



BRIGHTTEK
BRIGHTTEK (EUROPE) LIMITED

Brighten up The World With LED!



ISO/TS 16949:2009



BS EN ISO 14001:2004



QC 080000 IECQ HSPM

PRODUCT DATASHEET



- ▶ PLCC2 Top View SMD
- ▶ 2214 1.3t
- ▶ Natural White 4550K

NOW51S34Z



Release Date: 15 July 2022 Version: A1.2



2214 1.3t Series

RoHS Compliant



FEATURES:

- **Package:** PLCC2 Single Colour Top View SMD
- **Forward Current:** 20mA
- **Forward Voltage (typ.):** 3.0V
- **Luminous Intensity (typ.):** 2050mcd@20mA
- **Colour:** Natural White
- **Colour Temperature (CCT):** 4300~4800K
- **Viewing angle:** 120°
- **Materials:**
 - Die: InGaN
 - Resin: Silicone (Yellow Diffused)
 - Finishing: Ag plated
- **Operating Temperature:** -40~+105°C
- **Storage Temperature:** -40~+105°C
- **ESD (HBM):** 6KV
- **Grouping parameters:**
 - Forward voltage
 - Luminous intensity
 - CIE Chromaticity
- **Soldering methods:** Reflow
- **MSL:** acc. to JEDEC Level 2a
- **Packing:** 8mm tape with max.3000/reel, ϕ 180mm (7")

APPLICATIONS:

- Automotive
- Backlighting
- Indication Light
- Switch light
- Dashboard
- Decoration Lighting

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Forward Current	I_F	30	mA
Peak Forward Current Duty 1/10; width 0.1ms	I_{FP}	100	mA
Reverse Voltage	V_R	5	V
Reverse Current @5V	I_R	10	μ A
Junction Temperature	T_j	125	°C
Thermal Resistance Junction to Solder Point	R_{thJ-S}	130	°C/W
Thermal Resistance Junction to Ambient Point	R_{thJ-A}	260	°C/W
Operating Temperature	T_{OPR}	-40~+105	°C
Storage Temperature	T_{STG}	-40~+105	°C

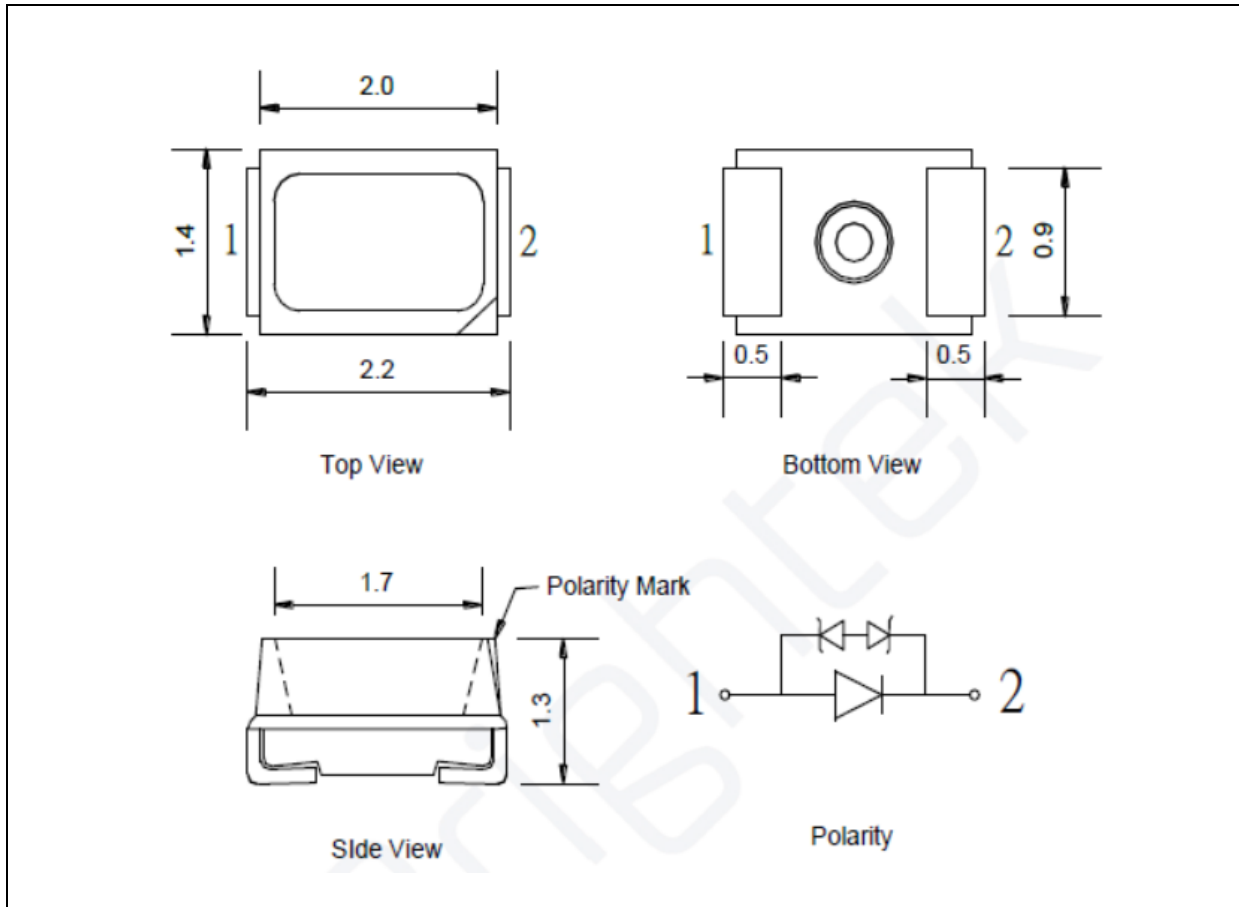
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	2.8	3.0	3.4	V	$I_F=20mA$
Luminous Intensity	I_v	1650	2050	---	mcd	$I_F=20mA$
Chromaticity Coordinates	X	---	0.3600	---	---	$I_F=20mA$
	Y	---	0.3625	---		
Peak Wavelength	λ_p	---	448	---	nm	$I_F=20mA$
Spectral Width 50%	$\Delta\lambda$	---	20	---	nm	$I_F=20mA$
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	$I_F=20mA$

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

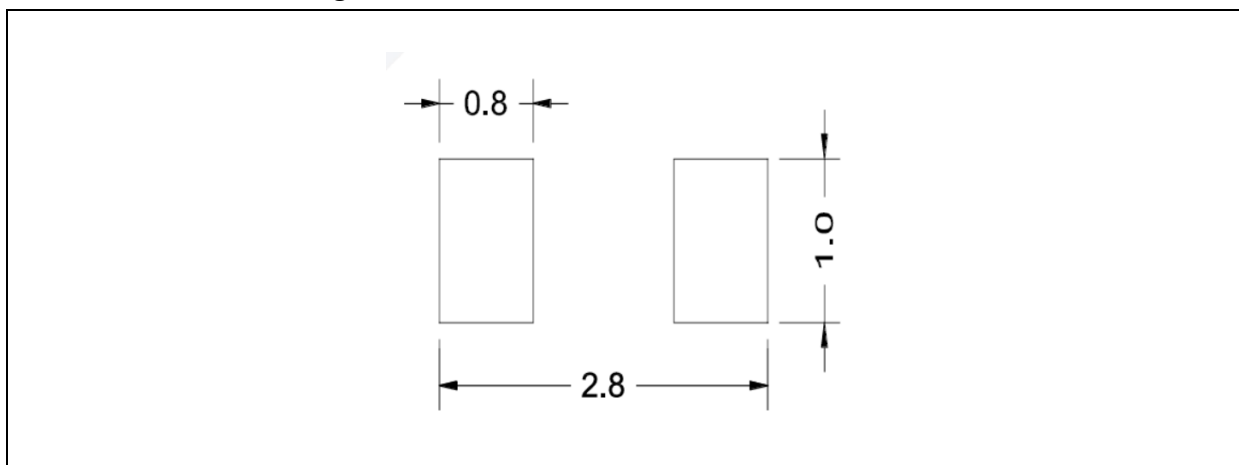
OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance $\pm 0.2\text{mm}$, unless otherwise noted.

Recommended Soldering Pad Dimension:



1. Dimensions are in millimetre (mm).
2. Tolerance $\pm 0.1\text{mm}$ with angle tolerance $\pm 0.5^\circ$.

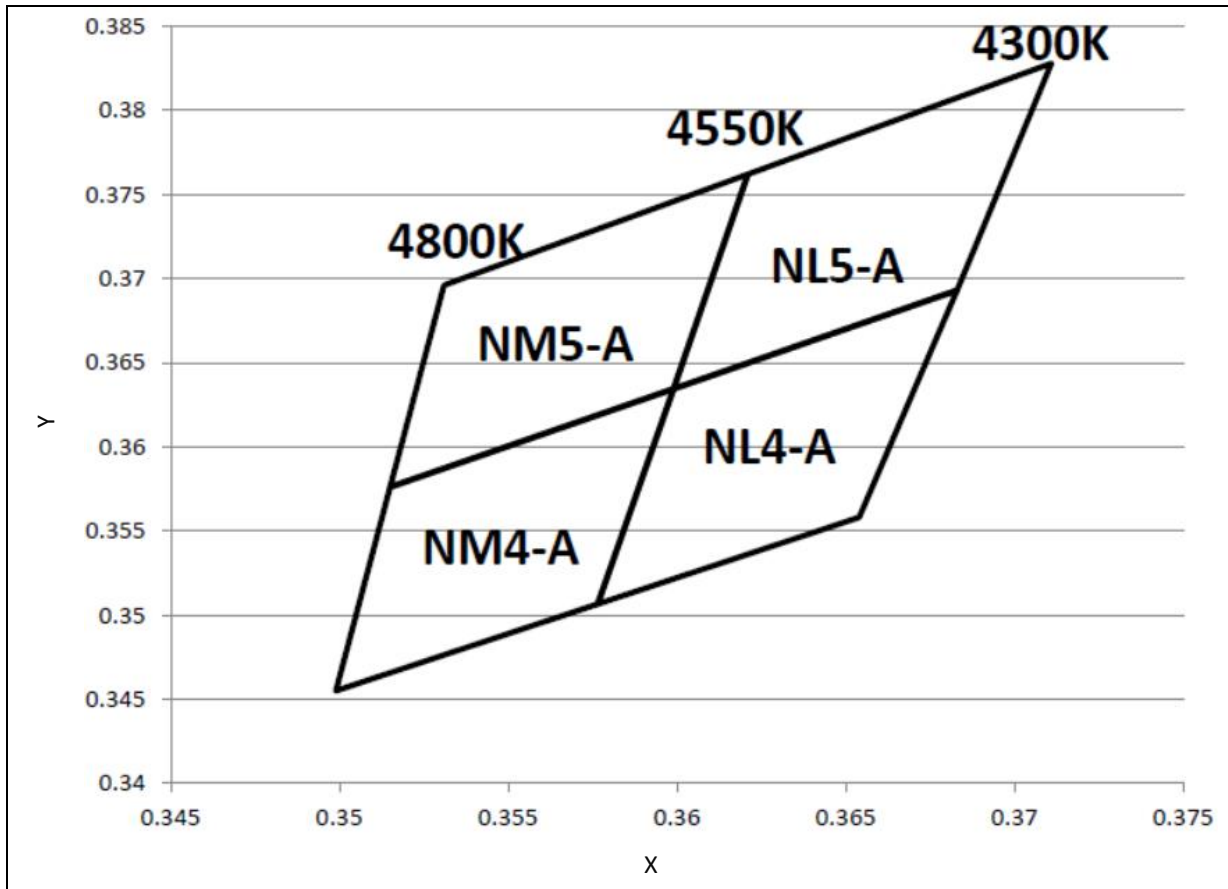
BINNING GROUPS:

 Forward Voltage Classifications ($I_F = 20\text{mA}$):

Code	Min.	Max.	Unit
B	2.8	2.9	V
C	2.9	3.0	
D	3.0	3.1	
E	3.1	3.2	
F	3.2	3.3	
G	3.3	3.4	

 Luminous Intensity Classifications ($I_F = 20\text{mA}$):

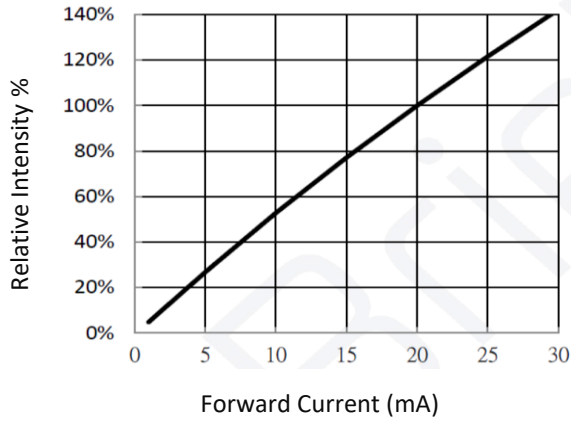
Code	Min.	Max.	Unit
4	1650	1850	mcd
5	1850	2050	
6	2050	2250	
7	2250	2450	

CIE CHROMATICITY DIAGRAM:

 Chromaticity Coordinates Classifications ($I_F = 20\text{mA}$):

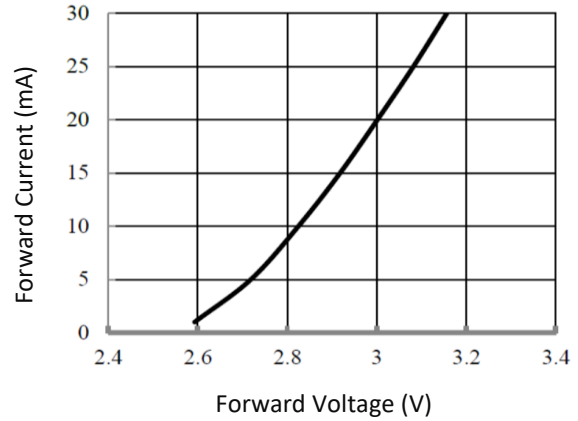
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
NM5-A	0.3531	0.3696	0.3621	0.3762	0.3599	0.3634	0.3515	0.3576
NL5-A	0.3621	0.3762	0.3711	0.3828	0.3683	0.3693	0.3599	0.3634
NM4-A	0.3515	0.3576	0.3599	0.3634	0.3576	0.3506	0.3499	0.3455
NL4-A	0.3576	0.3506	0.3599	0.3634	0.3683	0.3693	0.3654	0.3558

ELECTRO-OPTICAL CHARACTERISTICS:

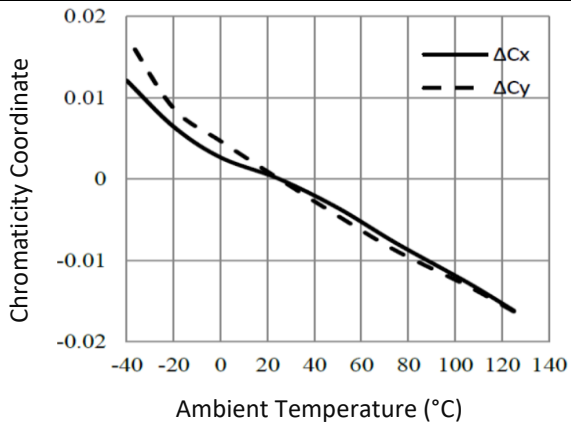
Relative Intensity v.s. Forward Current



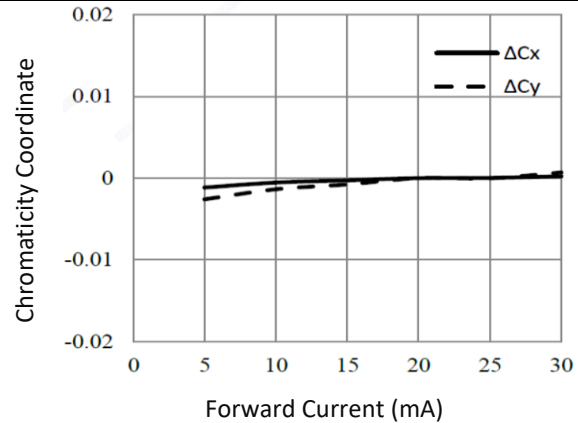
Forward Current v.s. Forward Voltage



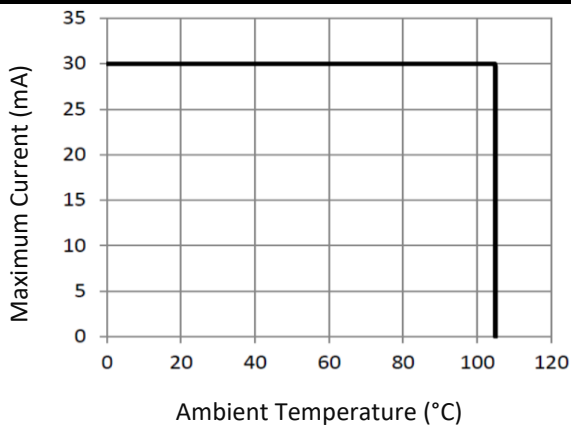
Temperature v.s. Chromaticity Coordinate



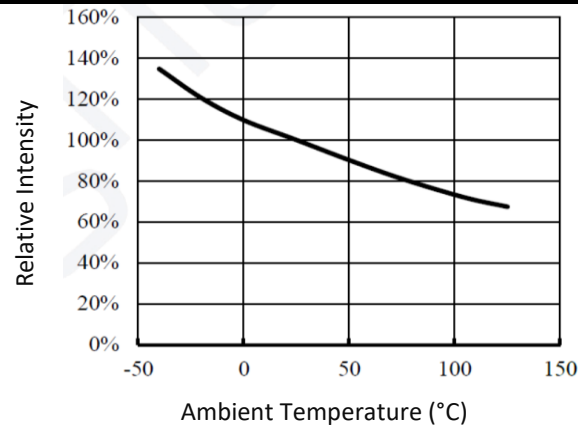
Current v.s. Chromaticity Coordinate



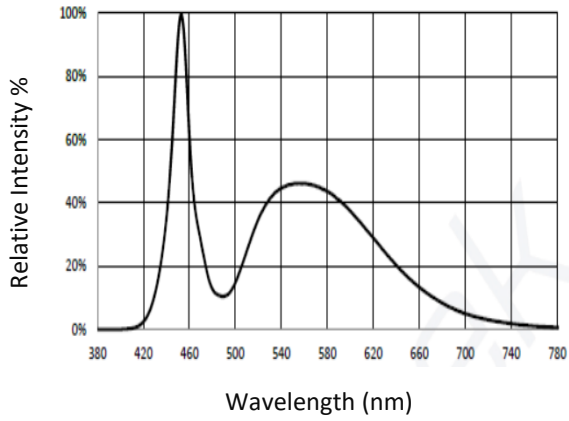
Temperature Derating Chart



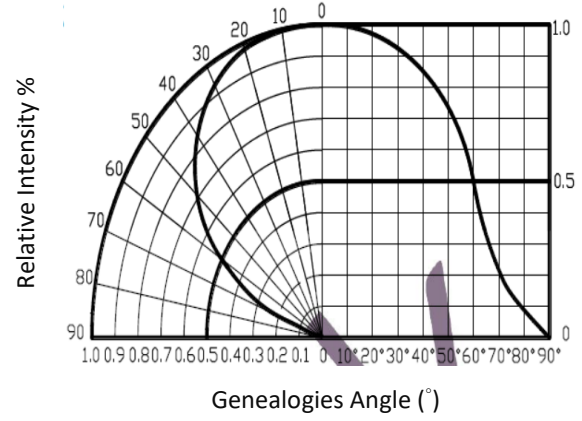
Relative Intensity Flux v.s. Ambient Temperature



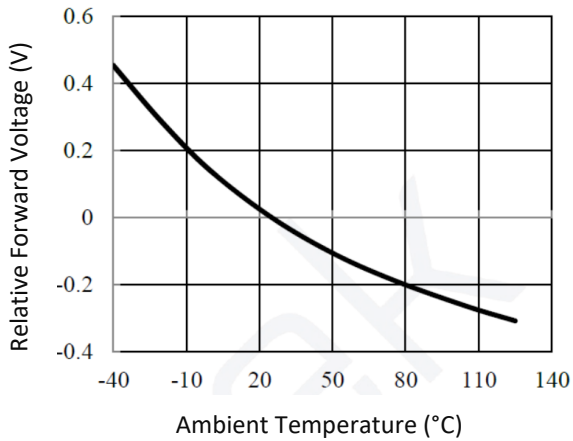
Relative Intensity v.s. Wavelength



Relative Intensity v.s. Angular Displacement

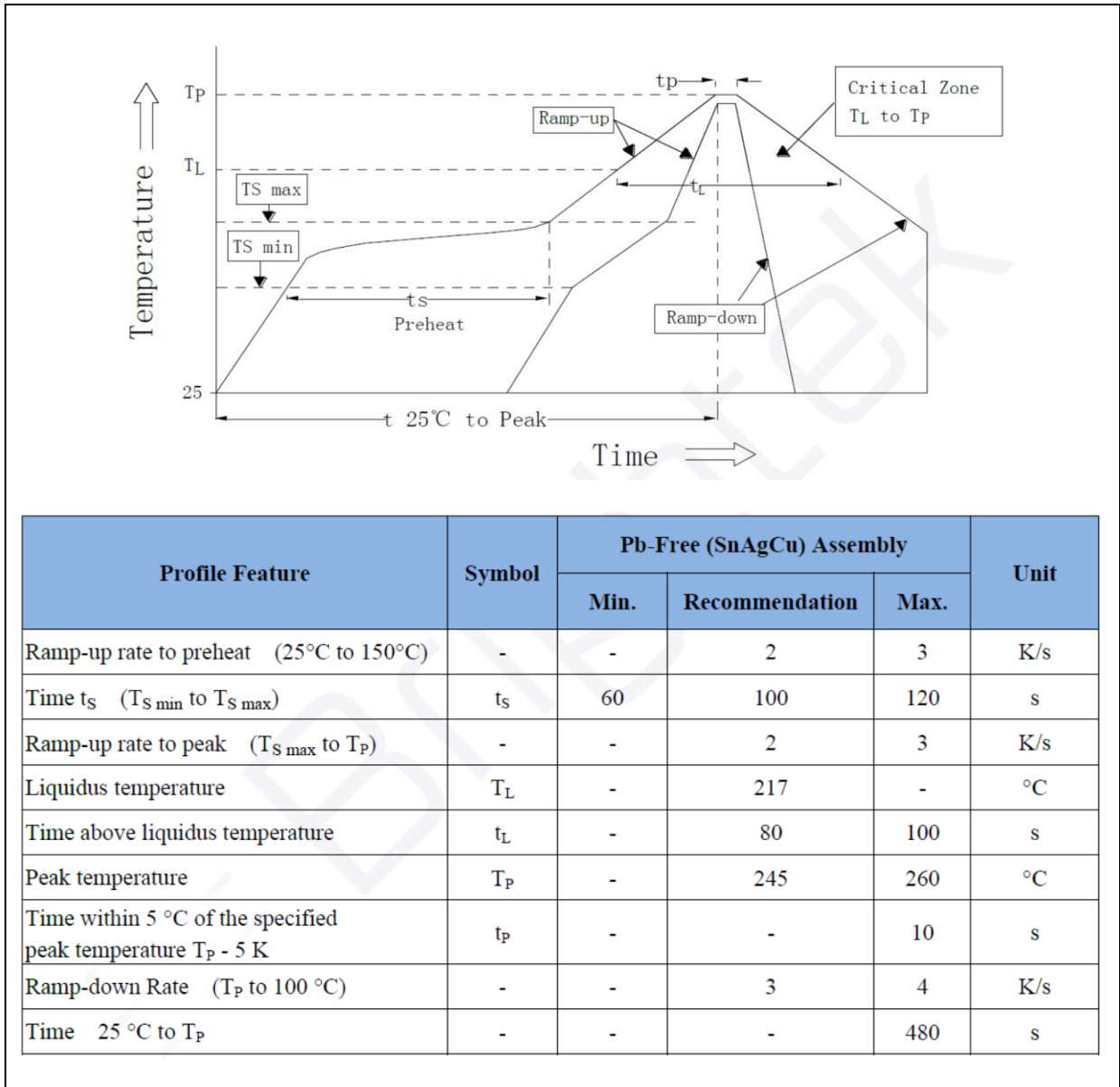


Relative Forward Voltage v.s. Temperature



RECOMMENDED SOLDERING PROFILE:

Reflow solder:

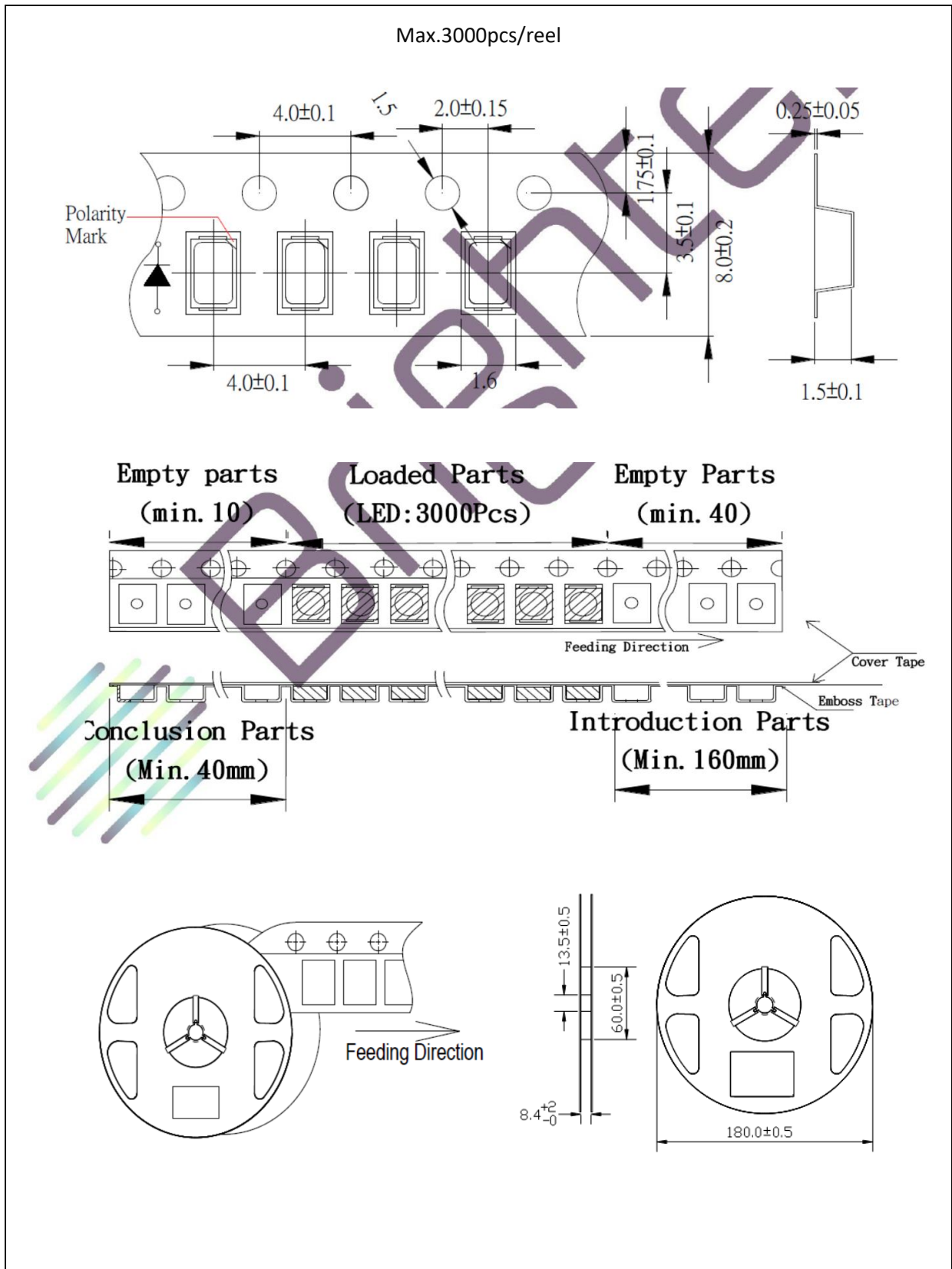


Note:

1. Recommend reflow temperature 240°C. The maximum soldering temperature should be limited to 260°C.
2. Maximum 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:

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:

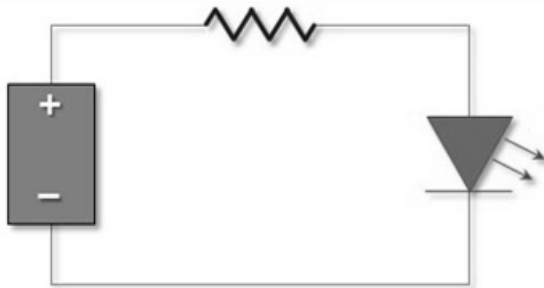
It is recommended to bake the LED before soldering if the pack has been unsealed for longer than 24hrs.

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.

REVISION RECORD:

Version	Date	Summary of Revision
A1.0	27/04/2020	Datasheet set-up.
A1.1	28/05/2022	New datasheet format.
A1.2	15/07/2022	Add thermal resistance data.