



**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



- ▶ PLCC6 SMD
- ▶ 3433 1.9t Series
- ▶ Red (630nm) / Green (527nm) / Blue (467nm)

NOM61S48Z



Release Date: 01 December 2022 Version: A1.1



### 3433 1.9t Series

**RoHS Compliant**



#### FEATURES (Red/Green/Blue\*):

- **Package:** PLCC6 RGB Top View SMD Package
- **Forward Current:** 20/20/20mA
- **Forward Voltage (typ.):** 2.2/3.0/3.0V
- **Luminous Flux (typ.):** 625/2500/500mcd@20mA
- **Colour:** Red/Green/Blue
- **CCT/Wavelength:** 630/527/467nm
- **Viewing angle:** 120/120/120°
- **Materials:**
  - Resin: Silicon (White Diffused)
- **Operating Temperature:** -40~+105°C
- **Storage Temperature:** -40~+105°C
- **ESD:** 2000V (HBM)
- **Grouping parameters:**
  - Forward voltage
  - Luminous intensity
  - Dominant Wavelength
- **Soldering methods:** Reflow soldering
- **Preconditioning:** MSL 2a according to JEDEC
- **Packing:** 12mm tape with max.1000pcs/reel, ø180mm (7")

#### APPLICATIONS:

- Automotive Interior
- LED Display
- Switch Light
- 3C Application
- Decoration Lighting

## CHARACTERISTICS:

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

Parameter	Symbol	Ratings	Unit
Forward Current	I <sub>F</sub>	50/50/50*	mA
Pulse Forward Current (duty 1/10; width 0.1ms)	I <sub>MAX</sub>	100/100/100	mA
Reverse Voltage	V <sub>R</sub>	5	V
Reverse Current @5V	I <sub>R</sub>	10	μA
Electrostatic Discharge (HBM)	ESD	2000	V
Junction Temperature	T <sub>j</sub>	125	°C
Thermal Resistance	R <sub>thJS</sub>	150	°C/W
Soldering Temperature	T <sub>sol</sub>	260	°C
Operating Temperature	T <sub>OPR</sub>	-40~+105	°C
Storage Temperature	T <sub>STG</sub>	-40~+105	°C

1. \* In the order of Red/Green/Blue.

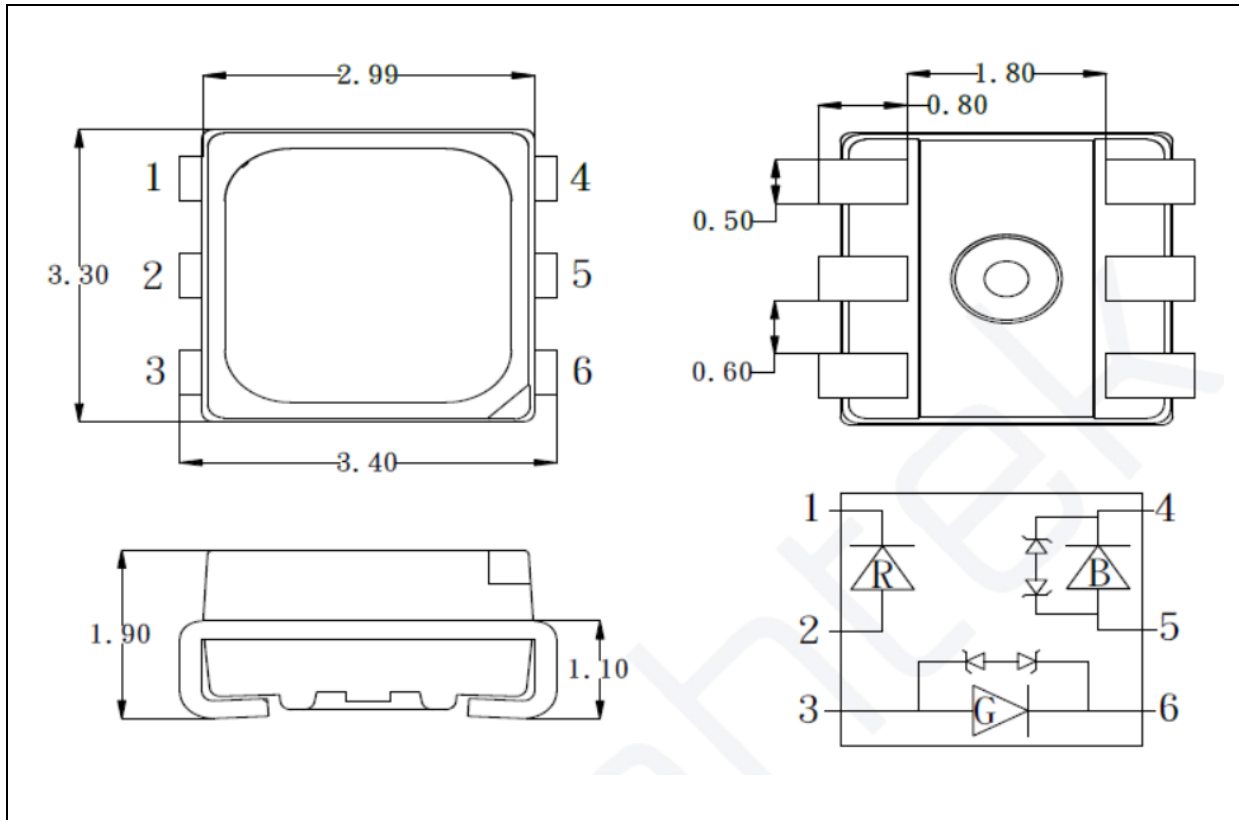
## Electrical &amp; Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Red - Forward Voltage	V <sub>F</sub>	1.9	---	2.5	V	I <sub>F</sub> =20mA
Red - Luminous Intensity	I <sub>V</sub>	500	---	750	mcd	I <sub>F</sub> =20mA
Red - Wavelength	W <sub>P</sub>	627	---	632	nm	I <sub>F</sub> =20mA
Green - Forward Voltage	V <sub>F</sub>	2.7	---	3.3	V	I <sub>F</sub> =20mA
Green - Luminous Intensity	I <sub>V</sub>	2000	---	3000	mcd	I <sub>F</sub> =20mA
Green - Wavelength	W <sub>P</sub>	525	---	530	nm	I <sub>F</sub> =20mA
Blue - Forward Voltage	V <sub>F</sub>	2.7	---	3.3	V	I <sub>F</sub> =20mA
Blue - Luminous Intensity	I <sub>V</sub>	400	---	600	mcd	I <sub>F</sub> =20mA
Blue - Wavelength	W <sub>P</sub>	465	---	470	nm	I <sub>F</sub> =20mA
Viewing Angle	2θ <sub>1/2</sub>	---	120	---	deg	I <sub>F</sub> =20mA

1. Luminous intensity (I<sub>V</sub>) ±10%, Forward Voltage (V<sub>F</sub>) ±0.1V, Viewing angle(2θ<sub>1/2</sub>) ±5%, Wavelength (λ) ±1nm.
2. We will amend the bin code to maintain bins centralization, and we provide the luminous intensity 1.25double per bin and the dominant wavelength is per 5/5/5nm of the R/G/B per bins.

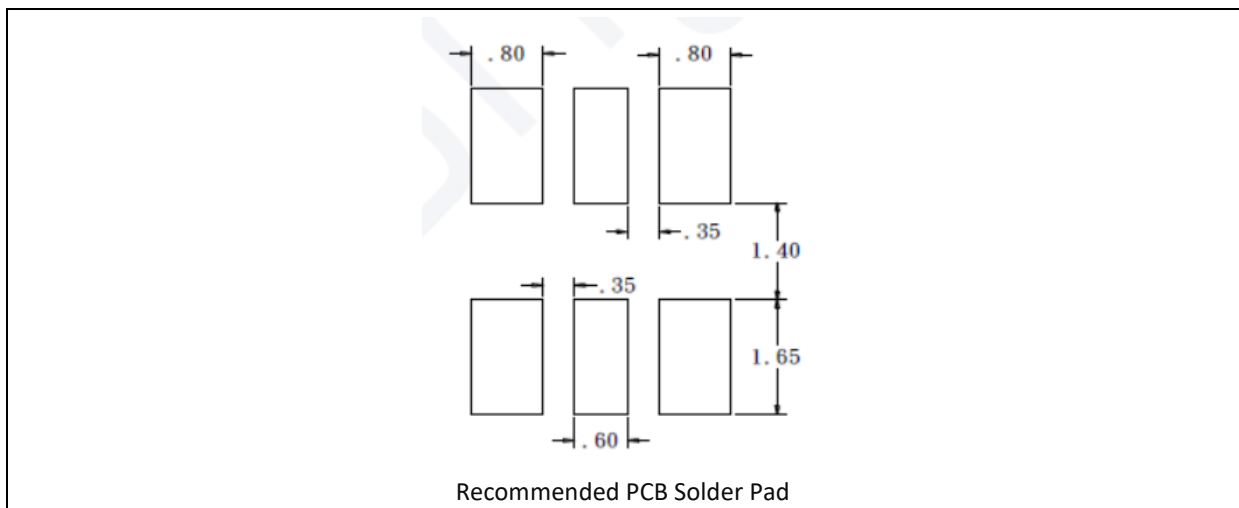
## OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance  $\pm 0.1\text{mm}$ , 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:**


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

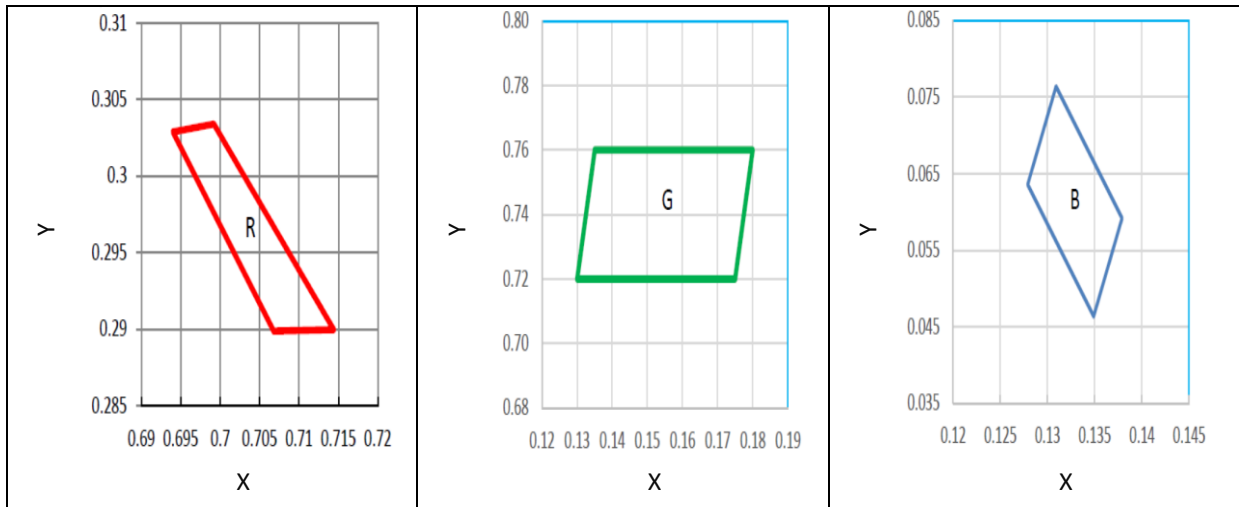
Code		Min.	Max.	Unit
R	<input type="checkbox"/>	1.9	2.5	V
G	<input type="checkbox"/>	2.7	3.3	
B	<input type="checkbox"/>	2.7	3.3	

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

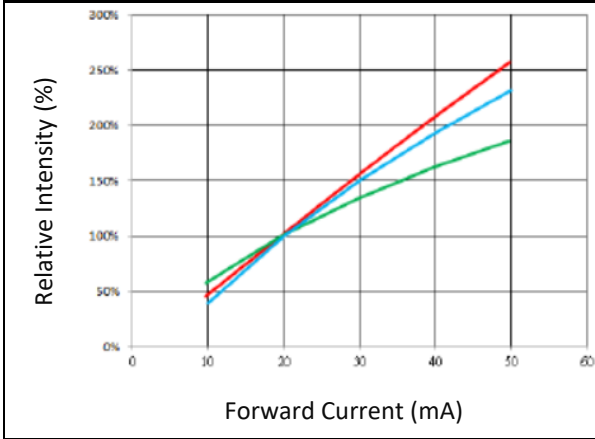
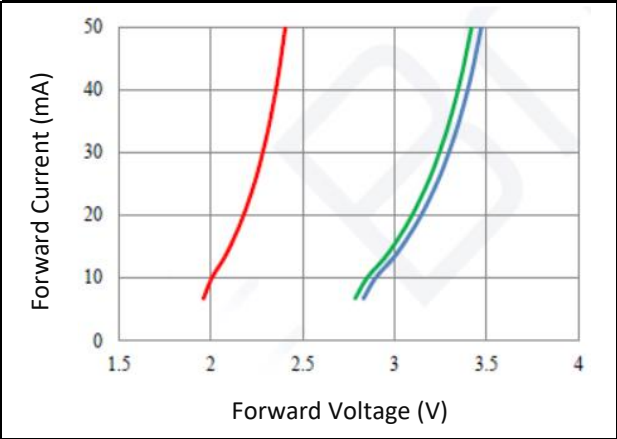
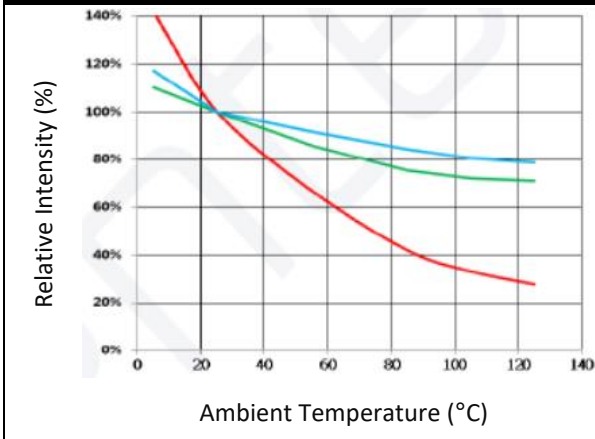
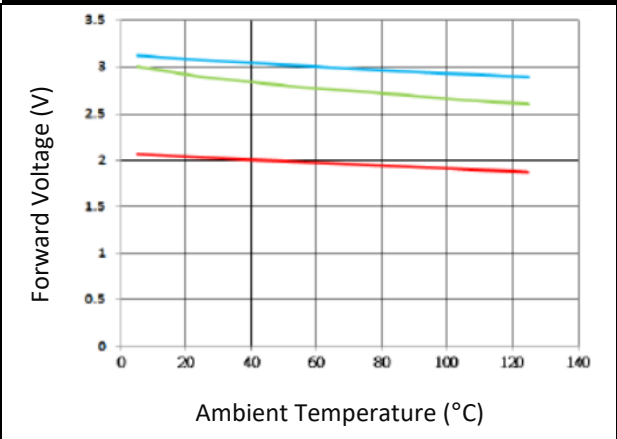
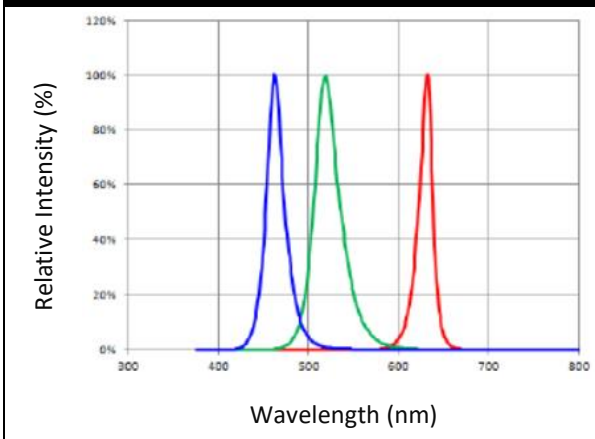
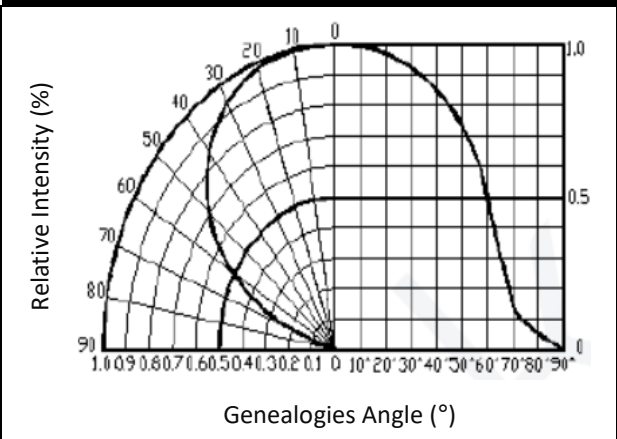
Code		Min.	Max.	Unit
R	13	500	750	mcd
G	25	2000	3000	mcd
B	11	400	600	mcd

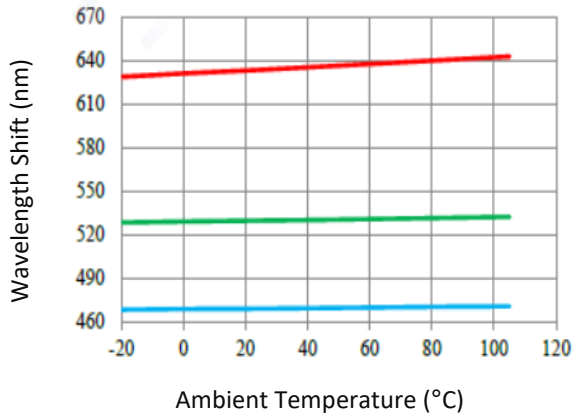
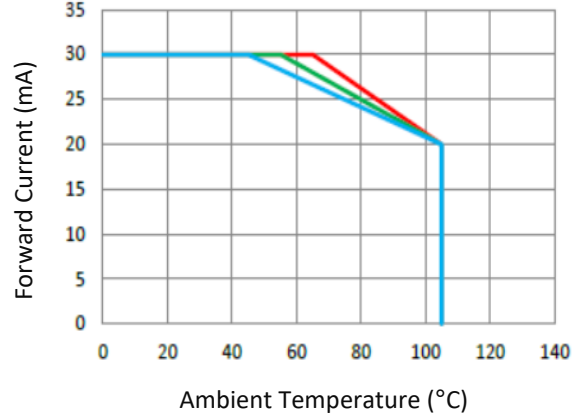
 Dominant Wavelength Classifications ( $I_F = 20\text{mA}$ ):

Code		Min.	Max.	Unit
R	D	627	632	nm
G	H	525	530	nm
B	b	465	470	nm

**CIE CHROMATICITY DIAGRAM:**

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

	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
R	0.7068	0.2899	0.7144	0.2900	0.6992	0.3034	0.6940	0.3029
G	0.1300	0.7200	0.1350	0.7600	0.1800	0.7600	0.1750	0.7200
B	0.1309	0.0764	0.1379	0.0592	0.1349	0.0464	0.1279	0.0636

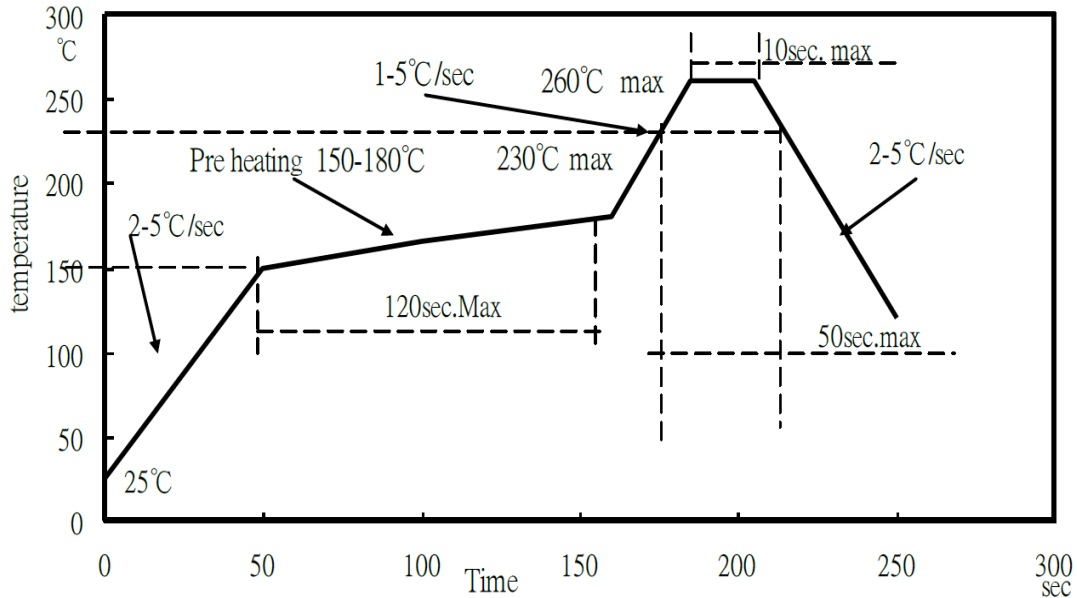
**ELECTRO-OPTICAL CHARACTERISTICS:**
**Relative Intensity v.s. Forward Current**

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

**Relative Intensity v.s. Ambient Temperature**

**Forward Voltage v.s. Ambient Temperature**

**Relative Spectral Distribution**

**Directive Radiation**


**ELECTRO-OPTICAL CHARACTERISTICS:**
**Colours Shifting v.s. Temperature**

**Maximum Current v.s. Ambient Temperature**




## RECOMMENDED SOLDERING PROFILE:

Lead-free Solder:



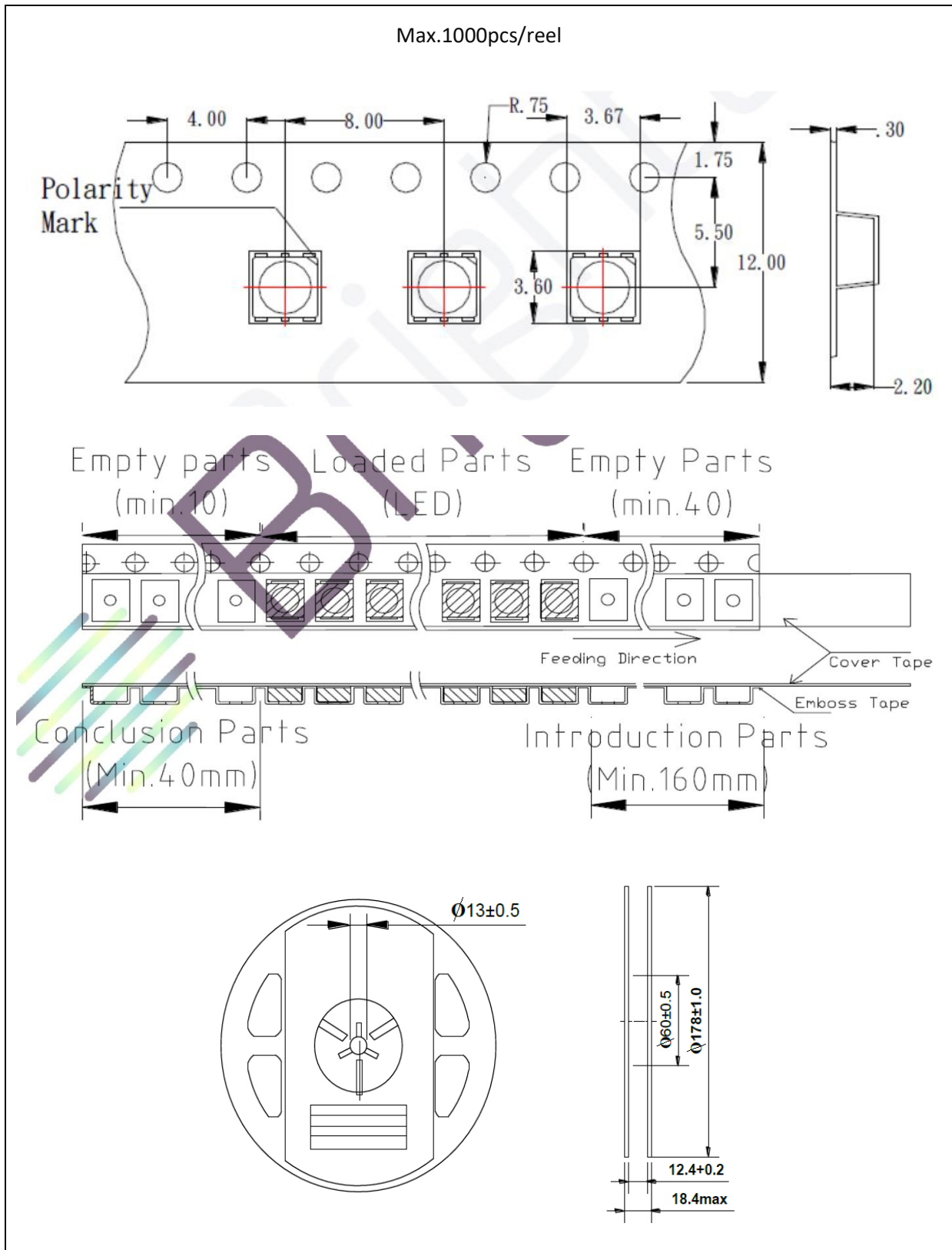
Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Min.	Recommendation	Max.	
Ramp-up rate to preheat (25°C to 150°C)	-	-	2	3	K/s
Time $t_S$ ( $T_{S\ min}$ to $T_{S\ max}$ )	$t_S$	60	100	120	s
Ramp-up rate to peak ( $T_{S\ max}$ to $T_P$ )	-	-	2	3	K/s
Liquidus temperature	$T_L$	-	217	-	°C
Time above liquidus temperature	$t_L$	-	80	100	s
Peak temperature	$T_P$	-	245	260	°C
Time within 5 °C of the specified peak temperature $T_P - 5\ K$	$t_P$	-	-	10	s
Ramp-down Rate ( $T_P$ to 100 °C)	-	-	3	4	K/s
Time 25 °C to $T_P$	-	-	-	480	s

Note:

1. Maximum reflow soldering: 1 time.
2. 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:

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

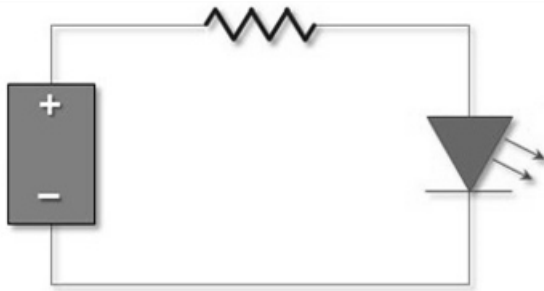
### Baking:

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.

**REVISION RECORD:**

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Version	Date	Summary of Revision
A1.0	15/07/2022	Datasheet set-up.
A1.1	01/12/2022	Revise bin range.