



**BRIGHTTEK**  
**BRIGHTTEK (EUROPE) LIMITED**

*Brighten up The World With LED!*



ISO/TS 16949:2009



BSI  
 BS EN ISO 14001:2004



QC 90000 IECQ HSP98

## PRODUCT DATASHEET



- ▶ EMC Top View SMD
- ▶ 2720 0.6t
- ▶ Red (622nm)

NOR51S91



Release Date: 23 April 2022 Version: A1.1



### 2720 0.6t Series



#### FEATURES:

- **Package:** EMC Mono Colour Top View SMD
- **Forward Current:** 200mA
- **Forward Voltage (typ.):** 2.2V
- **Luminous Flux (typ.):** 29lm@200mA
- **Colour:** Red
- **Wavelength (typ.):** 622nm
- **Viewing angle:** 120°
- **Materials:**
  - Resin: Silicone (Water Clear)
  - Finishing: Ag plated
- **Operating Temperature:** -40~+125°C
- **Storage Temperature:** -40~+125°C
- **ESD (HBM):** 2KV
- **Grouping parameters:**
  - Forward voltage
  - Luminous flux
  - Dominant wavelength
- **Soldering methods:** Reflow
- **MSL:** acc. to JEDEC Level 2a
- **Packing:** 8mm tape with max.2000/reel, ø180mm (7")

#### APPLICATIONS:

- Automotive Lighting
- Decoration Lighting

## CHARACTERISTICS:

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

Parameter	Symbol	Ratings	Unit
Forward Current	$I_F$	200	mA
Peak Forward Current Duty 1/10; width 0.1ms	$I_{FP}$	700	mA
Reverse Voltage	$V_R$	5	V
Reverse Current @5V	$I_R$	10	$\mu$ A
Junction Temperature	$T_j$	150	°C
Thermal Resistance Junction to Solder Point	$R_{th}$	19	°C/W
Operating Temperature	$T_{OPR}$	-40~+125	°C
Storage Temperature	$T_{STG}$	-40~+125	°C

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

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	$V_F$	1.8	2.2	2.8	V	$I_F=200mA$
Luminous Flux	$\Phi_V$	21	29	---	lm	$I_F=200mA$
Dominant Wavelength	$\lambda_D$	618	622	633	nm	$I_F=200mA$
Peak Wavelength	$\lambda_P$	---	633	---	nm	$I_F=200mA$
Spectral Line Half Bandwidth	$\Delta\lambda$	---	20	---	nm	$I_F=200mA$
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	$I_F=200mA$

- Luminous intensity ( $I_v$ )  $\pm 10\%$ , Forward Voltage ( $V_f$ )  $\pm 0.1V$ .



**BINNING GROUPS:**


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 Forward Voltage Classifications ( $I_F = 200\text{mA}$ ):

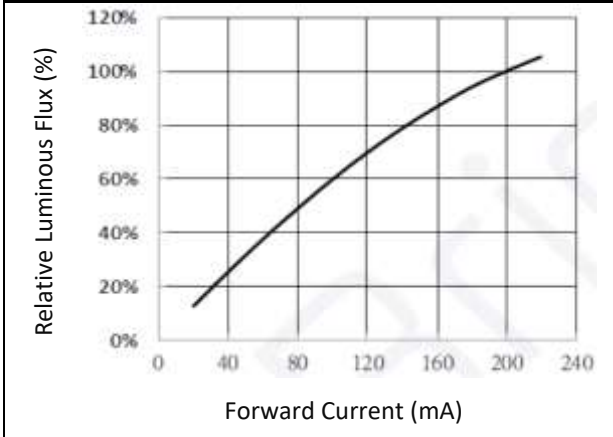
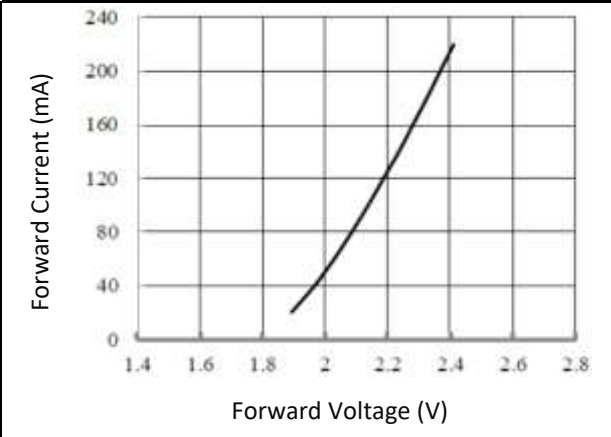
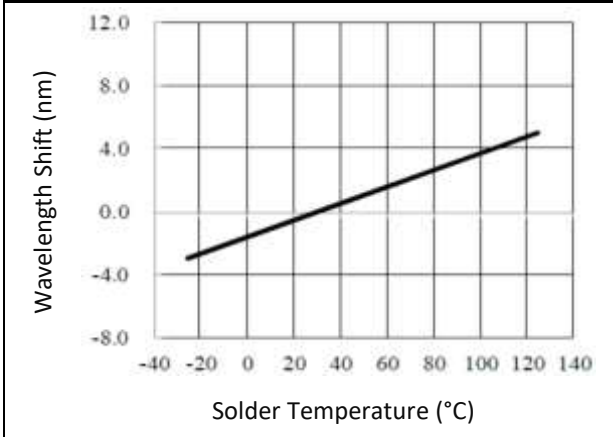
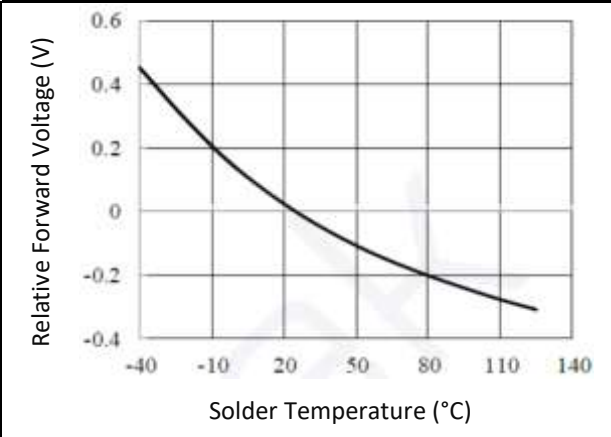
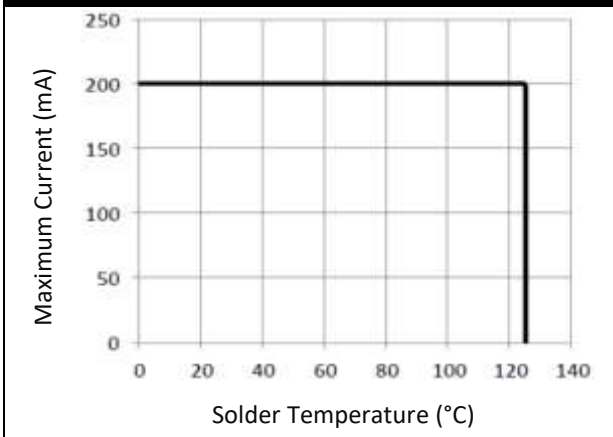
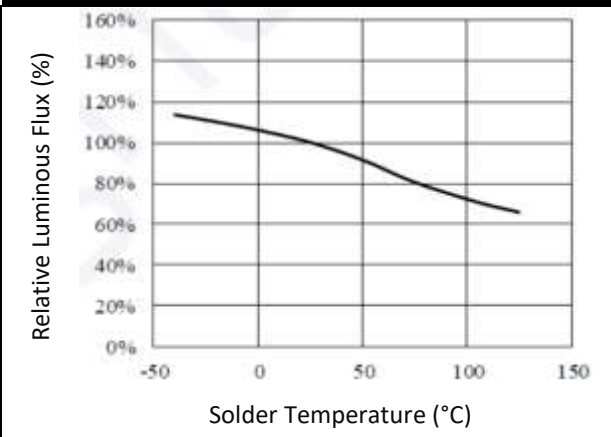
Code	Min.	Max.	Unit
E	1.8	2.0	V
F	2.0	2.2	
G	2.2	2.4	
H	2.4	2.6	
J	2.6	2.8	

 Luminous Flux Classifications ( $I_F = 200\text{mA}$ ):

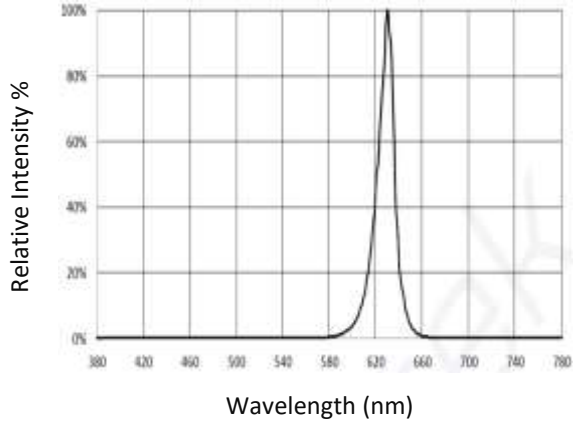
Code	Min.	Max.	Unit
15	21	24	lm
16	24	28	
17	28	32	
18	32	38	

 Dominant Wavelength Classifications ( $I_F = 200\text{mA}$ ):

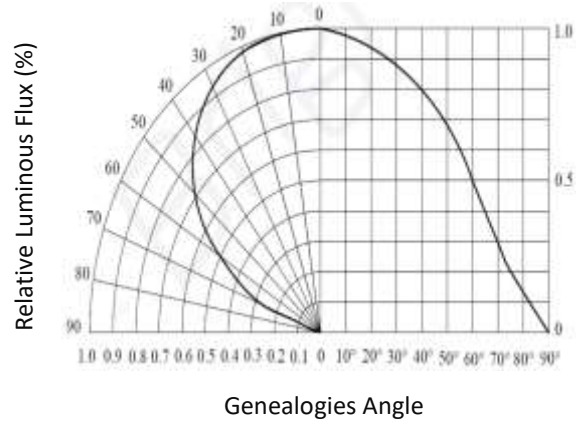
Code	Min.	Max.	Unit
V1	618	623	nm
V2	623	628	
V3	628	633	

**ELECTRO-OPTICAL CHARACTERISTICS:**
**Relative Flux v.s. Forward Current**

**Forward Current v.s. Forward Voltage**

**Solder Temperature v.s. Wavelength Shift**

**Relative Forward Voltage v.s. Temperature**

**Temperature Derating Chart**

**Relative Intensity Flux v.s. Temperature**


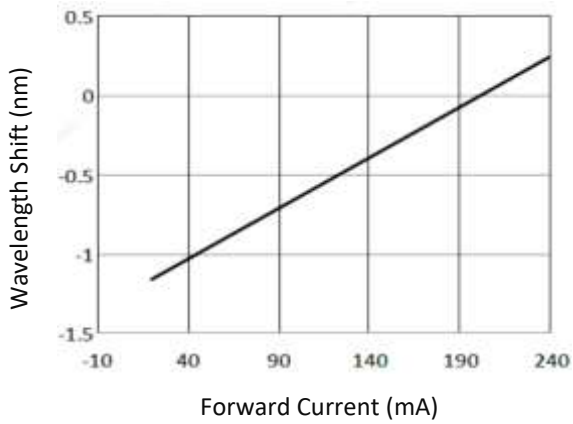
Relative Intensity v.s. Wavelength



Relative Intensity v.s. Angular Displacement

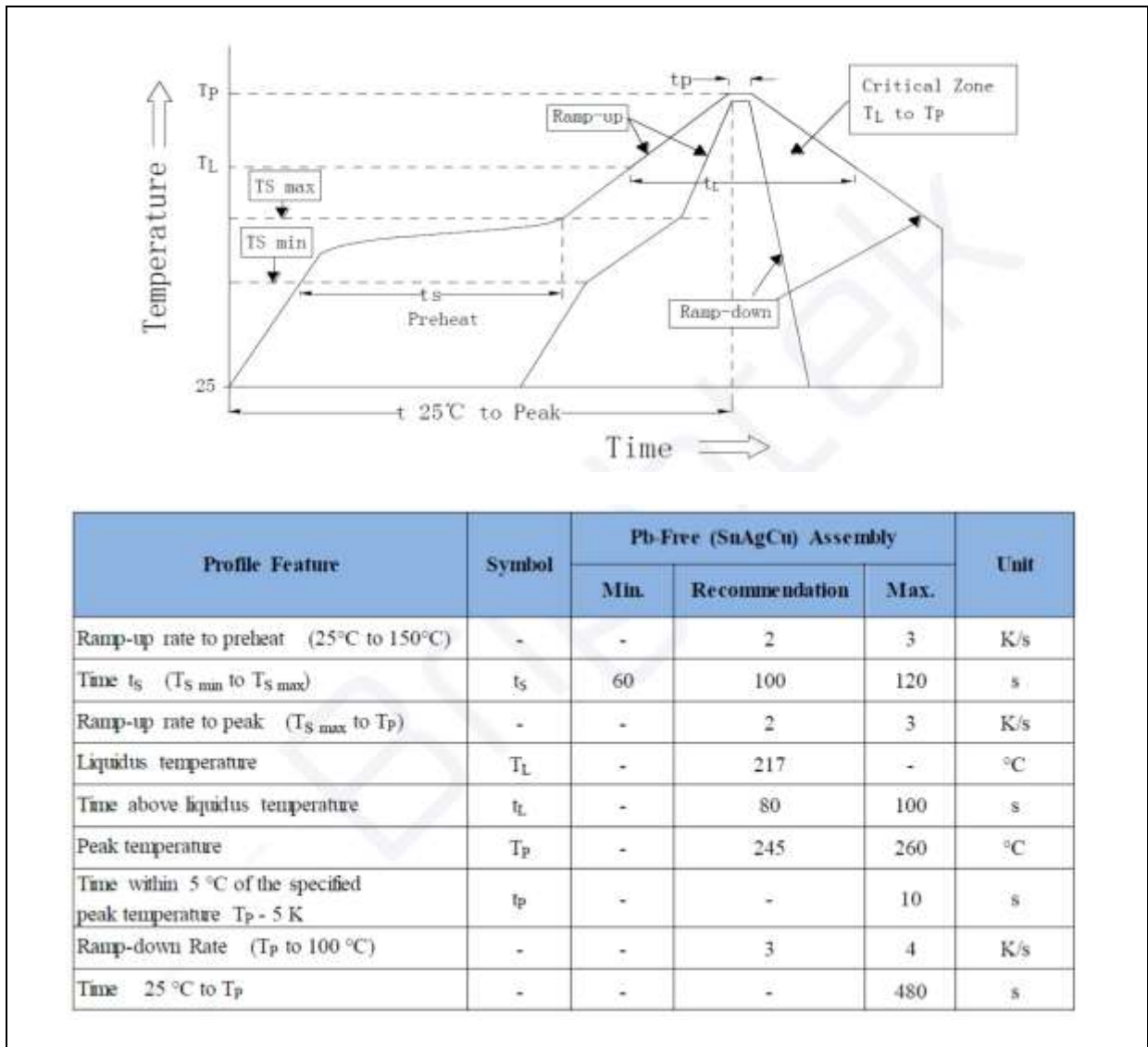


Forward Current v.s. Wavelength Shift



## RECOMMENDED SOLDERING PROFILE:

Reflow solder:

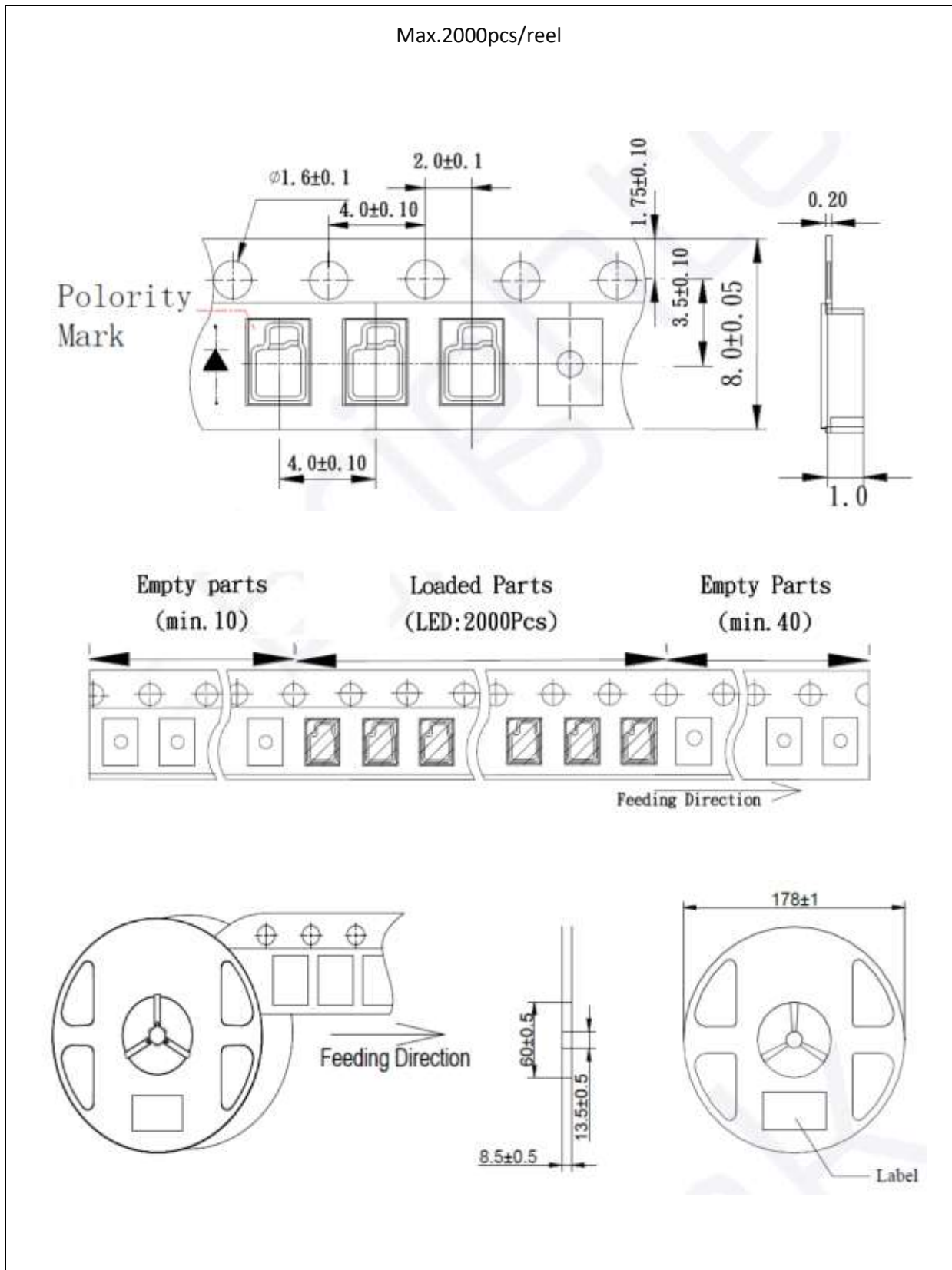


Note:

1. Recommend reflow temperature 245°C. The maximum soldering temperature should be limited to 260°C.
2. Maxima reflow soldering: 3 times.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

**PACKING SPECIFICATION:**

Reel Dimension:





## PRECAUTIONS OF USE:

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### Storage:

It is recommended to store the products in the following conditions:

- Humidity: 60% R.H. Max.
- Temperature: 5°C~30°C (41°F ~86°F).

Shelf life in sealed bag: 12 months at 5°C~30°C and <60% R.H.

Once the package is opened, the products should be used within 4 weeks. Otherwise, they should be kept in a damp-proof box with desiccating agent <10% R.H. and apply baking before use.

### Baking:

It is recommended to bake the LED before soldering if the pack has been unsealed for longer than 24hrs.

The suggested baking conditions are as followings:

- 60±3°C x 6hrs and <5%RH, taped / reel package.

It's normal to see slight color fading of carrier (light yellow) after baking in process.

### Testing Circuit:



Must apply resistor(s) for protection (over current proof).

### Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED carrier / package. Avoid putting any stress force directly on to the LED lens.

### ESD (Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handling the LED all time. All devices, equipment, machinery, work tables, and storage racks must be properly grounded.

In the events of manual working in process, make sure the devices are well protected from ESD at any time.

## Test Items and Reliability:

Test Item	Test Condition	Duration / Cycle	Failure Rate	Reference
Thermal Shock	-40°C 30mins ↓↑ 5mins 105°C 30mins	1000 cycles	0/26	JESD22 A-106
High Temperature Storage	Ta=105°C	1000hrs	0/26	JESD22 A-103B
Low Temperature Storage	Ta=-40°C	1000hrs	0/26	JESD22 A-119
Life Test	Ta=25°C I <sub>F</sub> =200mA	1000hrs	0/26	JESD22 A-108
High Humidity Heat Operation	Ta=85°C RH=85% I <sub>F</sub> =200mA	1000hrs	0/26	JESD22 A-101
High Temperature Operation	Ta=105°C I <sub>F</sub> =200mA	1000hrs	0/26	JESD22 A-108C
ESD (HBM)	2KV at 1.5KΩ 100pf	3 times	0/30	ANSI / JEDEC JS-001

Failure Criteria				
Item	Symbol	Condition	Criteria for Judgment	
			Min	Max
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =200mA	-	USL <sup>1</sup> x 1.1
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =5V	-	10μA
Luminous Intensity	I <sub>v</sub>	I <sub>F</sub> =200mA	LSL <sup>2</sup> x 0.7	-

1. USL: Upper Specification Level.
2. LSL: Lower Specification Level.

**REVISION RECORD:**

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Version	Date	Summary of Revision
A1.0	03/04/2020	Datasheet set-up.
A1.1	23/04/2022	New datasheet format.