



BRIGHTTEK
BRIGHTTEK (EUROPE) LIMITED

Brighten up The World With LED!



ISO 9001:2009



BSI
ISO 14001:2004



QC 800000 IECQ HSP98

PRODUCT DATASHEET



- ▶ PLCC2 Top View SMD
- ▶ 2214 1.3t
- ▶ Red 630nm

NOR48S90



Release Date: 27 May 2022 Version: A1.1



2214 1.3t Series

RoHS
Compliant



FEATURES:

- **Package:** PLCC2 Single Colour Top View SMD
- **Forward Current:** 20mA
- **Forward Voltage (typ.):** 1.9V
- **Luminous Intensity (typ.):** 140mcd@20mA
- **Colour:** Red
- **Wavelength:** 625~635nm
- **Viewing angle:** 120°
- **Materials:**
 - Die: AlGaInP
 - Resin: Silicone (Water Clear)
 - Finishing: Ag plated
- **Operating Temperature:** -40~+105°C
- **Storage Temperature:** -40~+105°C
- **ESD (HBM):** 2KV
- **Grouping parameters:**
 - Forward voltage
 - Luminous intensity
 - Dominant wavelength
- **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	10	V
Reverse Current @10V	I_R	10	μ A
Junction Temperature	T_j	125	°C
Thermal Resistance Junction to Solder Point	R_{th}	160	°C/W
Operating Temperature	T_{OPR}	-40~+105	°C
Storage Temperature	T_{STG}	-40~+105	°C

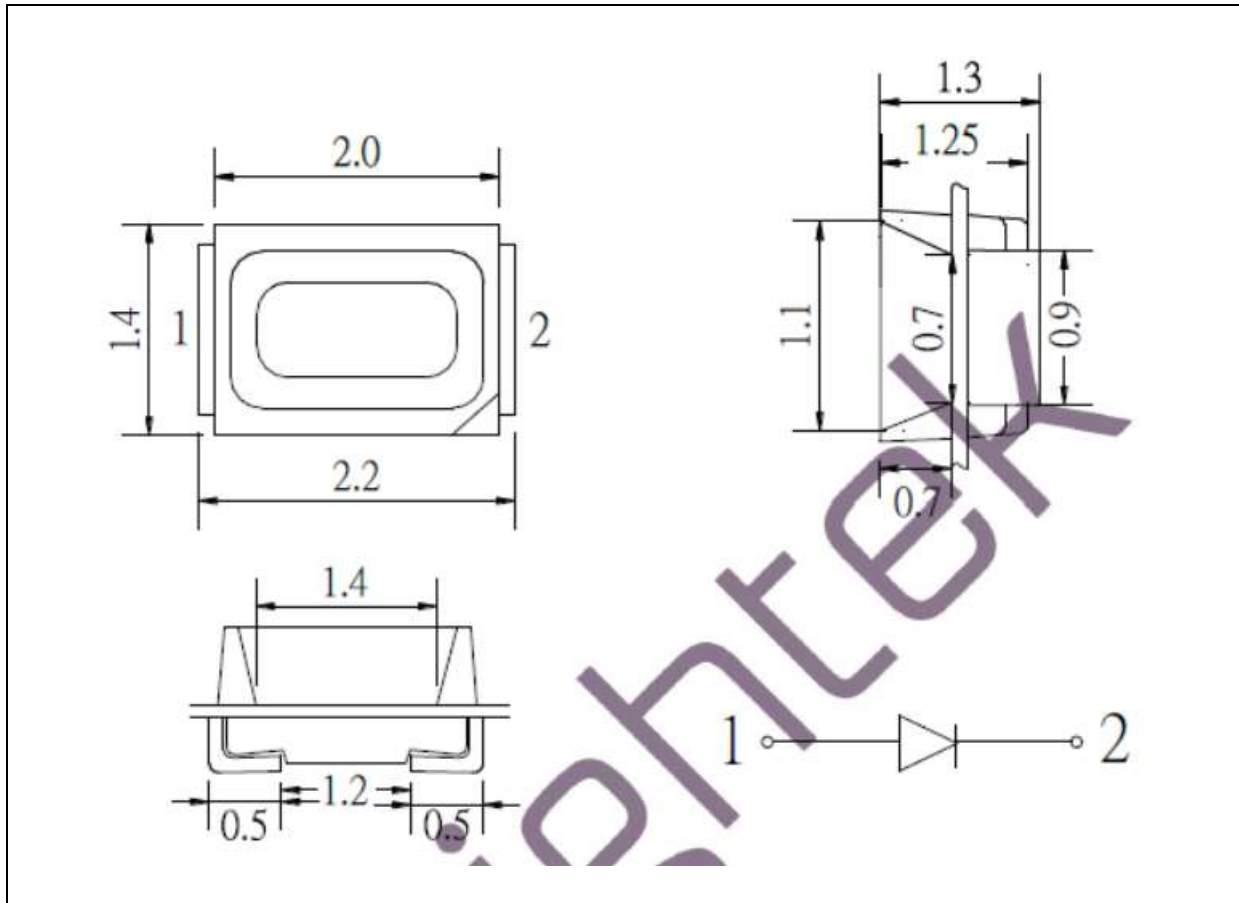
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	1.7	1.9	2.5	V	$I_F=20mA$
Luminous Intensity	I_v	90	140	---	mcd	$I_F=20mA$
Dominant Wavelength	λ_D	625	---	635	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) $\pm 0.1V$.

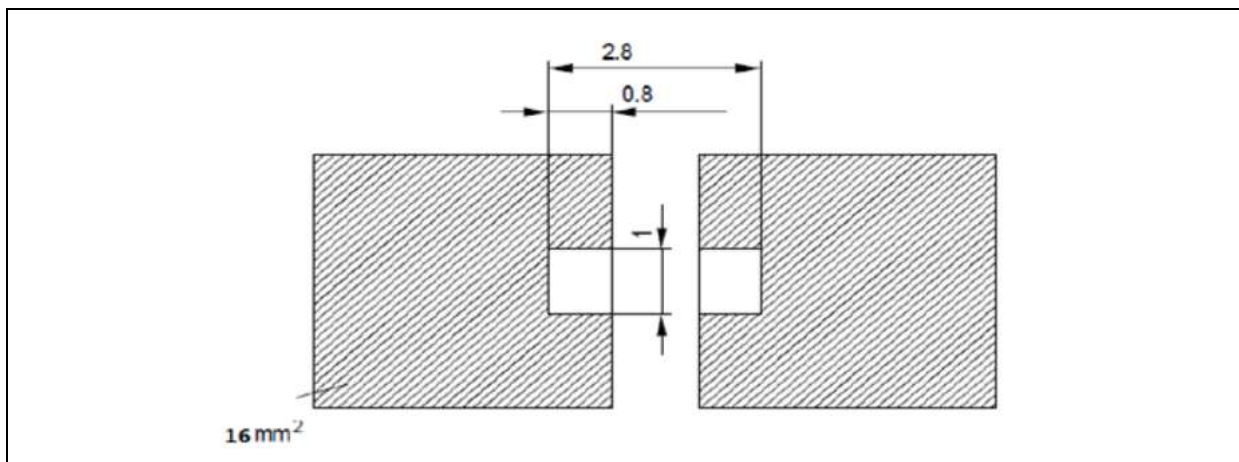
OUTLINE DIMENSION:

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
A	1.7	1.8	V
B	1.8	1.9	
C	1.9	2.0	
D	2.0	2.1	
E	2.1	2.2	
F	2.2	2.3	
G	2.3	2.4	
H	2.4	2.5	

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

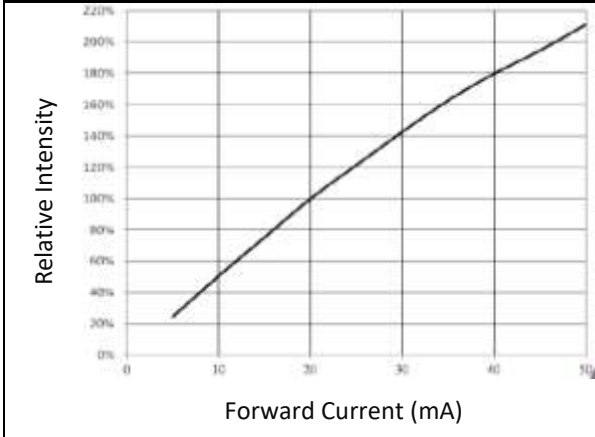
Code	Min.	Max.	Unit
6	90	120	mcd
7	120	160	
8	160	210	
9	210	270	

 Dominant Wavelength Classifications ($I_F = 20\text{mA}$):

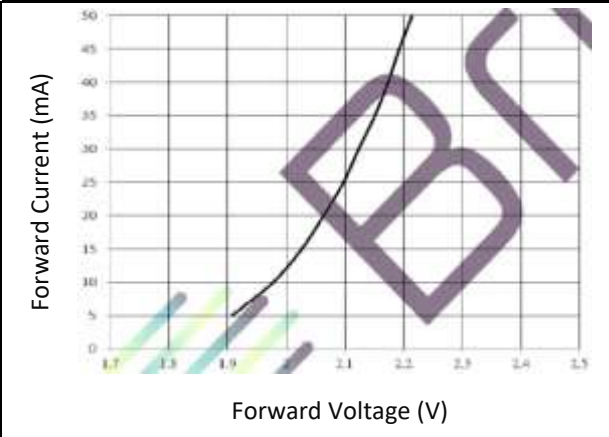
Code	Min.	Max.	Unit
D	625	630	nm
E	630	635	

ELECTRO-OPTICAL CHARACTERISTICS:

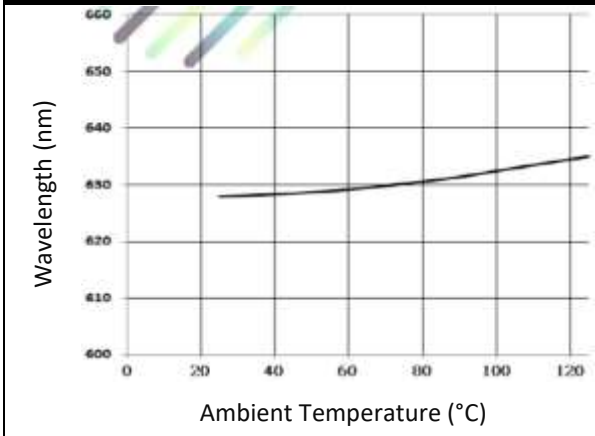
Relative Intensity v.s. Forward Current



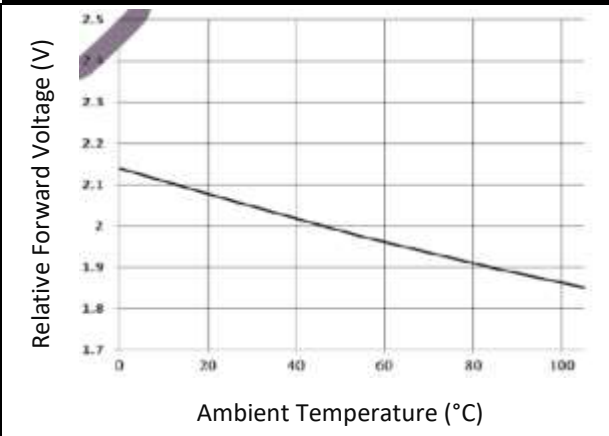
Forward Current v.s. Forward Voltage



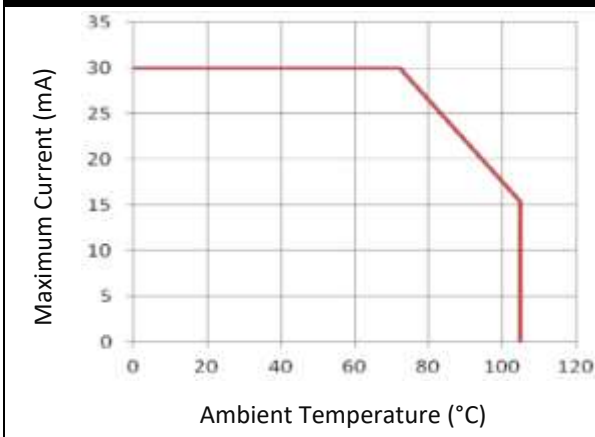
Solder Temperature v.s. Wavelength Shift



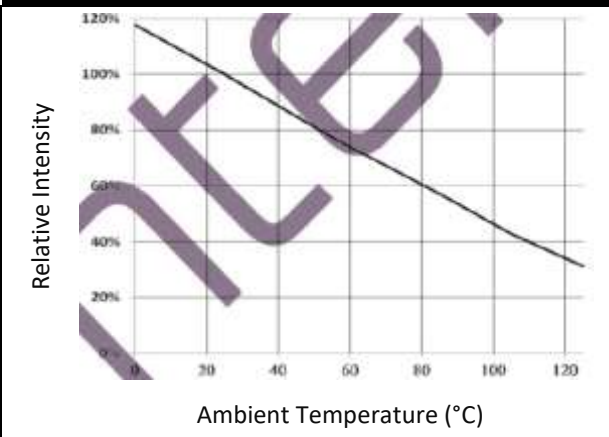
Relative Forward Voltage v.s. Temperature



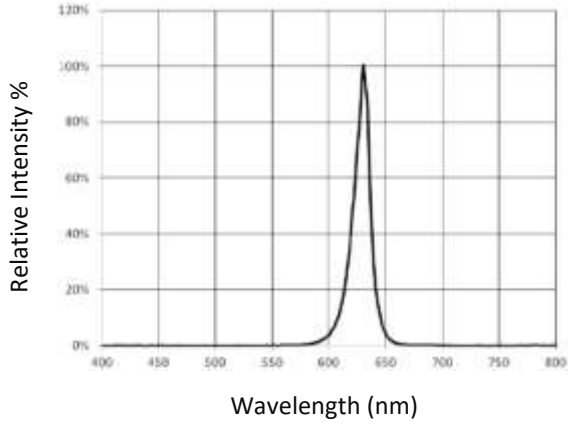
Temperature Derating Chart



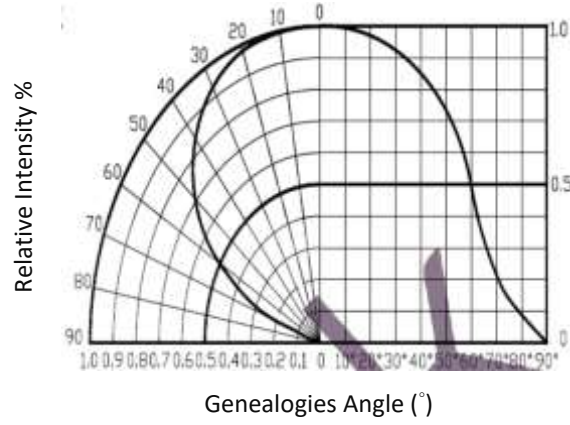
Relative Intensity Flux v.s. Ambient Temperature



Relative Intensity v.s. Wavelength

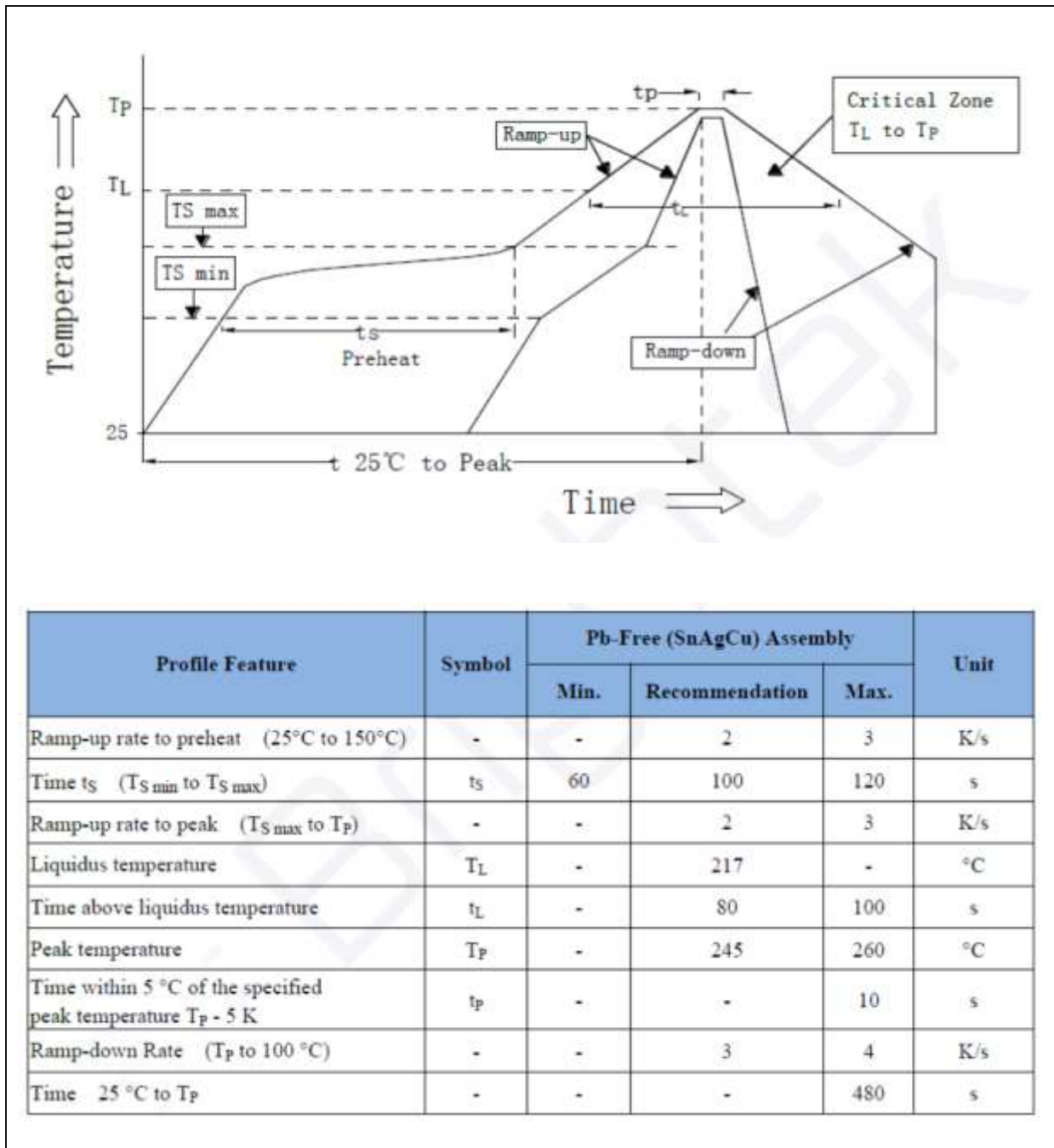


Relative Intensity v.s. Angular Displacement



RECOMMENDED SOLDERING PROFILE:

Reflow solder:

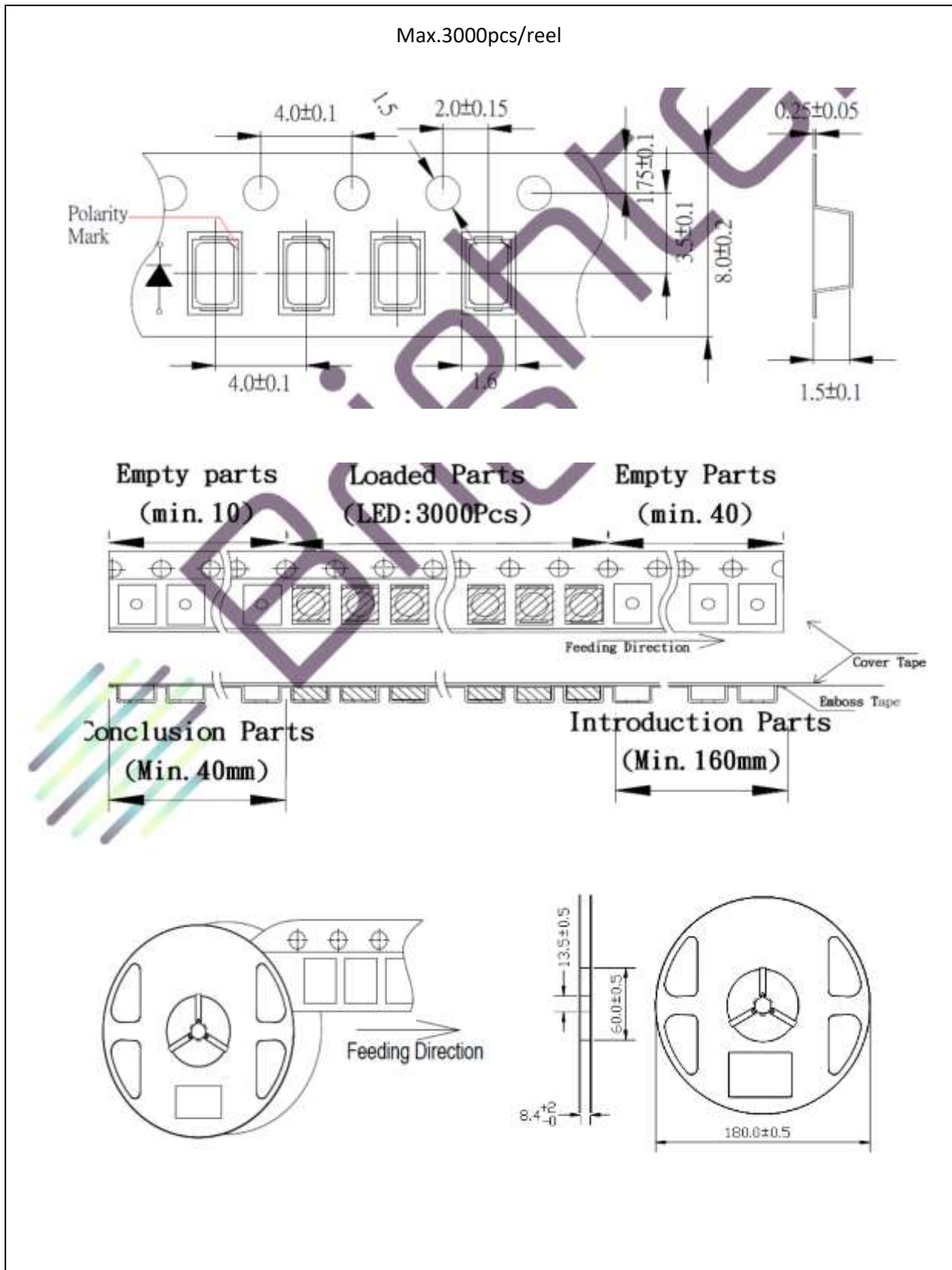


Note:

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	13/05/2019	Datasheet set-up.
A1.1	27/05/2022	New datasheet format.