



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 Series
- ▶ Gold White (PC Amber)

NOW51S93ZPC



Release Date: 23 April 2022 Version: A1.1



APPLICATIONS:

- Automotive Lighting
- Decorative Lighting

2720 0.6t Series



FEATURES:

- **Package:** EMC Top View SMD Package
- **Forward Current:** 350mA
- **Forward Voltage (typ.):** 3.3V
- **Luminous Flux (typ.):** 60lm@350mA
- **Colour:** Gold White / PC Amber
- **Colour Temperature (typ.):** 1800K
- **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")

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
DC Forward Current	I _F	450	mA
Pulse Forward Current Duty 1/10, Pulse Width 0.1mS	I _{PF}	1500	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}	12	°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

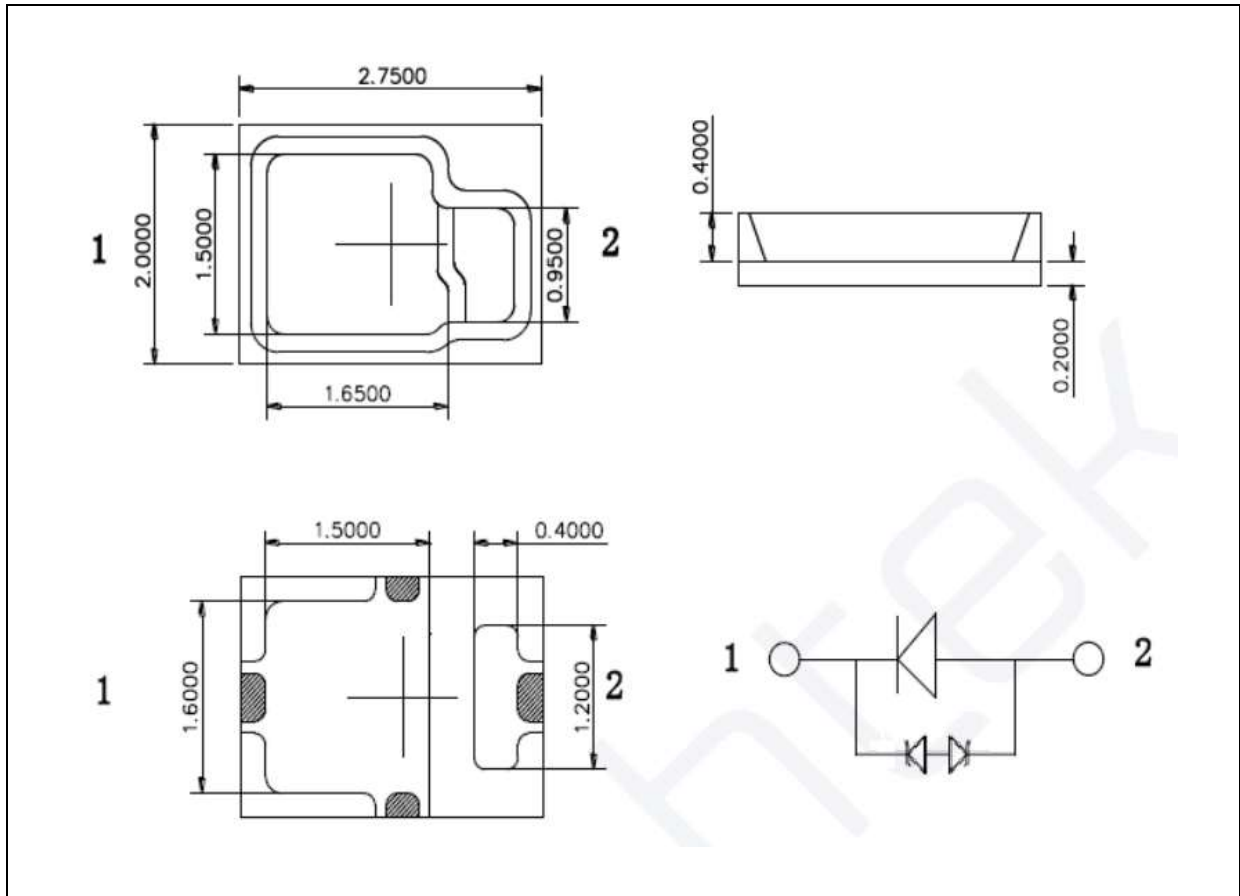
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V _F	2.8	3.3	3.8	V	I _F =350mA
Luminous Flux	Φ _V	50	60	---	lm	I _F =350mA
Chromaticity Coordinates	X	---	0.5700	---	---	I _F =350mA
	Y	---	0.4200	---		
Peak Wavelength	λ _P	---	611	---	nm	I _F =350mA
Spectral Width 50%	Δλ	---	88	---	nm	I _F =350mA
Viewing Angle	2θ _{1/2}	---	120	---	deg	I _F =350mA

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

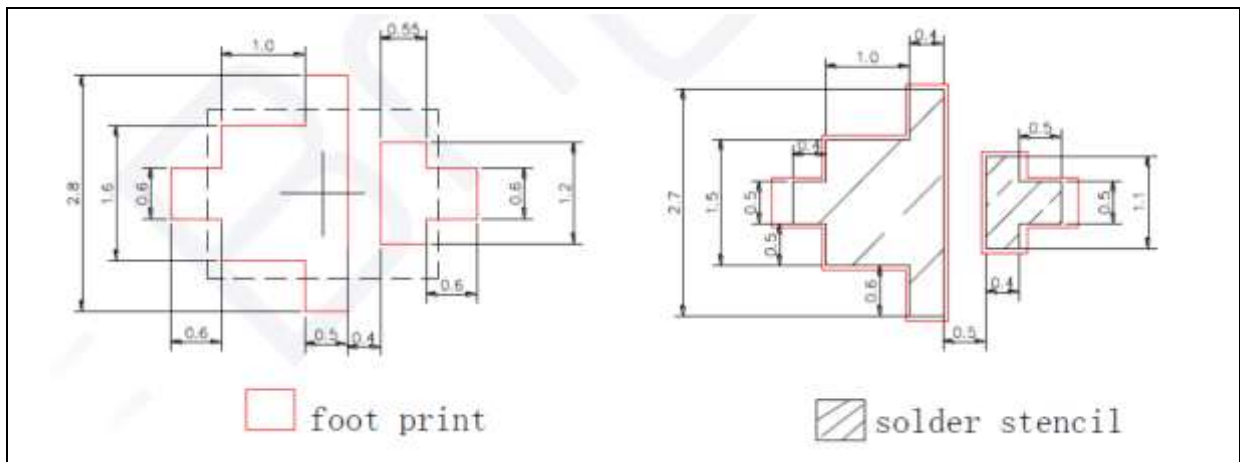
OUTLINE DIMENSION:

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 $\pm 0.5^\circ$.

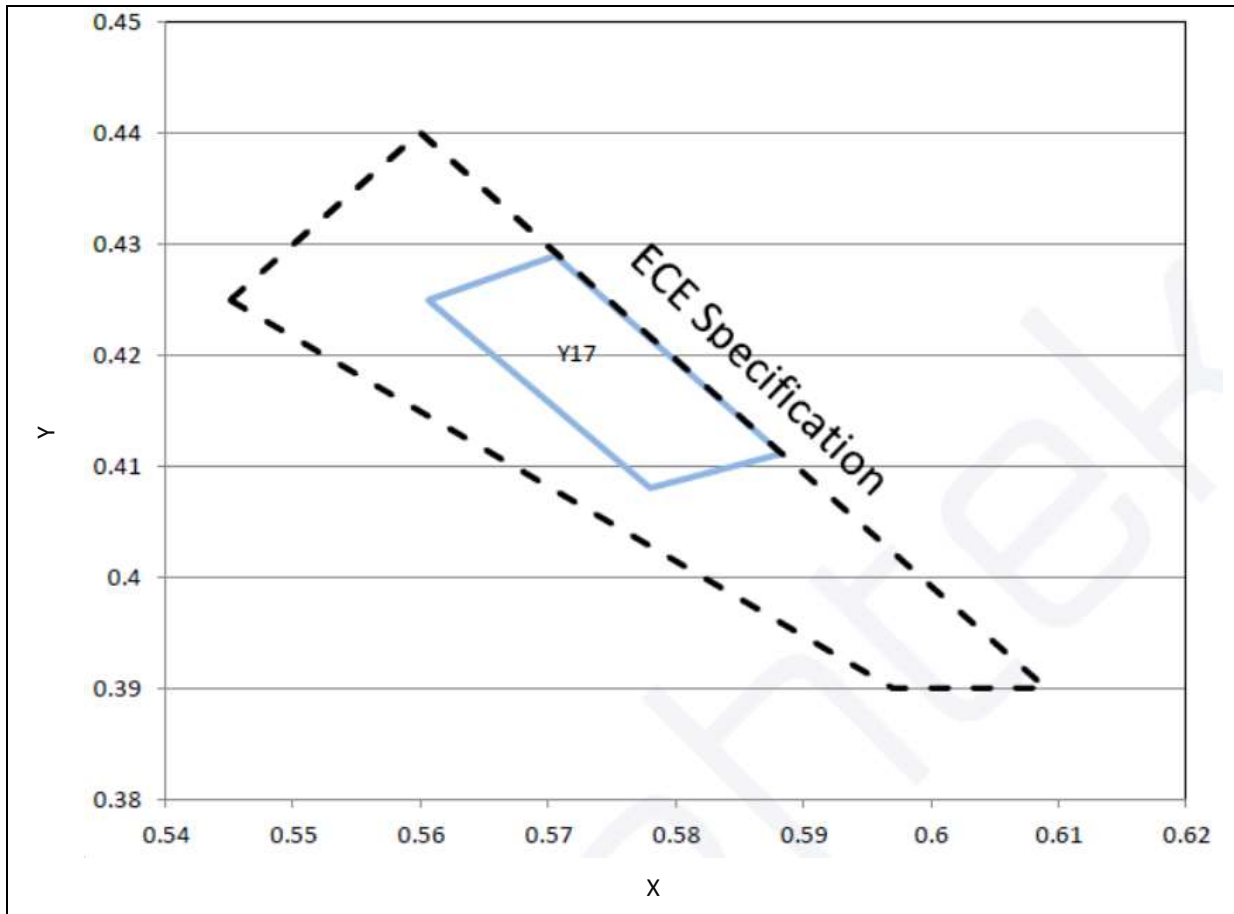
BINNING GROUPS:

 Forward Voltage Classifications ($I_F = 350\text{mA}$):

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 ($I_F = 350\text{mA}$):

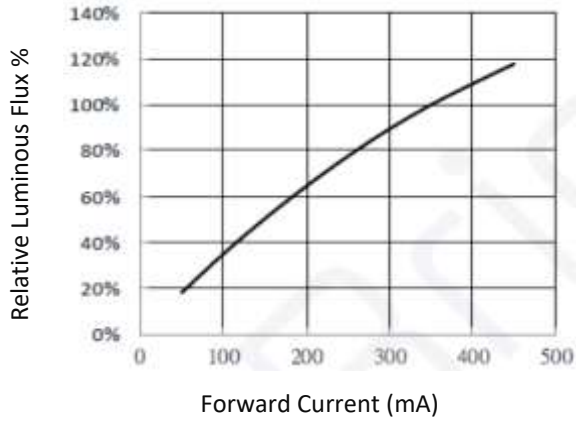
Code	Min.	Max.	Unit
21	50	58	mcd
22	58	66	
23	66	76	
24	76	87	

CIE CHROMATICITY DIAGRAM:

 Chromaticity Coordinates Classifications ($I_F = 350\text{mA}$):

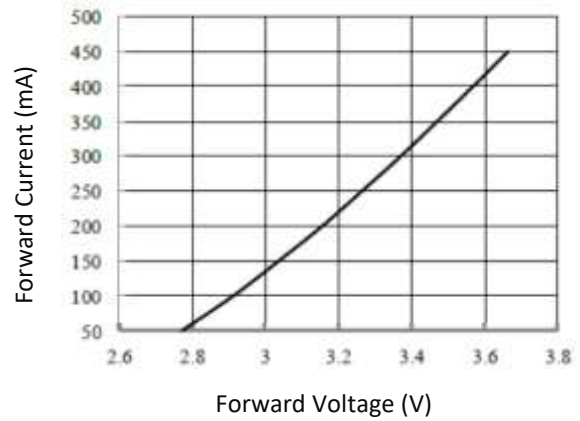
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
Y17	0.5606	0.4250	0.5705	0.4289	0.5883	0.4111	0.5780	0.4080

ELECTRO-OPTICAL CHARACTERISTICS:

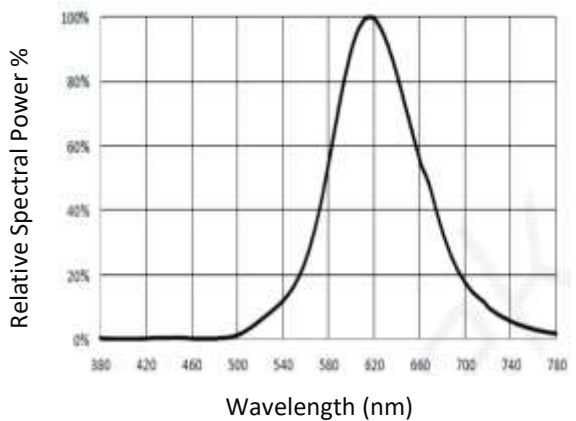
Relative Luminous Flux v.s. Forward Current



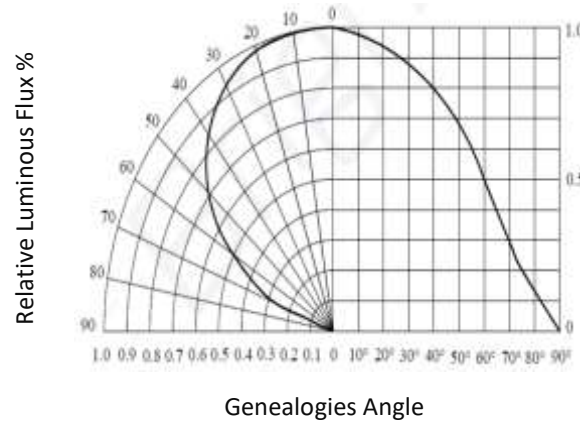
Forward Current v.s. Forward Voltage



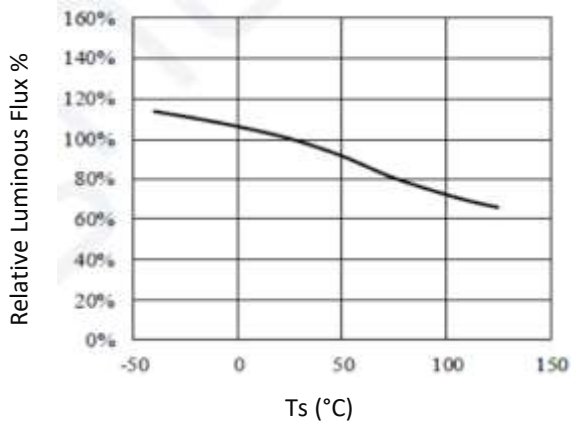
Relative Spectral Power v.s. Wavelength



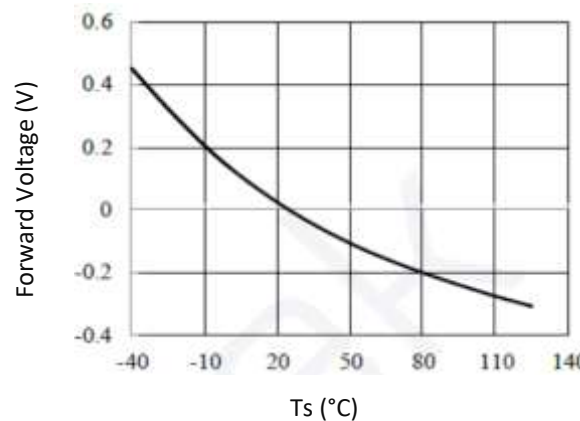
Directive Radiation



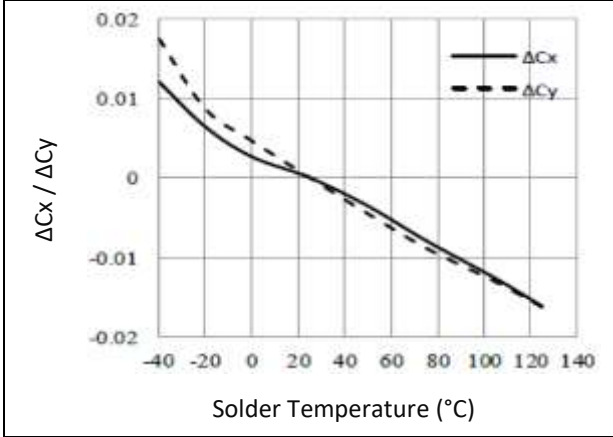
Relative Luminous Flux v.s. Solder Temp.



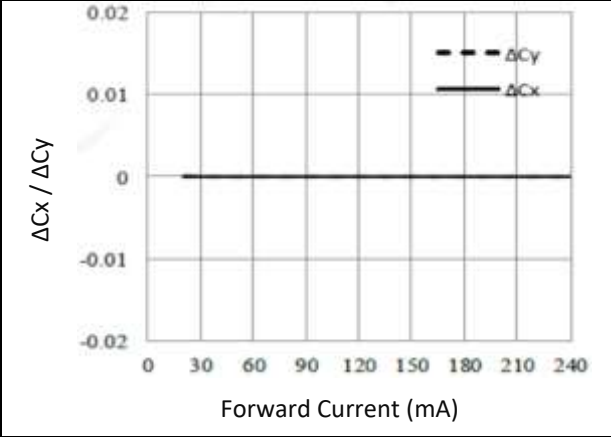
Forward Voltage v.s. Solder Temperature



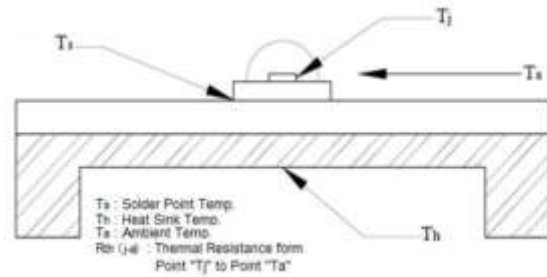
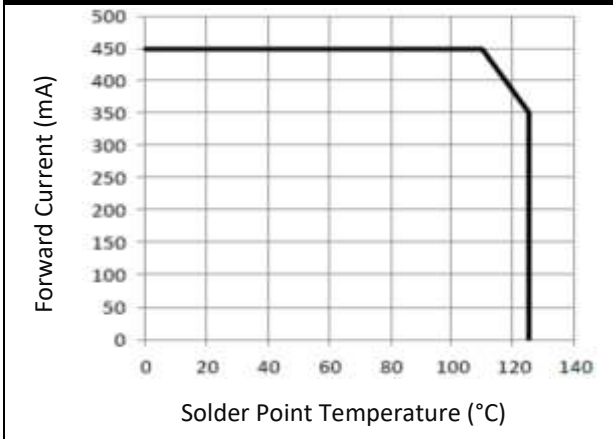
Chromaticity Coordinate Shift v.s. Solder Temp.



Chromaticity Coordinate Shift v.s. Current

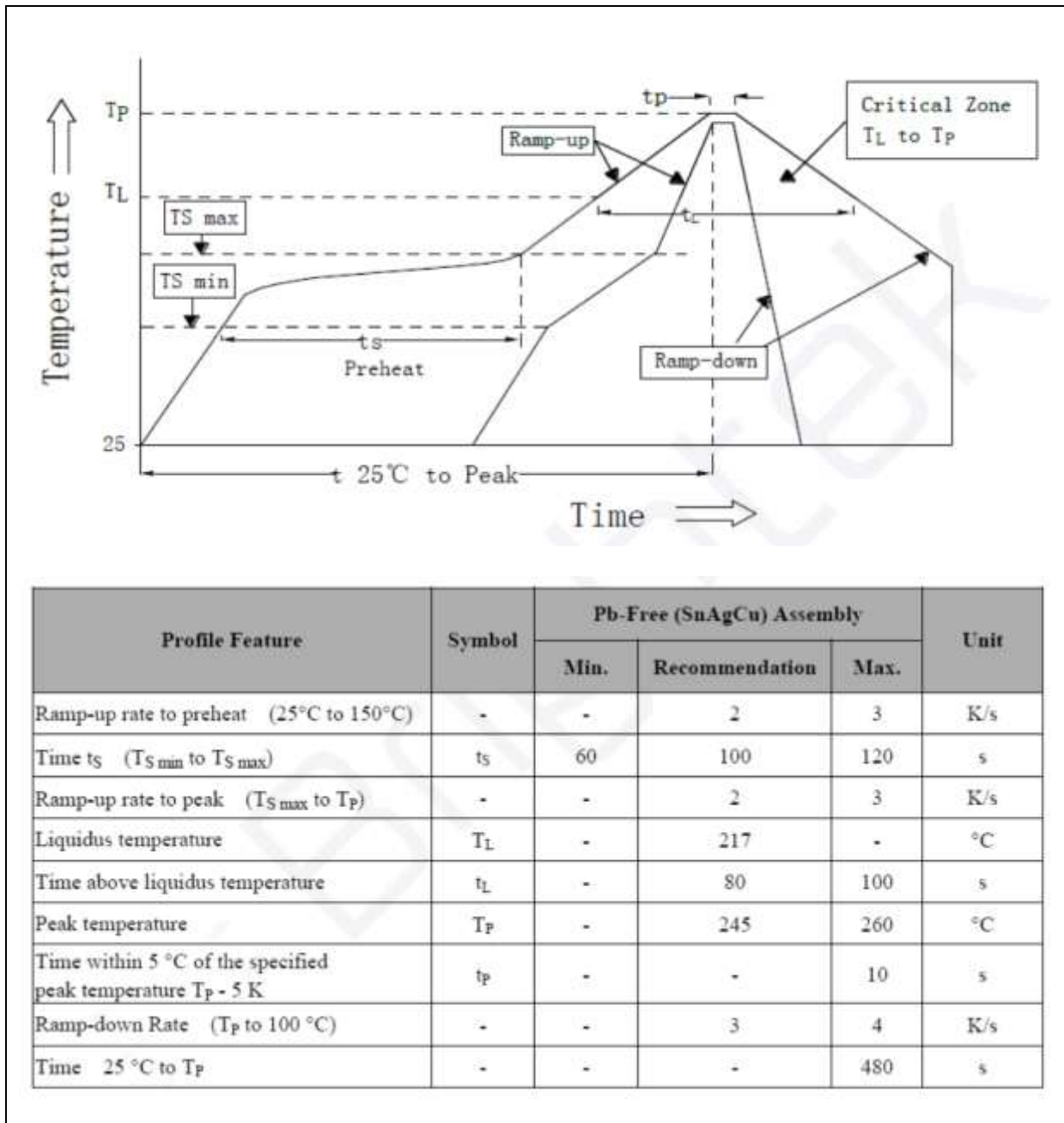


Forward Current Derating Curve



RECOMMENDED SOLDERING PROFILE:

Reflow Lead-free Solder:

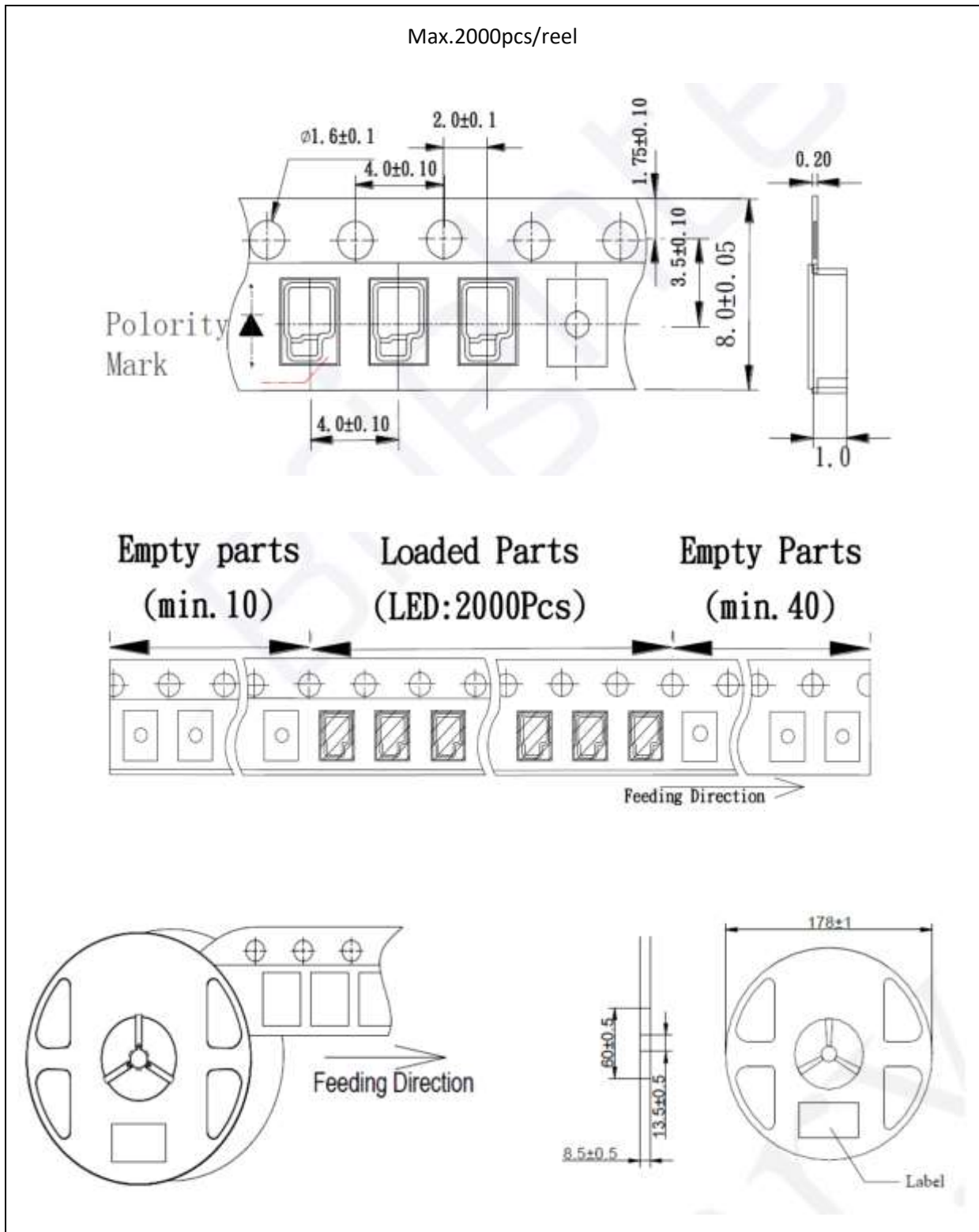


Note:

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-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 _F =350mA	1000hrs	0/26	JESD22 A-108
High Humidity Heat Operation	Ta=85°C RH=85% I _F =350mA	1000hrs	0/26	JESD22 A-101
High Temperature Operation	Ta=105°C I _F =350mA	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 =350mA	-	USL ¹ x 1.1
Reverse Current	I _R	V _R =5V	-	10μA
Luminous Intensity	I _v	I _F =350mA	LSL ² x 0.7	-

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

REVISION RECORD:

Version	Date	Summary of Revision
A1.0	27/04/2020	Datasheet set-up.
A1.1	23/04/2022	New datasheet format.