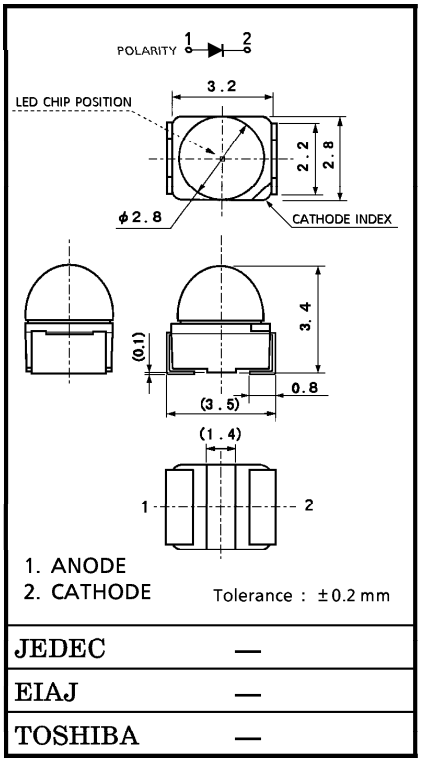
TOSHIBA LED LAMP

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

PANEL CIRCUIT INDICATOR

Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	—

Weight : 42 mg

- 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 : $T_{opr} \cdot T_{stg}$ −40~100°C
- Standard Embossed Taping
  8 mm Pitch : T10 (500 pcs / Reel)
- Reflow Soldering is possible.
- Applications : Automotive Use, Message Signboard, Backlight, etc.

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	μA	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

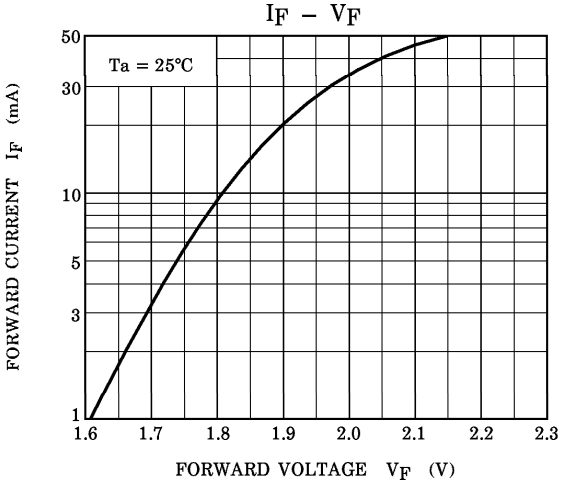
OPTICAL CHARACTERISTICS-2 (Ta = 25°C)

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

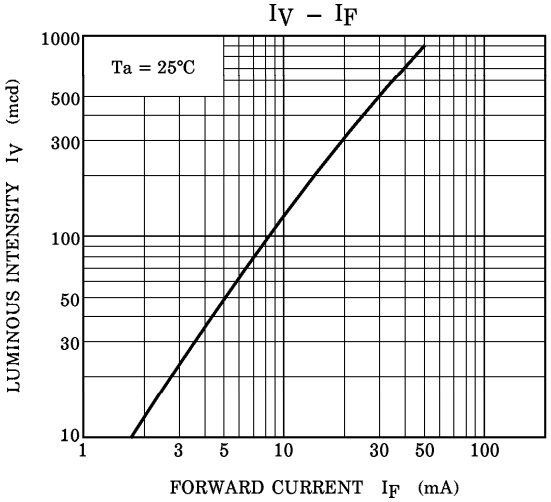
(Note) : This visible LED lamp also emits some IR light.
If a photodetector is located near the LED lamp, please ensure that it will not be affected by this IR light.

TLRH1102

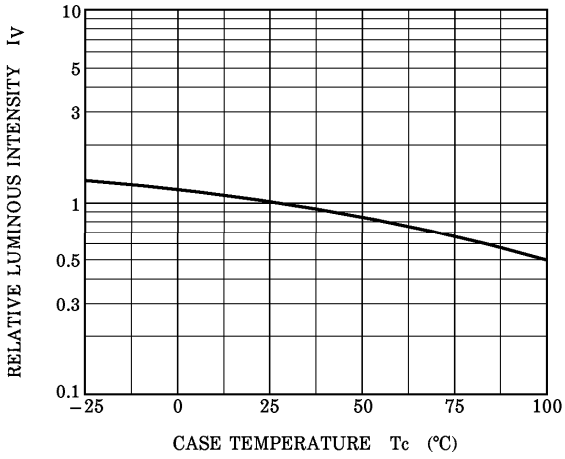
$I_F - V_F$



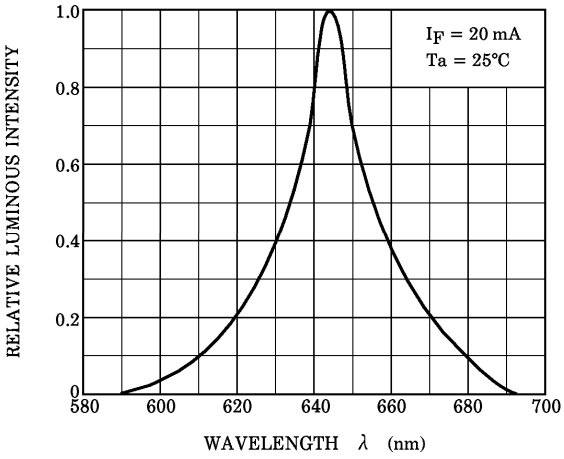
$I_V - I_F$



$I_V - Tc$

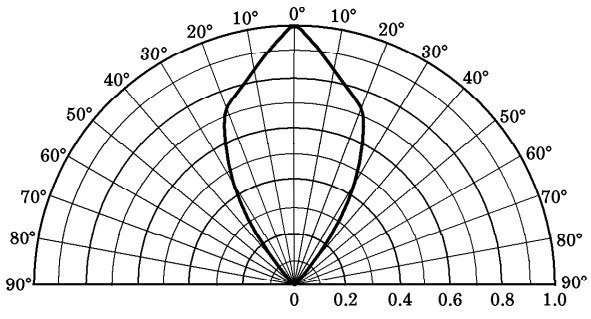


RELATIVE LUMINOUS INTENSITY − WAVELENGTH

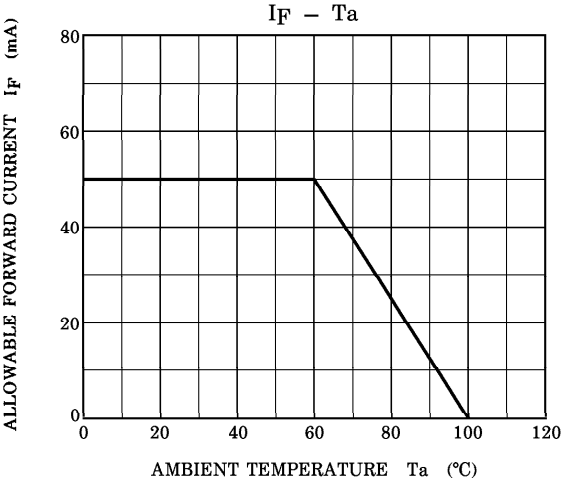


RADIATION PATTERN

Ta = 25°C

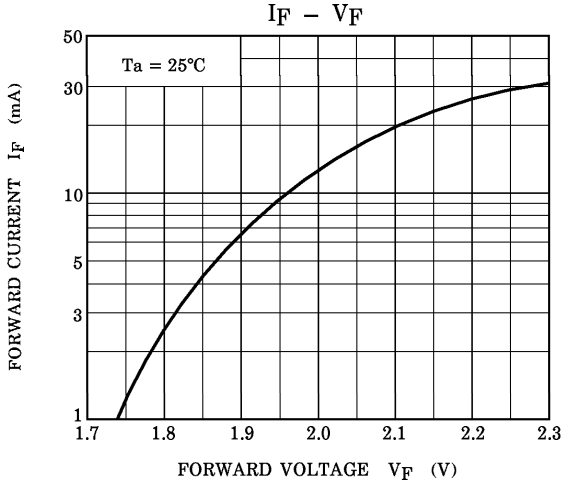


$I_F - Ta$

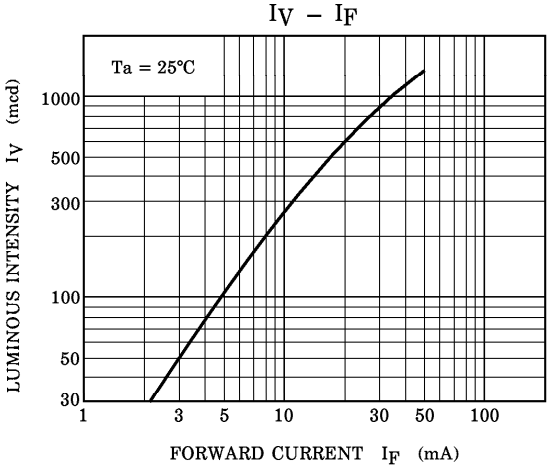


TLSH1102

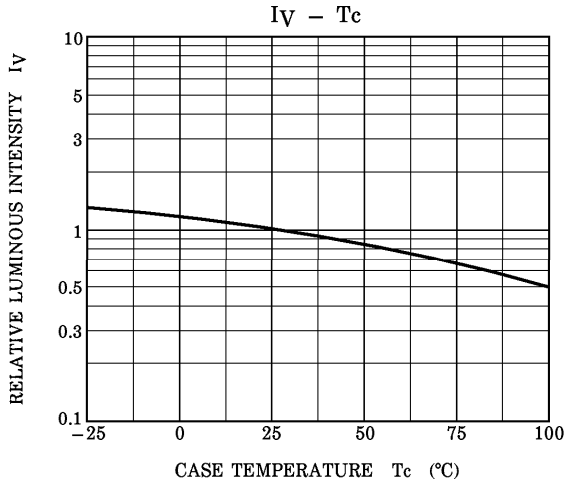
$I_F - V_F$



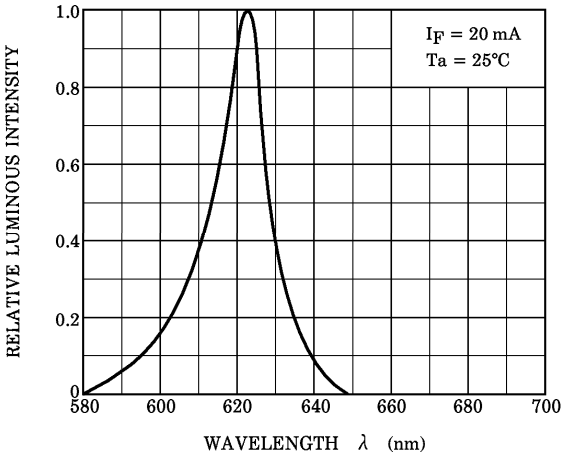
$I_V - I_F$



$I_V - Tc$

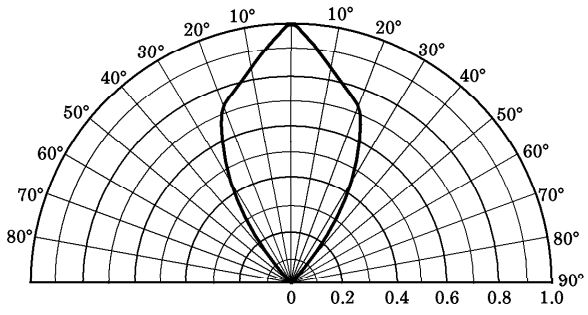


RELATIVE LUMINOUS INTENSITY – WAVELENGTH

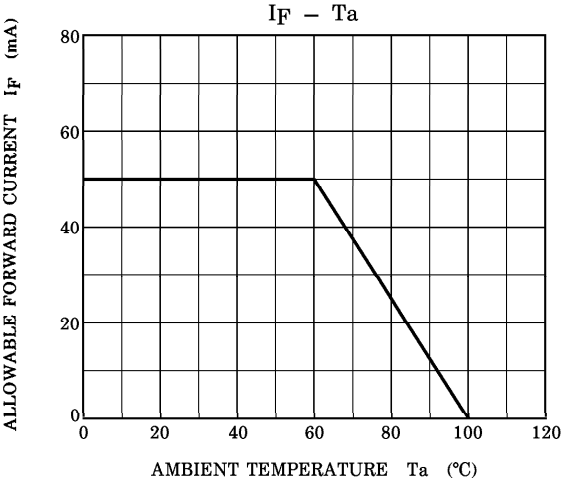


RADIATION PATTERN

Ta = 25°C

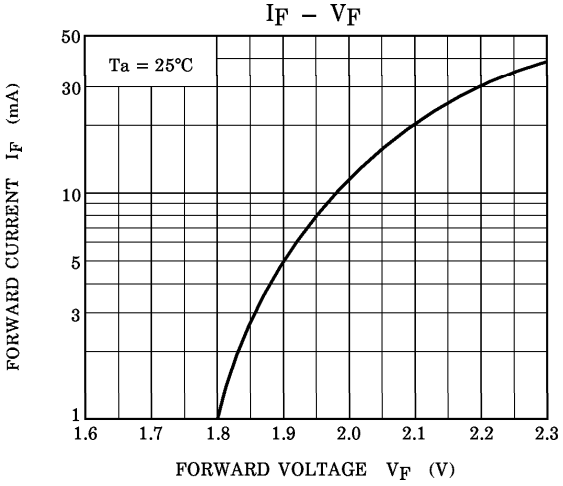


$I_F - Ta$

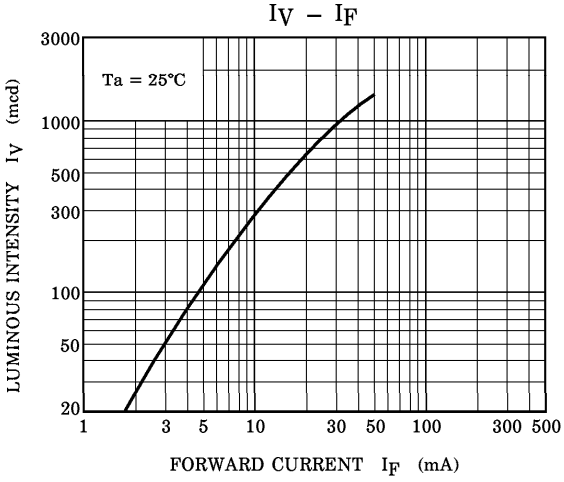


TLOH1102

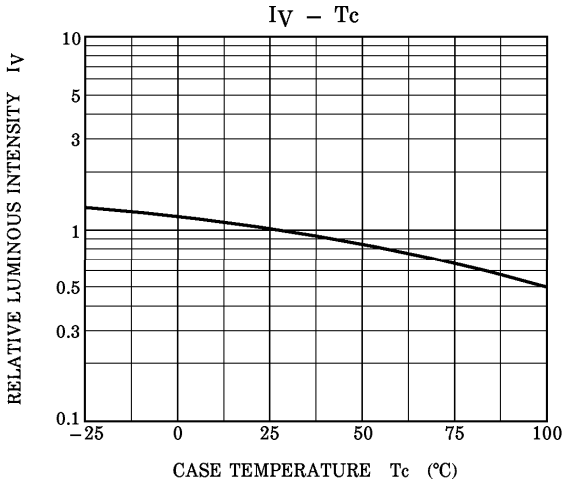
$I_F - V_F$



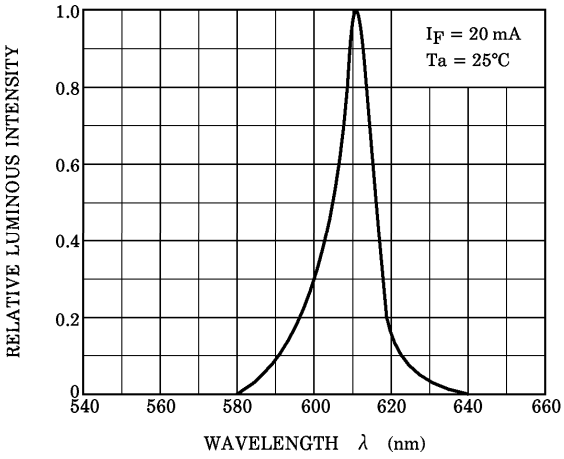
$I_V - I_F$



$I_V - T_c$

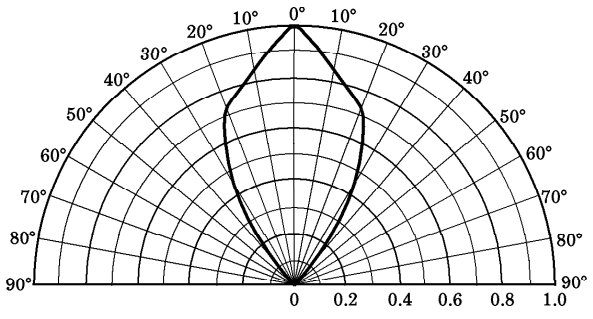


RELATIVE LUMINOUS INTENSITY – WAVELENGTH

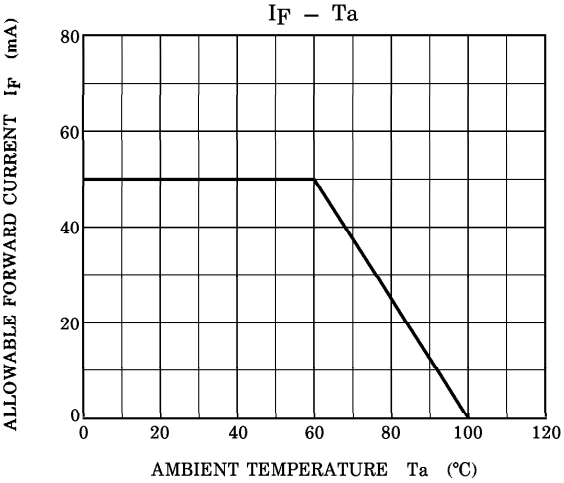


RADIATION PATTERN

Ta = 25°C

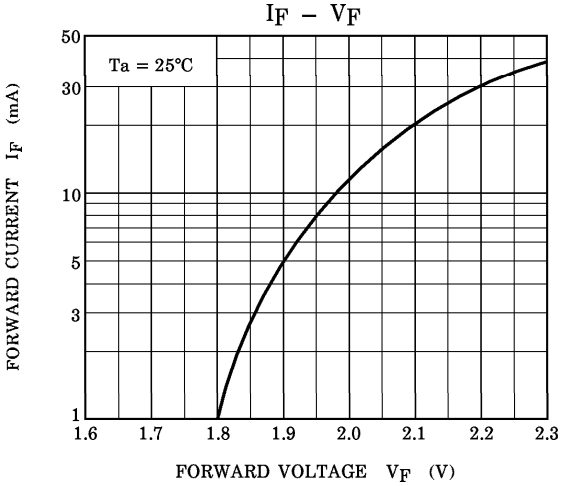


$I_F - Ta$

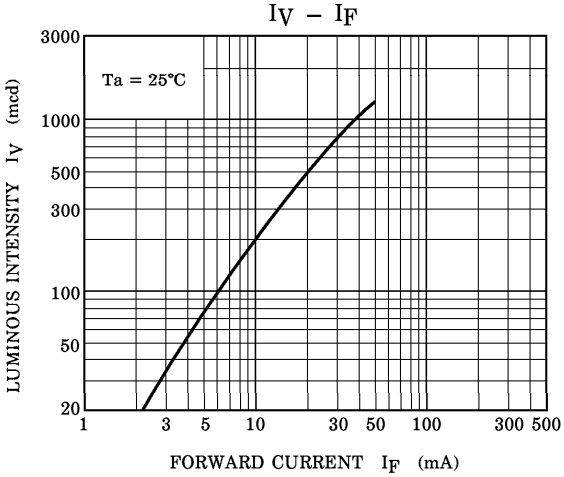


TLYH1102

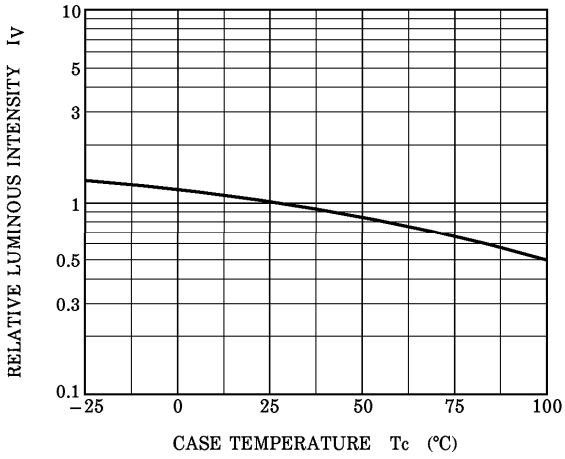
$I_F - V_F$



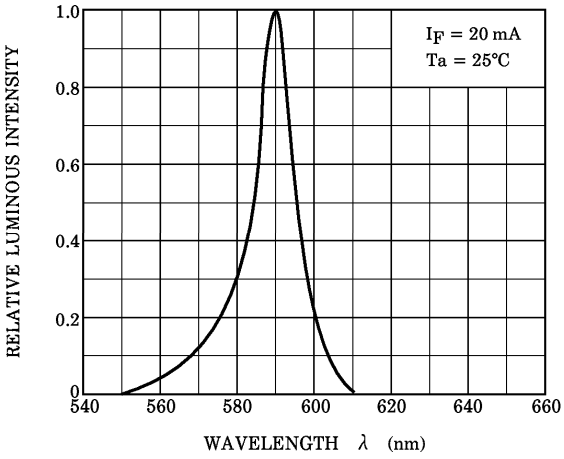
$I_V - I_F$



$I_V - T_c$

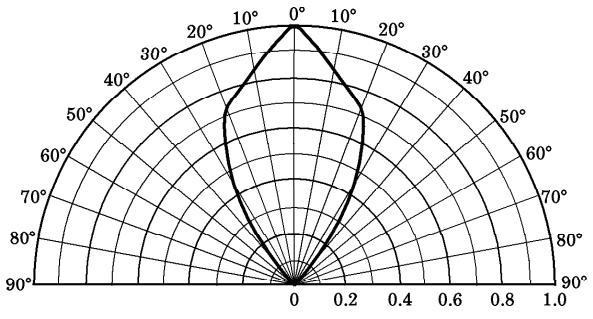


RELATIVE LUMINOUS INTENSITY – WAVELENGTH

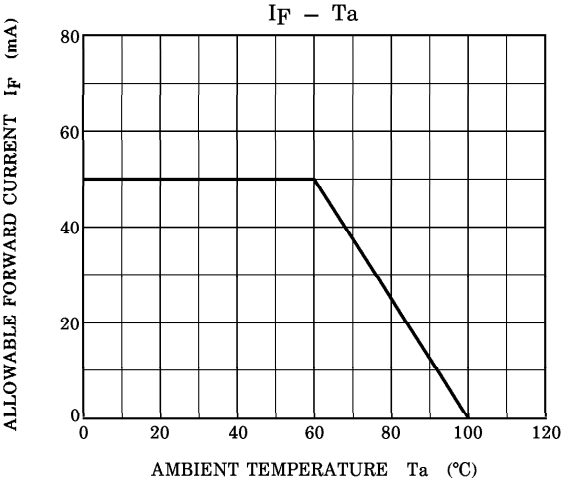


RADIATION PATTERN

Ta = 25°C



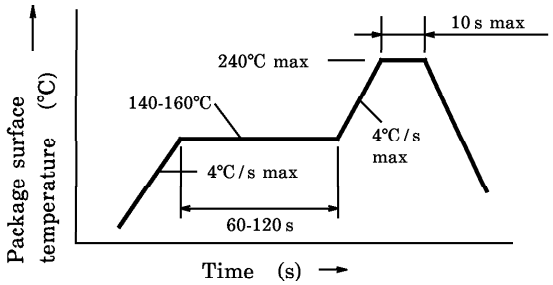
$I_F - Ta$



SOLDERING

Reflow soldering

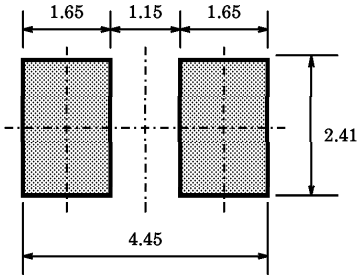
Temperature profile



(*) 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

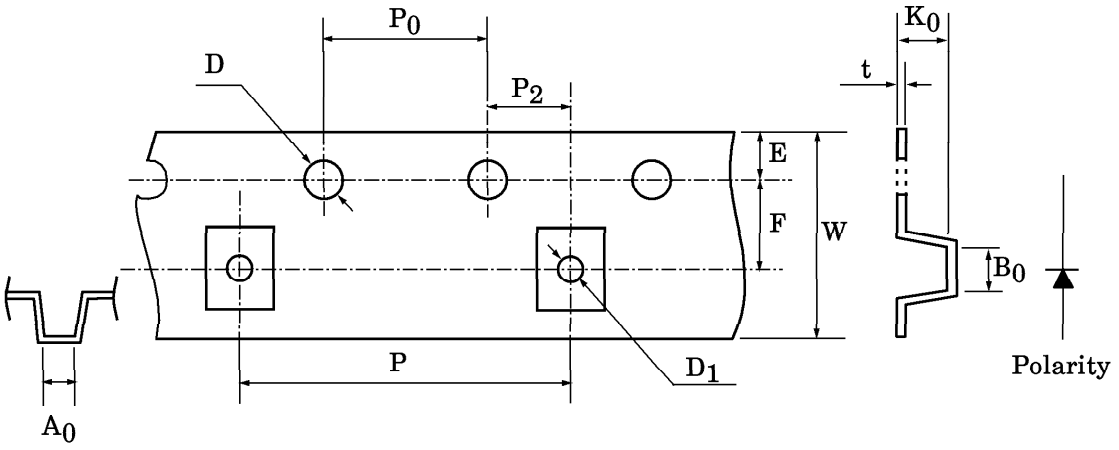
   (2) Example : TL□H1102 (T10)

   (T10) — Tape Specification
   TL□H1102 — Device Identifier

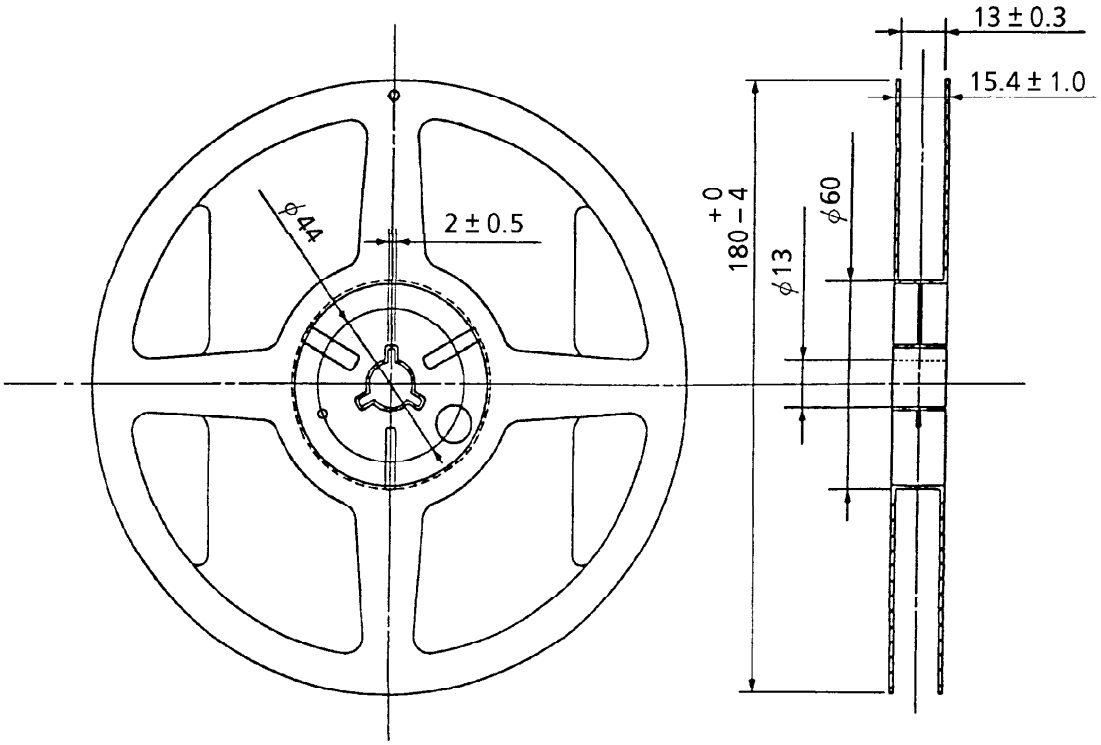
2. Dimension of tape

(Unit in mm)

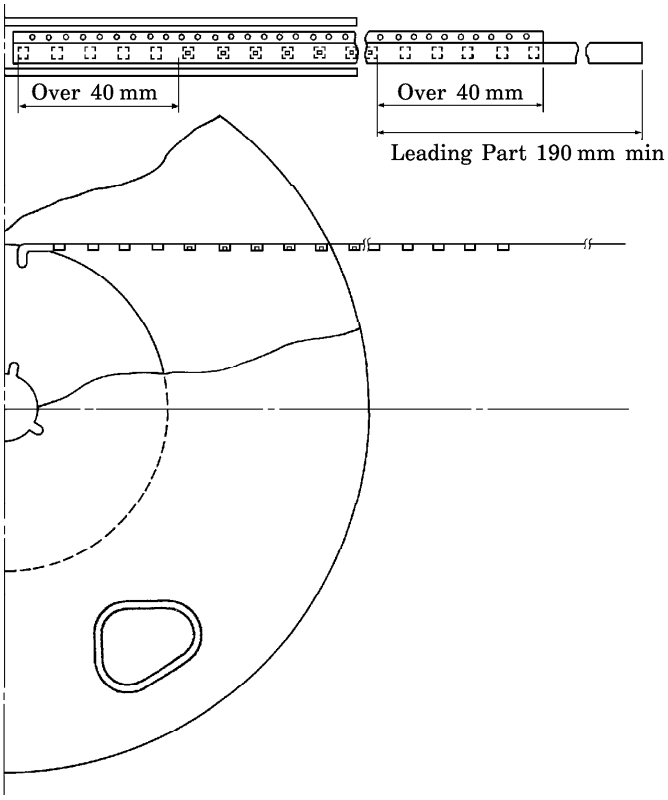
ITEM	DIMENSIONS	TOLERANCE	ITEM	DIMENSIONS	TOLERANCE
D	1.5	+0.1 / −0	P_2	2.0	±0.05
E	1.75	±0.1	W	12.0	±0.3
P_0	4.0	±0.1	P	8.0	±0.1
t	0.3	±0.05	A_0	2.9	±0.1
F	5.5	±0.05	B_0	3.7	±0.1
D_1	1.5	+0.1 / −0	K_0	3.6	±0.1



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.

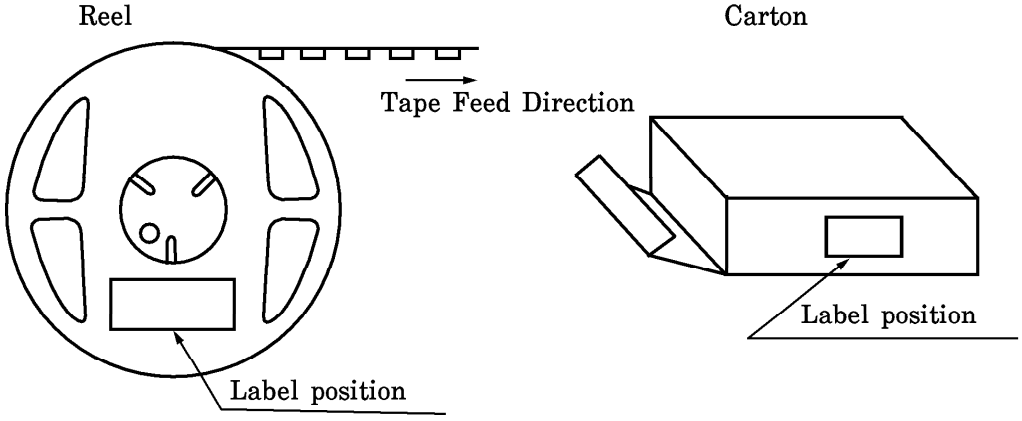
7. Notation Method

(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

- 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..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer's own risk.
- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.
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