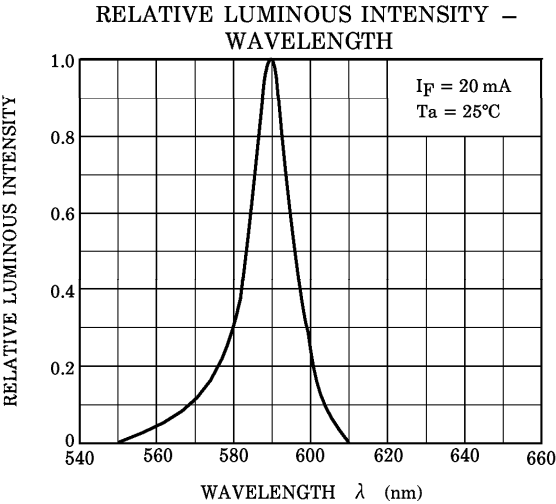
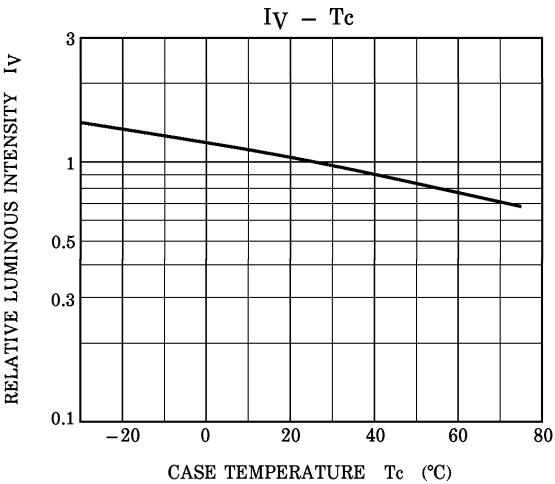
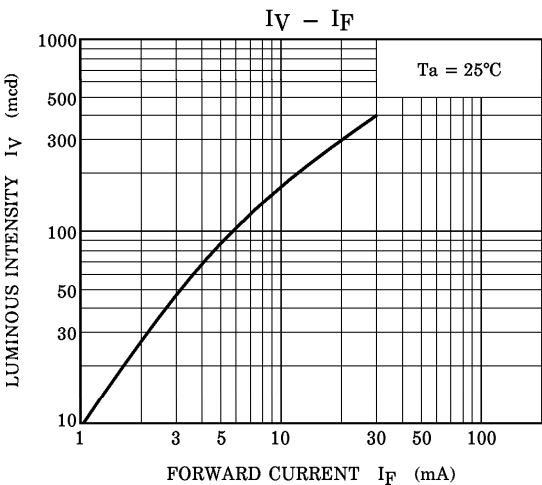
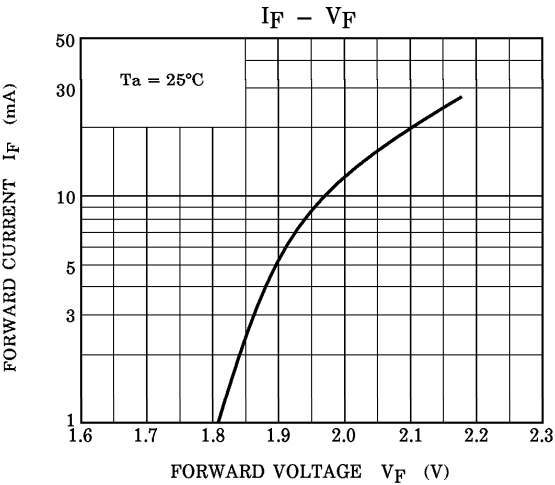
TLOE1005A



TLOU1005A

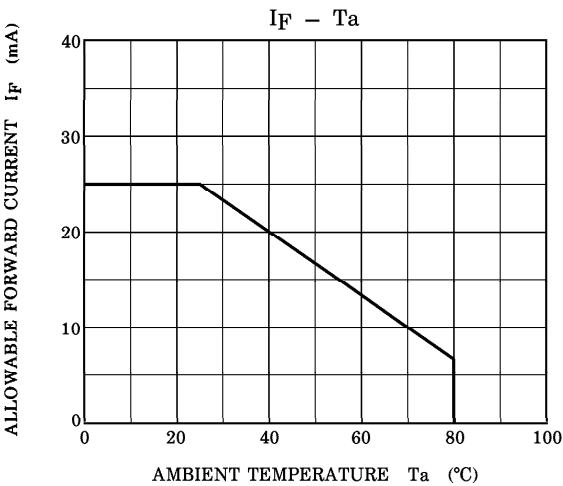
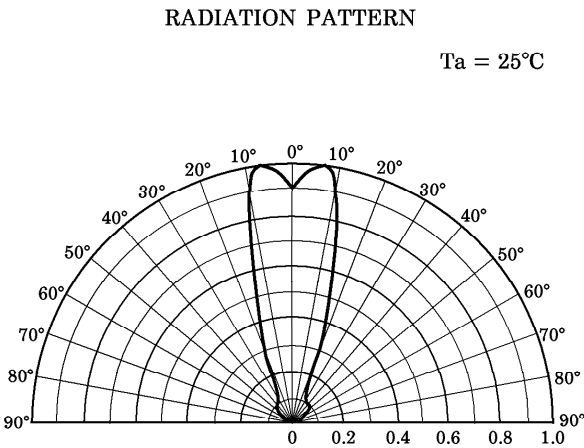
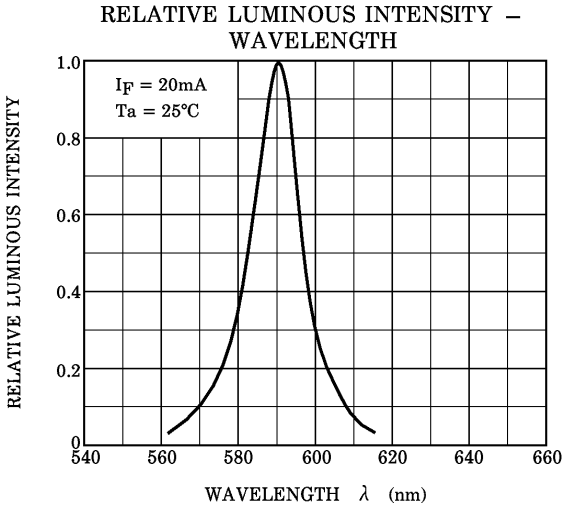
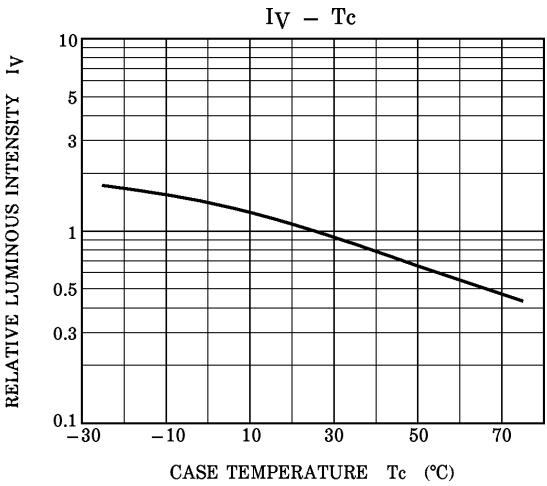
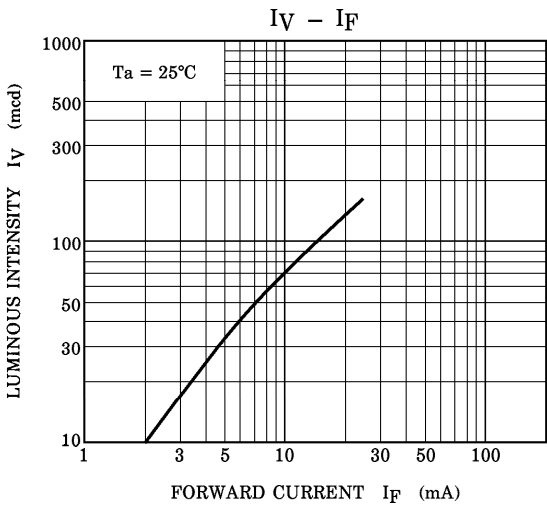
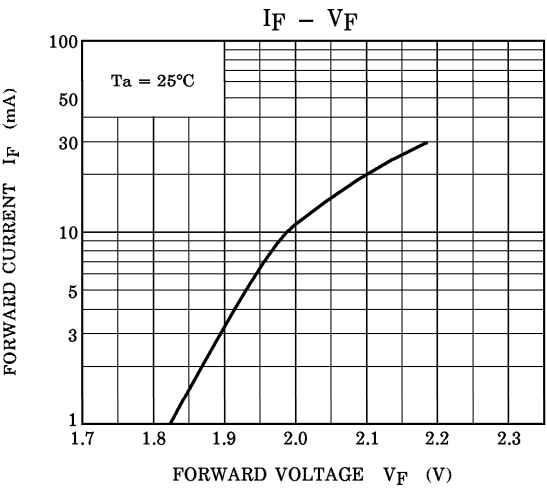


TLYE1005A

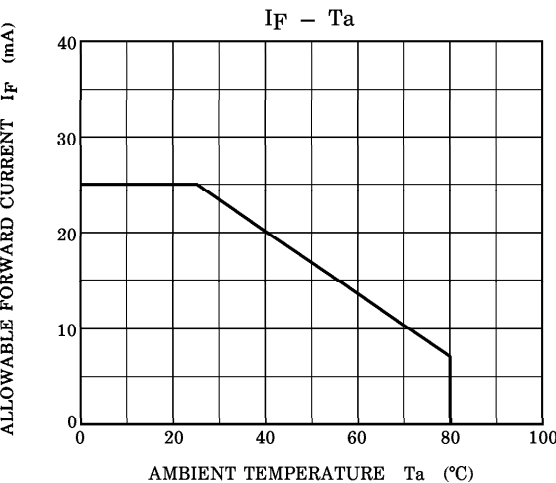
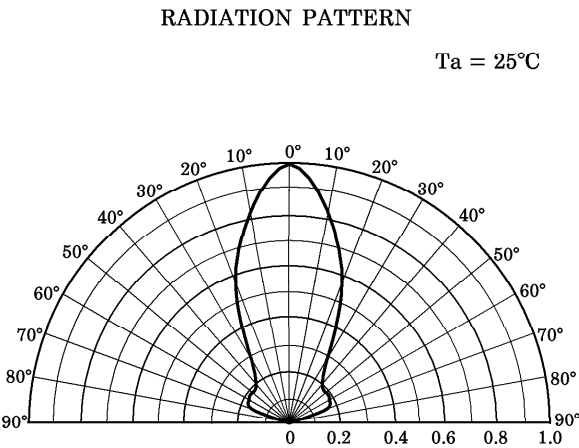
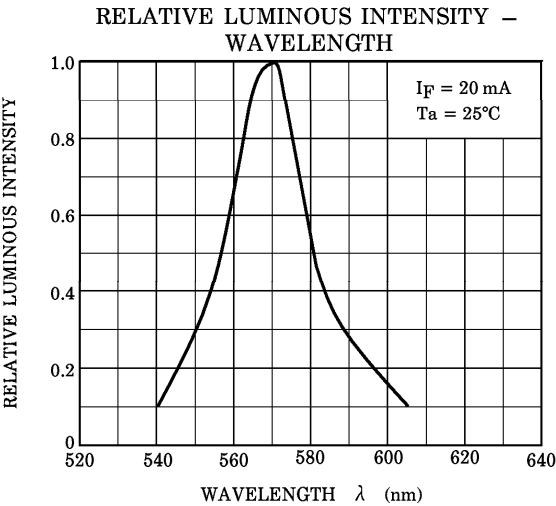
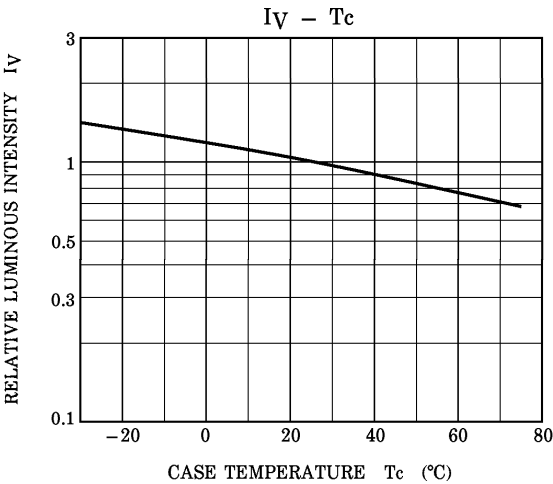
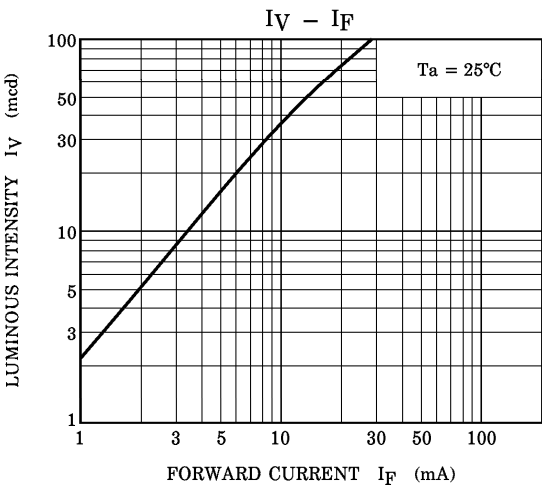
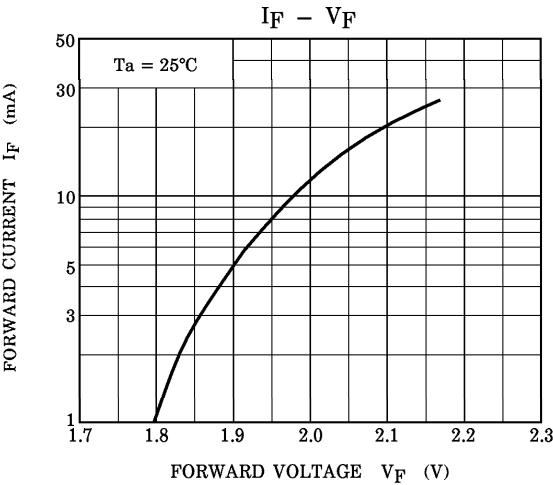




TLYU1005A



TLGD1005A



## PACKAGING

This LED device is packed in an aluminum envelope with silica gel to avoid moisture absorption. The optical characteristics may be affected by exposure to moisture in the air prior to soldering and it should be stored under the following conditions.

Temperature : 5~30°C  
Relative Humidity : 60% or lower

Baking is required if the device have been stored unopened for more than 6 months or if the aluminum envelope has been opened for more than 168 h.

Recommended baking condition is 60°C for 12 h minimum in the dry atmosphere.

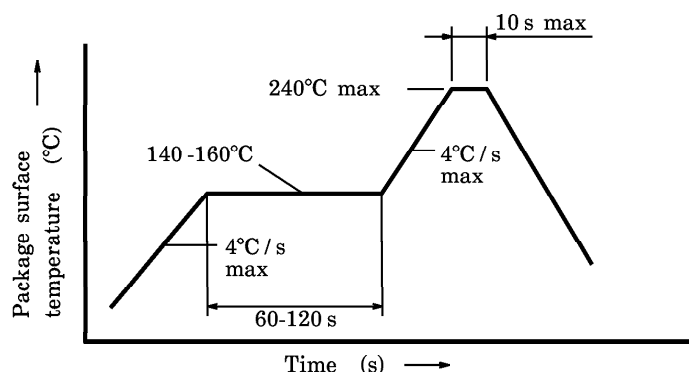
## PRECAUTION FOR MOUNTING

Do not apply force to the plastic part of the LED in high temperature conditions.  
Do not apply friction using a hard materials for avoid injuring the plastic part of the LED.  
Keep the LED away from any other parts when assembling boards into the set.

## SOLDERING

- Reflow soldering

Temperature profile



- Second time reflow soldering

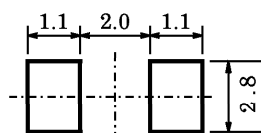
In case of second reflow soldering, it should be performed within 168 h after first reflow under the above conditions.

Storage conditions before second reflow soldering : 30°C, 60% RH or lower

- Do not perform flow soldering.
- Make any necessary soldering corrections manually.  
(Do not do this more than once for any given pin.)

Soldering iron : Less than 25 W  
Temperature : Lower than 300°C  
Time : Within 3 s

- Recommended soldering pattern



Unit in mm

## POST SOLDER CLEANING

When cleaning after soldering is needed, the following condition must be adhered to.

Cleaning solvents : AK225 or Alcohol

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

Ultrasonic : 300 W max

## AUTOMATIC MOUNTING : RECOMMENDED CONDITION

|                          |               |
|--------------------------|---------------|
| Absorption Head Diameter | $\phi 1.2$ mm |
|--------------------------|---------------|

Please ask the mounting equipment maker for the ideal automatic mounting condition.

## TAPING SPECIFICATIONS

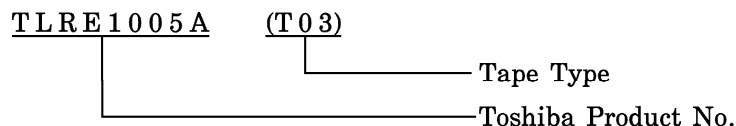
This specification lays out the 4 mm pitch embossed-tape packing requirements for 3.2 mm (L) × 2.4 mm (W) × 2.4 mm (H) size surface-mount LED lamp.

## 1. Product Naming System

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 : T03 (4 mm pitch)

(2) Example



## 2. Related Matter

## (1) Electro-optical Characteristics

Please refer to the each technical datasheet for electro-optical characteristics of tape packed products

## (2) Handling Precautions

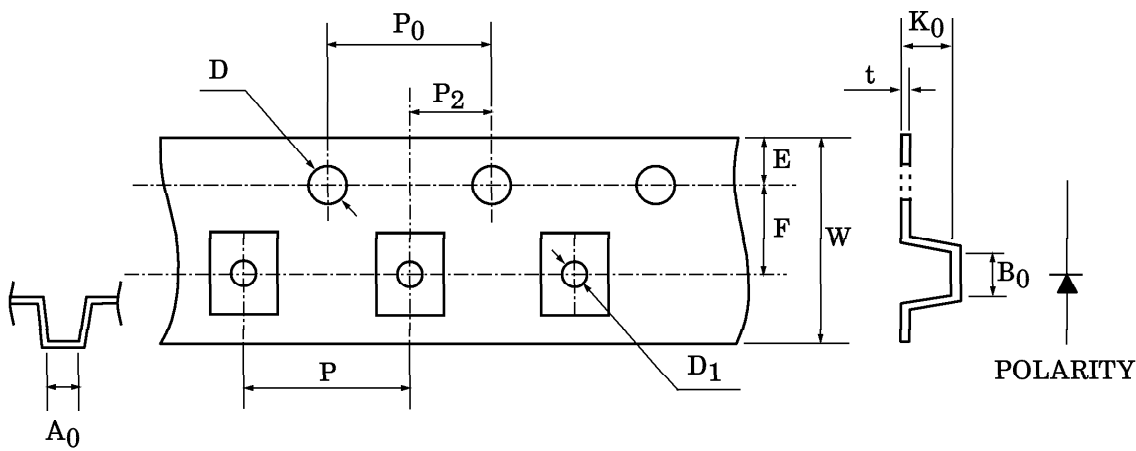
Tape material protected against static electricity. However, static electricity may occur depending on quantity of charged static electricity and a device may attach to a tape, or a device may be unstable when peeling a tape cover.

- In process, taping materials may sustain an electrostatic charge, use an ionizer to neutralize the ions.
- For transport and temporary storage of devices, use containers (boxes, jigs, bags) that are made of anti-static materials or of materials that dissipate electrostatic electricity.

3. Dimensions of tape

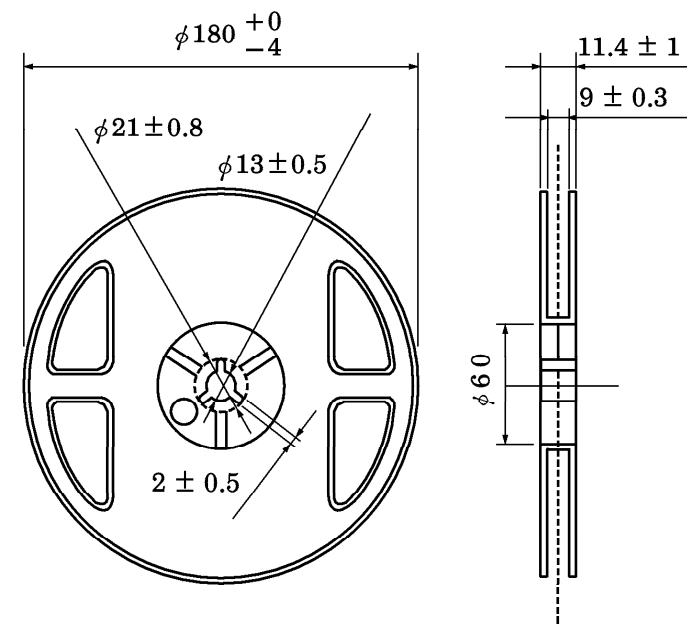
(Unit in mm)

| SYMBOL         | DIMENSION | TOLERANCE | SYMBOL         | DIMENSION | TOLERANCE |
|----------------|-----------|-----------|----------------|-----------|-----------|
| D              | 1.50      | +0.1 / -0 | P <sub>2</sub> | 2.00      | ±0.05     |
| E              | 1.75      | ±0.1      | W              | 8.00      | ±0.3      |
| P <sub>0</sub> | 4.00      | ±0.1      | P              | 4.00      | ±0.1      |
| t              | 0.25      | ±0.05     | A <sub>0</sub> | 2.80      | ±0.1      |
| F              | 3.50      | ±0.05     | B <sub>0</sub> | 3.50      | ±0.1      |
| D <sub>1</sub> | 1.10      | ±0.1      | K <sub>0</sub> | 2.70      | ±0.1      |

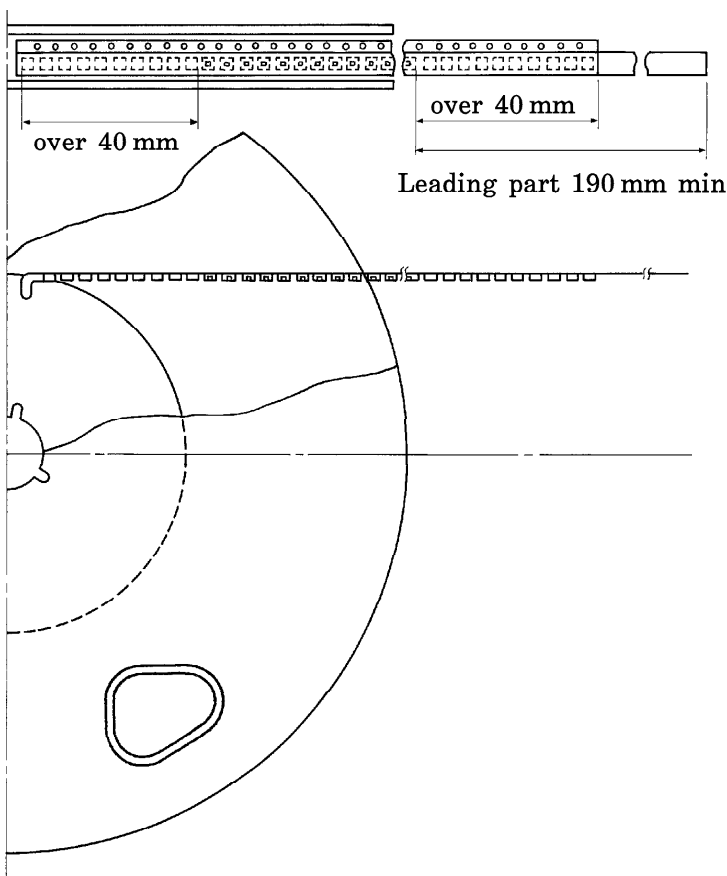


4. Dimensions of reel

Unit in mm



5. Leading part



6. Packing Form

(1) Number of Devices per Reel and Carton

|        |              |
|--------|--------------|
| Reel   | 1000 devices |
| Carton | 5000 devices |

(2) Packing : Silica gel and reel are packed into sealed aluminum pack.

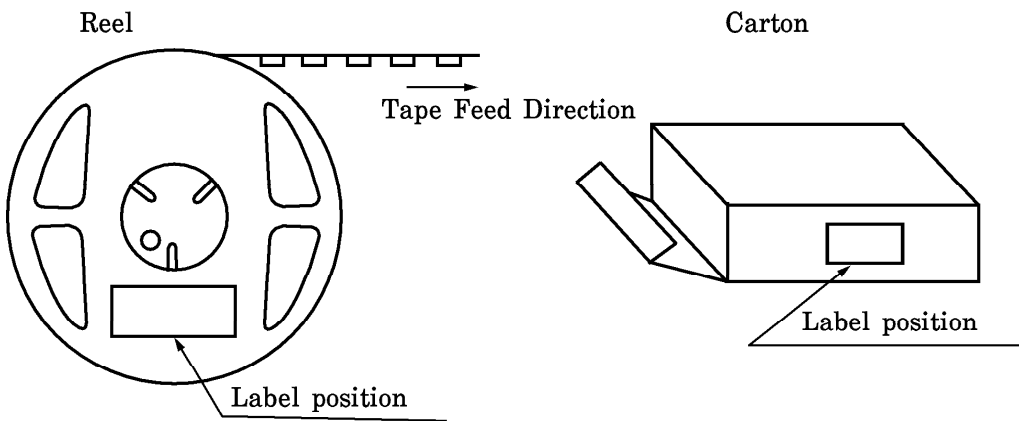
7. Notation Method

(1) Example : TLRE1005A (T03)

P / N :

|        |               |            |          |
|--------|---------------|------------|----------|
| TYPE   | TLRE1005A     |            |          |
| ADD. C | (T03)         | Q'TY       | 1000 pcs |
| NOTE   | (rank symbol) | Lot Number |          |

(2) Label location :



Aluminum pack : Attached to center of one side