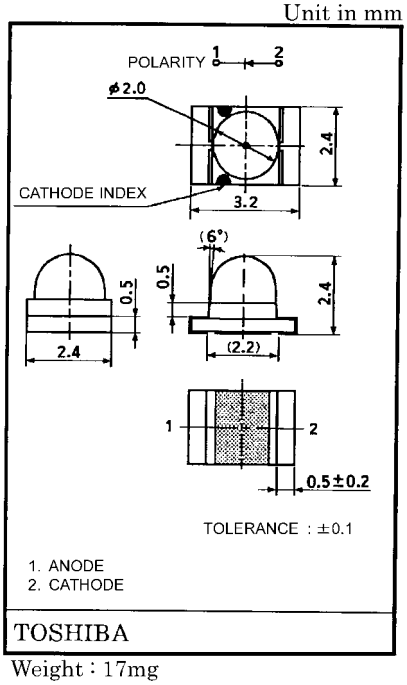
Preliminary

TOSHIBA LED Lamp

TLRE1005B (T03), TLSE1005B (T03), TLOE1005B (T03), TLYE1005B (T03), TLGE1005B (T03), TLPGE1005B (T03)

panel Circuit Indicator

Unit in mm



Weight : 17mg

- 3.2 (L) × 2.4 (W) × 2.4 (H) mm
  TL□E1005B (T03) Series
- φ2 mm lens top type
- InGaAℓP LED
- 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, Pure green
- Can be mounted using surface mounter.
- Reflow soldering is possible.
- Standard embossed taping
  4 mm pitch: T03 (1000 pcs/reel)
- Applications: High-output backlighting source, battery-powered equipment, message boards and portable devices

Line-up

Product name	Color	Material
TLRE1005B	Red	InGaAℓP
TLSE1005B	Red	
TLOE1005B	Orange	
TLYE1005B	Yellow	
TLGE1005B	Green	
TLPGE1005B	Pure Green	

Maximum Ratings (Ta = 25°C)

Product Name	Forward Current I_F (mA)	Reverse Voltage V_R (V)	Power Dissipation P_D (mW)	Operating Temperature T_{opr} (°C)	Storage Temperature T_{stg} (°C)
TLRE1005B	25	4	60	−40~85	−40~100
TLSE1005B					
TLOE1005B					
TLYE1005B					
TLGE1005B					
TLPGE1005B					

Electrical Characteristics (Ta = 25°C)

Product Name	Forward Voltage V_F				Reverse Current I_R	
	Min	Typ.	Max	I_F	Max	V_R
TLRE1005B	—	1.9	2.4	20	50	4
TLSE1005B	—	1.9	2.4			
TLOE1005B	—	2.0	2.4			
TLYE1005B	—	2.0	2.4			
TLGE1005B	—	2.0	2.4			
TLPGE1005B	—	2.1	2.4			
Unit	V			mA	μA	V

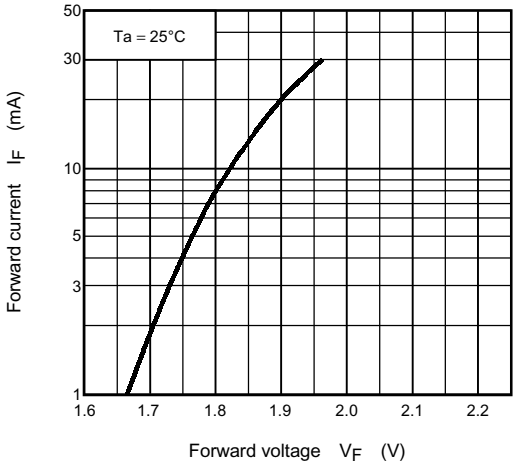
Optical Characteristics (Ta = 25°C)

Product Name	Luminous Intensity I_V				Emission Spectrum							
					Peak emission Wavelength λ_p			$\Delta\lambda$	Dominant Wavelength λ_d			I_F
	Min	Typ.	Max	I_F	Min	Typ.	Max	Typ.	Min	Typ.	Max	
TLRE1005B	(153)	450	—	20	—	(644)	—	(18)	—	630	—	20
TLSE1005B	(272)	1000	—		—	(623)	—	(17)	—	613	—	
TLOE1005B	(476)	1500	—		—	(612)	—	(15)	—	605	—	
TLYE1005B	(272)	850	—		—	(590)	—	(13)	—	587	—	
TLGE1005B	(153)	350	—		—	(574)	—	(11)	—	571	—	
TLPGE1005B	(47.6)	130	—		—	(562)	—	(11)	—	558	—	
Unit	mcd			mA	nm			nm	nm			mA

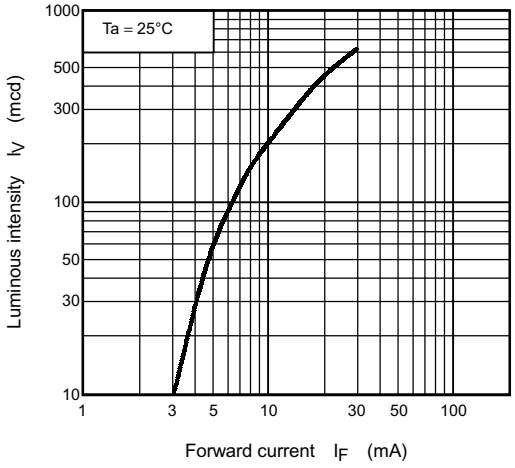
Note: This visible LED lamp also emits some IR light.
If a photodetector is located near the LED lamp, please ensure that it will not be affected by this IR light.

TLRE1005B

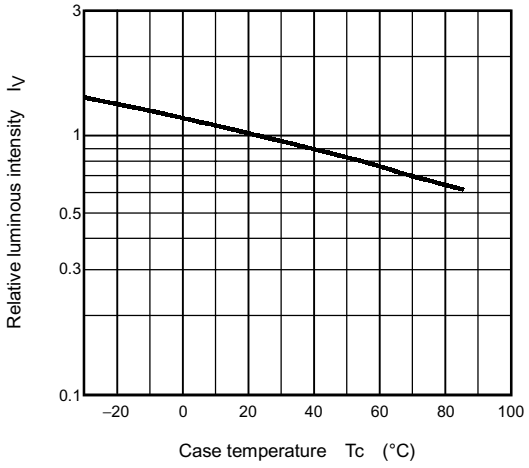
$I_F - V_F$



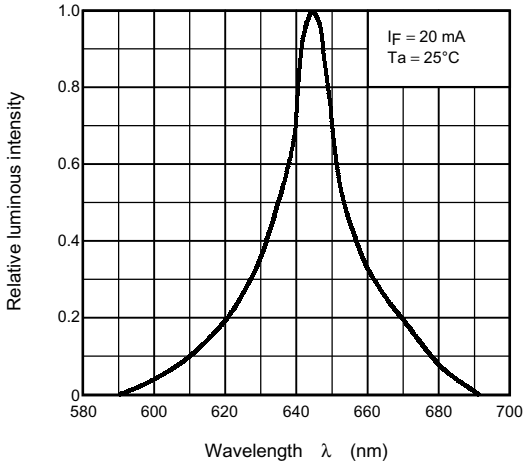
$I_V - I_F$



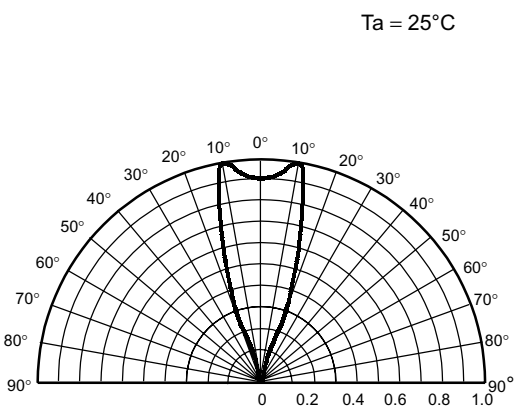
$I_V - Tc$



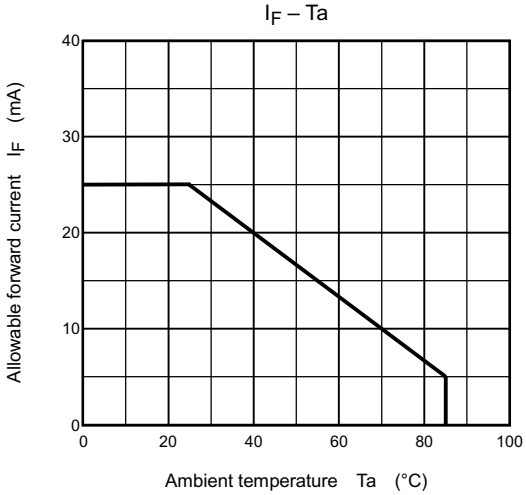
Relative luminous intensity – wavelength



Radiation pattern

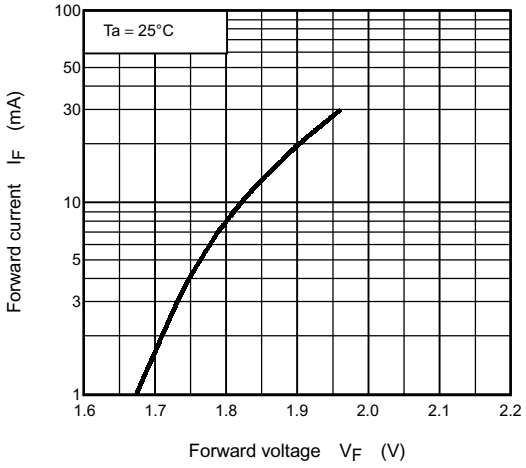


$I_F - Ta$



TLSE1005B

$I_F - V_F$



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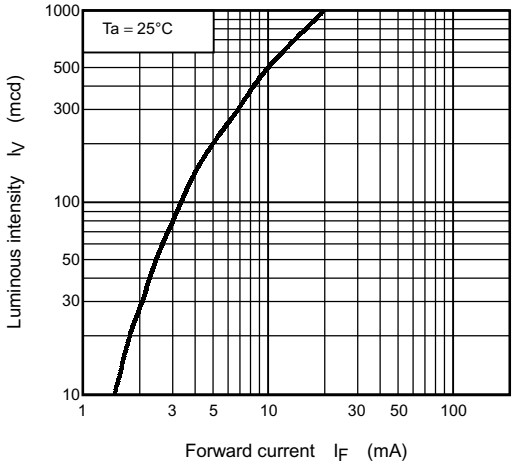
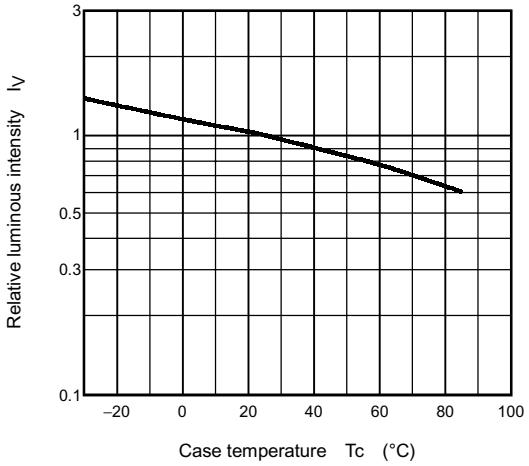
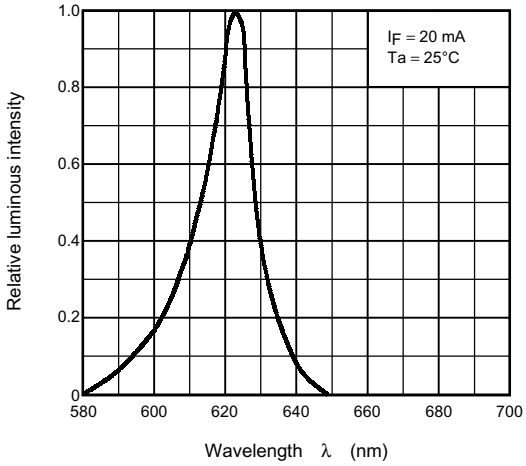


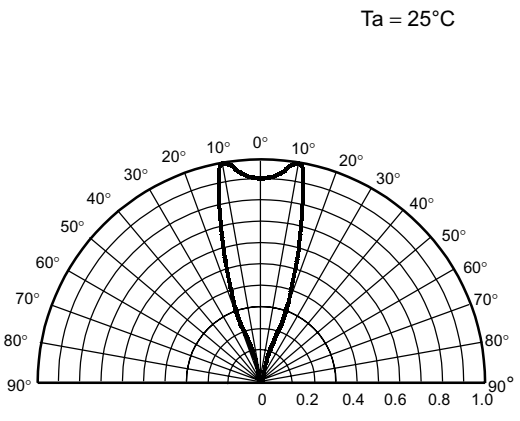
$I_V - Tc$



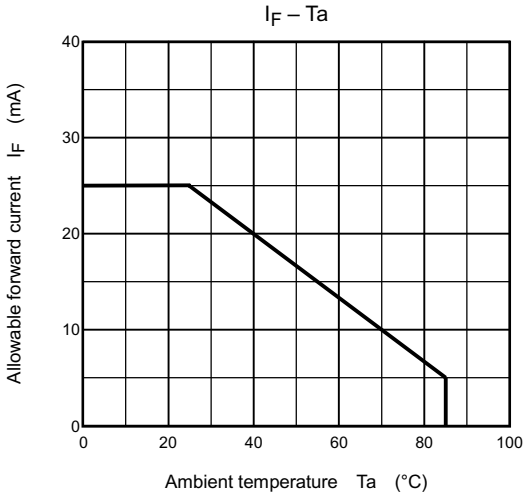
Relative luminous intensity – wavelength



Radiation pattern

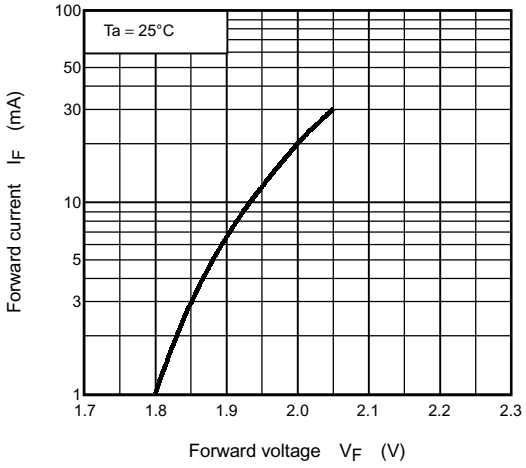


$I_F - Ta$

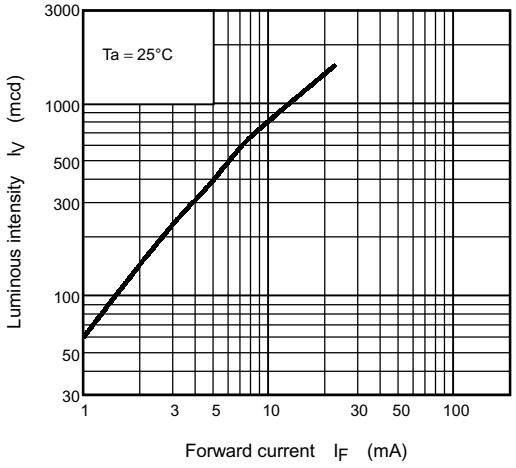


TLOE1005B

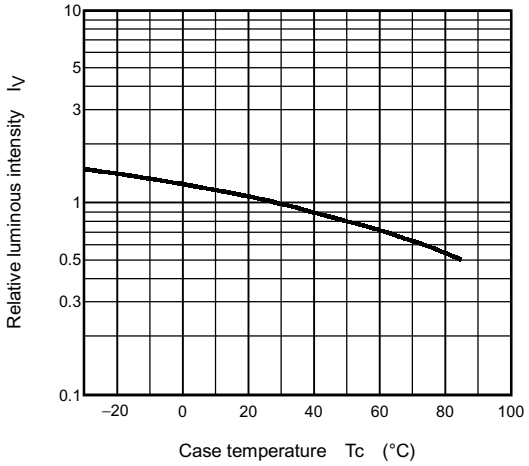
$I_F - V_F$



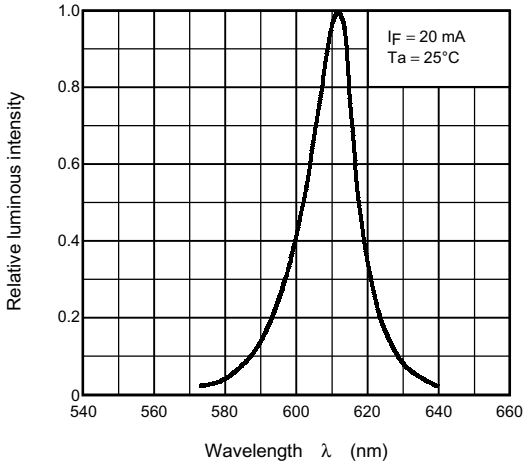
$I_V - I_F$



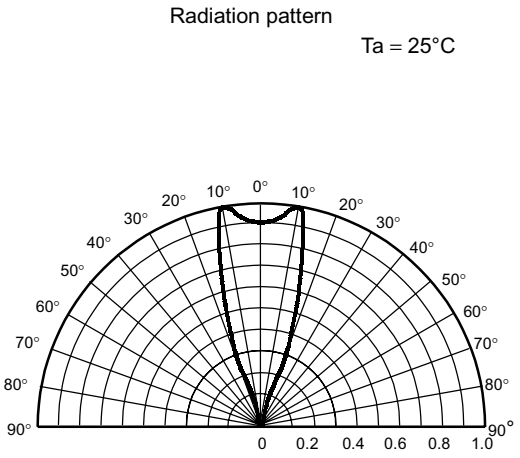
$I_V - Tc$



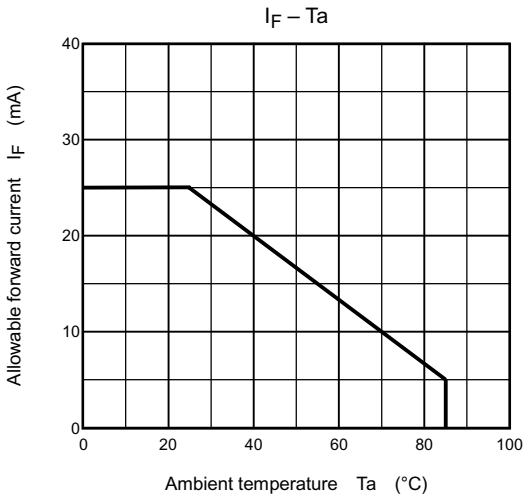
Relative luminous intensity – wavelength



Radiation pattern

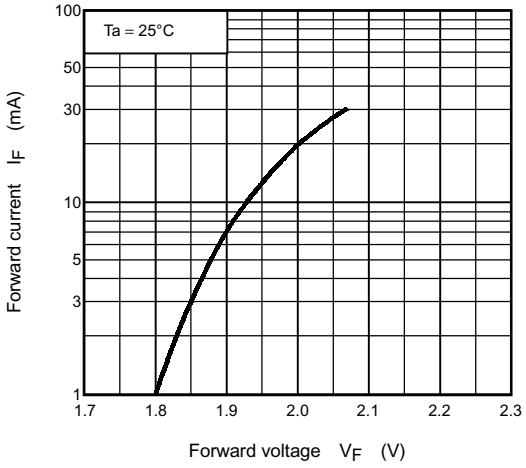


$I_F - Ta$

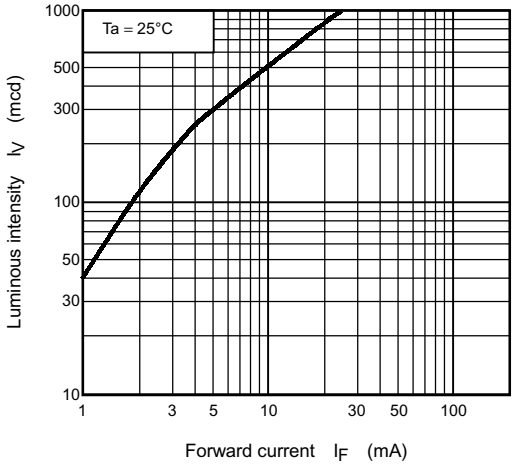


TLYE1005B

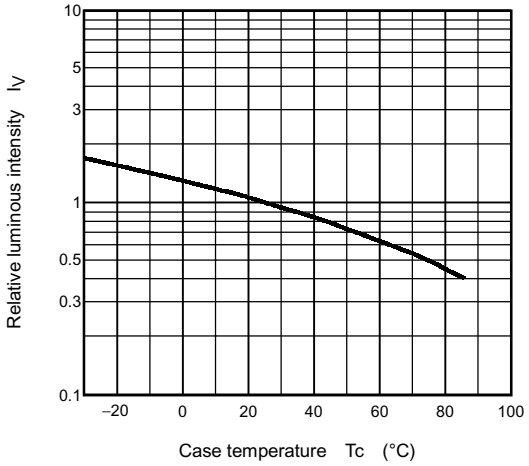
$I_F - V_F$



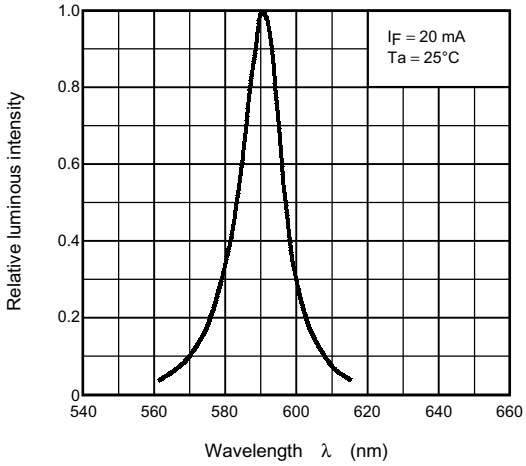
$I_V - I_F$



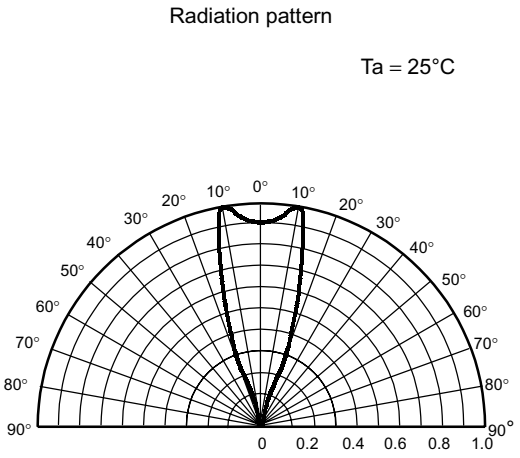
$I_V - Tc$



Relative luminous intensity – wavelength



Radiation pattern



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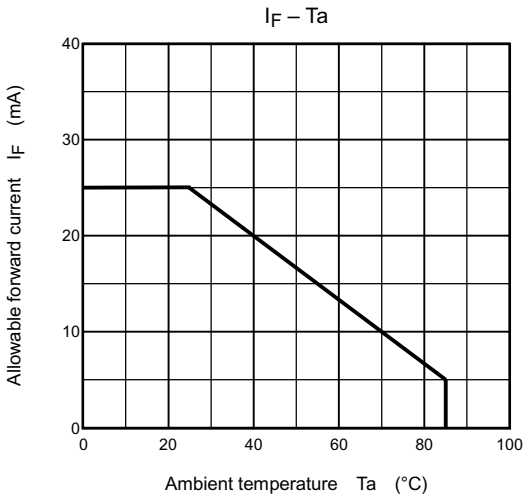
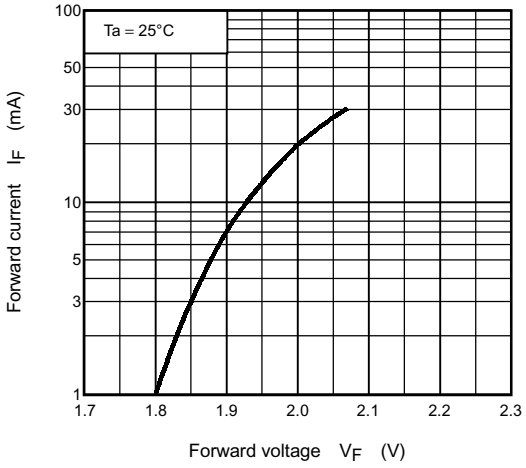
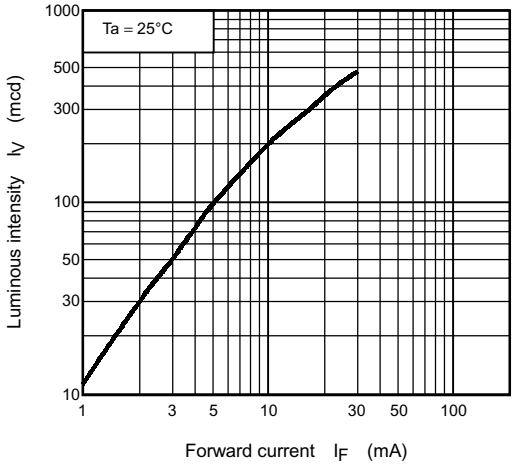


TLGE1005B

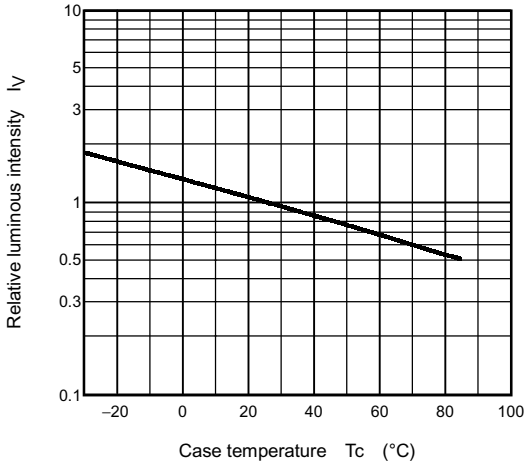
$I_F - V_F$



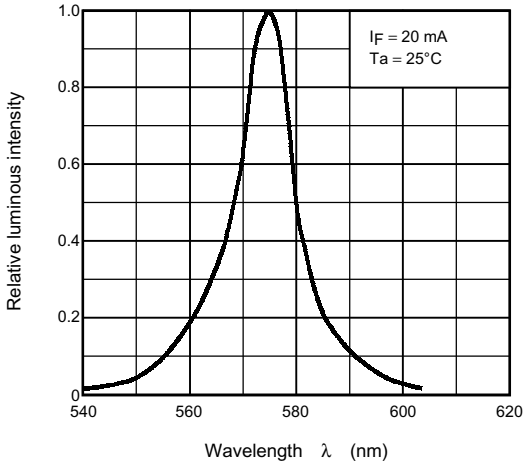
$I_V - I_F$



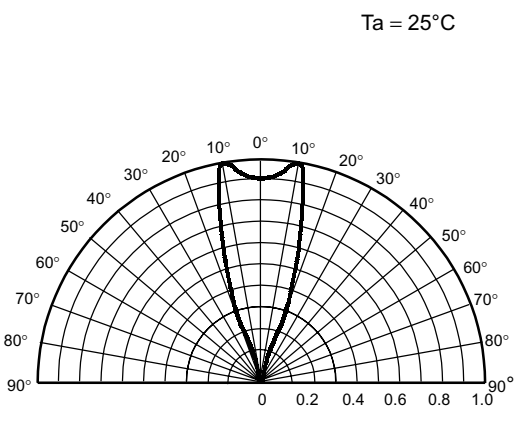
$I_V - Tc$



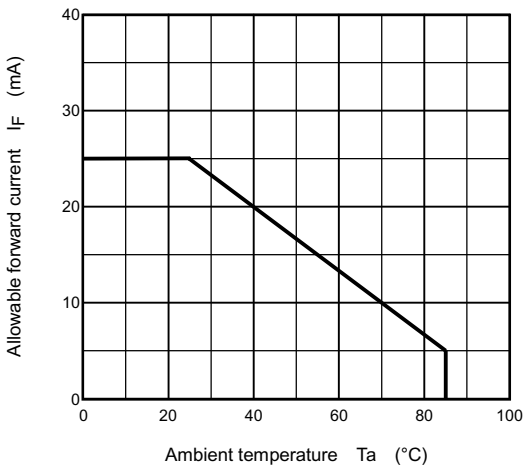
Relative luminous intensity – wavelength



Radiation pattern

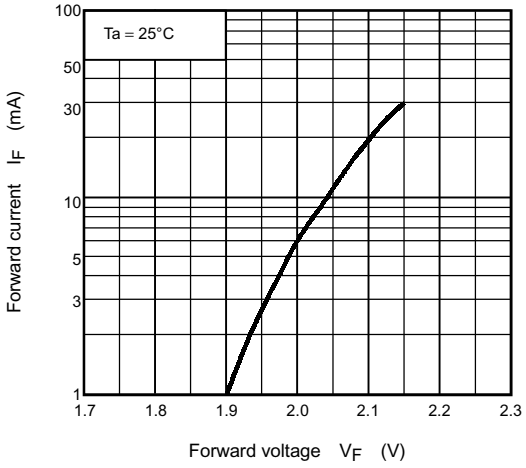


$I_F - Ta$

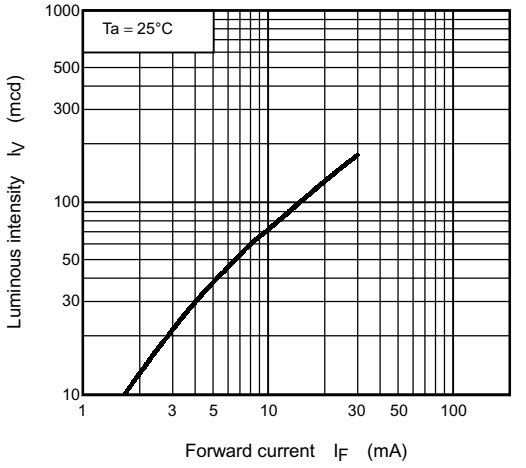


TLPGE1005B

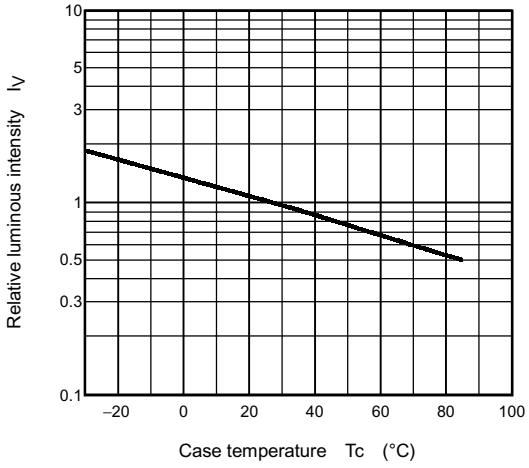
$I_F - V_F$



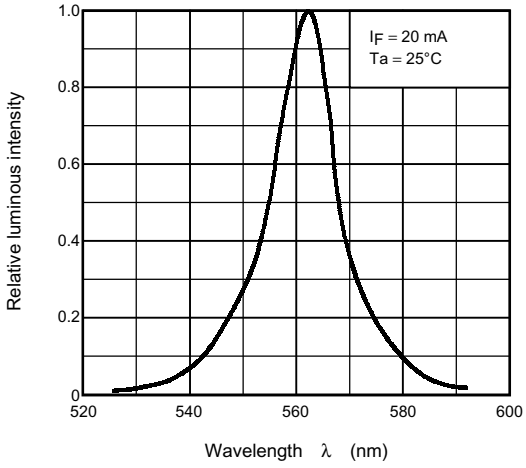
$I_V - I_F$



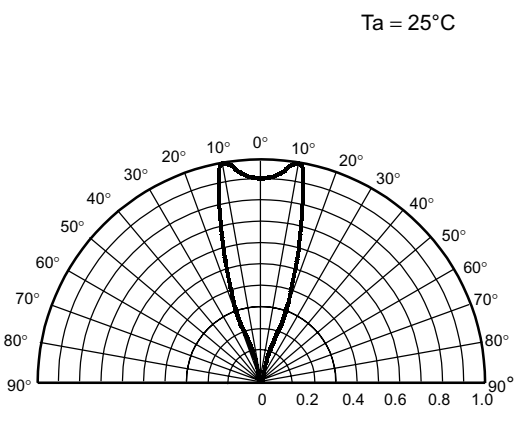
$I_V - Tc$



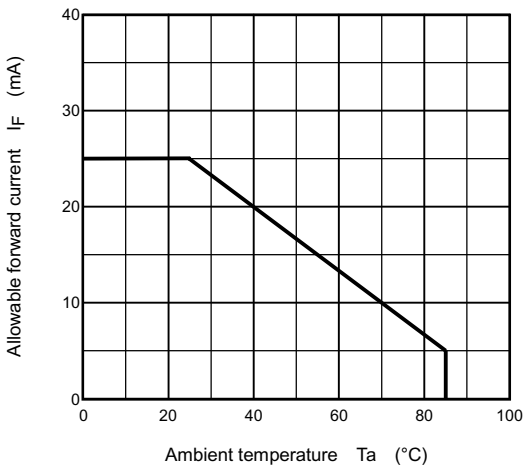
Relative luminous intensity – wavelength



Radiation pattern



$I_F - Ta$



Packaging

The LED devices are 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 condition is recommended.

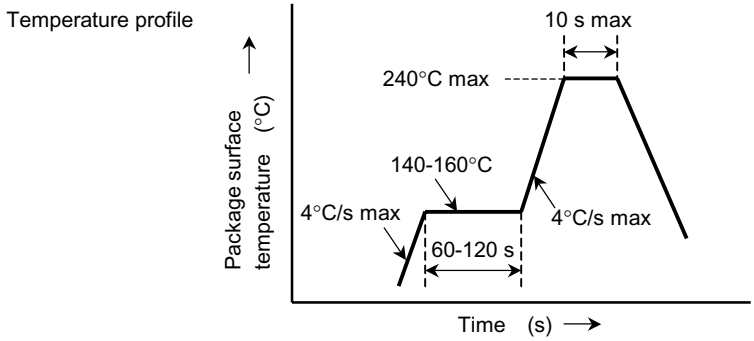
Temperature: 5~30°C
Relative Humidity: 60% or lower
Time: 168 h max

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.

Mounting Method

Soldering

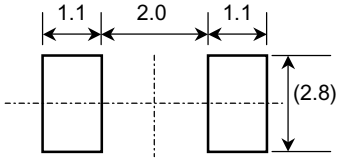
- Reflow soldering



- Please perform the first reflow soldering within 168 h after opening the package with reference to the above temperature profile.
- Second time reflow
  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: 25 W
  Temperature: no more than 30°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

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.

Recommended Automatic Surface Mounter Conditions

Absorption head diameter	ϕ1.2 mm

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

Taping specifications

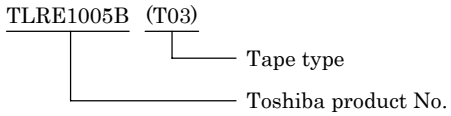
This specification lays out the 4 mm pitch embossed-tape packing requirements for 3.2 mm (L) × 2.4 mm (W) × 2.4 mm (H) size surface-mount LED lamp.

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.

(a) In process, taping materials may sustain an electrostatic charge, use an ionizer to neutralize the ions.

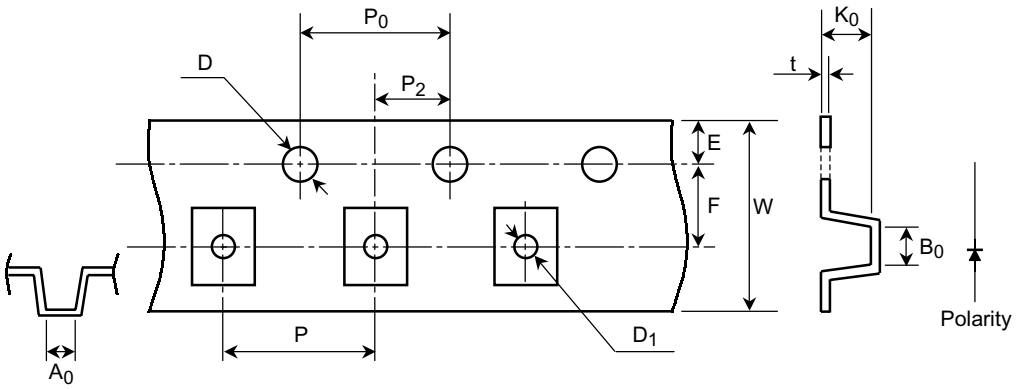
(b) For transport and temporary storage of devices, use containers (boxes, jigs, bags) that are made of anti-static materials or of materials that dissipate electrostatic electricity.

3. Tape Dimensions

(Unit in mm)

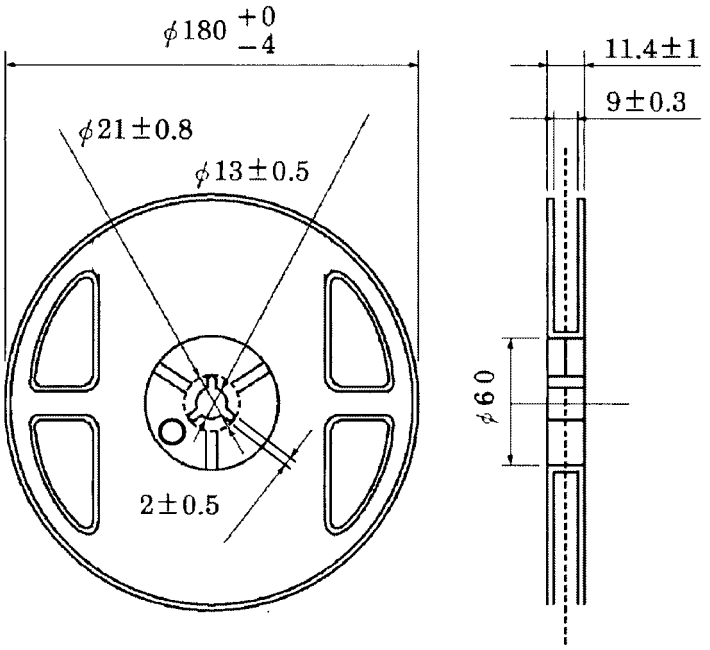
Symbol	Dimension	Tolerance
D	1.50	+0.1/–0
E	1.75	±0.1
P_0	4.00	±0.1
t	0.25	±0.05
F	3.50	±0.05
D_1	1.10	±0.1

Symbol	Dimension	Tolerance
P_2	2.00	±0.05
W	8.00	±0.3
P	4.00	±0.1
A_0	2.80	±0.1
B_0	3.50	±0.1
K_0	2.70	±0.1

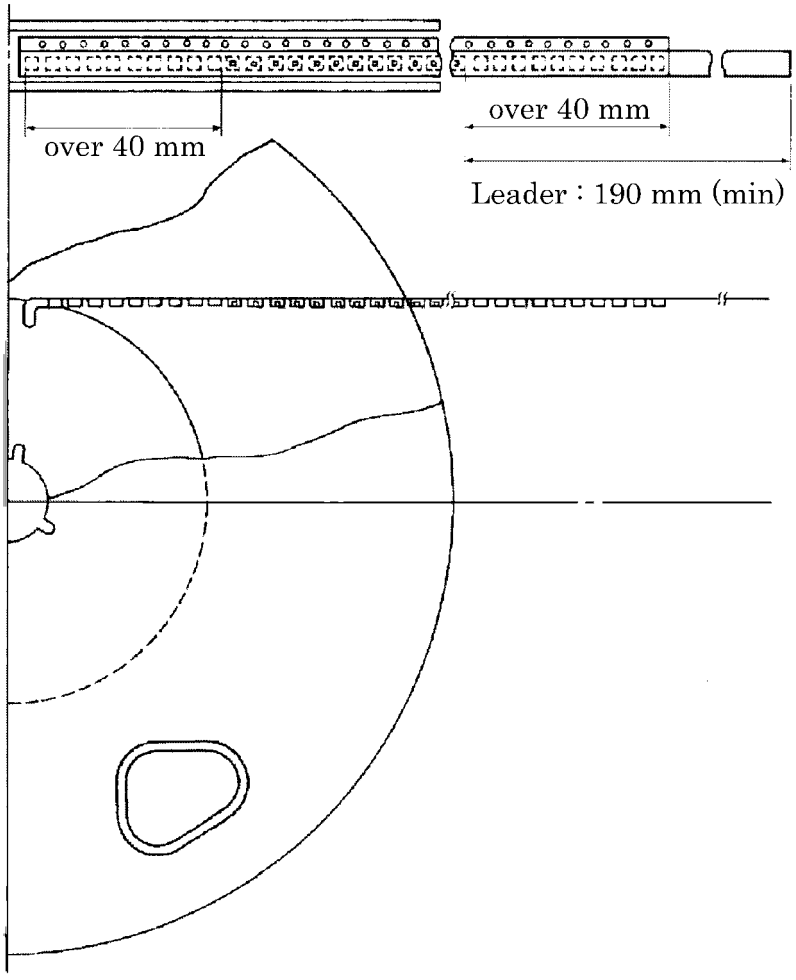


4. Reel Dimensions

Unit in mm



5. Leader and Trailer



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

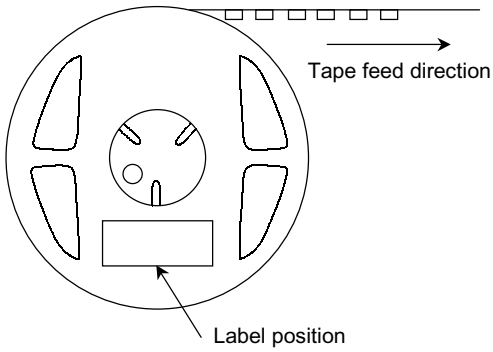
(1) Example: TLRE1005B (T03)

P/N:

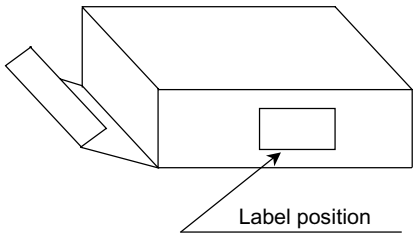
TYPE	TLRE1005B		
ADD.C	(T03)	QTY	1000 pcs
NOTE (rank symbol)			Lot Number

(2) Label location:

Reel



Carton



Aluminum pack: Attached to center of one side