

## Features

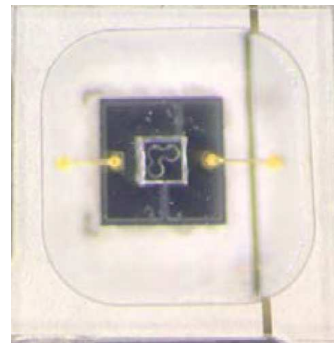
- 3535 UVC LED
- ROHS and REACH Compliant
- MSL 3 qualified according to J-STD 020
- ESD 8KV

## Applications

- Medical applications
- Industrial facility applications

## Description

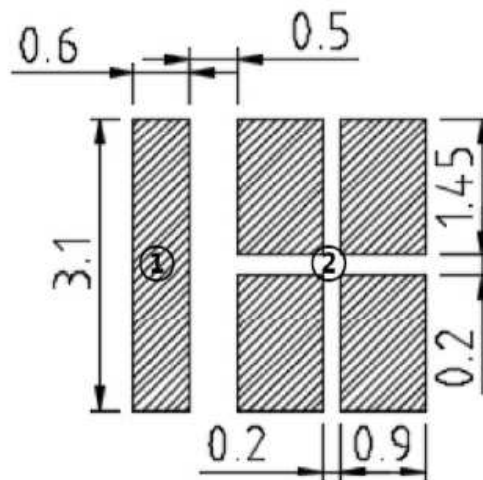
The IN-C33DTDU1 is a low-power UVC LED. It is a SMD type LED which can be used in various applications.



**IN-C33DTDU1**

## Recommended Solder Pattern

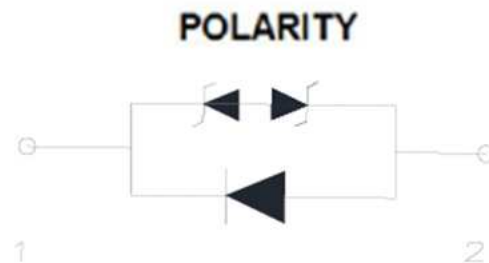
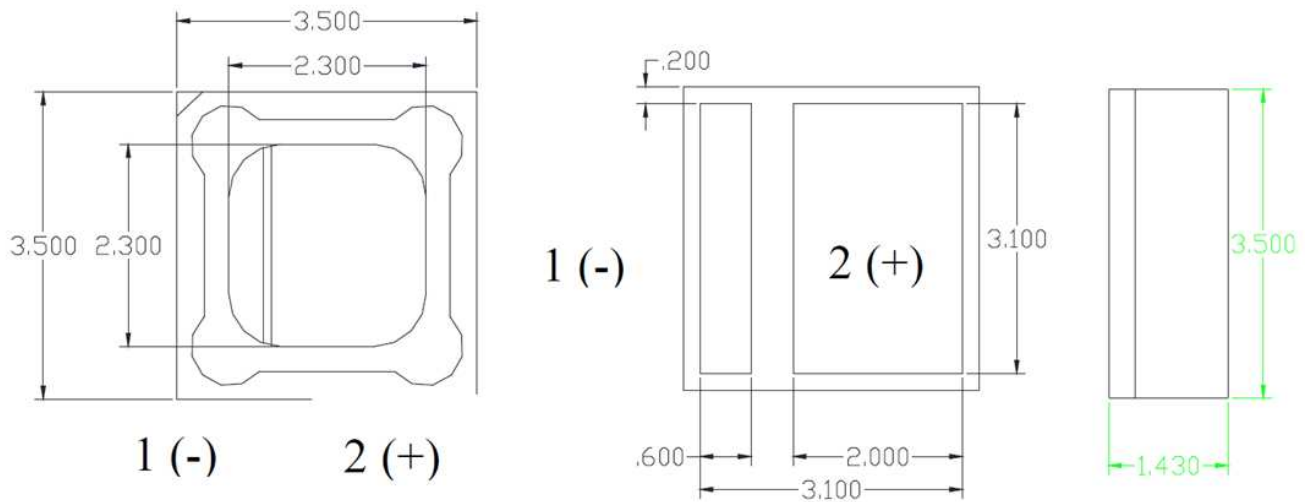
(Suggest Stencil  $t=0.12$  mm)



**Figure 1. IN-C33DTDU1 Recommended Solder Pattern**

## Package Dimensions

(All dimensions are in mm, tolerance is  $\pm 0.13\text{mm}$ )



**Figure 2. IN-C33DTDU1 Package Dimension**

## Absolute Maximum Rating at 25°C

Characteristics	Symbol	Min.	Typical	Max.	Unit
DC Forward Current <sup>1</sup>	$I_F$		15	20	mA
Pulse Current(@1/10 duty) <sup>2</sup>	$I_p$			25	mA
Forward Voltage	$V_F$	5.0		9.0	V
Reverse Voltage	$V_R$		-10		V
Leakage Current (5V)	$I_R$			10	μA
Junction Temperature <sup>3</sup>	$T_j$		85		°C
Storage Temperature Range	$T_{stg}$	-40	—	80	°C
Soldering Temperature	$T_{sol}$		260		°C
Thermal Resistance Junction / Solder Point	$R_{th}$		45		°C/W
Viewing Angle <sup>4</sup>	$2\theta_{1/2}$		130		Deg

### Notes:

1. For other ambient, limited setting of current will depend on de-rating curves.
2. D=0.01s duty 1/10.
3. When drive on maximum current ,  $T_j$  must be kept below 85°C
4. Viewing angle( $2\theta_{1/2}$ )  $\pm 10^\circ$

## ESD Precaution

ATTENTION: Electrostatic Discharge (ESD) protection

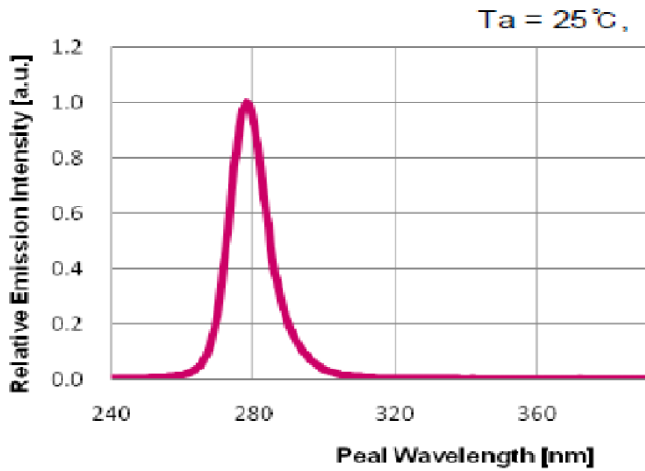


The symbol above denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlInGaP, GaN, or/and InGaN based chips are STATIC SENSITIVE devices. ESD precaution must be taken during design and assembly. If manual work or processing is needed, please ensure the device is adequately protected from ESD during the process.

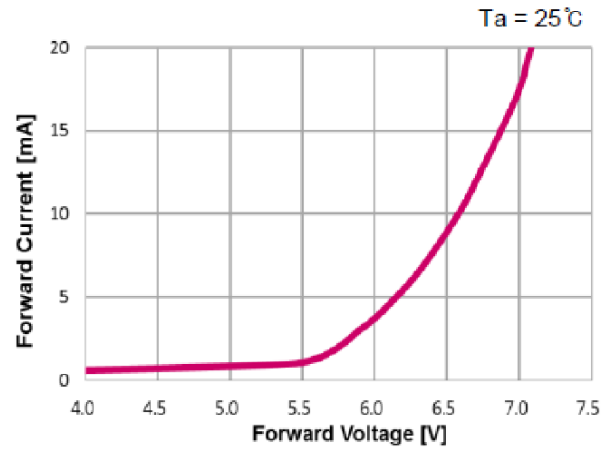
Please be advised that normal static precautions should be taken in the handling and assembly of this device to prevent damage or degradation which may be induced by electrostatic discharge (ESD).

## Electronic-Optical Characteristics

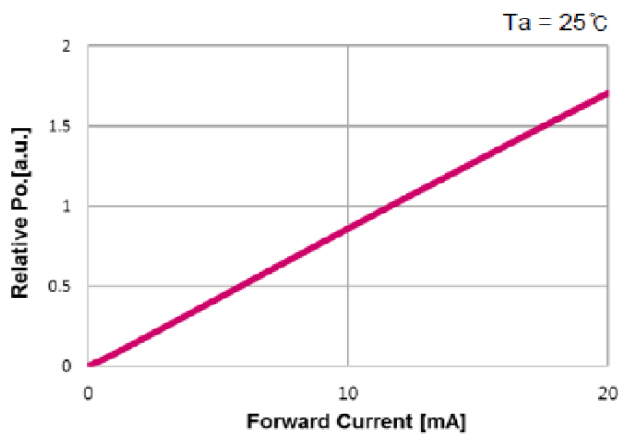
Relative Spectral Power Distribution



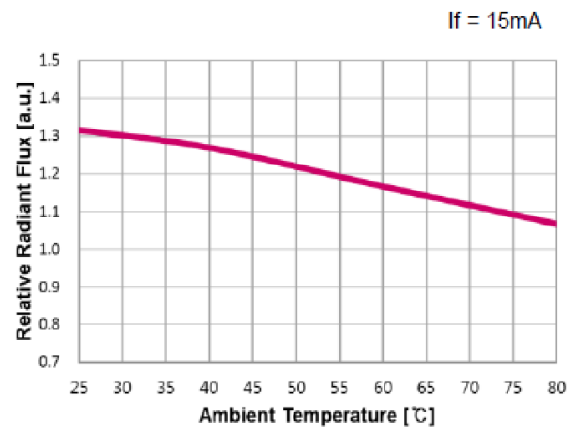
Forward Current vs. Forward Voltage ( $T_a = 25^\circ\text{C}$ )



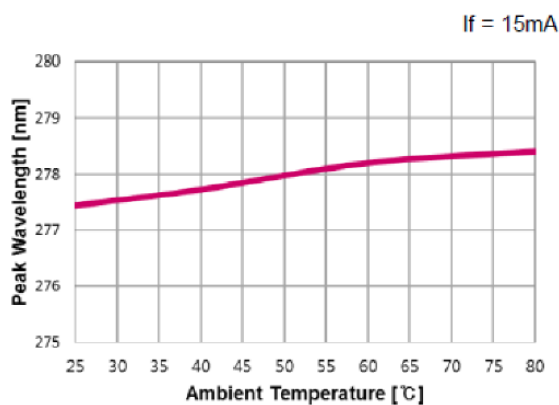
Relative Radiant Flux vs. Forward Current ( $T_a = 25^\circ\text{C}$ )



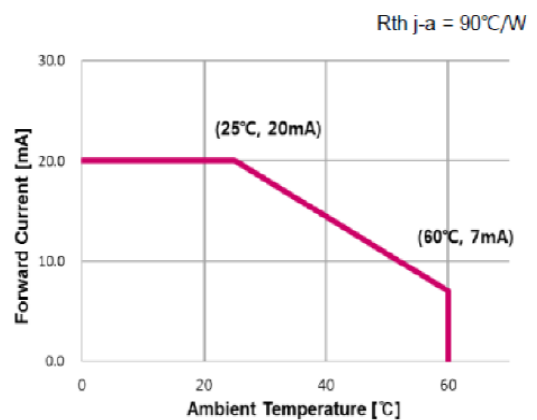
Relative Radiant Flux vs. Ambient Temperature ( $I_f = 15\text{mA}$ )



Relative Radiant Flux vs. Peak wavelength



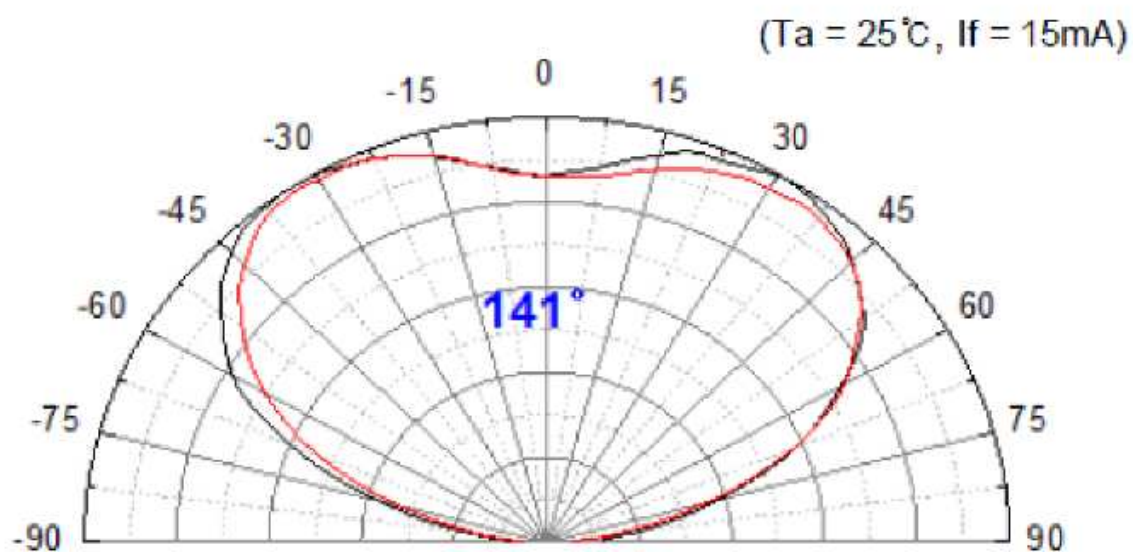
Derating



### Notes:

Viewing angle ( $2\theta_{1/2}$ )  $\pm 10^\circ$

## Typical Characteristic Curves – Radiation Pattern





## Ordering Information

Peak Wavelength Range	Beam Angle	Forward Voltage(V)		Part Number
		Min	Max	
U1: 265~285nm	130°	5.0	9.0	IN-C33DTDU1

### Notes:

1. Forward voltage (VF )  $\pm 0.5V$ , Radiometric Power (Po)  $\pm 15\%$ .

## Label Specifications

		Date: yyyy/mm/dd 
CUSTOMER P/N: 		
INOLUX P/N: 	QTY: 	PCS 
LOT NO: 		
IV BIN: 	COLOR BIN: 	VF: 

## Inolux P/N:

I	N	-	C	3	3	D	T	D		U1	-	X	X	X	X
Inolux SMD			Material	Package		Variation	Orientation	Current	Lens	Color		Customized Stamp-off			
			C = Ceramic Type	33D = 3.5 x 3.5, 130 Deg.			T = Top Mount	D = 15mA	(Blank) = Clear	U1 = 265-285nm					

## Lot No.:

Z	2	0	1	7	01	24	001
Internal Tracker	Year (2017, 2018, .....)				Month	Date	Serial

## Forward Voltage Binning

Voltage unit: V@15mA			
Peak Wavelength	Bin Code	Min	Max
U1 265nm-285nm	A	5.0	6.0
	B	6.0	7.0
	C	7.0	8.0
	D	8.0	9.0

**Notes:**

1. Binning current is 15 mA

## Radiant flux (Power) binning

Bin Code (15mA)	Min. Po (mW)	Typ. Po (mW)	Max. Po (mW)
P1	1	1.5	2
P2	2	2.5	3
P3	3	3.5	4

**Notes:**

1. Binning current is 15mA

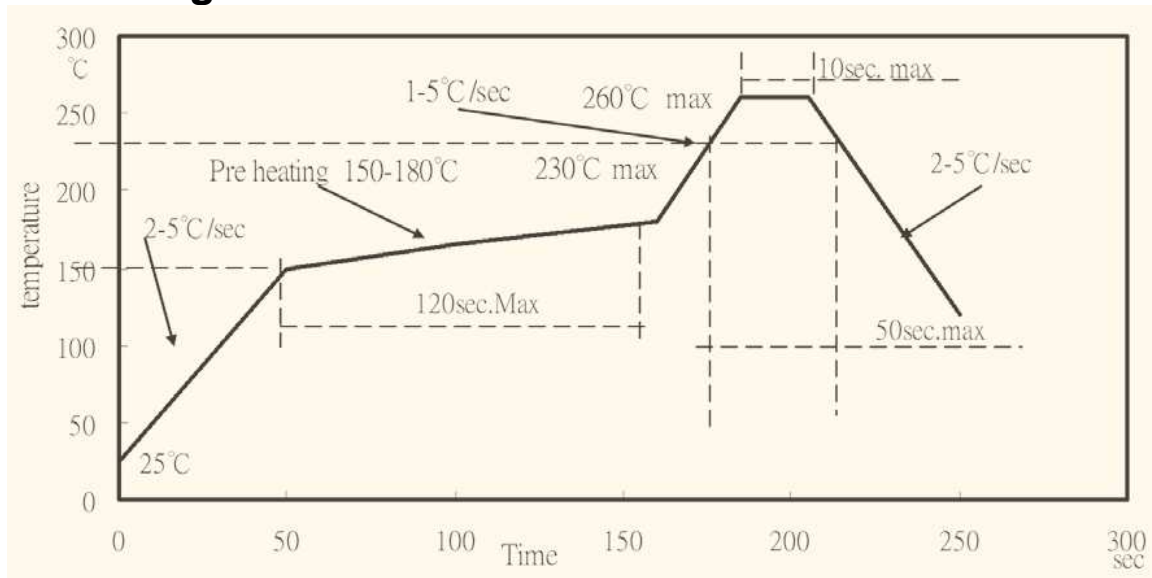
## Peak wavelength binning reference table

Bin code (15mA)	Min. Wp (nm)	Max. Wp (nm)
W280	265.0	285.0

**Notes:**

1. Peak-wavelength (Wp) tolerance:  $\pm 2.0\text{nm}$
2. Testing Current 15mA

## Reflow Soldering



## Soldering Iron

Basic Spec is  $\leq 4$  sec. when 260°C (+10°C  $\rightarrow$  -1 second). Power dissipation of Iron should be less than 15W. Surface temperature should be under 230°C

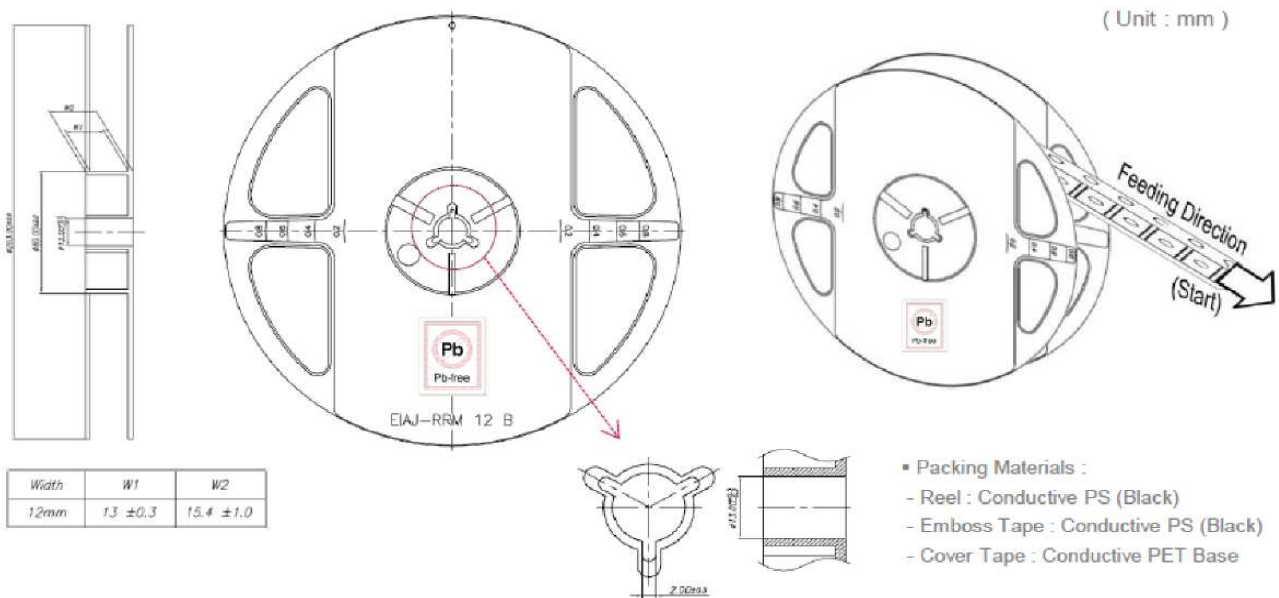
## Rework

Rework should be completed within 4 second under 245°C

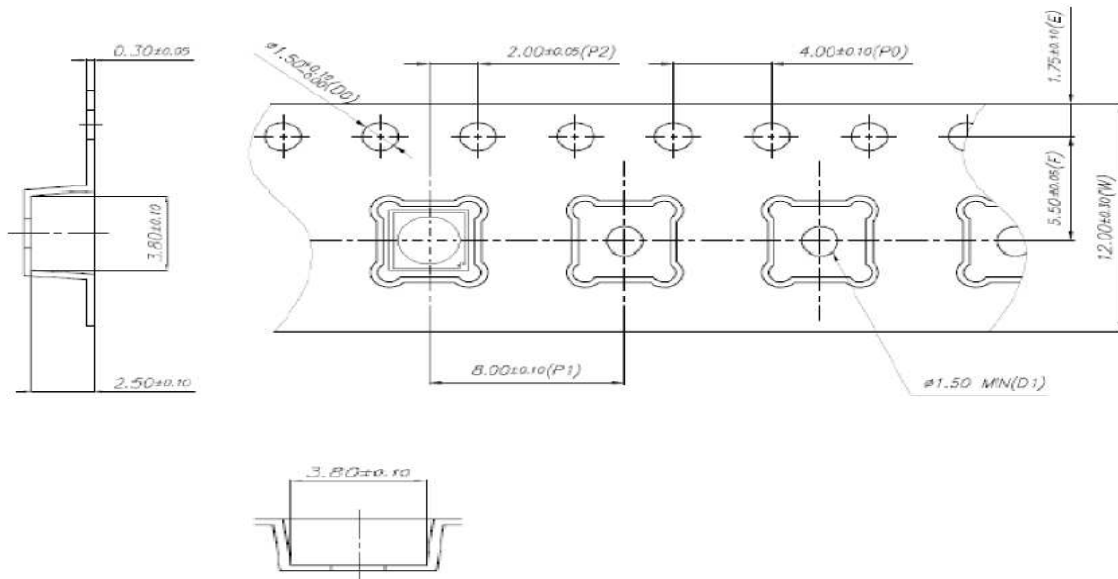


## Packing

### Reel



### Tape



#### Notes:

1. Each Reel (minimum number of pieces is 100 and maximum is 1000 (130D) is packed in a moisture-proof bag along with 2 packs of desiccant and a humidity indicator card;
2. Part No., Lot No., quantity should be indicated on the label of the moisture-proof bag and the cardboard box.

## Precautions

### 1. Recommendation for using LEDs

1.1 The lens of LEDs should not be exposed to dust or debris. Excessive dust and debris may cause a drastic decrease in the luminosity.

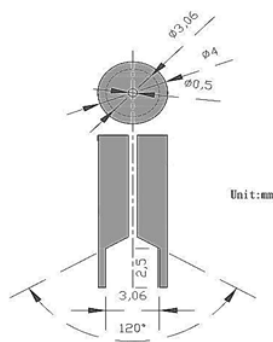
1.2 Avoid mechanical stress on LED lens.

1.3 Do not touch the LED lens surface. It would affect the optical performance of the LED due to the LED lens' damage.

1.4 Pick & place tools are recommended for the remove of LEDs from the factory tape & reel packaging

### 2. Pick & place nozzle

The pickup tool was recommended and shown as below



### 3. Lens handling

Please follow the guideline to pick LEDs

3.1 Use tweezers to pick LEDs

3.2 Do not touch the lens by using tweezers

3.3 Do not touch lens with fingers

3.4 Do not apply more than 4N of lens (400g) directly onto the lens

### 4. Lens cleaning

In the case which a small amount of dirt and dust particles remain on the lens surface, a suitable cleaning solution can be applied.

4.1 Try a gentle wiping with dust-free cloth

4.2 If needed, use dust-free cloth and isopropyl alcohol to gently clean the dirt from the lens surface.

4.3 Do not use other solvents as they may directly react with the LED assembly

4.4 Do not use ultrasonic cleaning which will damage the LEDs

## Test Items and Results of Reliability

Test Item	Test Conditions	Duration/ Cycle	Number of Damage	Reference
Thermal Shock	-40℃ 30min ↑↓5min 125℃ 30min	100 cycles	0/22	AECQ101
High Temperature Storage	Ta=100℃	500 hrs	0/22	EIAJ ED-4701 200 201
Humidity Heat Storage	Ta=85℃ RH=85%	500 hrs	0/22	EIAJ ED-4701 100 103
Low Temperature Storage	Ta=-40℃	500 hrs	0/22	EIAJ ED-4701 200 202
Life Test	Ta=25℃ If=15mA	500 hrs	0/22	Tested with IN standard
High Humidity Heat Life Test	85℃ RH=85% If=15mA	500 hrs	0/22	Tested with IN standard
High Temperature Life Test	Ta=85℃	500 hrs	0/22	Tested with IN standard
ESD(HBM)	8KV at 1.5kΩ;100pf	3 Times	0/22	MIL-STD-883

Criteria for Judging the Damage				
Item	Symbol	Condition	Criteria for Judgment	
			Min	Max
Forward Voltage	VF	If=15mA	LSL ×0.9	USL ×1.1
Reverse Current	IR	VR =5V	—	100μA
Luminous Intensity	Iv	If=500mA	LSL ×0.7	USL ×1.2

### Notes:

1. USL: Upper specification level
2. LSL: Lower specification level

## Revision History

Changes since last revision	Page	Version No.	Revision Date
Initial Release		1.0	08-08-2017
Format Update		1.1	09-20-2017
Format Update		1.2	02-22-2018
Format Update		1.3	03-09-2018

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