

TOSHIBA LED Lamp

TLBF1108(T11), TLEGF1108(T11)

Unit: mm

Panel Circuit Indicators

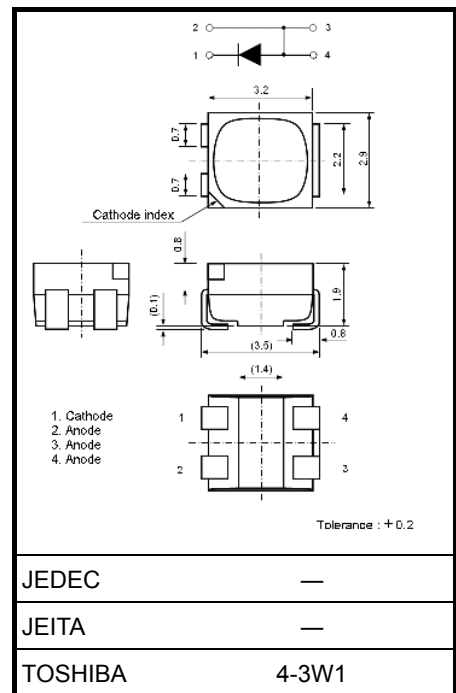
3.5 (L) mm × 2.9 (W) mm × 1.9 (H) mm

TL□F1108(T11) series

- Luminous intensity:
 - Blue: $I_v = 560$ mcd (typ.)@ $I_F = 40$ mA
 - Green: $I_v = 2000$ mcd (typ.)@ $I_F = 40$ mA
- $T_{opr} / T_{stg} = -40$ to 100°C
- High current driving : $I_F = 50$ mA (max)
- Standard embossed tape packing:
 - 4 mm pitch : T11 type (2000 pcs/reel)
 - 8-mm tape/ reel
- Applications: automotive use, backlighting, pilot lamp etc.

Color and Material

Part Number	Color	Material
TLBF1108	Blue	InGaN
TLEGF1108	Green	



Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

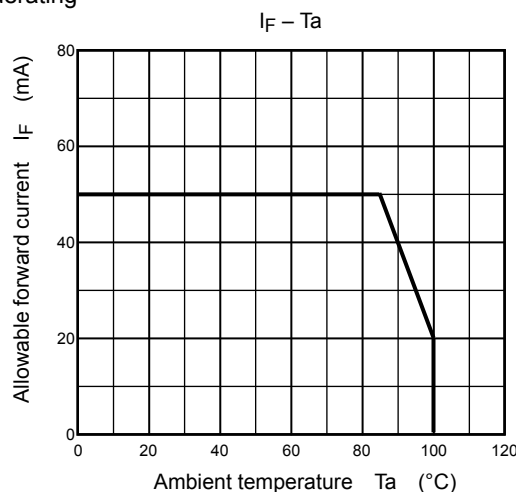
Weight: 0.035 g (typ.)

Characteristics	Symbol	Rating	Unit
Forward Current (Note 1)	I_F	50	mA
Reverse Voltage	V_R	5	V
Power Dissipation	P_D	200	mW
Operating Temperature	T_{opr}	-40 to 100	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 to 100	$^\circ\text{C}$

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)

Characteristics	Symbol	Test condition	Min	Typ.	Max	Unit
Forward Voltage	V_F	$I_F = 40 \text{ mA}$	3.0	3.5	4.0	V
Reverse Current	I_R	$V_R = 5 \text{ V}$	—	—	10	μA

Optical Characteristics-1 (Ta = 25°C)

Part Number	Luminous Intensity I_v				I_F	Available I_v rank
	Min	Typ.	Max	Please see Note 2		
TLBF1108	400	560	1250	40	UA1 / UA2 / VA1 / VA2	
TLEGF1108	1000	2000	3200		WA1 / WA2 / XA1 / XA2	
Unit	mcd			mA	—	

Note 2: The specification as following 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.

I_v rank		
Rank symbol	Min	Max
UA1	400	630
UA2	500	800
VA1	630	1000
VA2	800	1250
WA1	1000	1600
WA2	1250	2000
XA1	1600	2500
XA2	2000	3200
Unit	mcd	mcd

Optical Characteristics-2 (Ta = 25°C)

Part Number	Emission Spectrum							I_F
	Peak Emission Wavelength λ_p			$\Delta\lambda$	Dominant Wavelength λ_d			
	Min	Typ.	Max	Typ.	Min	Typ.	Max	
TLBF1108	—	468	—	25	463	470	477	40
TLEGF1108	—	518	—	35	518	528	538	
Unit	nm			nm	nm			mA

The cautions

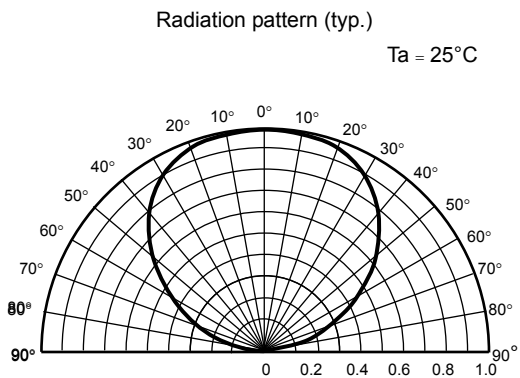
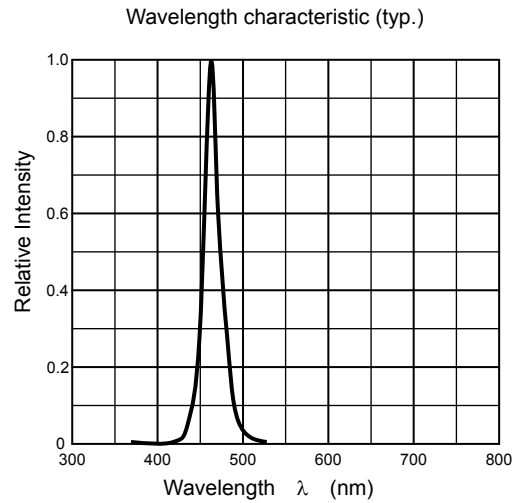
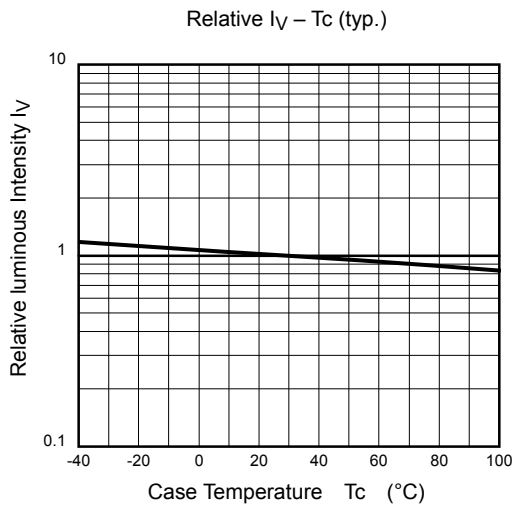
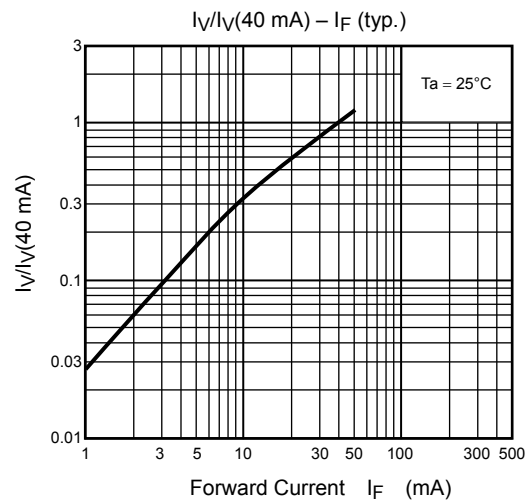
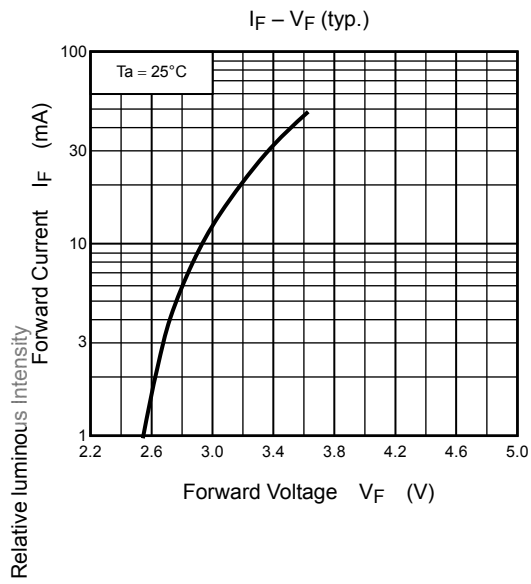
ESD withstand voltage according to MIL STD 883D, Method 3015.7: $\geq 1000V$

When handling this LED, take the following measures to prevent the LED from being damaged or otherwise adversely affected.

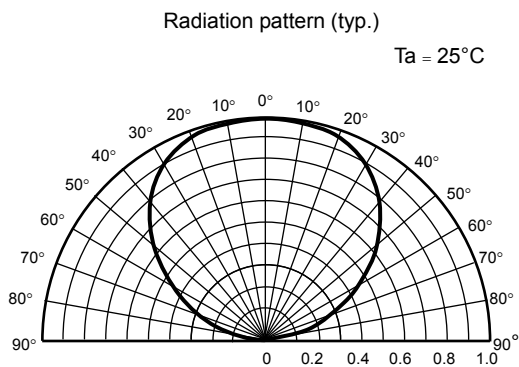
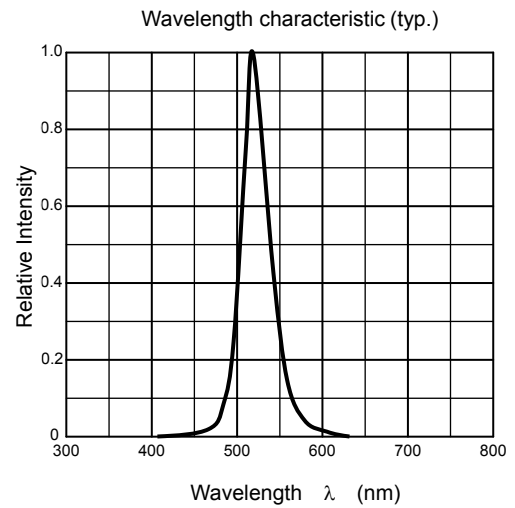
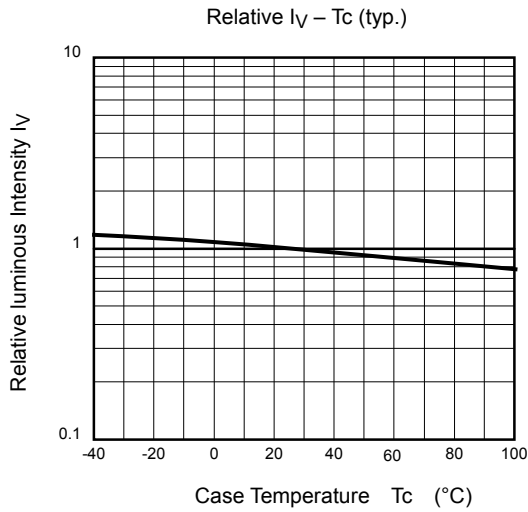
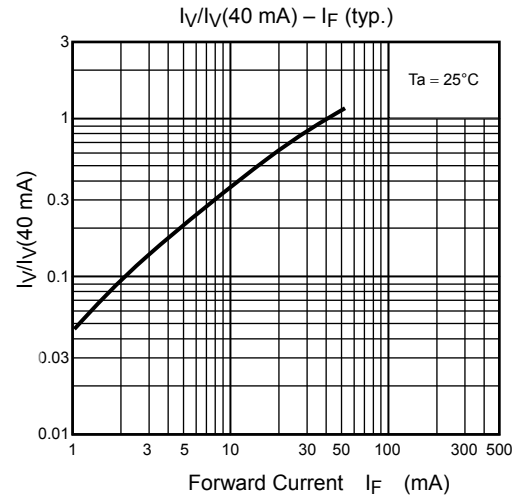
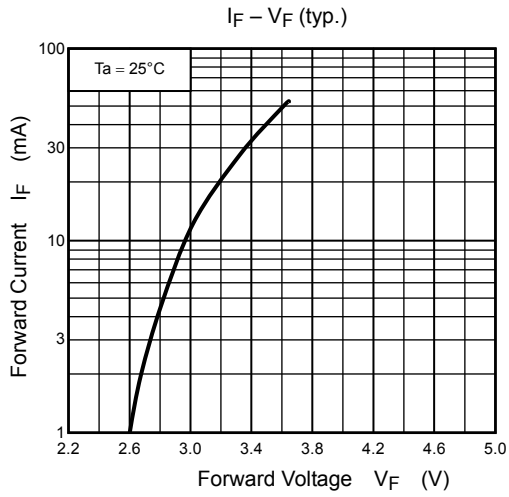
- 1) Use a conductive tablemat and conductive floor mat, and ground the workbench and floor.
- 2) Operators handling laser diodes must be grounded via a high resistance (about 1 M Ω). A conductive strap is good for this purpose.
- 3) Ground all tools including soldering irons.

This product is designed as a general display light source usage, and it has applied the measurement standard that matched with the sensitivity of human's eyes. Therefore, it is not intended for usage of functional application (ex. Light source for sensor, optical communication and etc) except general display light source.

TLBF1108



TLEGF1108



Packaging

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

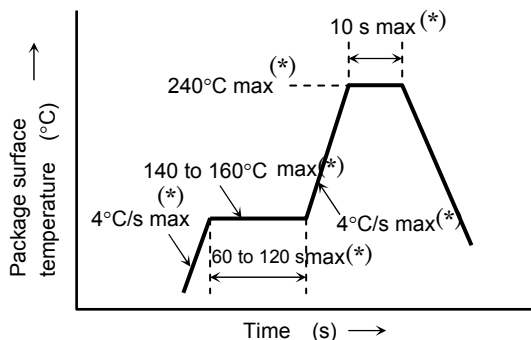
1. This moisture proof bag may be stored unopened within 12 months at the following conditions.
 Temperature: 5°C to 30°C
 Humidity: 90% (max)
2. After opening the moisture proof bag, the device should be assembled within 4 weeks in an environment of 5°C to 30°C/60% RH or below.
3. If upon opening, the moisture indicator card shows humidity 30% or above (Color of indication changes to pink) or the expiration date has passed, the device should be baked in taping with reel.
 After baking, use the baked device within 72 hours, but perform baking only once.
 Baking conditions: 60±5°C, for 24 to 48 hours.
 Expiration date: 12 months from sealing date, which is imprinted on the label affixed.
4. Repeated baking can cause the peeling strength of the taping to change, then leads to trouble in mounting.
5. If the packing material of laminate would be broken, the hermeticity would deteriorate. Therefore, do not throw or drop the packed devices.

Mounting Method

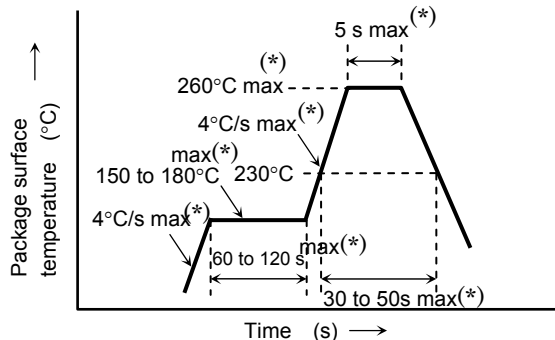
Soldering

- Reflow soldering (example)

Temperature profile for Pb soldering (example)



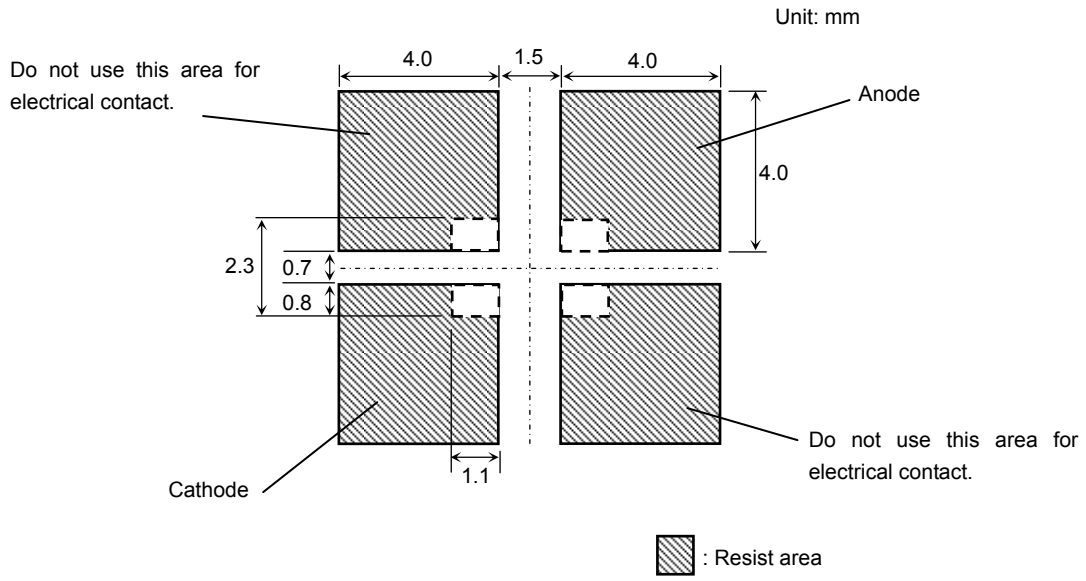
Temperature profile for Pb-free soldering (example)



- 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.
- Please perform the first reflow soldering with reference to the above temperature profile and within 4 weeks of opening the package.
- Second reflow soldering
 In case of second reflow soldering should be performed within 168 h of the first reflow under the above conditions.
 Storage conditions before the second reflow soldering: 30°C, 60% RH (max)
- Make any necessary soldering corrections manually.
 (only once at each soldering point)
 Soldering iron: 25 W
 Temperature : 300°C or less
 Time : within 3 s
- Do not perform wave soldering.

Recommended soldering pattern

Cu area > 16 mm²



Cleaning

When cleaning is required after soldering, Toshiba recommends the following cleaning solvents. It is confirmed that these solvents have no effect on semiconductor devices in our dipping test (under the recommended conditions). In selecting the one for your actual usage, please perform sufficient review on washing condition, using condition and etc.

ASAHI CLEAN AK-225AES	: (made by ASAHI GLASS)
KAO CLEAN THROUGH 750HS	: (made by KAO)
PINE ALPHA ST-100S	: (made by ARAKAWA CHEMICAL)

Precautions when Mounting

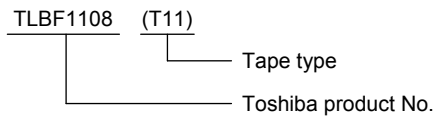
- (1) Do not apply force to the plastic part of the LED under high-temperature conditions.
- (2) To avoid damaging the LED plastic, do not apply friction using a hard material.
- (3) When installing the PCB in a product, ensure that the device does not come into contact with other components.
- (4) For this product, silicone is used as the encapsulated material. Therefore the top surface of this product is soft. Please do not stress on the encapsulated part of LEDs to avoid affecting the reliability of the product. When using the mounting devices, please use the picking up nozzle that does not affect the silicone resin.

Tape Specifications

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)

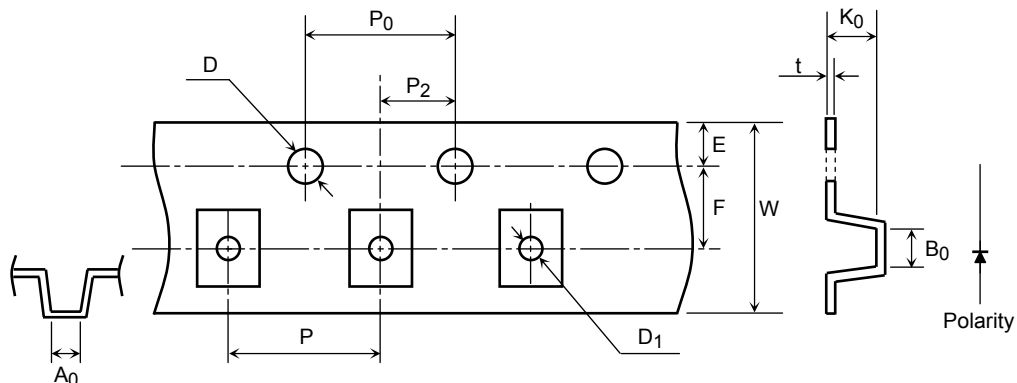
- (1) Tape Type: T11 (4-mm pitch)
- (2) Example



2. Tape dimensions

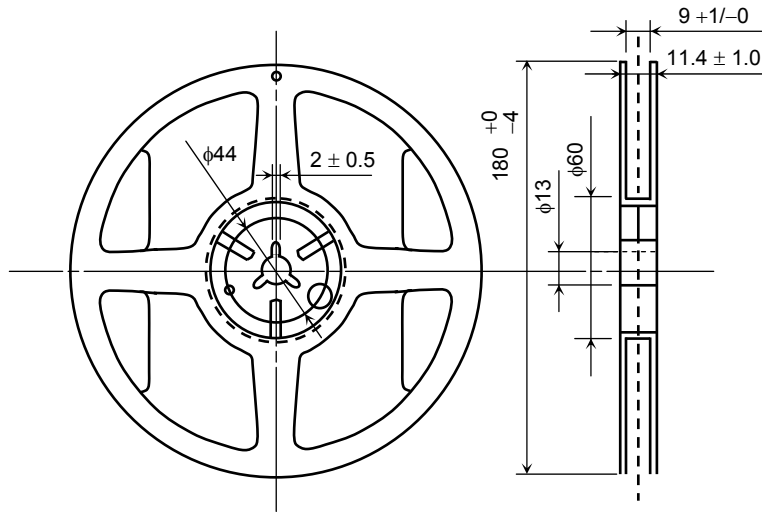
Unit: mm

Symbol	Dimension	Tolerance	Symbol	Dimension	Tolerance
D	1.5	+0.1/-0	P ₂	2.0	±0.05
E	1.75	±0.1	W	8.0	±0.3
P ₀	4.0	±0.1	P	4.0	±0.1
t	0.3	±0.05	A ₀	2.9	±0.1
F	3.5	±0.05	B ₀	3.7	±0.1
D ₁	1.5	±0.1	K ₀	2.3	±0.1

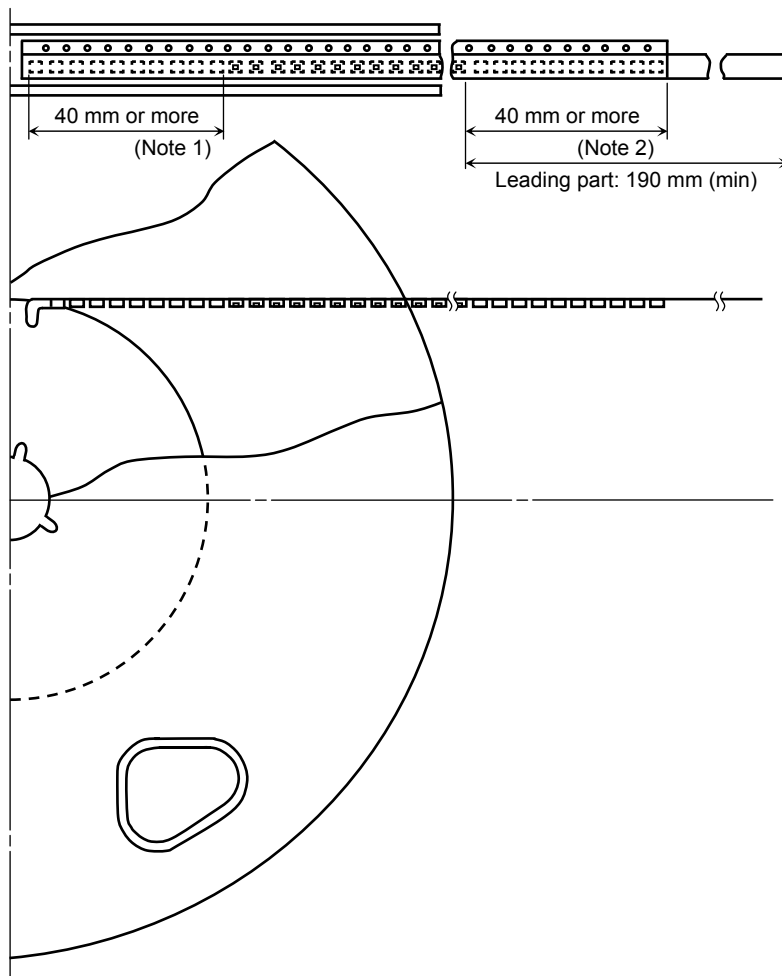


3. Reel dimensions

Unit: mm



4. Leader and trailer sections of tape



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