



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 Top View
- ▶ 5050 1.6t
- ▶ Red (622nm) / True Green (525nm) / Blue (465nm)

NOM66S32BS



Release Date: 15 January 2024 Version: A1.1



APPLICATIONS:

- Indicator
- Dashboard
- 3C Application
- Display
- Decoration Lighting

5050 1.6t Series



FEATURES (Red/Green/Blue):

- **Package:** PLCC6 Top View Black Surface LED SMT Package
- **Forward Current:** 20/20/20mA*
- **Forward Voltage (typ.):** 2.0/2.7/3.1V
- **Luminous Intensity (typ.):** 800/2180/275mcd@20mA
- **Colour:** Red/Green/Blue
- **Dominant Wavelength (typ.):** 622/525/465nm
- **Viewing Angle:** 120/120/120°
- **Materials:**
 - Die: AlGaInP/InGaN/InGaN
 - Resin: Silicone (White Diffused)
- **Operating Temperature:** -40~+80°C
- **Storage Temperature:** -40~+85°C
- **Grouping Parameters:**
 - Forward voltage
 - Luminous intensity
 - Dominant wavelength
- **Soldering Methods:** Reflow soldering
- **MSL Level:** acc. to JEDEC Level 3
- **Packing:** 12mm tape with max.3000/reel, ø330mm (13")

* In the order of Red/Green/Blue.

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Forward Current	I_F	30/30/30*	mA
Peak Forward Current Duty 1/8, f=1kHz	I_{FP}	125	mA
Reverse Voltage	V_R	5	V
Reverse Current @5V	I_R	10	μA
Power Dissipation	P_D	75/102/111	mW
Operating Temperature	T_{OPR}	-40~+80	°C
Storage Temperature	T_{STG}	-40~+85	°C

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

Electrical & Optical Characteristics (Ta=25°C)

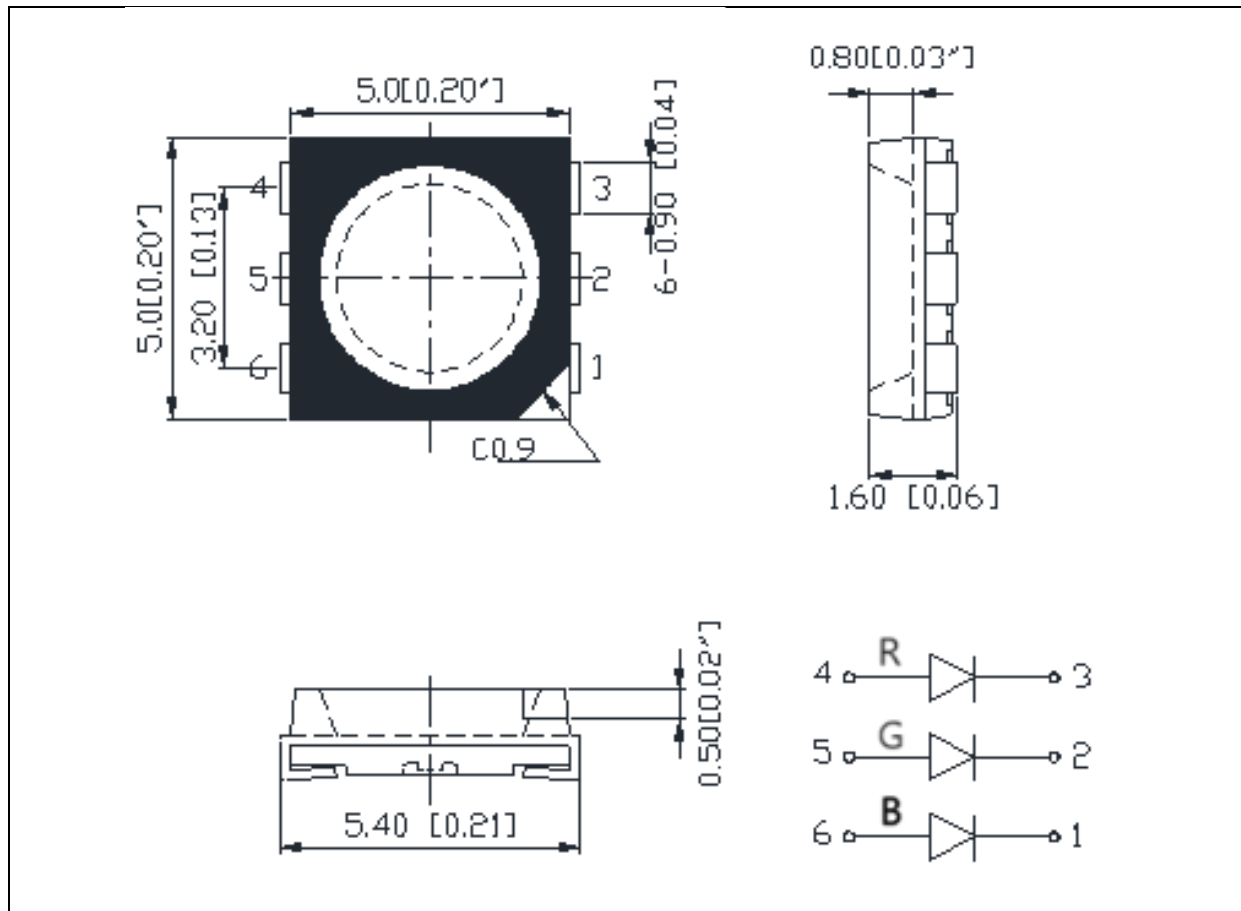
Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	1.7/2.5/2.8*	2.0/2.7/3.1	2.5/3.4/3.7	V	$I_F=20mA$
Luminous Intensity	I_V	400/1250/160	800/2180/275	1250/4000/500	mcd	$I_F=20mA$
Dominant Wavelength	λ_D	615/520/460	622/525/465	630/530/470	nm	$I_F=20mA$
Peak Wavelength	λ_P	---	630/520/450	---	nm	$I_F=20mA$
Spectral Line Half Bandwidth	$\Delta \lambda$	---	19/32/23	---	nm	$I_F=20mA$
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	$I_F=20mA$

1. * In the order of Red/Green/Blue.
 2. Luminous intensity (I_V) $\pm 15\%$, Forward Voltage (V_F) $\pm 0.1V$, Viewing angle($2\theta_{1/2}$) $\pm 5\%$.



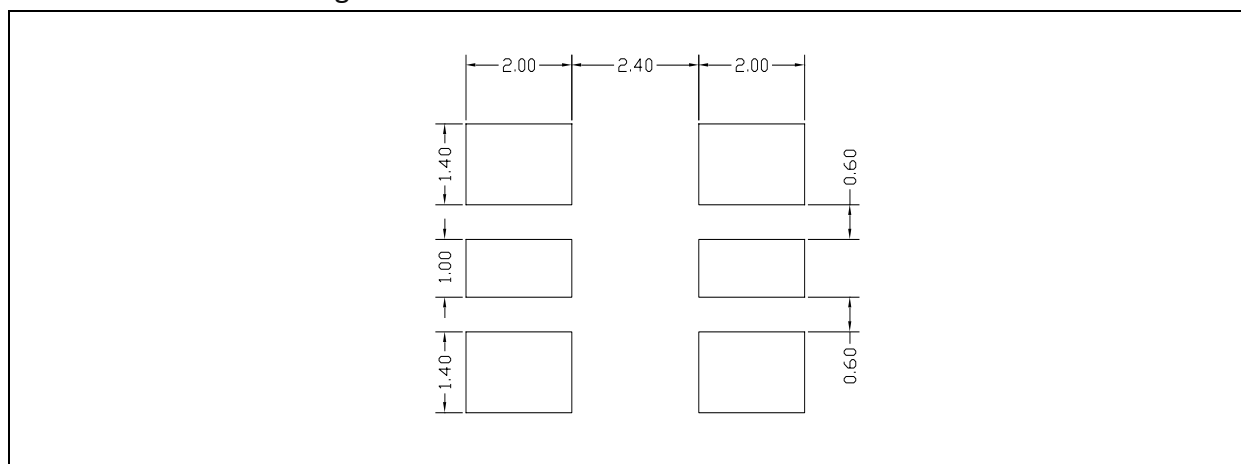
OUTLINE DIMENSION:

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
Red	□	1.7	2.5	V
Green	e	2.5	2.8	V
	f	2.8	3.1	
	g	3.1	3.4	
Blue	f	2.8	3.1	V
	g	3.1	3.4	
	h	3.4	3.7	

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

	Code	Min.	Max.	Unit
Red	P	400	500	mcd
	Q	500	630	
	R	630	800	
	S	800	1000	
	T	1000	1250	
Green	U	1250	1600	mcd
	V	1600	2000	
	W	2000	2500	
	X	2500	3200	
	Y	3200	4000	
Blue	L	160	200	mcd
	M	200	250	
	N	250	320	
	O	320	400	
	P	400	500	

BINNING GROUPS:

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

	Code	Min.	Max.	Unit
Red	s	615	620	nm
	t	620	625	
	u	625	630	
Green	U	520	522.5	nm
	V	522.5	525	
	W	525	527.5	
	X	527.5	530	
Blue	E	460	462.5	nm
	F	462.5	465	
	G	465	467.5	
	H	467.5	470	

Example Group Name on Label:

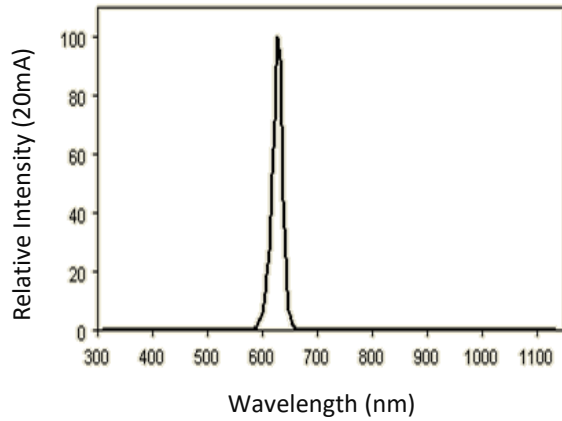
□Pt gUW gMF 20 (in order of R/G/B):

- □Pt20 = □ (1.7~2.5V) ► P (400~500mcd) ► t (620~625nm) ► 20 ($I_F=20\text{mA}$)
- gUW20 = g (3.1~3.4V) ► U (1250~1600mcd) ► W (525~527.5nm) ► 20 ($I_F=20\text{mA}$)
- gMF20 = g (3.1~3.4V) ► M (200~250mcd) ► F (462.5~465nm) ► 20 ($I_F=20\text{mA}$)

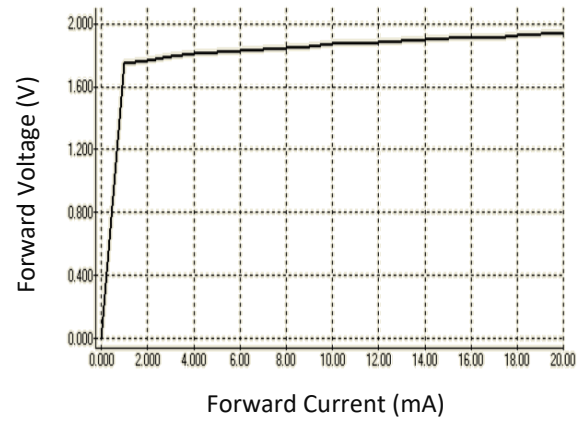


ELECTRO-OPTICAL CHARACTERISTICS (RED):

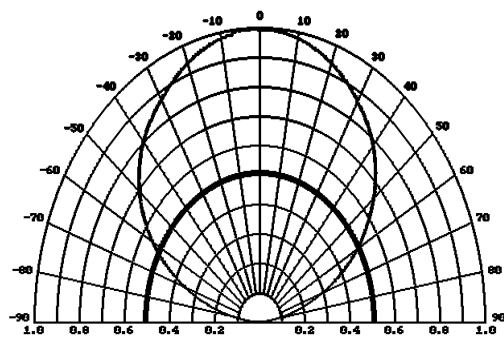
Relative Spectral Distribution



Forward Current v.s. Forward Voltage



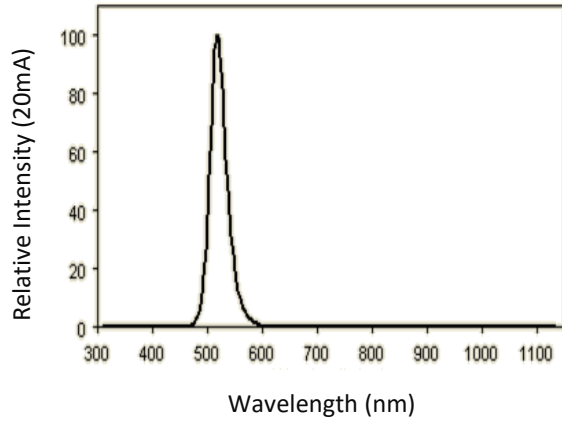
Directive Radiation



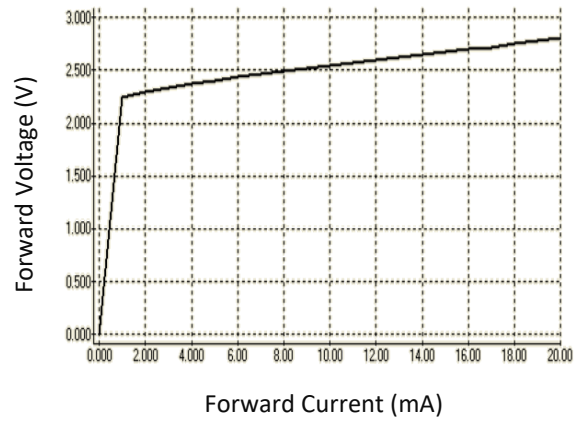


ELECTRO-OPTICAL CHARACTERISTICS (GREEN):

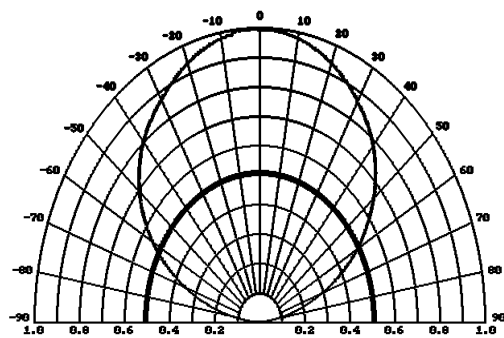
Relative Spectral Distribution



Forward Current v.s. Forward Voltage



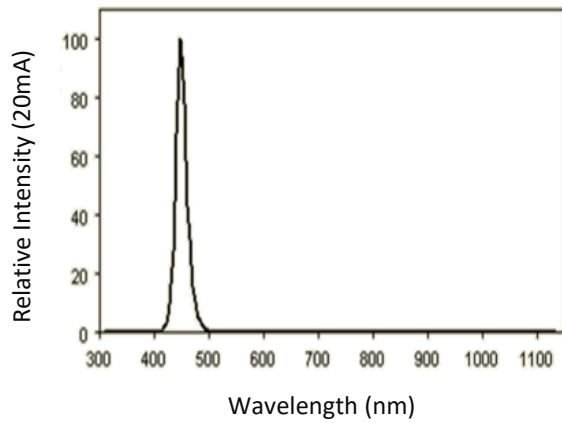
Directive Radiation



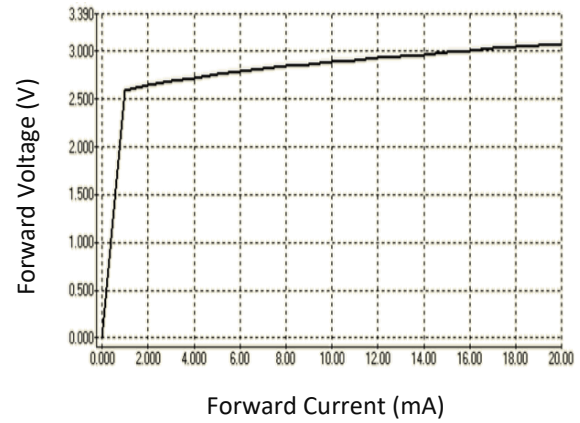


ELECTRO-OPTICAL CHARACTERISTICS (BLUE):

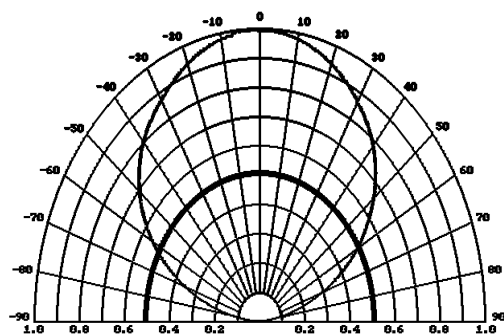
Relative Spectral Distribution



Forward Current v.s. Forward Voltage



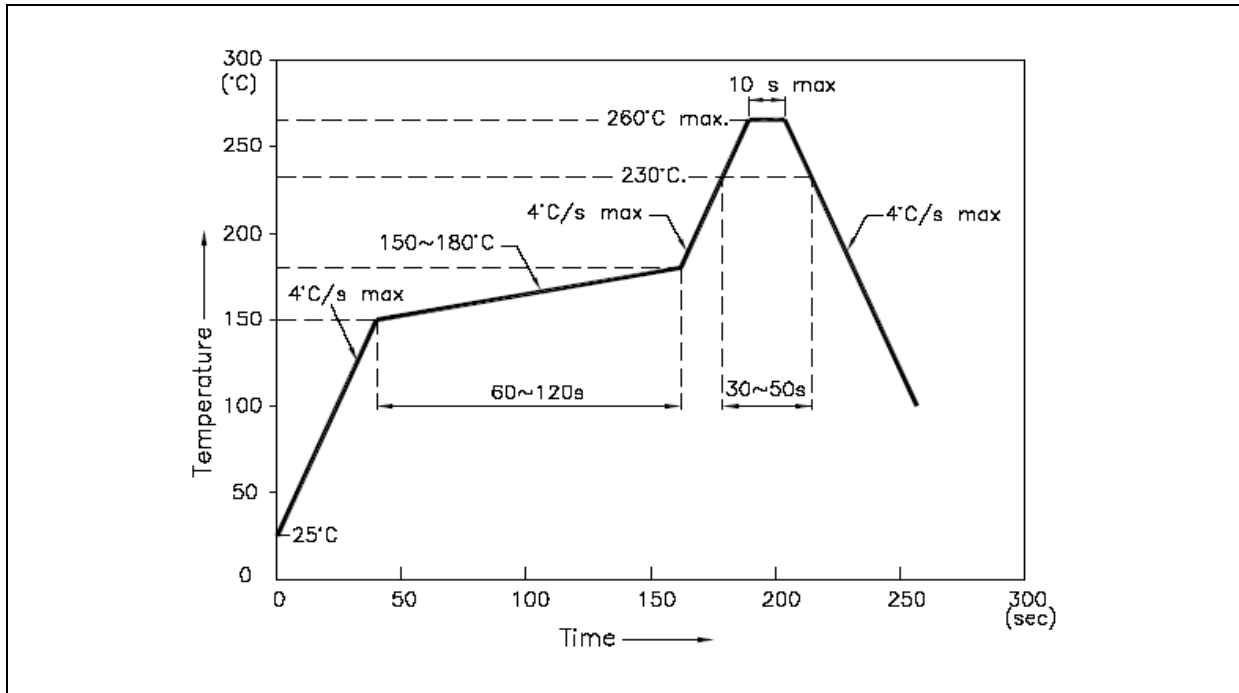
Directive Radiation





RECOMMENDED SOLDERING PROFILE:

Reflow Solder:



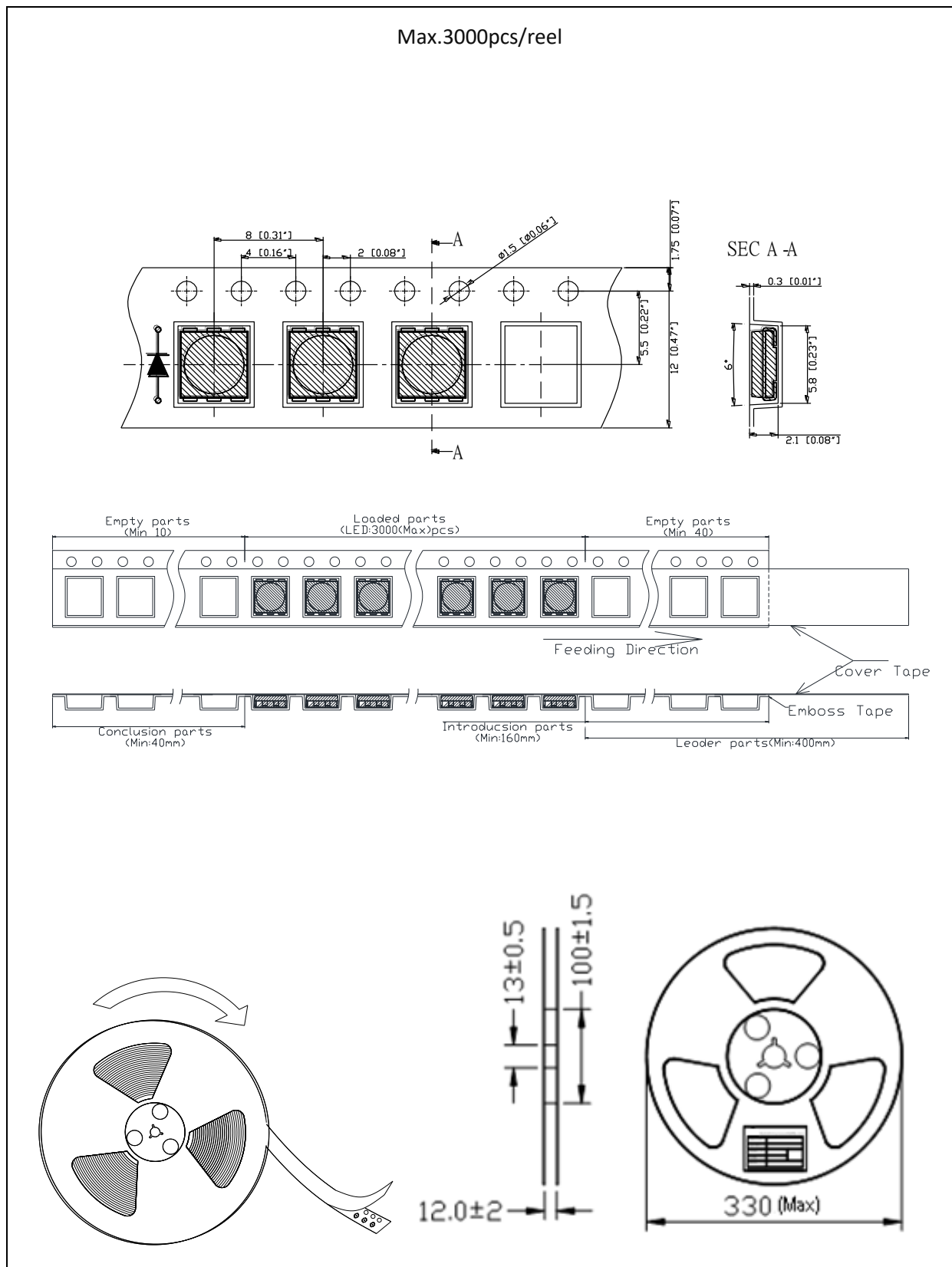
Note:

1. Recommend reflow temperature 245°C. The maximum soldering temperature should be limited to 260°C.
2. Maximum reflow soldering: 2 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 a week. Otherwise, they should be kept in a damp-proof box with desiccating agent <10% R.H. and apply baking at 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±5°C x 24hrs and <5%RH, taped / reel package.

It's normal to see slight color fading of carrier (light Blue) 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	05/01/2024	Datasheet set-up.
A1.1	15/01/2024	Correct packing information and casting material.