

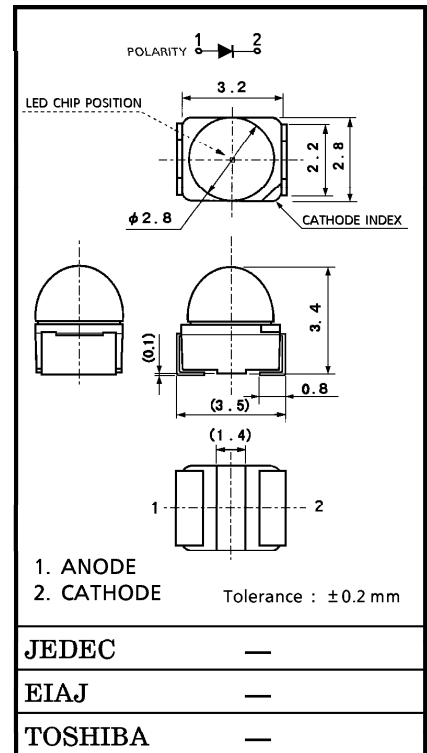
TOSHIBA LED LAMP

**TLRH1102 (T10), TLSH1102 (T10)
TLOH1102 (T10), TLYH1102 (T10)**

PANEL CIRCUIT INDICATOR

- Surface Mount Device
- 3.2 (L) × 2.8 (W) × 3.4 (H) mm Size
 φ2.8 mm Diameter Lens-Top Type
- InGaAlP LED (Ultra High-Brightness Type)
- Line-up
 Colors : Red, Orange, Yellow
- Low Drive Current, High Intensity Light Emission
- Available of Automounting Machine Use
- Clear luminescence is obtained.
- High Operating Temperature : $T_{opr} \cdot T_{stg} \quad -40 \sim 100^{\circ}\text{C}$
- Standard Embossed Taping
 8 mm Pitch : T10 (500 pcs/Reel)
- Reflow Soldering is possible.
- Applications : Automotive Use, Message Signboard,
 Backlight, etc.

Unit in mm



Weight : 42 mg

LINE-UP

| PRODUCT NAME | COLOR | MATERIAL |
|--------------|--------|----------|
| TLRH1102 | Red | InGaAlP |
| TLSH1102 | Red | InGaAlP |
| TLOH1102 | Orange | InGaAlP |
| TLYH1102 | Yellow | InGaAlP |

MAXIMUM RATINGS (Ta = 25°C)

| PRODUCT NAME | FORWARD CURRENT (DC) I_F (mA) | REVERSE VOLTAGE V_R (V) | POWER DISSIPATION P_D (mW) | OPERATING TEMPERATURE T_{opr} (°C) | STORAGE TEMPERATURE T_{stg} (°C) |
|--------------|---------------------------------|---------------------------|------------------------------|--------------------------------------|------------------------------------|
| TLRH1102 | 50 | 4 | 125 | -40~100 | -40~100 |
| TLSH1102 | 50 | 4 | 125 | | |
| TLOH1102 | 50 | 4 | 125 | | |
| TLYH1102 | 50 | 4 | 125 | | |

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| PRODUCT NAME | FORWARD VOLTAGE V_F | | | | REVERSE CURRENT I_R | |
|--------------|--------------------------|------|-----|-------|--------------------------|-------|
| | MIN | TYP. | MAX | I_F | MAX | V_R |
| TLRH1102 | — | 1.9 | 2.5 | 20 | 50 | 4 |
| TLSH1102 | — | 2.1 | 2.5 | 20 | 50 | 4 |
| TLOH1102 | — | 2.1 | 2.5 | 20 | 50 | 4 |
| TLYH1102 | — | 2.1 | 2.5 | 20 | 50 | 4 |
| Unit | V | | | mA | μ A | V |

OPTICAL CHARACTERISTICS-1 (Ta = 25°C)

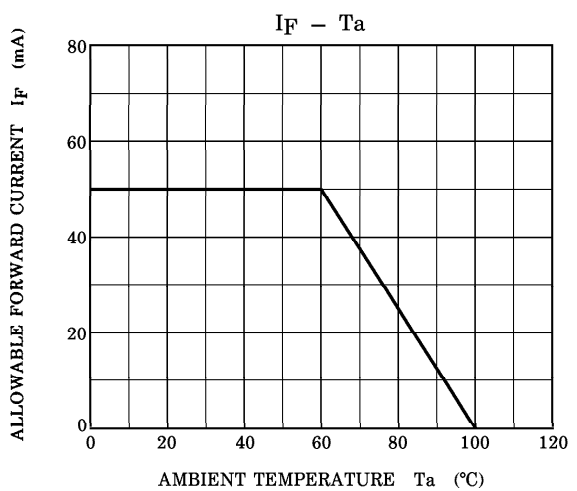
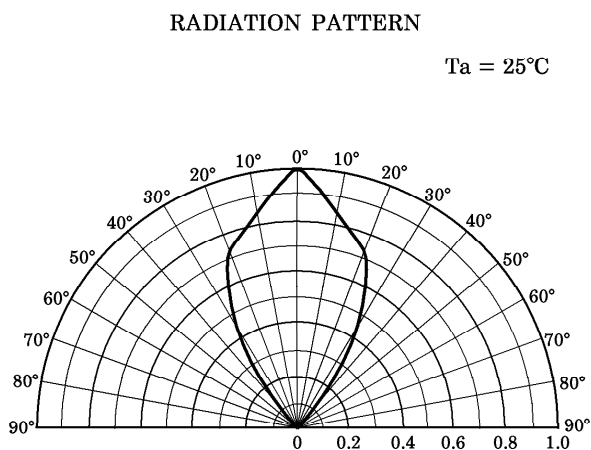
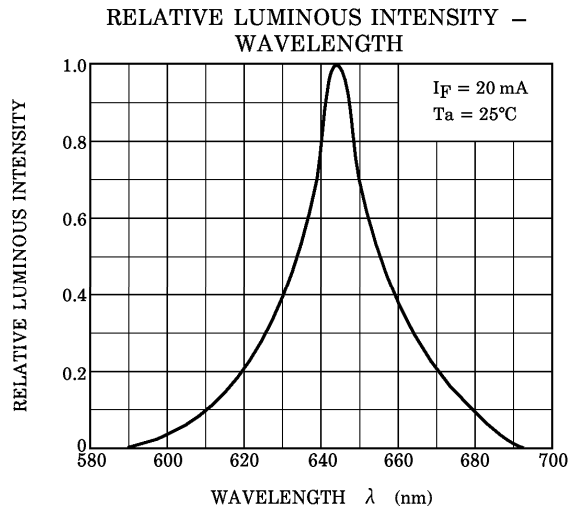
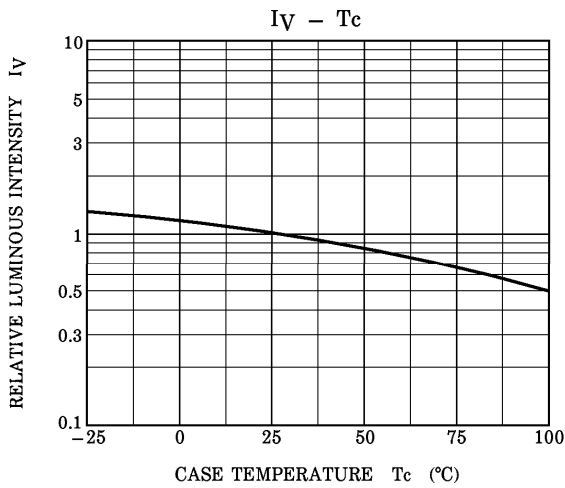
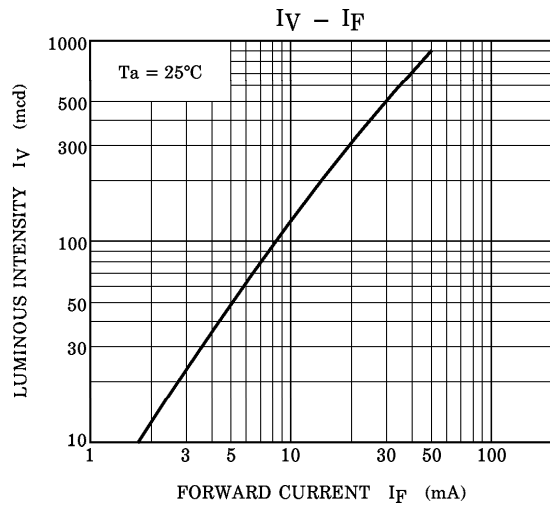
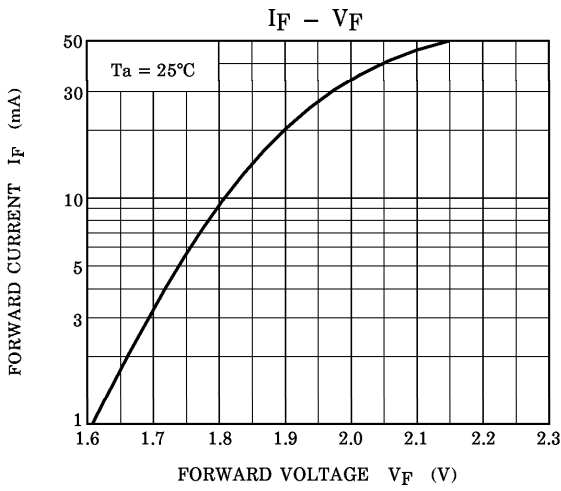
| PRODUCT NAME | LUMINOUS INTENSITY I_v | | | |
|--------------|-----------------------------|------|-----|-------|
| | MIN | TYP. | MAX | I_F |
| TLRH1102 | 85 | 320 | — | 20 |
| TLSH1102 | 153 | 600 | — | 20 |
| TLOH1102 | 272 | 650 | — | 20 |
| TLYH1102 | 153 | 480 | — | 20 |
| Unit | mcd | | | mA |

OPTICAL CHARACTERISTICS-2 (Ta = 25°C)

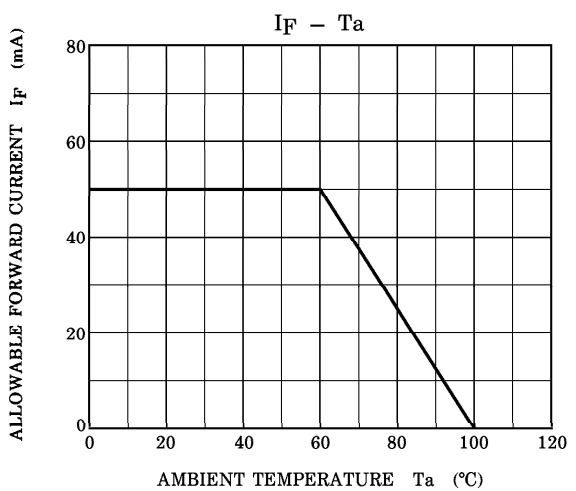
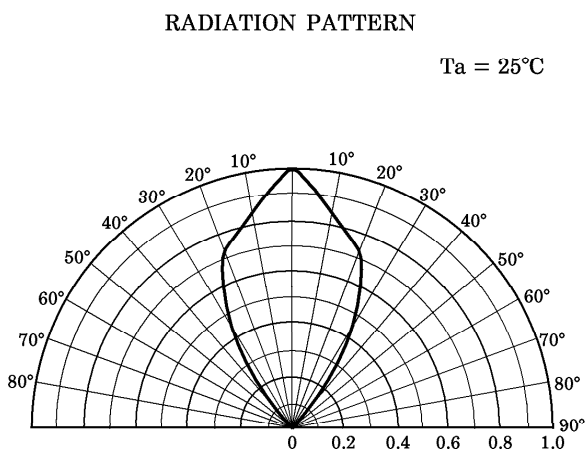
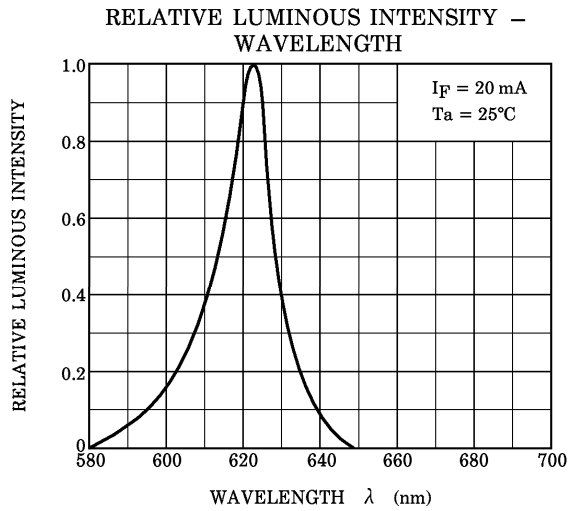
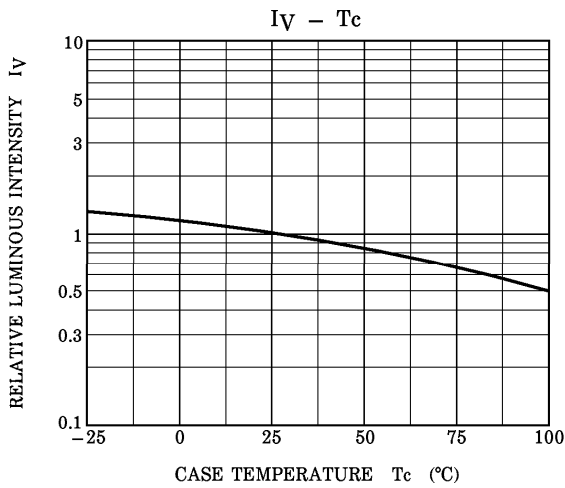
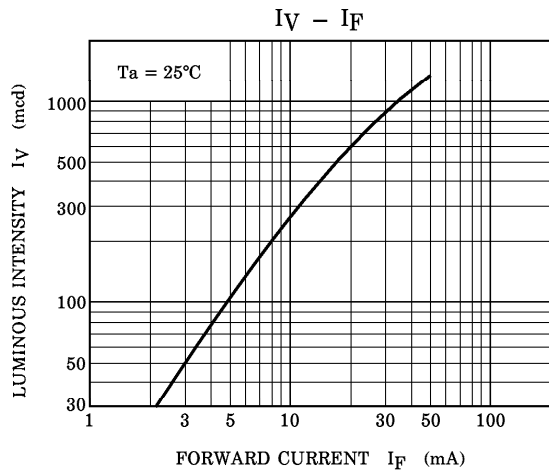
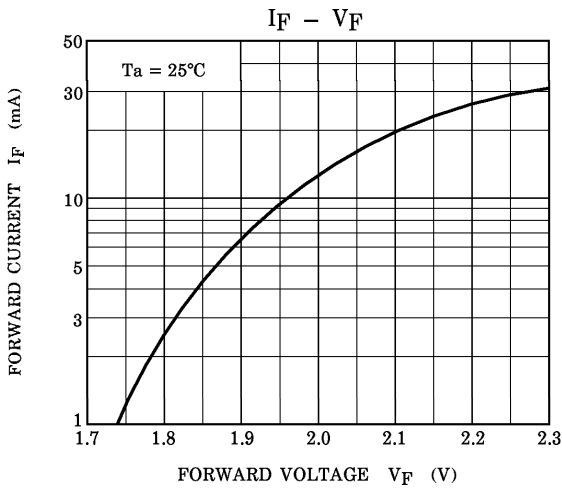
| PRODUCT NAME | EMISSION SPECTRUM | | | | | | | | |
|--------------|--------------------------------------|------|-----|------|-----------------|---------------------------------|------|-----|-------|
| | Peak Emission Wavelength λ_p | | | | $\Delta\lambda$ | Dominant Wavelength λ_d | | | I_F |
| | MIN | TYP. | MAX | TYP. | | MIN | TYP. | MAX | |
| TLRH1102 | — | 644 | — | 18 | — | 630 | — | 20 | |
| TLSH1102 | — | 623 | — | 15 | — | 613 | — | 20 | |
| TLOH1102 | — | 612 | — | 15 | — | 605 | — | 20 | |
| TLYH1102 | — | 590 | — | 13 | — | 587 | — | 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.

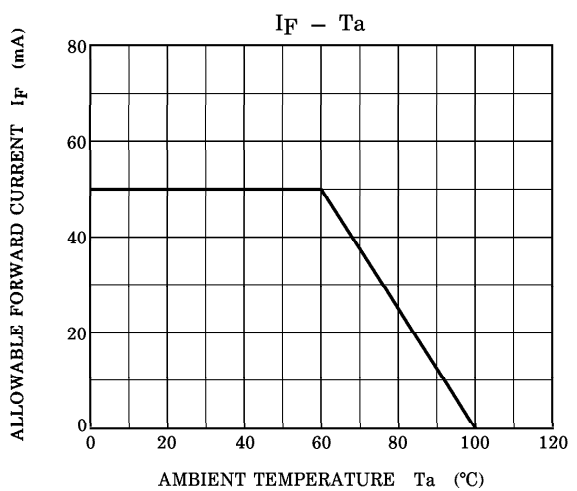
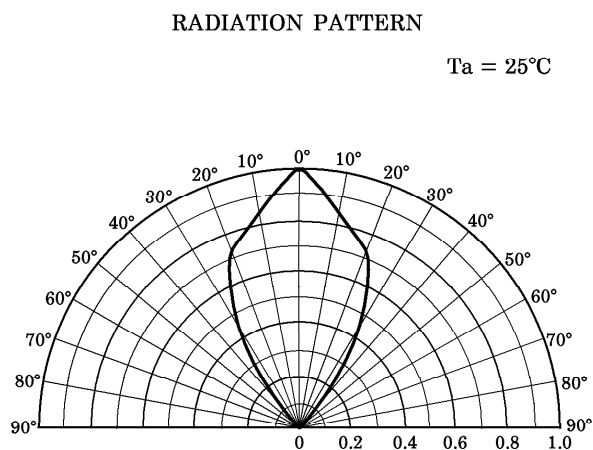
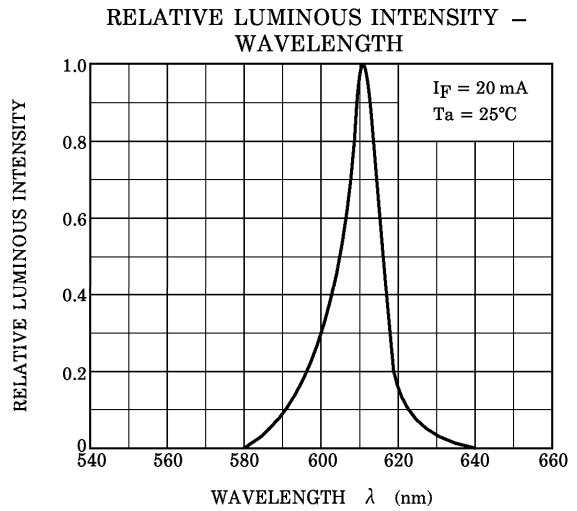
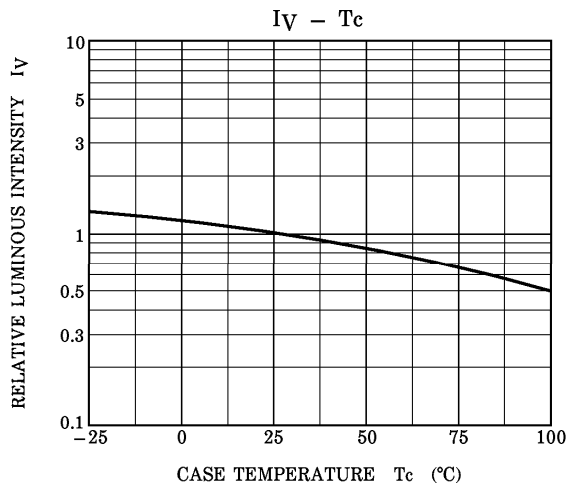
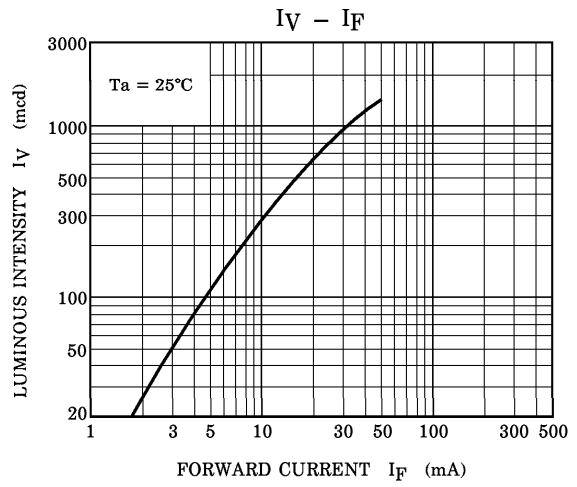
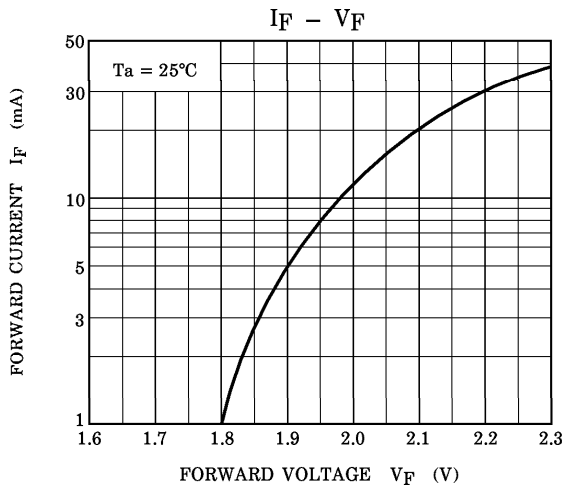
TLRH1102



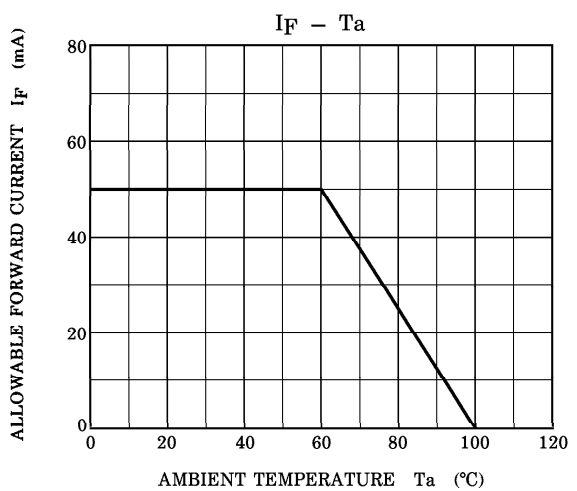
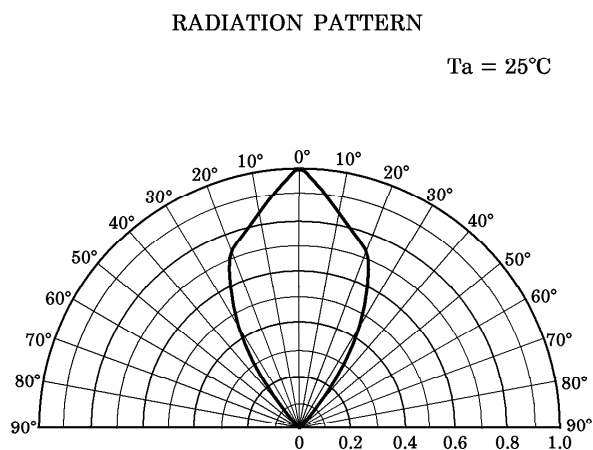
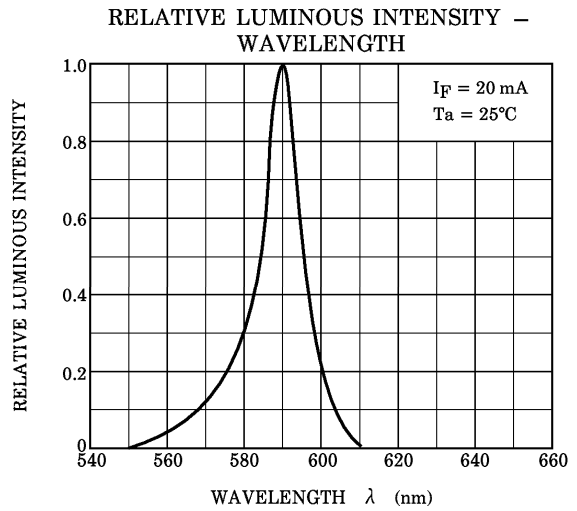
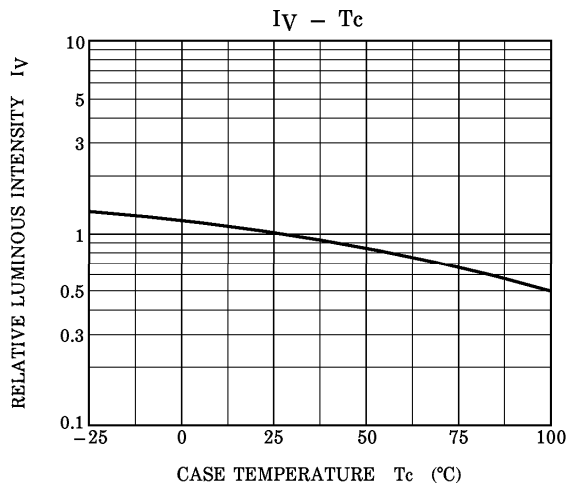
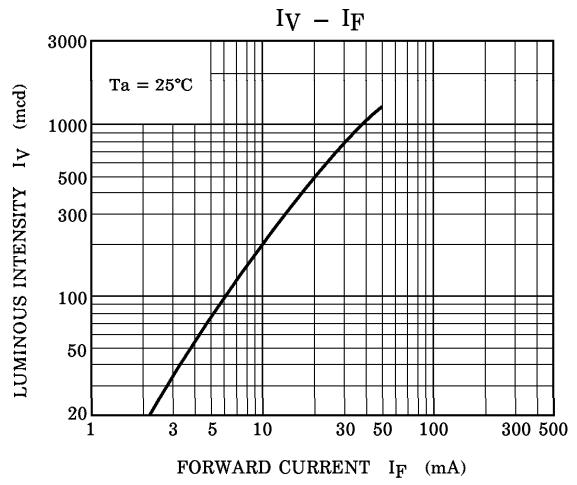
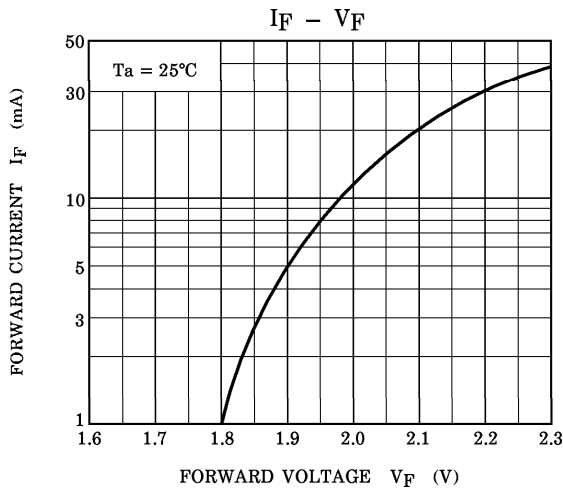
TLSH1102



TLOH1102



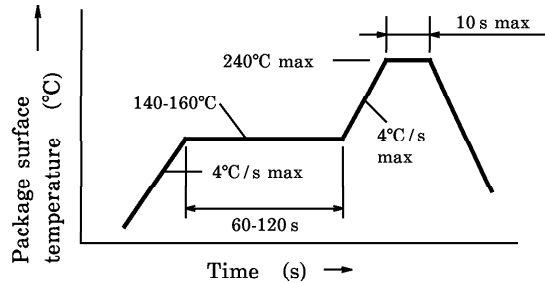
TLYH1102



SOLDERING

Reflow soldering

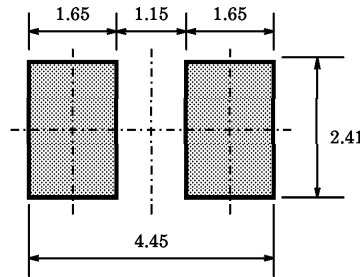
Temperature profile



(*) Reflow is permitted just one time.

Recommended soldering pattern

(Unit in mm)



RECOMMENDATION FOR MANUAL SOLDERING

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

POST SOLDERING 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

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 before 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 month 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.

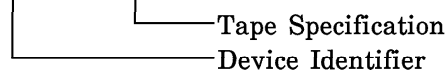
PRECAUTION FOR MOUNTING

Do not apply force to the plastic part of the LED in high temperature conditions.
Do not apply friction using 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.

TAPING SPECIFICATIONS

1. Taping Number

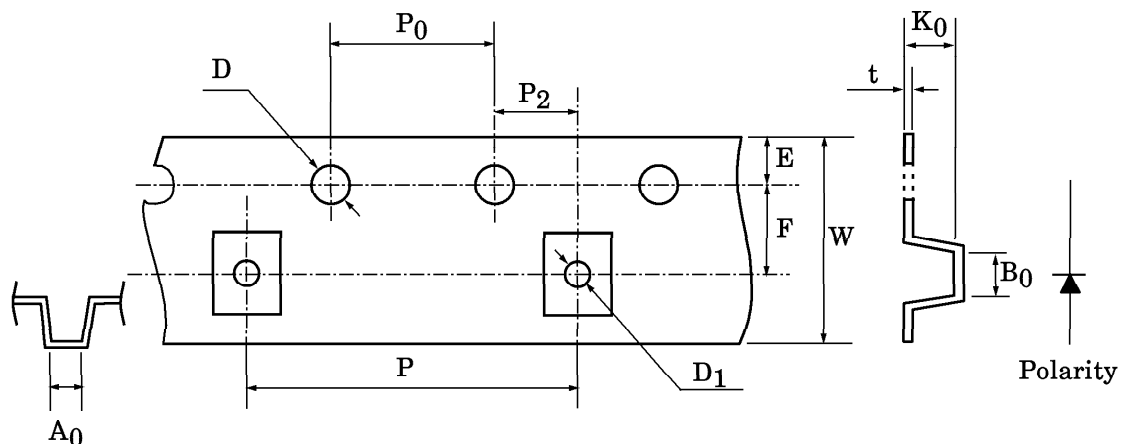
- (1) Name : T10
- (2) Example : TL□H1102 (T10)



2. Dimension of tape

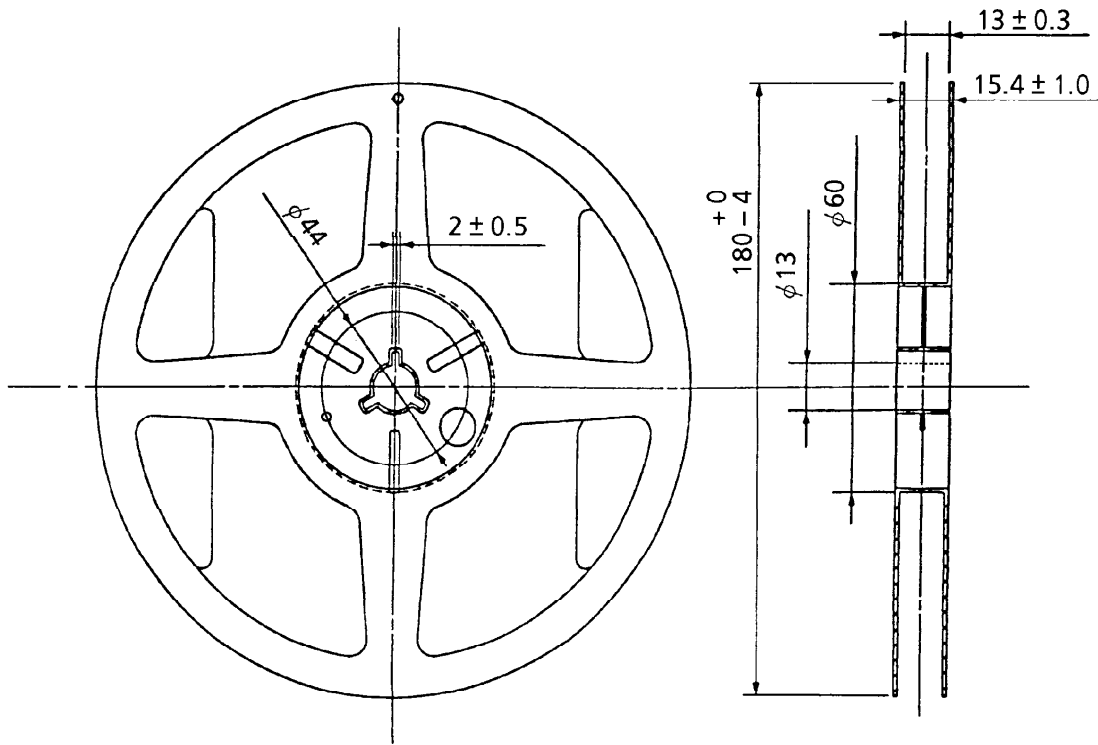
(Unit in mm)

| ITEM | DIMENSIONS | TOLERANCE | ITEM | DIMENSIONS | TOLERANCE |
|----------------|------------|-----------|----------------|------------|-----------|
| D | 1.5 | +0.1/ -0 | P ₂ | 2.0 | ±0.05 |
| E | 1.75 | ±0.1 | W | 12.0 | ±0.3 |
| P ₀ | 4.0 | ±0.1 | P | 8.0 | ±0.1 |
| t | 0.3 | ±0.05 | A ₀ | 2.9 | ±0.1 |
| F | 5.5 | ±0.05 | B ₀ | 3.7 | ±0.1 |
| D ₁ | 1.5 | +0.1/ -0 | K ₀ | 3.6 | ±0.1 |



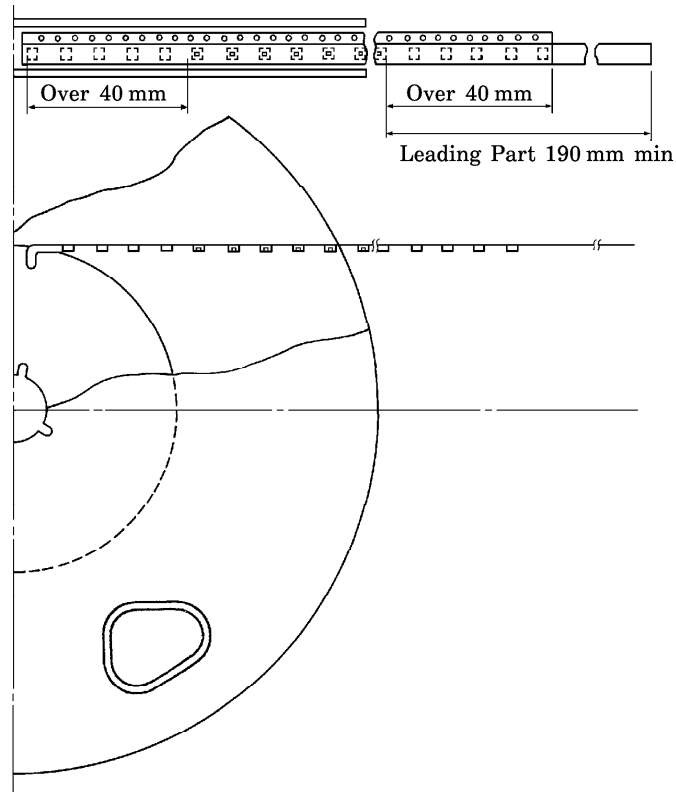
3. Dimension of reel

(Unit in mm)



4. Leading part

(Unit in mm)



6. Packing Form

(1) Number of Devices per Reel and Carton

| | |
|--------|--------------|
| Reel | 500 devices |
| Carton | 2500 devices |

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

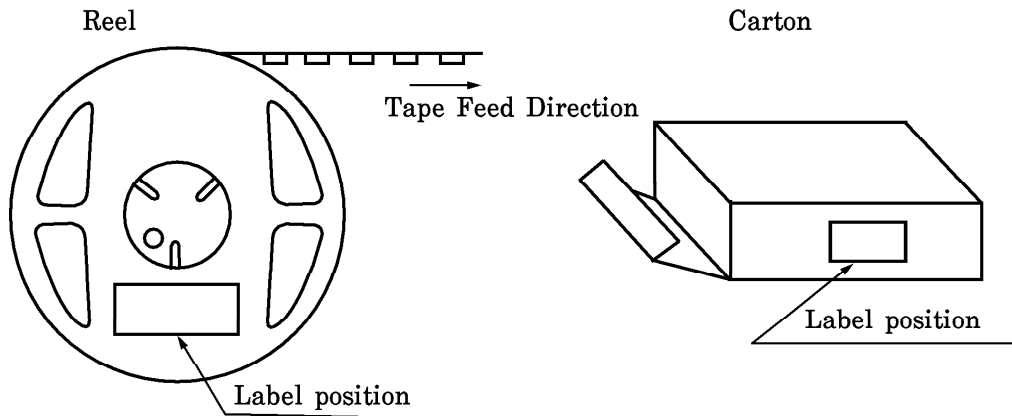
7. Notation Method

(1) Example : TLRH1102 (T10)

P/N :

| | | | |
|--------|---------------|------|------------|
| TYPE | TLRH1102 | | |
| ADD. C | (T10) | Q'TY | 500 pcs |
| NOTE | (rank symbol) | | Lot Number |

(2) Label location :



Aluminum pack : Attached to center of one side

RESTRICTIONS ON PRODUCT USE

000707EAC

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