

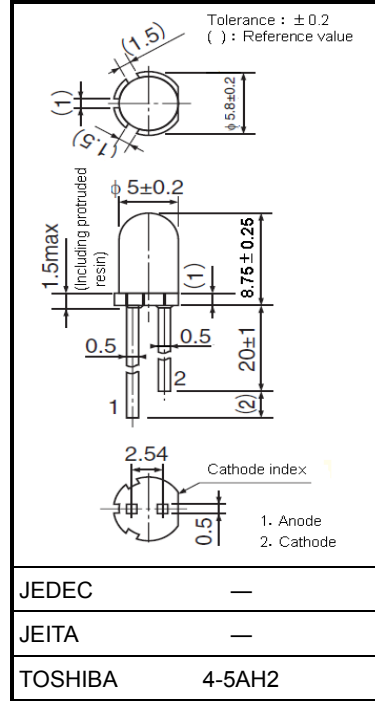
TOSHIBA LED Lamp InGaAlP Red Light Emission

# TLRMK16TAP( FHD? )

## Panel Circuit Indicator

- $\phi$  5 mm package
- InGaAlP technology
- Transparent lens
- High intensity light emission
- Excellent low current light output
- Applications: Various types of information panels, backlightings, etc.
- Stopper lead type is also available. TLRMK16TA(F)

Unit: mm



## Absolute Maximum Ratings (Ta = 25°C)

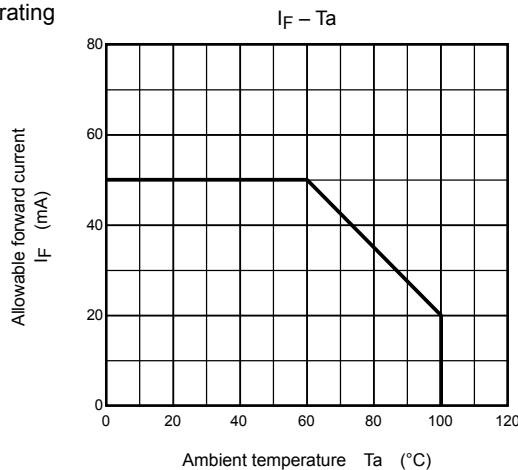
Characteristic	Symbol	Rating	Unit
Forward current	$I_F$ (Note 1)	50	mA
Reverse voltage	$V_R$	4	V
Power dissipation	$P_D$	125	mW
Operating temperature range	$T_{opr}$	-40 to 100	°C
Storage temperature range	$T_{stg}$	-40 to 120	°C

Weight: 0.31 g (typ.)

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



For part availability and ordering information please call Toll Free: 800.984.5337  
Website: [www.marktechopto.com](http://www.marktechopto.com) | Email: [info@marktechopto.com](mailto:info@marktechopto.com)

## Electrical and Optical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward voltage	$V_F$	$I_F = 20 \text{ mA}$	1.8	2.15	2.5	V
Reverse current	$I_R$	$V_R = 4 \text{ V}$	—	—	50	$\mu\text{A}$
Luminous intensity	$I_V$	$I_F = 20 \text{ mA}$ (Note 2)	1900	5400	10700	mcd
Peak emission wavelength	$\lambda_P$	$I_F = 20 \text{ mA}$	—	636	—	nm
Spectral line half width	$\Delta\lambda$	$I_F = 20 \text{ mA}$	—	14	—	nm
Dominant wavelength	$\lambda_d$	$I_F = 20 \text{ mA}$	—	626	—	nm

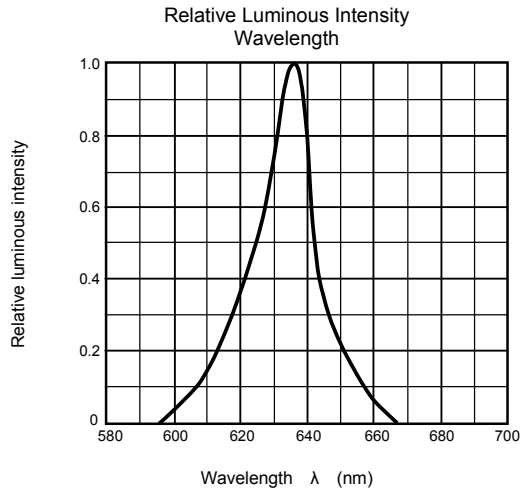
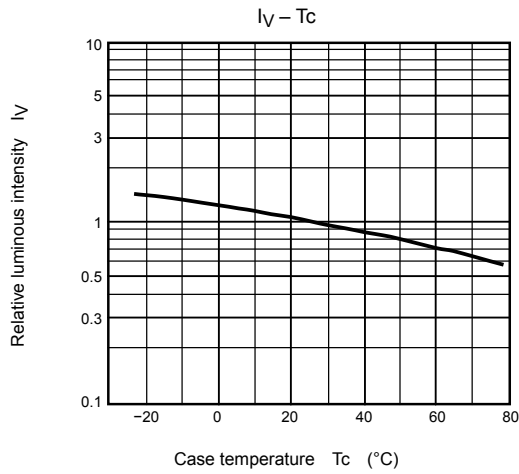
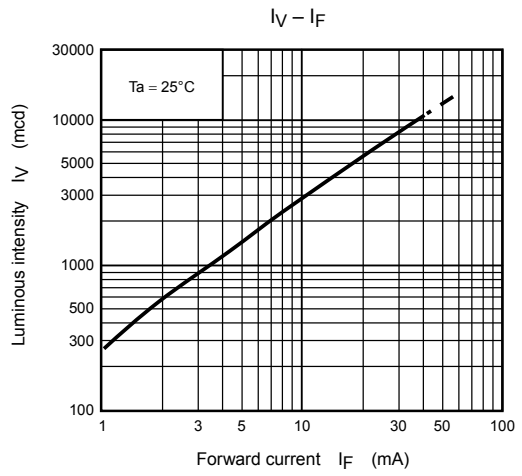
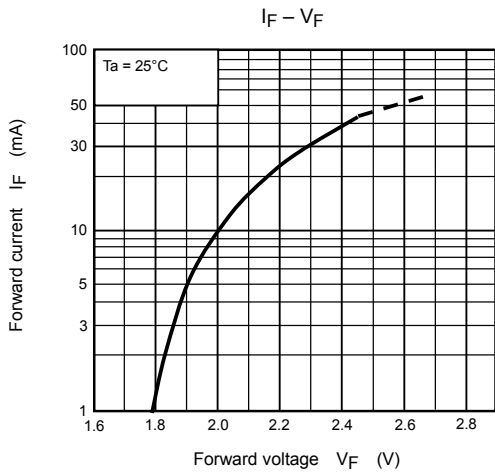
Note 2: Lamps are classified into the following ranks according to their luminous intensity. Each packing box includes single Luminous Intensity class.

$I_V$  rank classification

Rank	Min	Max	Accuracy
T	1900	3380	±22.5%
U	3380	6010	
V	6010	10700	
Unit	mcd		—

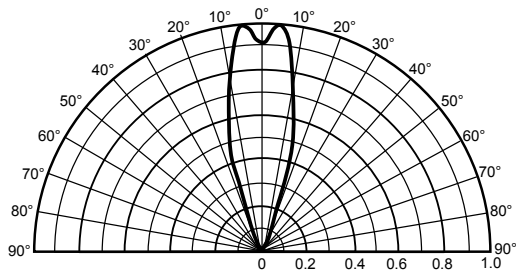
## Precaution

- Please be careful of the followings
- Soldering temperature: 260°C max      Soldering time: 3 s max  
(Soldering portion of lead: up to 1.6 mm from the body of the device)
  - If the lead is formed, the lead should be formed up to 1.6 mm from the body of the device without forming stress to the resin. Soldering should be performed after lead forming.
  - 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.



**Radiation Pattern**

$T_a = 25^\circ\text{C}$



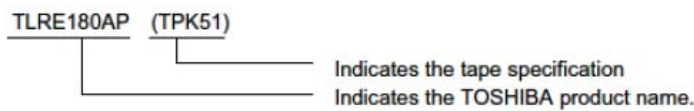
## LED Lamp Tape Packaging Specifications (type A)

- Tape specifications for automatic insertion machine
- $\phi 3$  and  $\phi 5$  diameter types
- Standard reel, folding tape type
- Anode/cathode selectable
- 2.54 mm pitch straight lead type
- 5 mm pitch forming lead type

### 1. Product Naming

The packaging type is indicated by a designation that is appended to the LED's product name.

[Example]



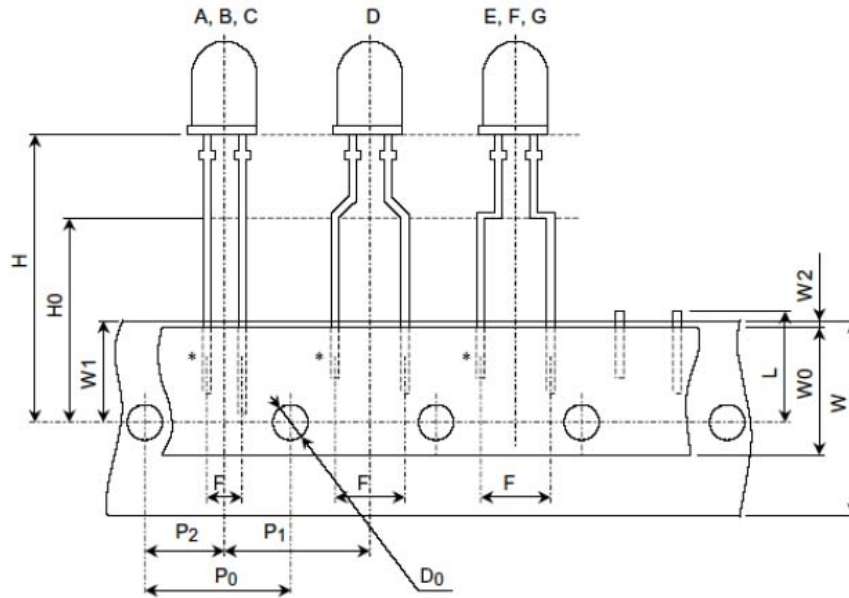
### 2. Tape Specifications

Tape is classified according to tape type, dimensions, lead polarity, and packaging type as follows:

Tape Specifications			Tape Specification
Reel Method		Ammo Pack	
(anode lead first)	(cathode lead first)		
TPK1	TPKR1	TPK51	Ⓐ
TPK3	TPKR3	TPK53	Ⓑ
TPK5	TPKR5	TPK55	Ⓒ
TPJ1	TPJR1	TPJ51	Ⓓ
TPJ2	TPJR2	TPJ52	Ⓔ
TPJ3	TPJR3	TPJ53	Ⓕ
TPJ6	TPJR6	TPJ56	Ⓖ

**3. Tape Specifications and Dimensions**

**Tape Specifications**



**Tape Dimensions**

Unit: mm

	A	B	C	D	E	F	G
H	23.35 ± 1.0	18.55 ± 1.0	17.0 ± 1.0	23.35 ± 1.0	20.5 ± 1.0	22.5 ± 1.0	23.35 ± 1.0
H <sub>0</sub>	—			16.0 ± 0.5			
W	18.0 <sup>+1</sup> <sub>-0.5</sub>						
W <sub>0</sub>	6.0 ± 0.3 or 13.0 ± 0.3						
W <sub>1</sub>	9.0 <sup>+0.75</sup> <sub>-0.5</sub>						
W <sub>2</sub>	≤ 0.5						
P <sub>0</sub>	12.7						
P <sub>1</sub>	12.7 ± 1 (pitch between products)						
P <sub>2</sub>	6.35 ± 1.3						
F	2.54 <sup>+0.8</sup> <sub>-0.2</sub>			5.00 <sup>+0.8</sup> <sub>-0.2</sub>			
L	11.0 max						
D <sub>0</sub>	φ4.0 ± 0.2						

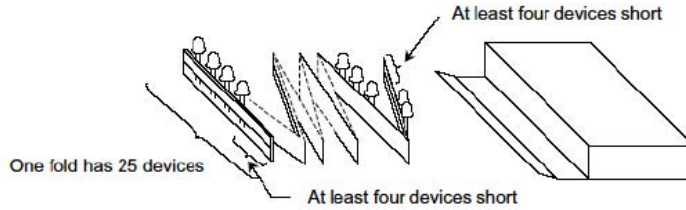
\*: Some devices on the tape may have had their leads cut.

Hence, the lead dimensions given in the technical data sheets may differ from actual lead lengths.

(2) Ammo pack

(a) Folded Tape Method

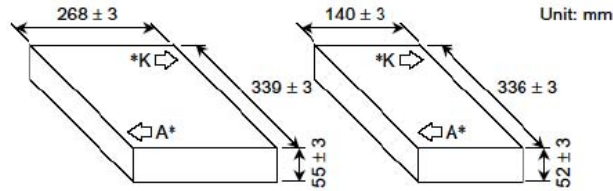
- ① This is a reel of tape alternately folded with 25 devices attached per fold.
- ② The first and last folds have at least four devices less than the usual 25.



(b) Packaging Box Dimensions

Ⓐ Standard Box

Ⓑ Small Box

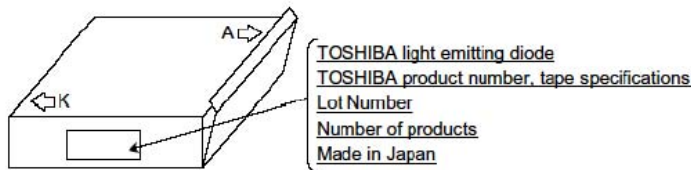


\*: Indicates the first lead.

A: Anode first

B: Cathode first

(c) Markings on Shipping Box



(d) Number of Devices Per Box

LED Type	Quantity Per Box
φ3 series	2000 or 4000 pcs
φ5 series	1000 or 2000 pcs

(e) Name of Ammo Taped Product

TOSHIBA product number + (TP    )

Suffix indicating tape type  
 Letter indicating lead format  
 J: Forming lead  
 K: Straight lead

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