

Preliminary

TOSHIBA LED Lamp

TLBD1052(T20),TLEGD1052(T20)

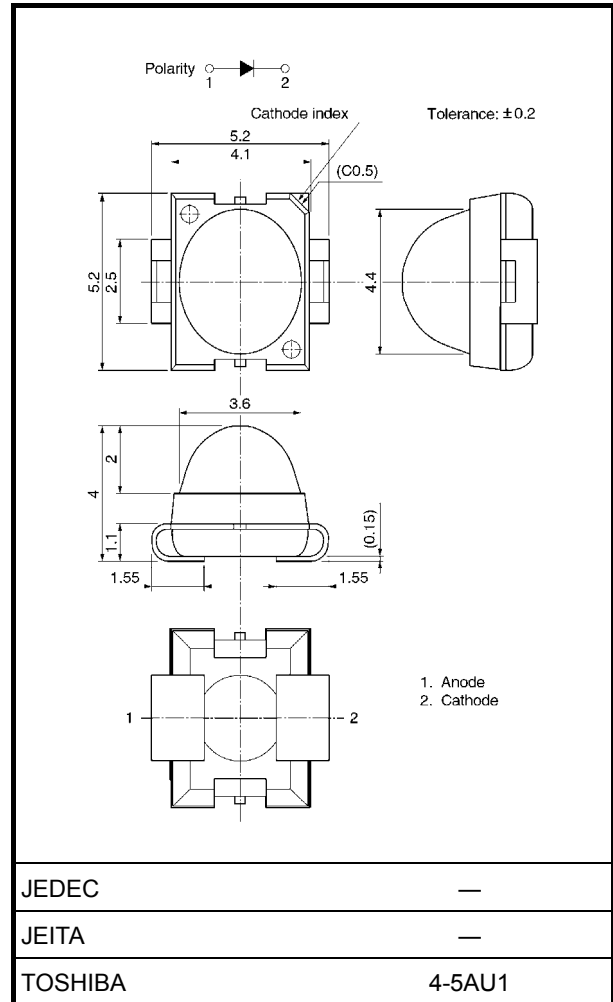
Panel Circuit Indicator

- 5.2 (L) × 5.2 (W) × 4.0 (H) mm size
- TL H1052 (T20) Series
3.6 × 4.4 mm transparent oval lens top type
- Colors : Blue d = 470 nm (typ.)
: Green d = 528 nm (typ.)
- Clear luminescence is obtained.
- High Operating Temperature
: T_{opr} = -40~100°C (85 °)
: T_{stg} = -40~110
- Can be mounted using surface mounter.
- Reflow Soldering is possible.
- Standard Embossed Taping
8 mm pitch : T20(400pcs/Reel)
- Applications : message signboards, backlighting, amusement, etc

Color and Material

Product Name	Color	Material
TLBD1052	Blue	InGaN
TLEGD1052	Green	InGaN

unit : mm



Weight: 0.085g

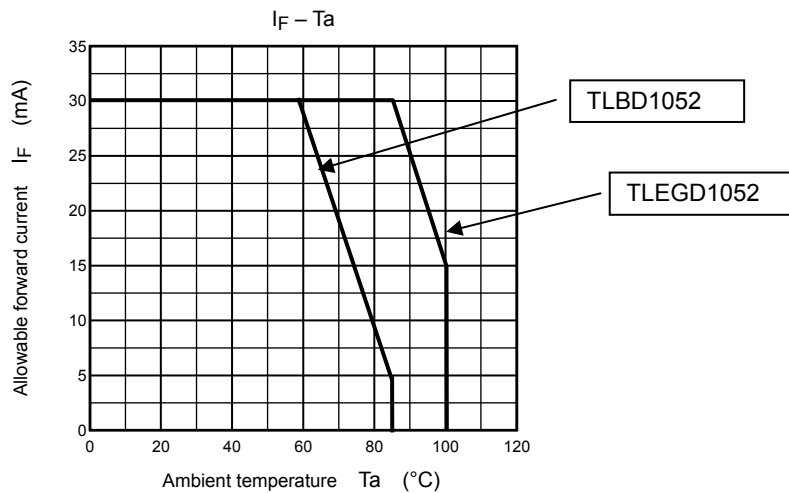
Absolute Maximum Ratings (Ta = 25°C)

Product Name	Forward Current I _F (mA) Please see Note 1	Reverse Voltage V _R (V)	Power Dissipation P _D (mW)	Operation Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)
TLBD1052	30	4	120	-40~85	-40~110
TLEGD1052				-40~100	

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note 1: Forward current derating



Electrical Characteristics (Ta = 25°C)

Product Name	Forward Voltage V _F				Reverse Current I _R	
	Min.	Typ.	Max.	I _F	Max.	V _R
TLBD1052	2.7	3.3	4.0	20	10	4
TLEGD1052	2.7	3.3	4.0			
Unit	V			mA	μA	V

Optical Characteristics-1 (Ta = 25°C)

Product Name	Luminous Intensity I _v			I _F	Available I _v rank Please see Note 2
	Min.	Typ.	Max.		
TLBD1052	85	300	736	20	N / P / Q
TLEGD1052	272	850	2300	20	Q / R / S
Unit	mcd	mcd	mcd	mA	

Note 2: The specification on the above table is used for I_v classification of LEDs in Toshiba facility.
Each reel includes the same rank LEDs. Let the delivery ratio of each rank be unquestioned.

Rank	Luminous Intensity I _v	
	Min	Max
N	85	230
P	153	414
Q	272	736
R	476	1290
S	850	2300
Unit	mcd	mcd

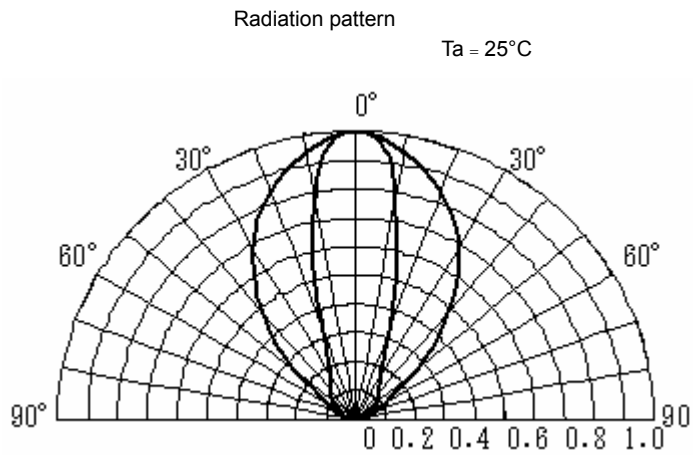
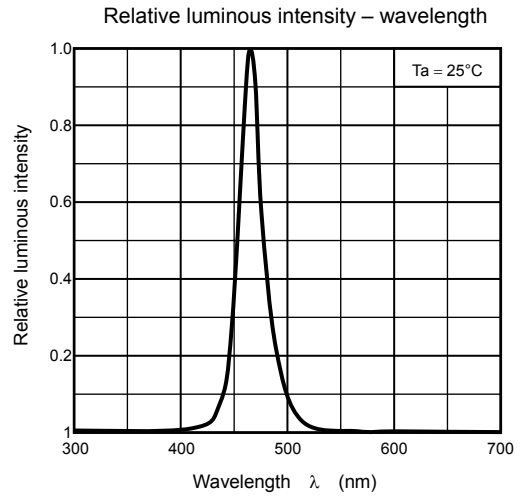
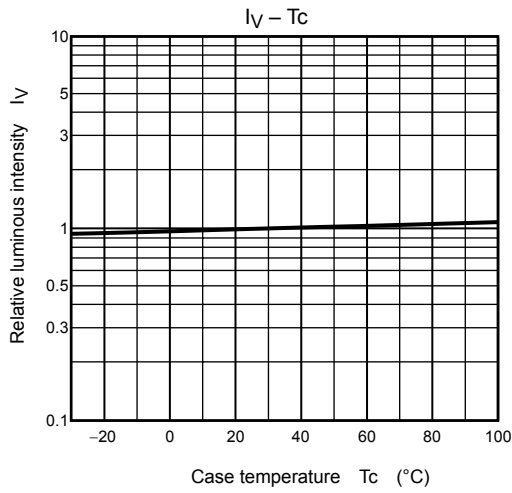
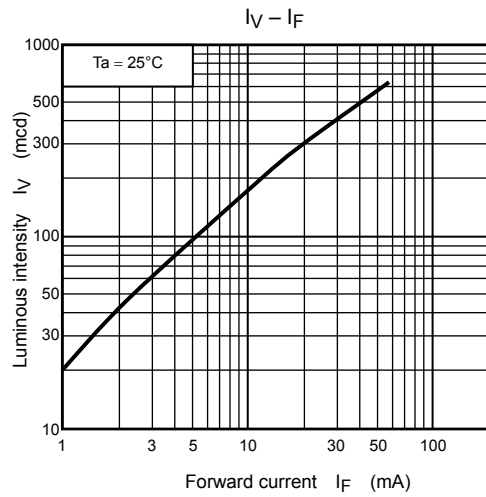
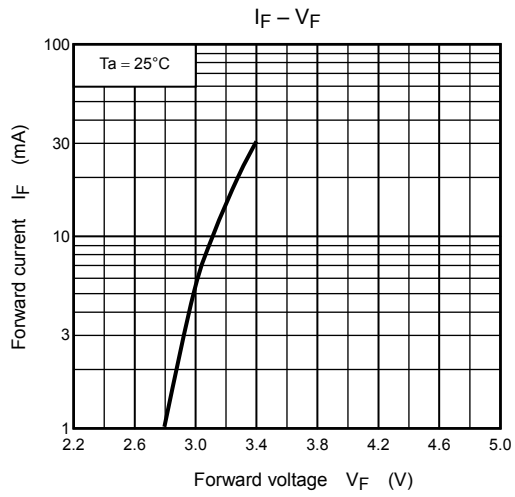
Optical Characteristics-2 (Ta = 25°C)

Product Name	Emission Spectrum							I _F
	Peak Emission Wavelength λ _p			Δλ Typ	Dominant Wavelength λ _d			
	Min	Typ	Max		Min	Typ	Max	
TLBD1052	—	468	—	25	463	470	479	20
TLEGD1052	—	518	—	35	517	528	540	
Unit	nm			nm	nm			mA

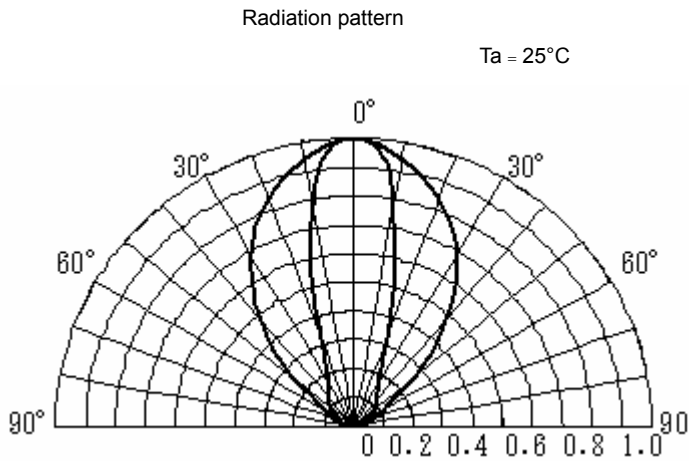
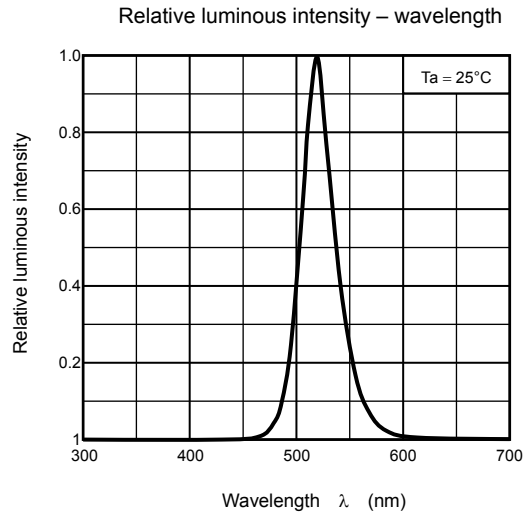
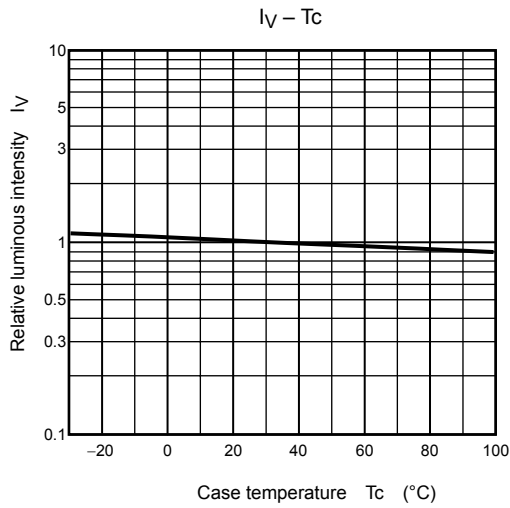
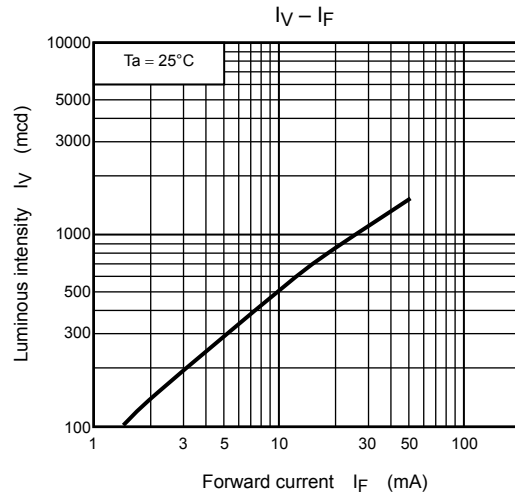
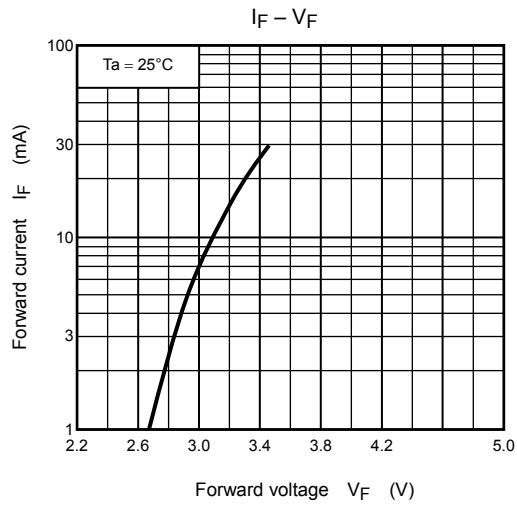
The cautions

- ESD withstand voltage according to MIL STD 883D, Method 3015.7 : ≥1000V
When handling this LED, take the following measures to prevent the LED from being damaged or otherwise adversely affected.
 - Use a conductive tablemat and conductive floor mat, and ground the workbench and floor.
 - Operators handling laser diodes must be grounded via a high resistance (about 1MΩ). A conductive strap is good for this purpose.
 - Ground all tools including soldering irons.
- These products are designed as a general display light source usage, and they have applied the measurement standard that matched with the sensitivity of human's eyes. Therefore, they are not intended for usage of functional application (ex. Light source for sensor, optical communication and etc) except general display light source.

TLBD1052



TLEGD1052



Packaging

These LED devices are packed in an aluminum envelope with silica gel and a moisture indicator to prevent moisture absorption. The optical characteristics of the devices may be affected by exposure to moisture in the air before soldering and they should therefore be stored under the following conditions:

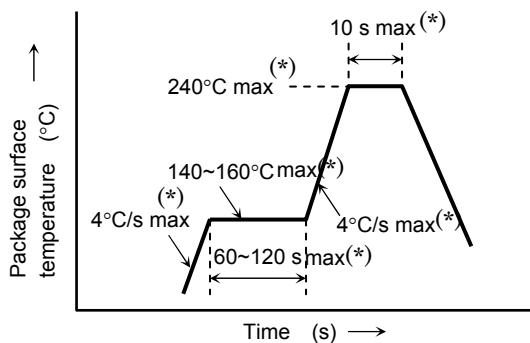
1. This moisture-proof bag may be stored unopened for up to 12 months under the following conditions.
Temperature: 5°C~30°C
Humidity: 90% (max)
2. After the moisture-proof bag has been opened, the devices should be assembled within 72 hours in an environment of 5°C to 30°C/70% RH or below.
3. If, upon opening, the moisture indicator card shows humidity of 30% or above (when the indication color changes to pink) or the expiration date has passed, the devices should be baked while packed in the tape reel. After baking, use the baked devices within 72 hours, but perform baking only once.
Baking conditions: 60 ±5°C, for 12 to 24 hours.
Expiration date: 12 months from the sealing date, which is imprinted on the same side as this label.
4. Repeated baking may cause the peeling strength of the tape to change, leading to trouble in mounting. Also, be sure to prevent damage to the device from static electricity during the baking process.
5. Any breakage in the laminate packing material will cause the hermeticity of the product to deteriorate. Do not toss or drop the packed devices.

Mounting Method

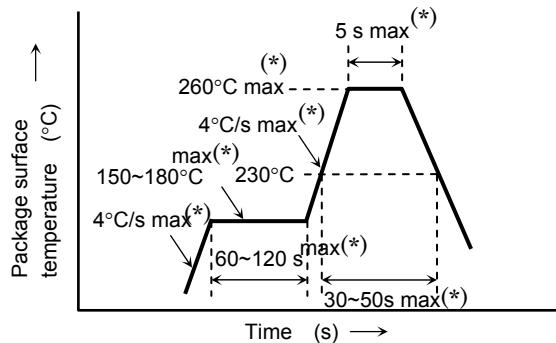
Soldering

- Reflow soldering (example)

Temperature profile for Pb soldering (example)

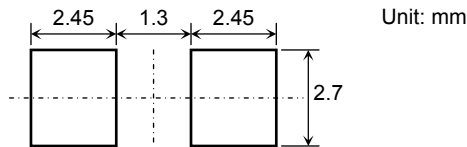


Temperature profile for Pb-free soldering (example)



- The product is evaluated using above reflow soldering conditions. No additional test is performed exceed the condition (i.e. the condition more than (*)MAX values) as a evaluation. Please perform reflow soldering under the above conditions.
- Perform the first reflow soldering in accordance with the above temperature profile and within 72 hours of opening the package.
- Second time reflow
In case of second reflow soldering should be performed within 72 hours of the first reflow under the above conditions.
Storage conditions before the second reflow soldering: 5 ~ 30°C, 70% RH max
- Do not perform flow soldering.
- Make any necessary soldering corrections manually.
(only once at each soldering point)
Soldering iron: Less than 25 W
Temperature : Less than 350°C or less
Time : within 3 s (Up to 1time per place)

Recommended soldering pattern



Cleaning

When cleaning is required after soldering, Toshiba recommends the following cleaning solvents. Our dipping tests (carried out under the recommended conditions) confirm that these solvents have no effect on semiconductor devices. In selecting the cleaning solvent you will actually use, be sure to take into account the cleaning conditions and usage conditions.

Cleaning Solvent

ASAHI CLEAN AK-225AES
 KAO CLEANTHROUGH 750H
 PINE ALPHA ST-100S
 TOSHIBA TECHNOCARE
 (FRW-17, FRW-1, FRV-100)

Manufacturer

ASAHI GLASS
 KAO
 ARAKAWA CHEMICAL
 GE TOSHIBA SILICONES

Precautions When Mounting

Do not apply force to plastic parts of the LED under high-temperature conditions.

The LED plastic is easily scratched. Avoid friction between plastic parts and hard objects or materials.

When installing the PCB in a product, ensure that the device does not come into contact with other components.

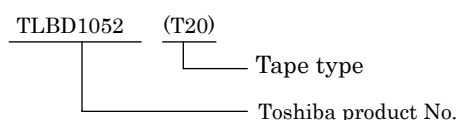
Tape Specifications

This specification lays out the 8 mm pitch embossed-tape packing requirements for 5.2 mm (L) × 5.2 mm (W) × 4.0 mm (H) size surface-mount LED lamp.

1. Product number format

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: T20 (8-mm pitch)
- (2) Example



2. Related Matters

- (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.

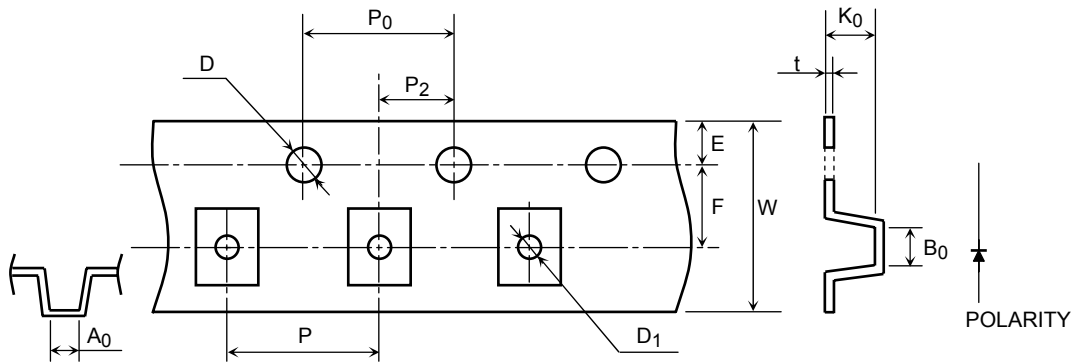
- (a) In process, taping materials may sustain an electrostatic charge, use an ionizer to neutralize the ions.
- (b) For transport and temporary storage of devices, use containers (boxes, jigs, bags) that are made of anti-static materials or of materials that dissipate electrostatic electricity.

3. Tape Dimensions

Unit in mm

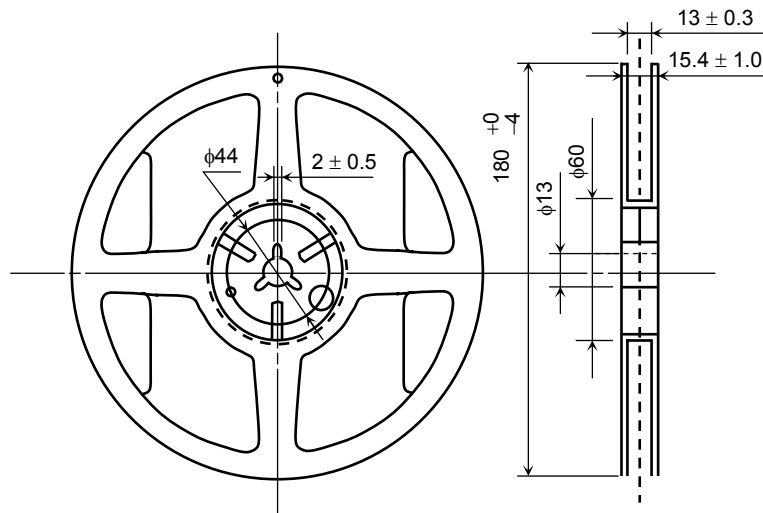
Symbol	Dimension	Tolerance
D	1.5	+0.1/-0
E	1.75	±0.1
P ₀	4.0	±0.1
t	0.4	±0.05
F	5.5	±0.05
D ₁	1.6	±0.1

Symbol	Dimension	Tolerance
P ₂	2.0	±0.05
W	12.0	±0.2
P	8.0	±0.1
A ₀	5.5	±0.1
B ₀	5.5	±0.1
K ₀	4.4	±0.1

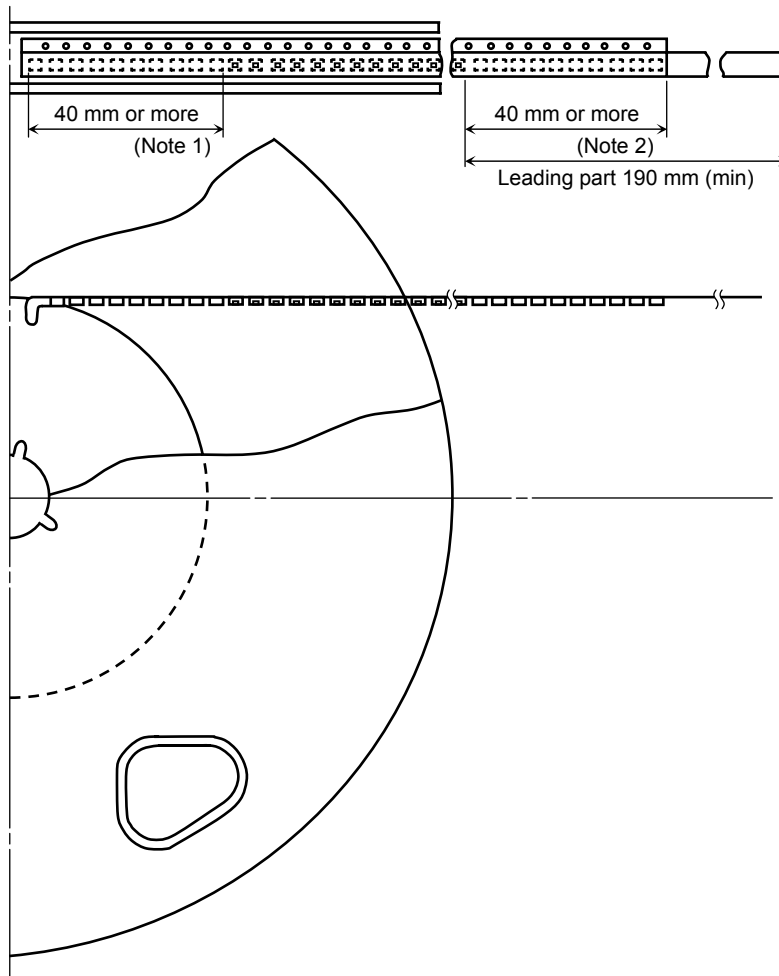


4. Reel Dimensions

Unit in mm



5. Leader and Trailer



Note1: Empty trailer section

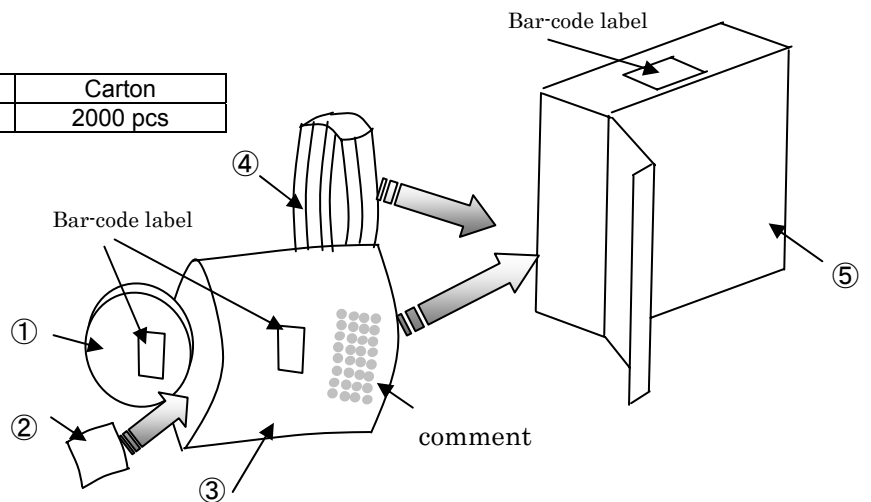
Note2: Empty leader section

6. Packing display

(1) Packing quantity

Tape type	Reel	Carton
T20	400 pcs	2000 pcs

No.	Item
①	Reel
②	Silica gel with a humidity indicator
③	Aluminum pack
④	Cushion
⑤	Carton



(2) Packing form: Each reel and a silica gel with a humidity indicator are sealed in an aluminum pack.

7. Label format

(1) Example : TLBD1052(T20)

* See below for how to decipher the Lot Number.

P/N :

TYPE	TLBD1052		
ADDC	(T20)	Q TY	400pcs

Lot. Number & Symbol for control (Rank symbol) 400

Use under 5-30degC/70%RH within 72h

[[G]] / RoHS COMPATIBLE

*(Y)380 400 Symbol for control



TOSHIBA



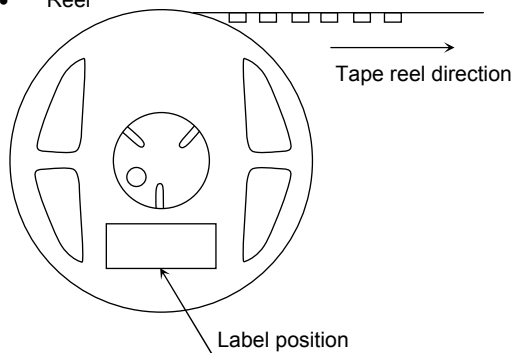
SEALED May,17,2007

DIFFUSED IN USA

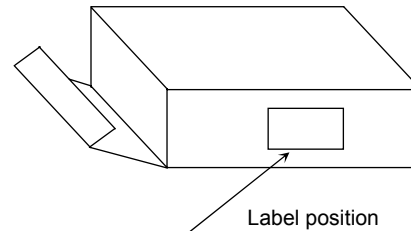
ASSEMBLED IN JAPAN

(2) Label location

- Reel



- Carton



- The aluminum package in which the reel is supplied also has a copy of the label attached to the center of one side.

*The Lot Number includes the following information.

Example: 270 7 E 2 G → "Packaged May 17, 2007"

a b c d e

a: Domestic ID

b: Last digit of the year (CE): "0" (Y2000), "1" (Y2001), "2" (Y2002) ~ "9" (Y2009)

Repeated for each decade

c: Month: "A" (Jan), "B" (Feb), "C" (Mar) ~ "L" (Dec)

d: Decade of the month: "1" (First), "2" (Middle), "3" (Last)

e: Day in d above: "A" (1st), "B" (2nd), "C" (3rd) ~ "J" (9th), "K" (10th)

"L" denotes the 31st of the month

"I" is not used to denote a day in this date system

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- TOSHIBA products should not be embedded to the downstream products which are prohibited to be produced and sold, under any law and regulations.
- GaAs(Gallium Arsenide) is used in this product. The dust or vapor is harmful to the human body. Do not break, cut, crush or dissolve chemically.