



BRIGHTTEK
BRIGHTTEK (EUROPE) LIMITED

Brighten up The World With LED!



ISO 9001:2009



BSI
 BS EN ISO 14001:2004



QC 800000 IECQ HSP98

PRODUCT DATASHEET



- ▶ EMC Top View SMD
- ▶ 2720 0.6t Series
- ▶ Cool White 6000K

Release Date: 23 April 2022 Version: A1.1

NOW51S96Z



2720 0.6t Series



FEATURES:

- **Package:** EMC Top View SMD Package
- **Forward Current:** 200mA
- **Forward Voltage (typ.):** 3.2V
- **Luminous Flux (typ.):** 70lm@200mA
- **Colour:** Cool White
- **Colour Temperature (typ.):** 6000K
- **Viewing angle:** 120°
- **Materials:**
 - Resin: Silicon (Yellow Diffused)
 - L/T Finish: Ag plated
- **Operating Temperature:** -40~+125°C
- **Storage Temperature:** -40~+125°C
- **Grouping parameters:**
 - Forward Voltage
 - Luminous Flux
 - CIE Chromaticity
- **Soldering methods:** Reflow
- **Preconditioning:** MSL2a according to J-STD020
- **Packing:** 8mm tape with max.2000pcs /reel, ø180mm (7")

APPLICATIONS:

- Automotive Lighting
- Decorative Lighting

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
DC Forward Current	I _F	240	mA
Pulse Forward Current Duty 1/10, Pulse Width 0.1mS	I _{PF}	800	mA
Reverse Voltage	V _R	5	V
Reverse Current @5V	I _R	10	μA
Junction Temperature	T _j	150	°C
Thermal Resistance Junction to Solder Point	R _{THJ-S}	40	°C/W
Electrostatic Discharge (HBM)	ESD	8000	V
Operating Temperature	T _{OPR}	-40~+125	°C
Storage Temperature	T _{STG}	-40~+125	°C
Soldering Temperature	T _{SOL}	260	°C

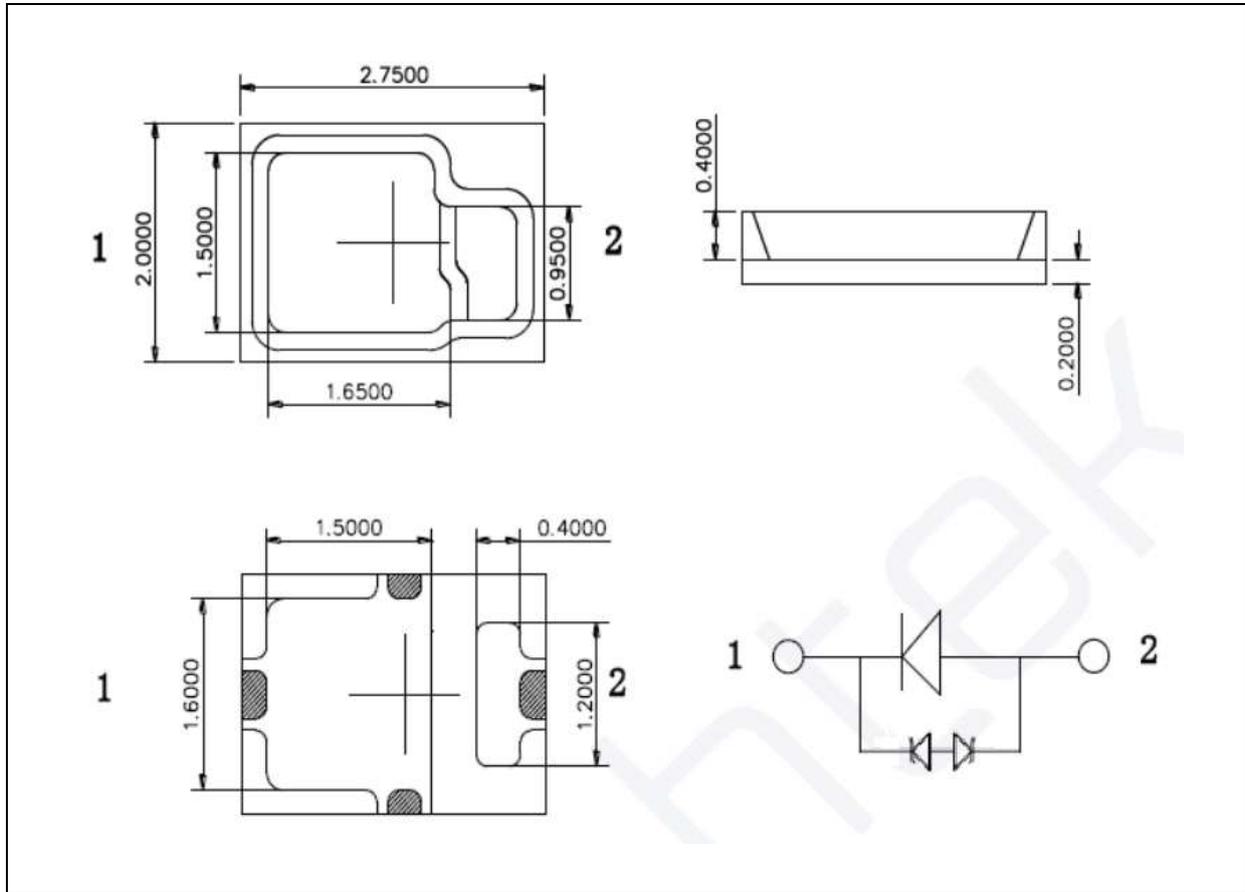
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V _F	2.8	3.2	3.8	V	I _F =200mA
Luminous Flux	Φ _V	58	70	---	lm	I _F =200mA
Chromaticity Coordinates	X	---	0.3250	---	---	I _F =200mA
	Y	---	0.3350	---		
Colour Temperature	CCT	---	6000	---	K	I _F =200mA
Peak Wavelength	λ _P	---	450	---	nm	I _F =200mA
Spectral Width 50%	Δλ	---	20	---	nm	I _F =200mA
Viewing Angle	2θ _{1/2}	---	120	---	deg	I _F =200mA

1. Luminous intensity (I_v) ±10%, Forward Voltage (V_F) ±0.1V, Viewing angle(2θ_{1/2}) ±5°

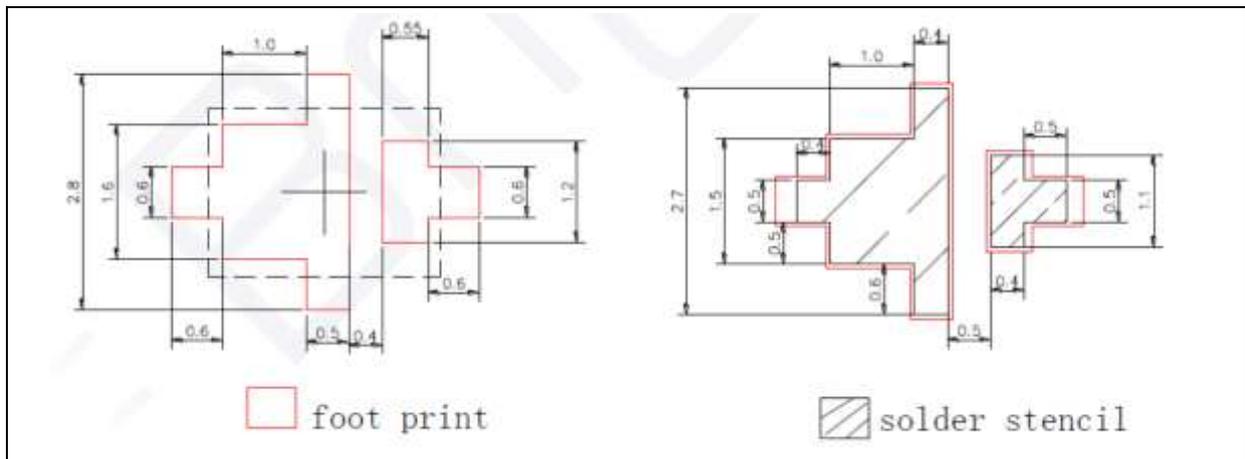
OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance $\pm 0.13\text{mm}$, unless otherwise noted.

Recommended Soldering Pad Dimension:



1. Dimensions are in millimetre (mm).
2. Tolerance $\pm 0.12\text{mm}$ with angle tolerance $\pm 0.5^\circ$.

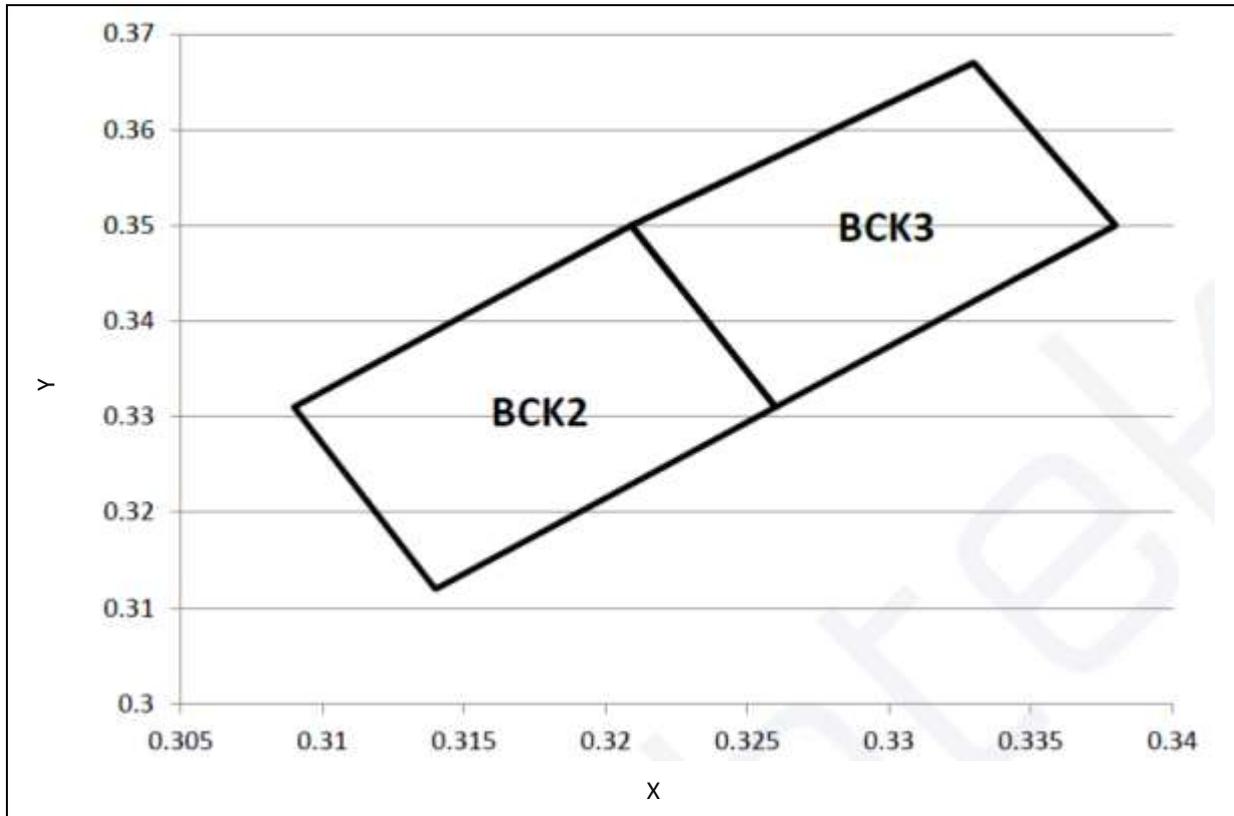
BINNING GROUPS:

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

Code	Min.	Max.	Unit
K	2.8	3.0	V
L	3.0	3.2	
M	3.2	3.4	
N	3.4	3.6	
O	3.6	3.8	

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

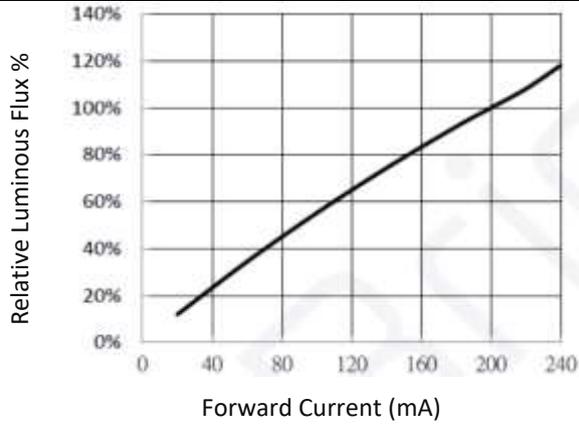
Code	Min.	Max.	Unit
22	58	66	mcd
23	66	76	
24	76	87	
25	87	100	

CIE CHROMATICITY DIAGRAM:

 Chromaticity Coordinates Classifications ($I_F = 200\text{mA}$):

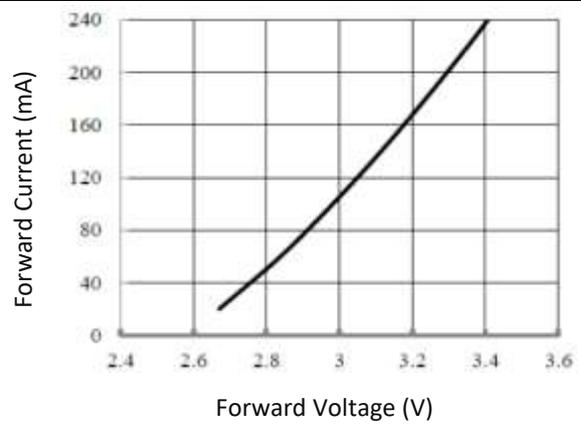
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
BCK2	0.3090	0.3310	0.3140	0.3120	0.3260	0.3310	0.3209	0.3500
BCK3	0.3209	0.3500	0.3260	0.3310	0.3380	0.3500	0.3330	0.3670

ELECTRO-OPTICAL CHARACTERISTICS:

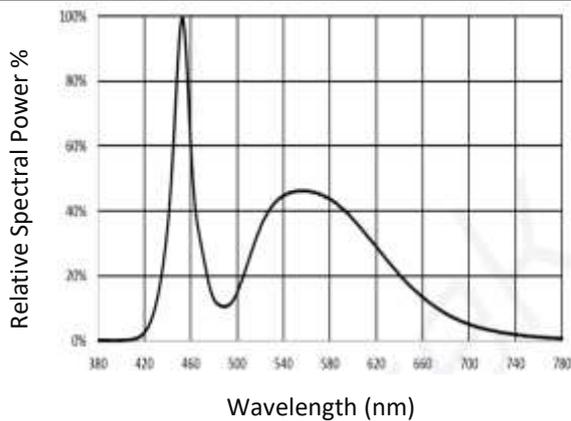
Relative Luminous Flux v.s. Forward Current



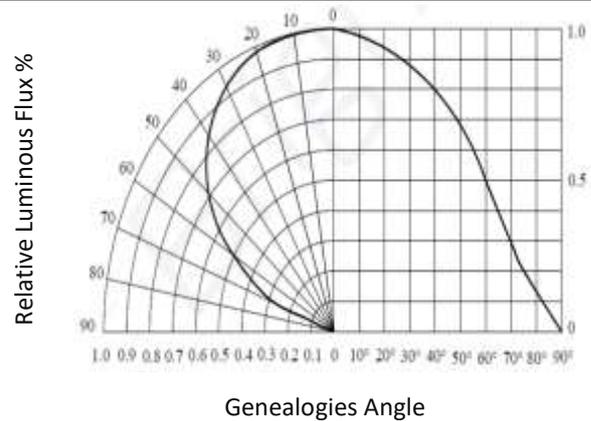
Forward Current v.s. Forward Voltage



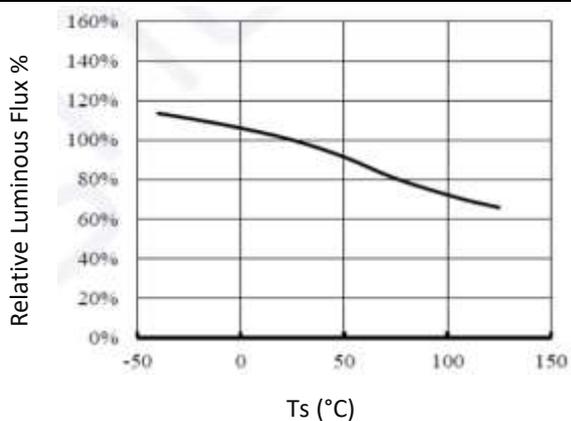
Relative Spectral Power v.s. Wavelength



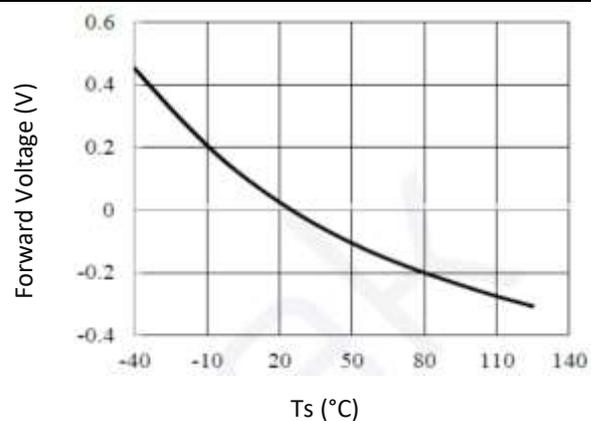
Directive Radiation



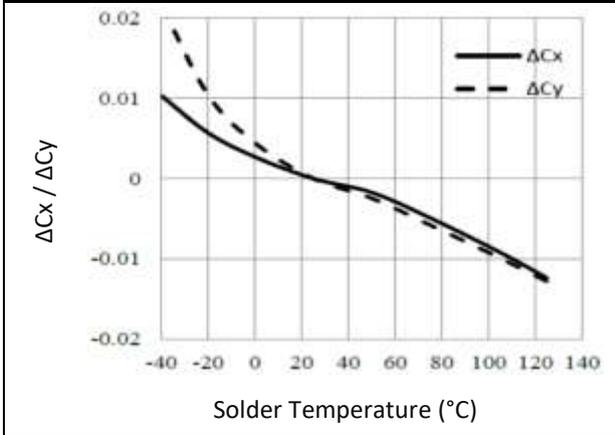
Relative Luminous Flux v.s. Solder Temp.



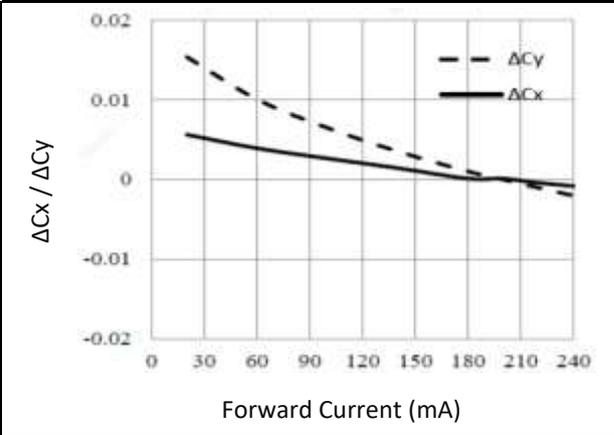
Forward Voltage v.s. Solder Temperature



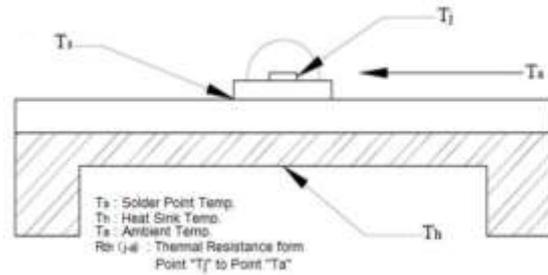
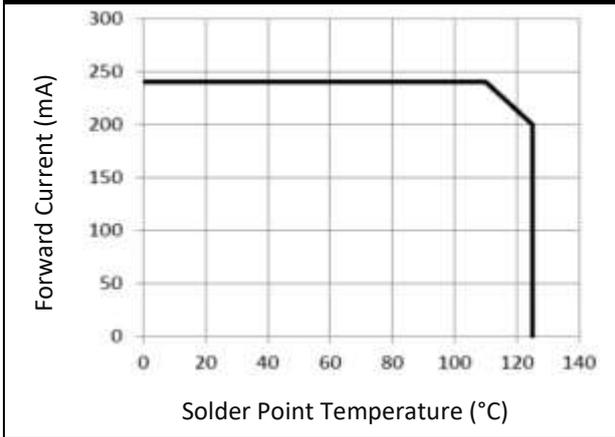
Chromaticity Coordinate Shift v.s. Solder Temp.



Chromaticity Coordinate Shift v.s. Current

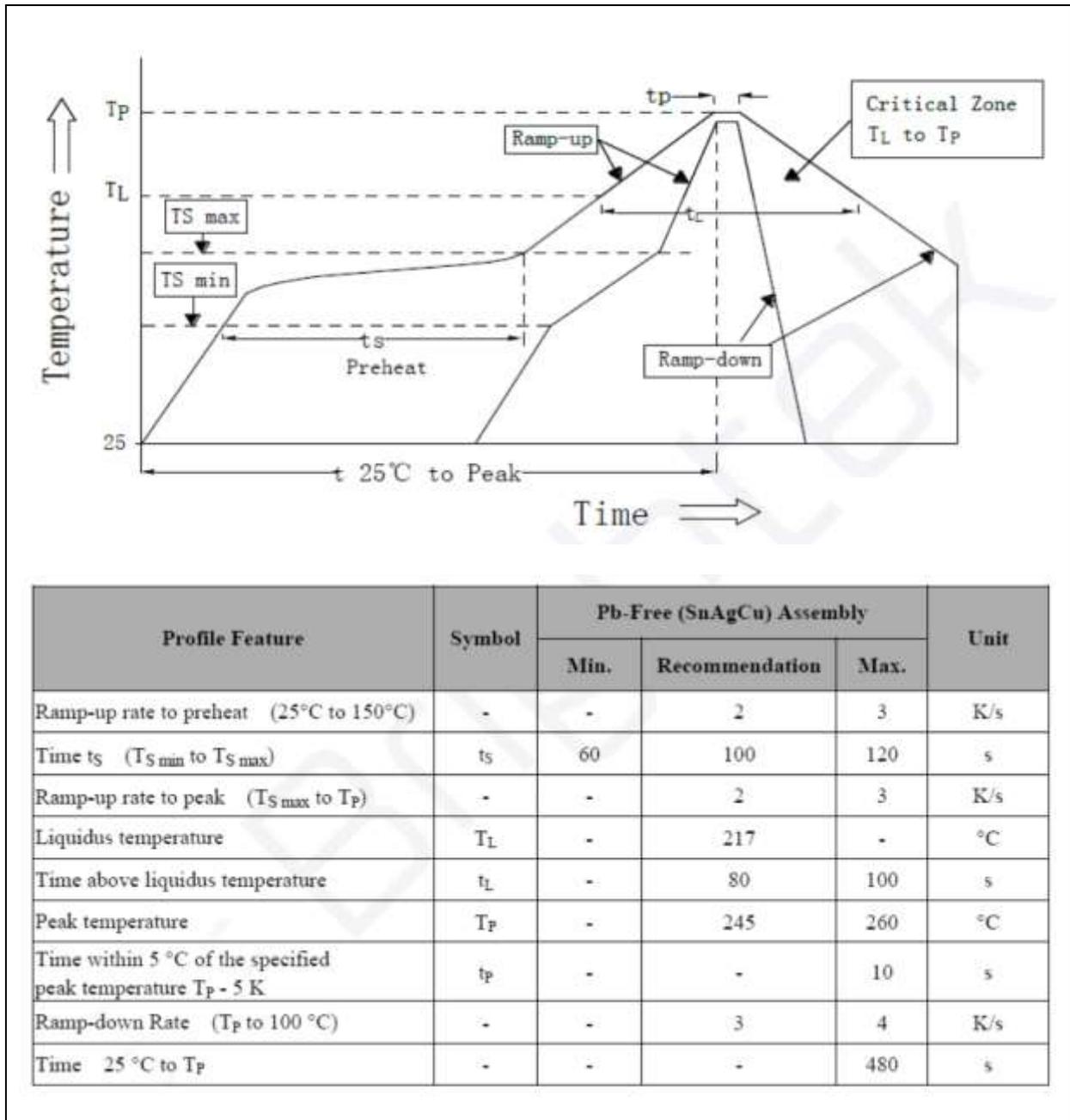


Forward Current Derating Curve



RECOMMENDED SOLDERING PROFILE:

Reflow Lead-free Solder:

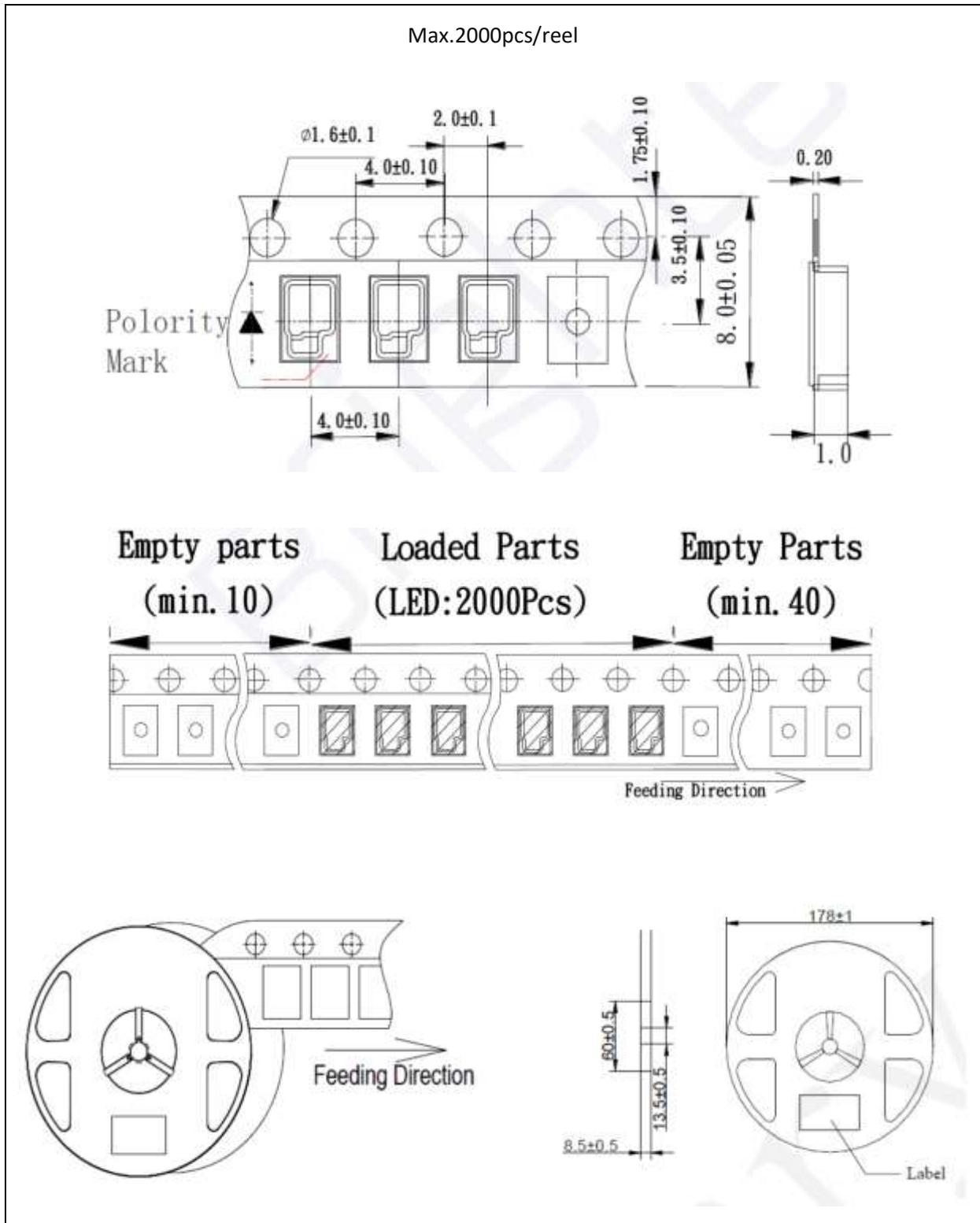


Note:

1. Maximum reflow soldering: 3 times.
2. The recommended reflow temperature is 240°C. The maximum soldering temperature should be limited to 260°C.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

PACKING SPECIFICATION:

Reel Dimension:



PRECAUTIONS OF USE:

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 a week. Otherwise, they should be kept in a damp-proof box with desiccating agent <10% R.H. and apply baking before use.

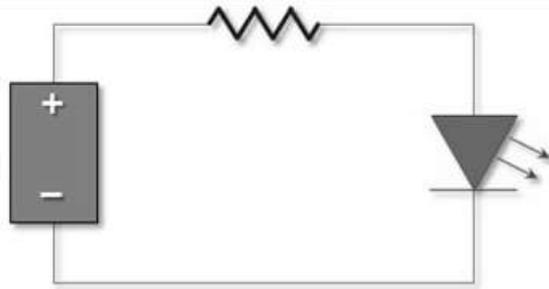
Baking:

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-electrosatic 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 _F =200mA	1000hrs	0/26	JESD22 A-108
High Humidity Heat Operation	Ta=85°C RH=85% I _F =200mA	1000hrs	0/26	JESD22 A-101
High Temperature Operation	Ta=105°C I _F =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 _F	I _F =200mA	-	USL ¹ x 1.1
Reverse Current	I _R	V _R =5V	-	10μA
Luminous Intensity	I _v	I _F =200mA	LSL ² x 0.7	-

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

REVISION RECORD:

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