

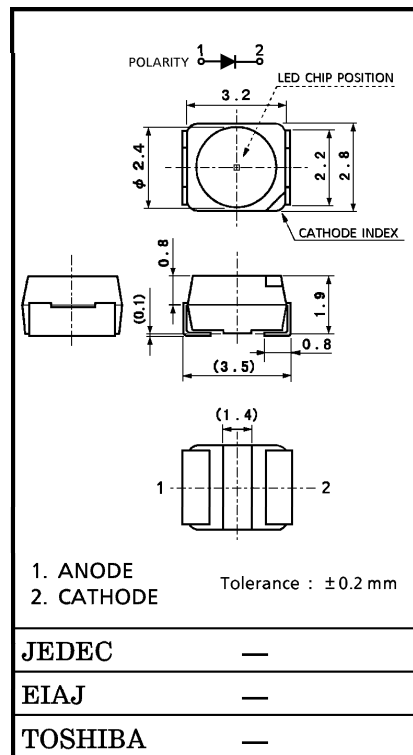
TOSHIBA LED LAMP

**TLRH1100 (T09), TLSH1100 (T09)  
TLOH1100 (T09), TLYH1100 (T09)**

PANEL CIRCUIT INDICATOR

- Surface Mount Device
- 3.2 (L) × 2.8 (W) × 1.9 (H) mm Size
- Flap-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 : T09 (1000 pcs / Reel)
- Reflow Soldering is possible.
- Applications : Automotive Use, Message Signboard, Backlight, etc.

Unit in mm



Weight : 35 mg

LINE-UP

PRODUCT NAME	COLOR	MATERIAL
TLRH1100	Red	InGaAlP
TLSH1100	Red	InGaAlP
TLOH1100	Orange	InGaAlP
TLYH1100	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)
TLRH1100	50	4	125	-40~100	-40~100
TLSH1100	50	4	125		
TLOH1100	50	4	125		
TLYH1100	50	4	125		

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- TOSHIBA is continually working to improve the quality and the 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 observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product 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 products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

PRODUCT NAME	FORWARD VOLTAGE $V_F$				REVERSE CURRENT $I_R$	
	MIN	TYP.	MAX	$I_F$	MAX	$V_R$
TLRH1100	—	1.9	2.5	20	50	4
TLSH1100	—	2.1	2.5	20	50	4
TLOH1100	—	2.1	2.5	20	50	4
TLYH1100	—	2.1	2.5	20	50	4
Unit	V			mA	$\mu$ A	V

OPTICAL CHARACTERISTICS-1 (Ta = 25°C)

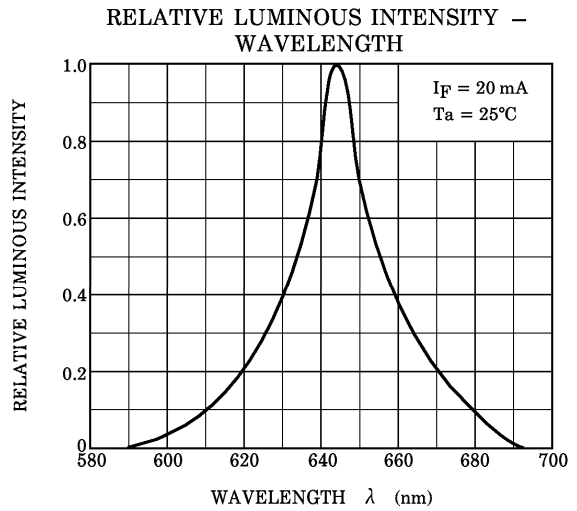
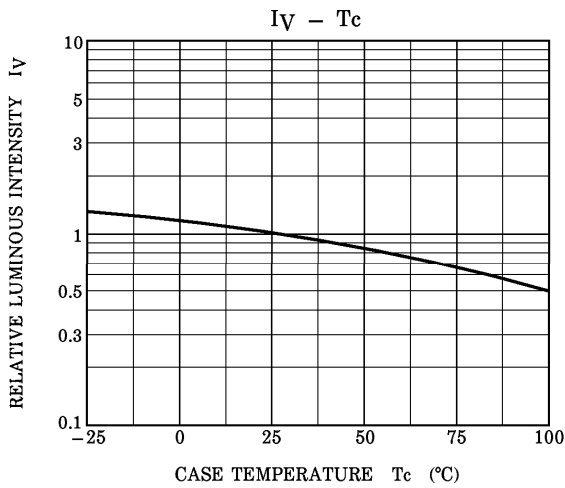
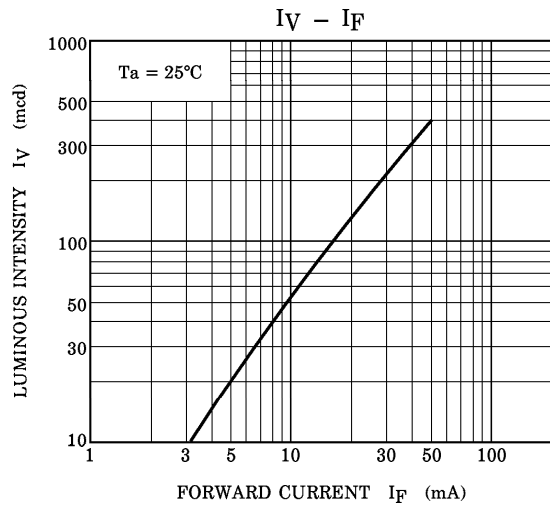
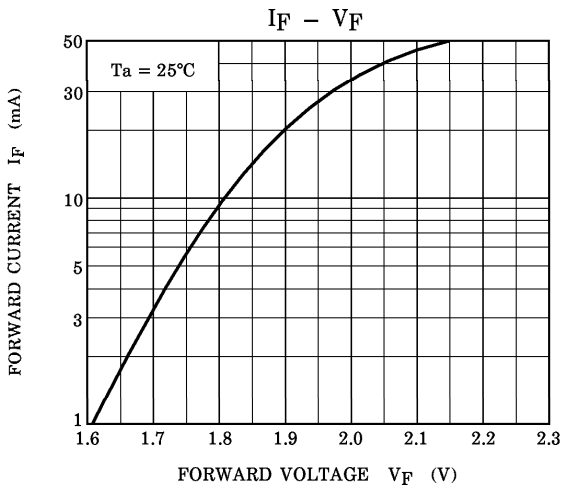
PRODUCT NAME	LUMINOUS INTENSITY $I_v$			
	MIN	TYP.	MAX	$I_F$
TLRH1100	47.6	130	—	20
TLSH1100	85.0	240	—	20
TLOH1100	85.0	260	—	20
TLYH1100	85.0	190	—	20
Unit	mcd			mA

OPTICAL CHARACTERISTICS-2 (Ta = 25°C)

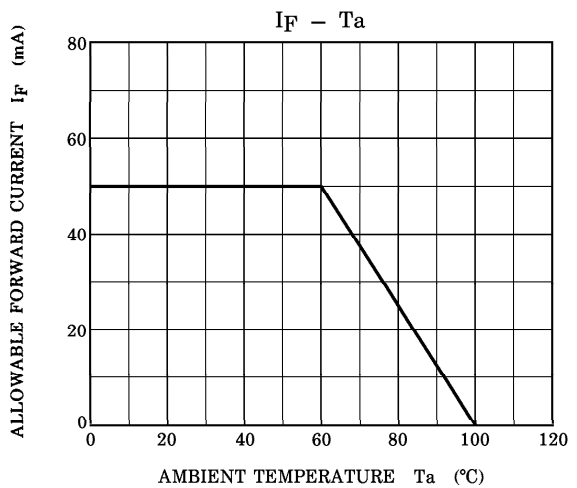
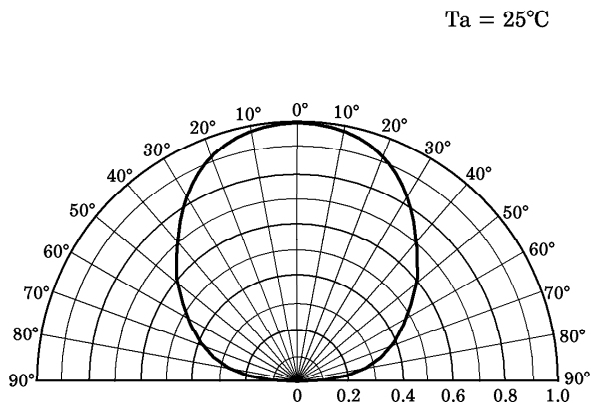
PRODUCT NAME	EMISSION SPECTRUM								
	Peak Emission Wavelength $\lambda_p$				$\Delta\lambda$	Dominant Wavelength $\lambda_d$			$I_F$
	MIN	TYP.	MAX	TYP.		MIN	TYP.	MAX	
TLRH1100	—	644	—	18	—	630	—	20	
TLSH1100	—	623	—	15	—	613	—	20	
TLOH1100	—	612	—	15	—	605	—	20	
TLYH1100	—	590	—	13	—	587	—	20	
Unit	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.

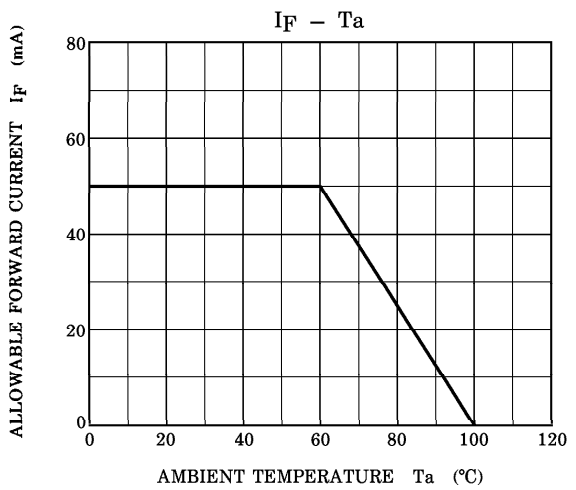
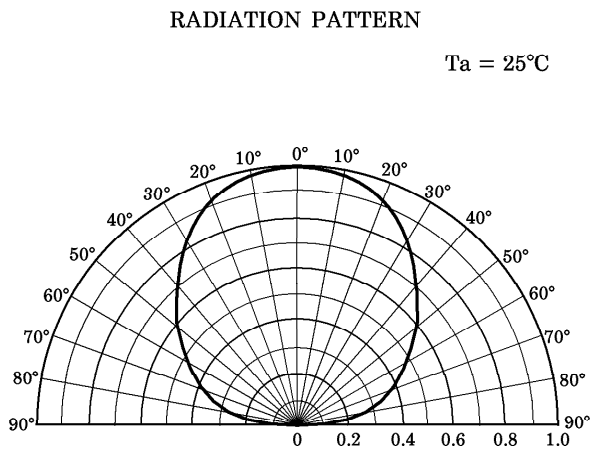
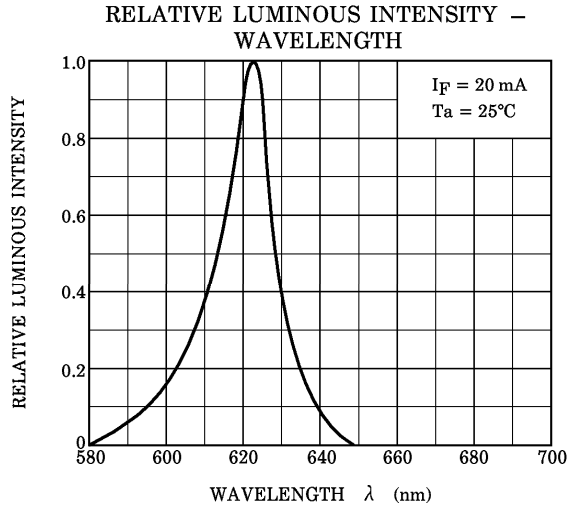
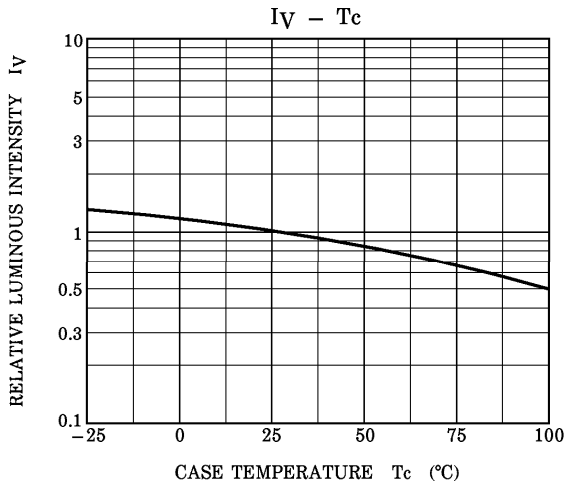
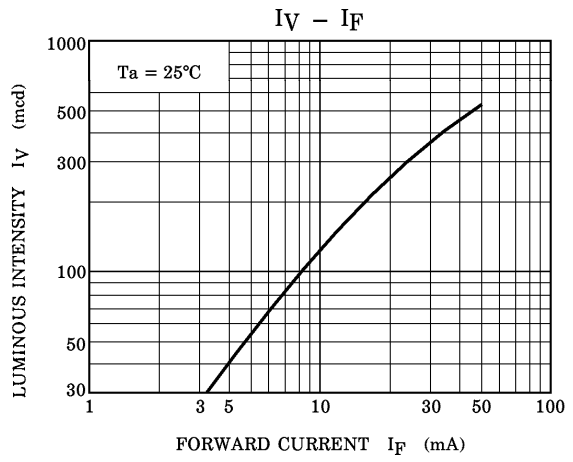
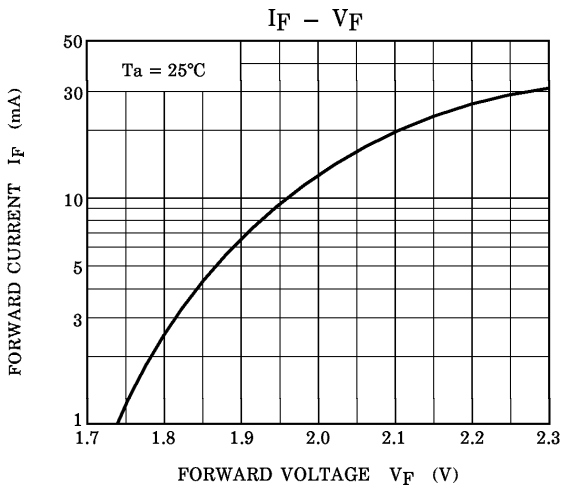
**TLRH1100**



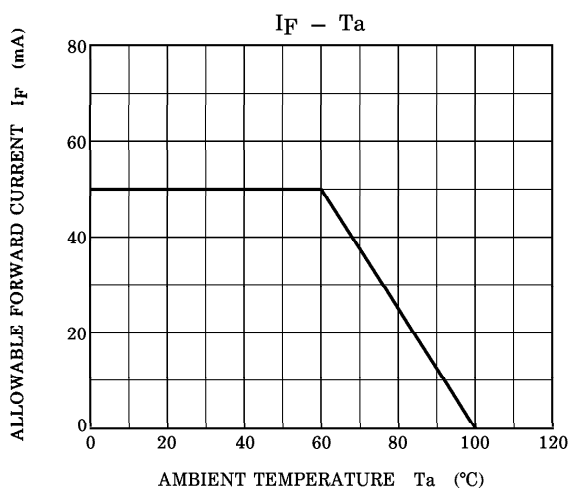
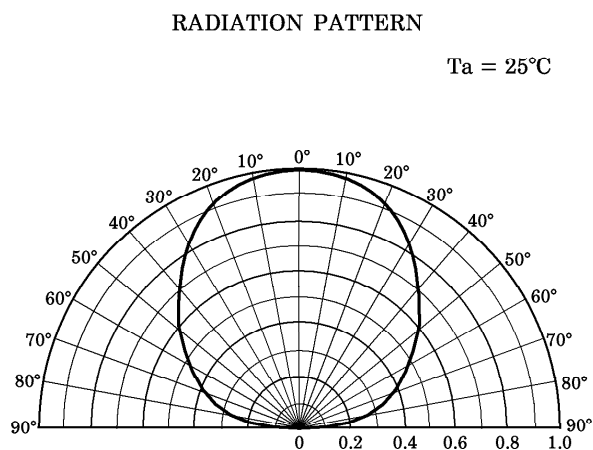
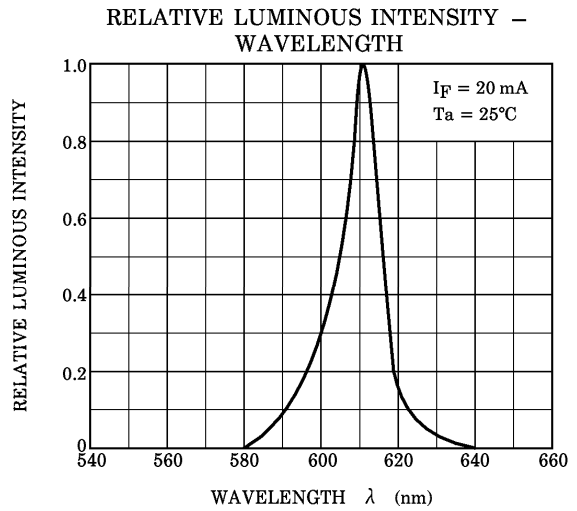
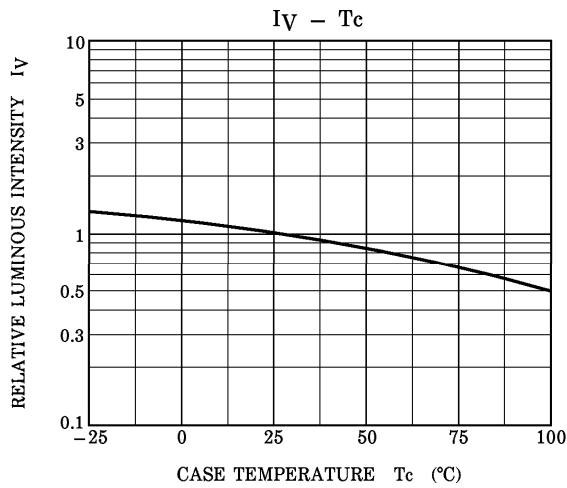
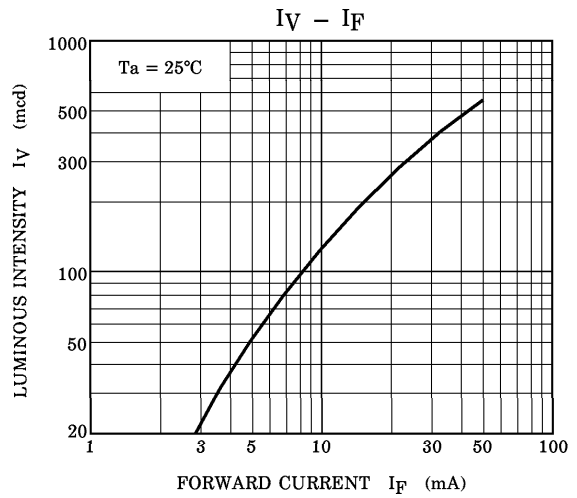
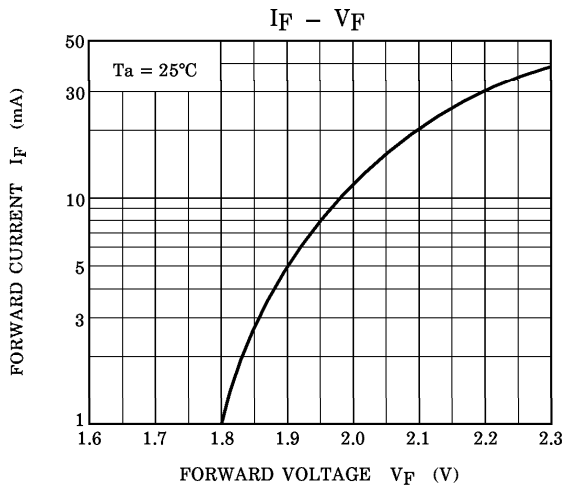
**RADIATION PATTERN**



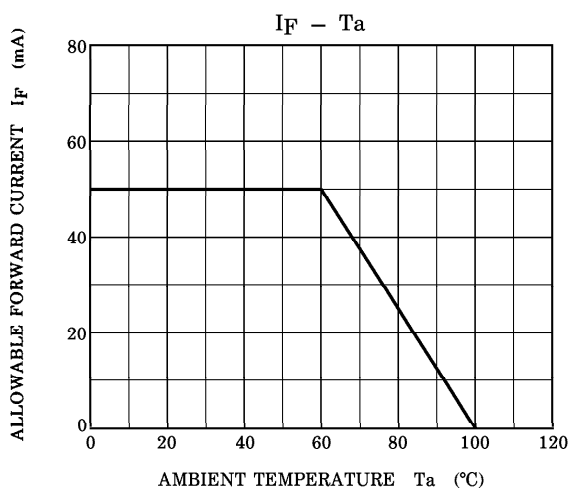
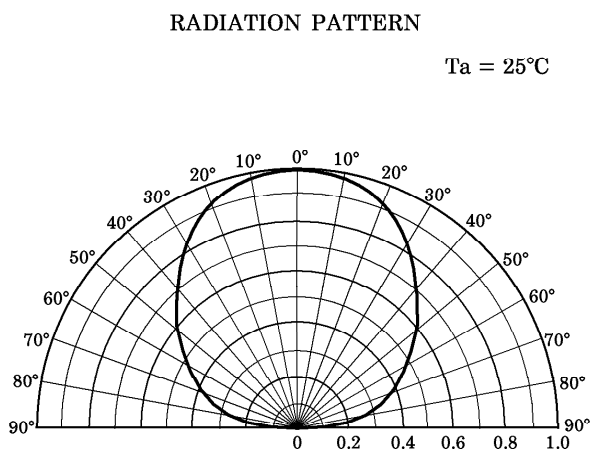
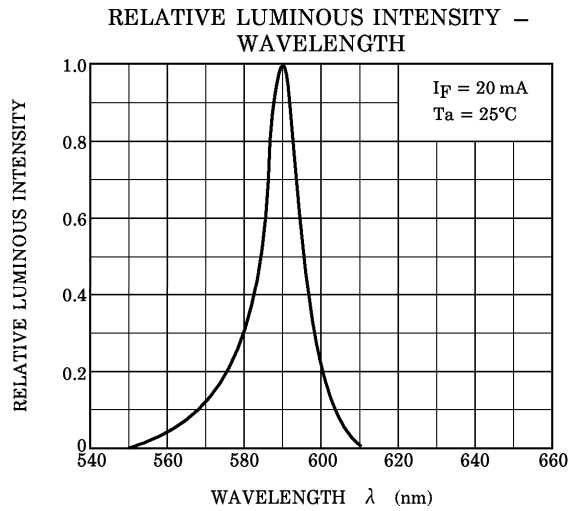
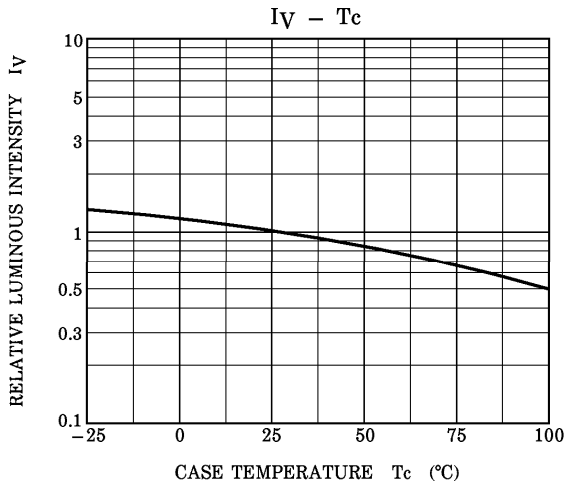
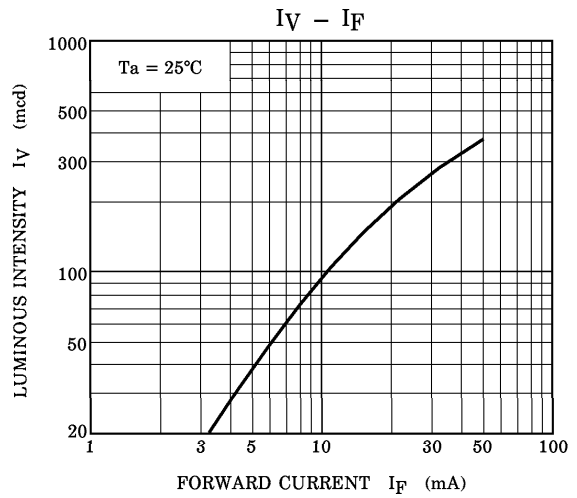
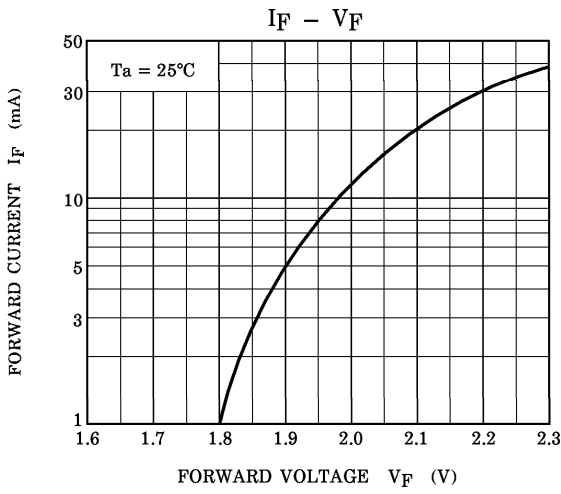
**TLSH1100**



**TLOH1100**



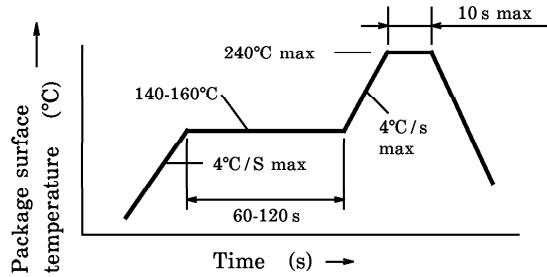
**TLYH1100**



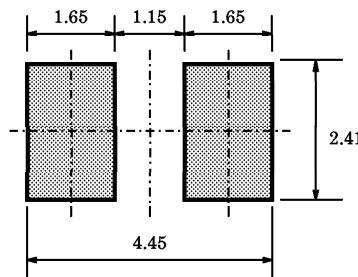
**SOLDERING**

Reflow soldering

Temperature profile



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.

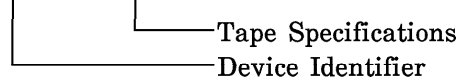
Keep the LED away from any other parts when assembling boards into the set.

**TAPING SPECIFICATIONS**

1. Taping Number

(1) Name : T09

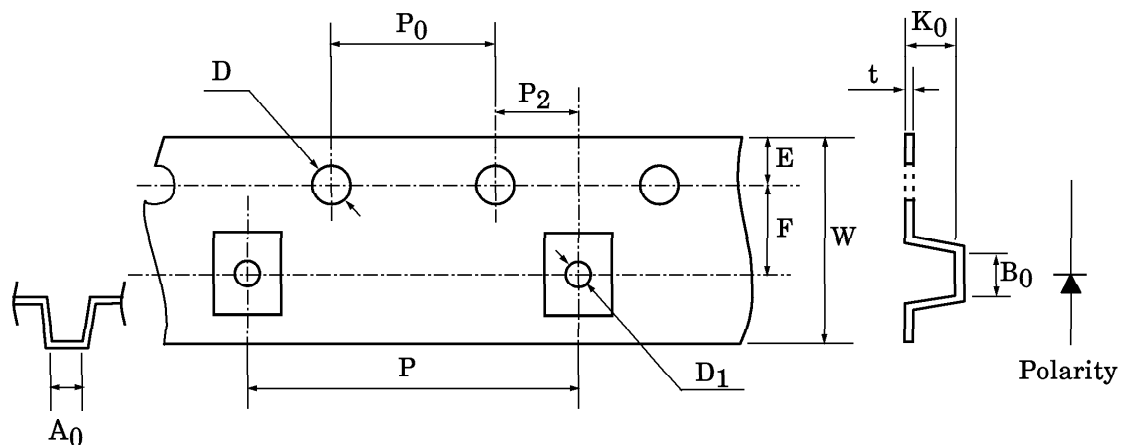
(2) Example : TL□H1100 (T09)



2. Dimension of tape

(Unit in mm)

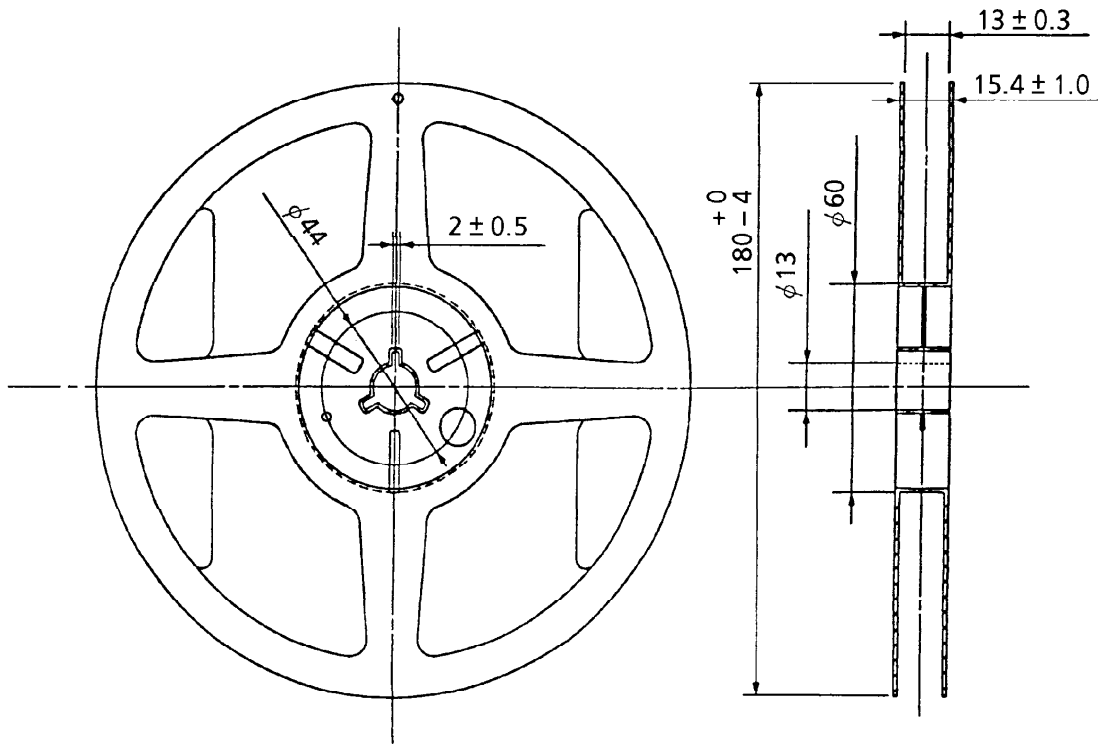
ITEM	DIMENSIONS	TOLERANCE	ITEM	DIMENSIONS	TOLERANCE
D	1.5	+0.1/ -0	P <sub>2</sub>	2.0	±0.05
E	1.75	±0.1	W	12.0	±0.3
P <sub>0</sub>	4.0	±0.1	P	8.0	±0.1
t	0.3	±0.05	A <sub>0</sub>	2.9	±0.1
F	5.5	±0.05	B <sub>0</sub>	3.7	±0.1
D <sub>1</sub>	1.5	+0.1/ -0	K <sub>0</sub>	2.3	±0.1





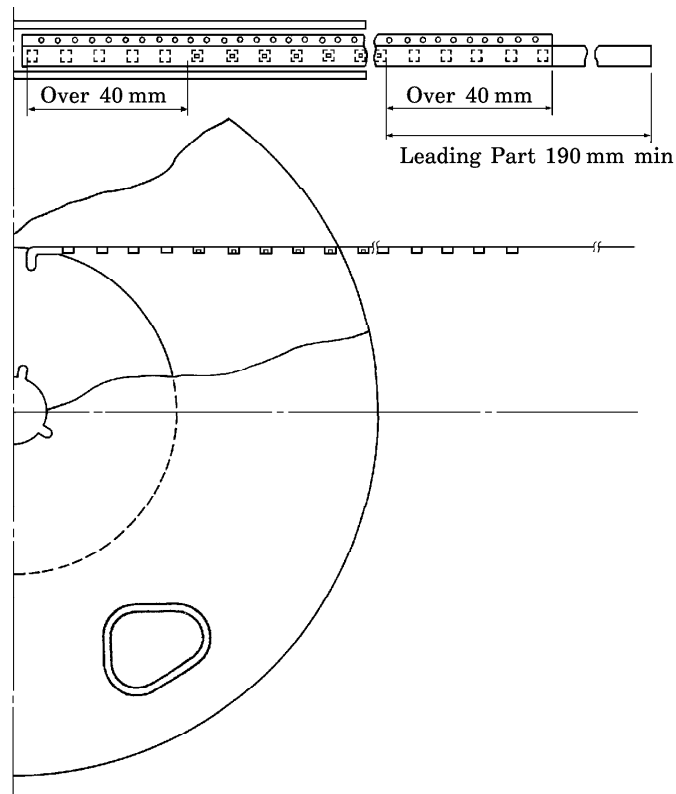
3. Dimension of reel

(Unit in mm)



4. Leading part

(Unit in mm)



6. Packing Form

(1) Number of Devices per Reel and Carton

Reel	1000 devices
Carton	5000 devices

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

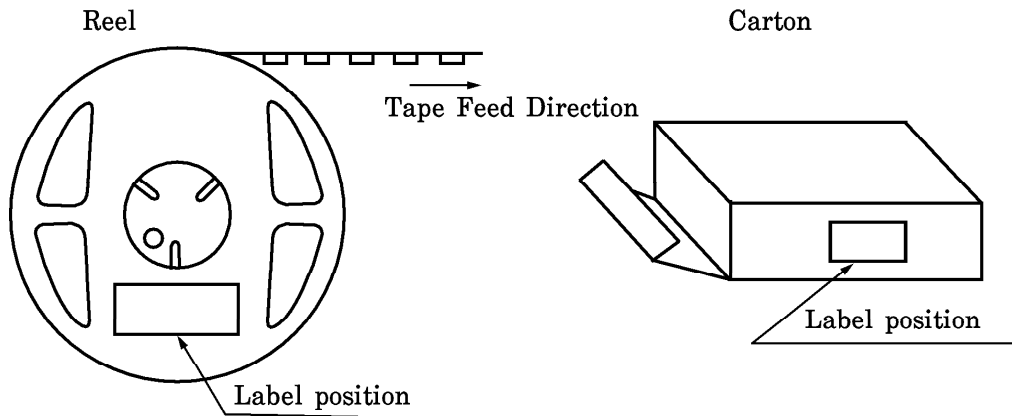
7. Notation Method

(1) Example : TLRH1100 (T09)

P/N :

TYPE	TLRH1100		
ADD. C	(T09)	Q'TY	1000 pcs
NOTE	(rank symbol)	Lot Number	

(2) Label location :



Aluminum pack : Attached to center of one side