



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
- ▶ 5050 1.8t Series
- ▶ Red / Green / Blue

NOM18S28



Release Date: 03 March 2016 Version: A1.0



5050 1.8t Series

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RoHS
Compliant



FEATURES (Red/Green/Blue*):

- **Package:** PLCC6 RGB White SMD Package
- **Forward Current:** 20/20/20mA
- **Forward Voltage (typ.):** 2.0/3.3/3.2V
- **Luminous Flux (typ.):** 160/1000/160mcd@20mA
- **Colour:** Red/Green/Blue
- **CCT/Wavelength:** 530/520/465nm
- **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:** IR Reflow soldering
- **Preconditioning:** MSL 3 according to JEDEC
- **Packing:** 12mm tape with 3000pcs/reel, ø180mm (7")

APPLICATIONS:

- Decoration Lighting
- Light Strip
- Display
- Commercial Lighting

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Forward Current	I_F	30/30/30*	mA
Pulse Forward Current (duty 1/10; width 0.1ms)	I_{MAX}	125	mA
Power Dissipation	P_D	75/111/111	mW
Reverse Voltage	V_R	-5	V
Reverse Current @5V	I_R	10	μA
Operating Temperature	T_{OPR}	-40~+80	°C
Storage Temperature	T_{STG}	-40~+85	°C

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

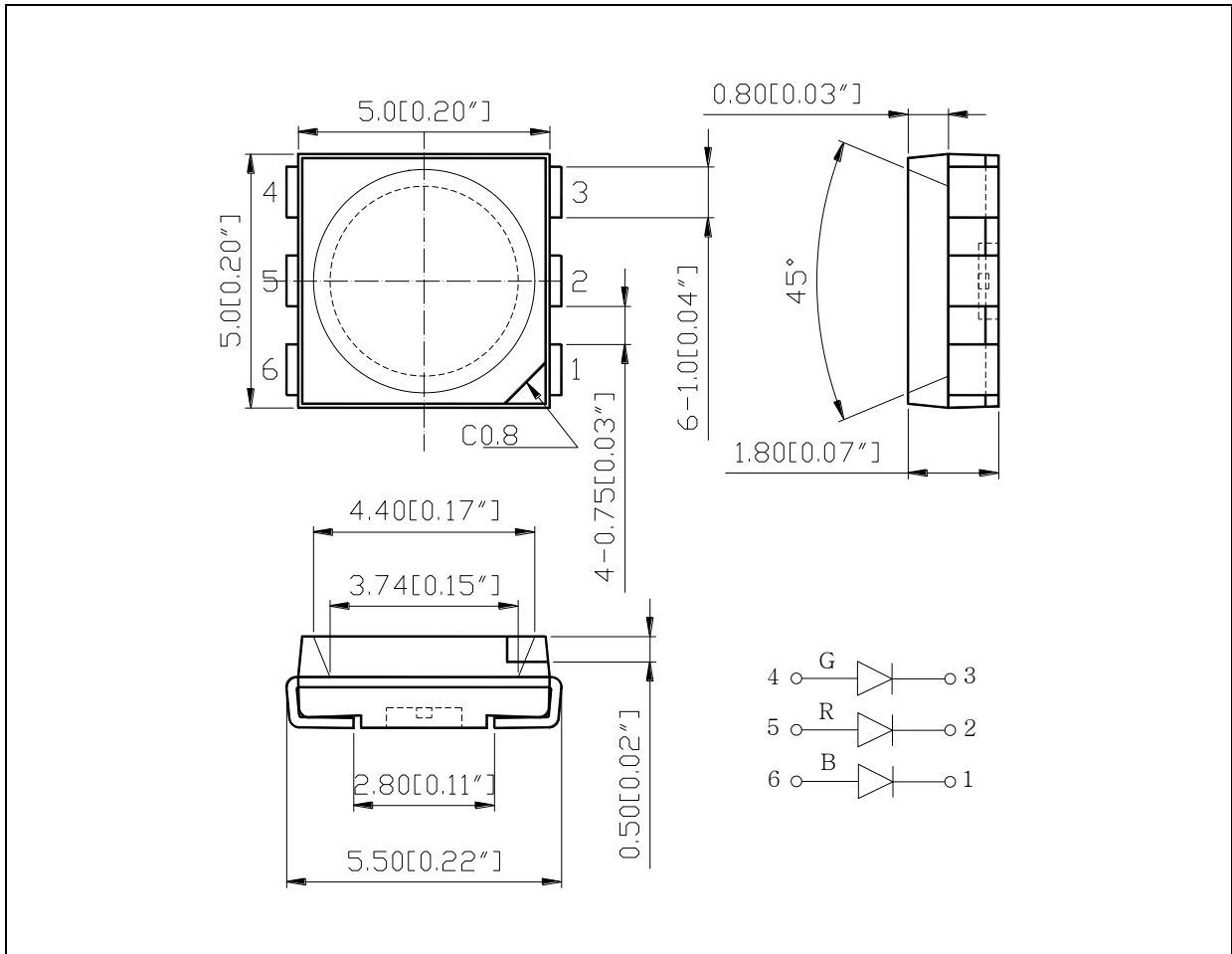
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Red - Forward Voltage	V_F	1.7	2.0	2.5	V	$I_F=20mA$
Red - Luminous Intensity	I_V	80	160	250	mcd	$I_F=20mA$
Red - Wavelength	W_D	625	630	635	nm	$I_F=20mA$
Red - Peak Wavelength	W_P	---	640	---	nm	$I_F=20mA$
Red - Spectral Half Bandwidth	$\Delta\lambda$	---	18	---	nm	$I_F=20mA$
Green - Forward Voltage	V_F	2.8	3.2	3.7	V	$I_F=20mA$
Green - Luminous Intensity	I_V	630	1000	1600	mcd	$I_F=20mA$
Green - Wavelength	W_P	515	520	525	nm	$I_F=20mA$
Green - Peak Wavelength	W_P	---	515	---	nm	$I_F=20mA$
Green - Spectral Half Bandwidth	$\Delta\lambda$	---	34	---	nm	$I_F=20mA$
Blue - Forward Voltage	V_F	2.8	3.2	3.7	V	$I_F=20mA$
Blue - Luminous Intensity	I_V	80	160	250	mcd	$I_F=20mA$
Blue - Wavelength	W_P	460	465	470	nm	$I_F=20mA$
Blue - Peak Wavelength	W_P	---	460	---	nm	$I_F=20mA$
Blue - Spectral Half Bandwidth	$\Delta\lambda$	---	26	---	nm	$I_F=20mA$
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	$I_F=20mA$

 1. Luminous intensity (I_V) $\pm 5\%$, Forward Voltage (V_F) $\pm 0.1V$

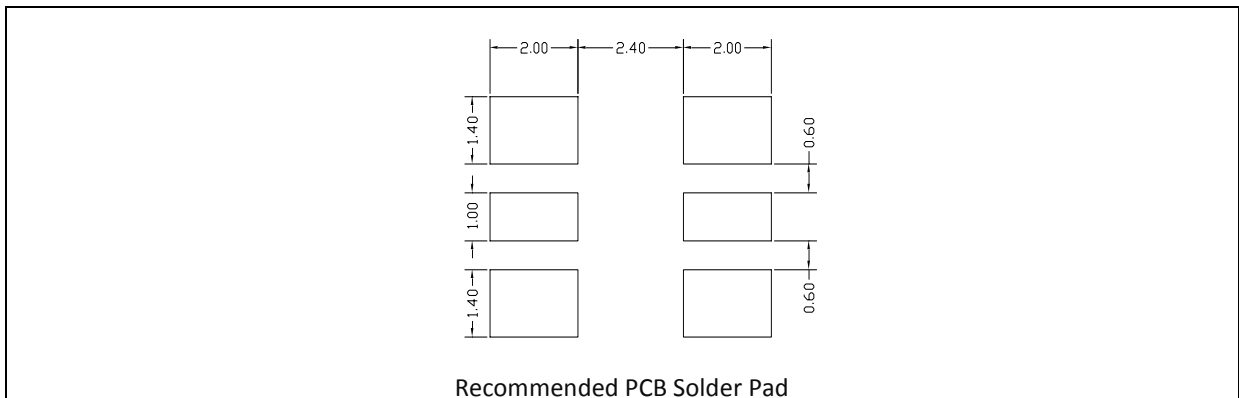
OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance ± 0.1 mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



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

BINNING GROUPS:

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

Code	Min.	Max.	Unit
R	1.7	2.5	V
GF / BF	2.8	3.1	
GG / BG	3.1	3.4	
GH / BH	3.4	3.7	

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

Code	Min.	Max.	Unit
Red	I	80	mcd
	J	100	
	K	125	
	L	160	
	M	200	

Green	R	630	mcd
	S	800	
	T	1000	
	U	1250	

Blue	I	80	mcd
	J	100	
	K	125	
	L	160	
	M	200	

BINNING GROUPS:

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

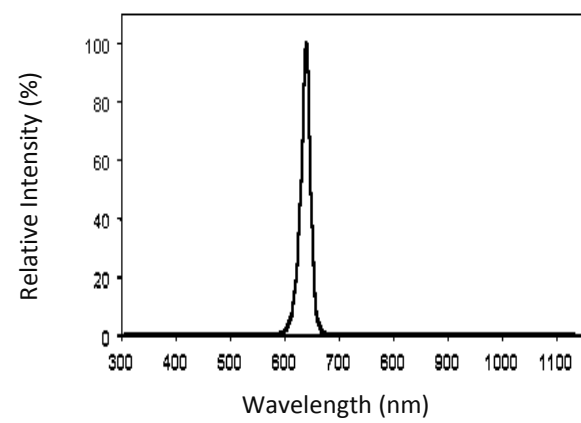
Code		Min.	Max.	Unit
Red	U	625	630	nm
	V	630	635	

Green	S	515	517.5	nm
	T	517.5	520	
	U	520	522.5	
	V	522.5	525	

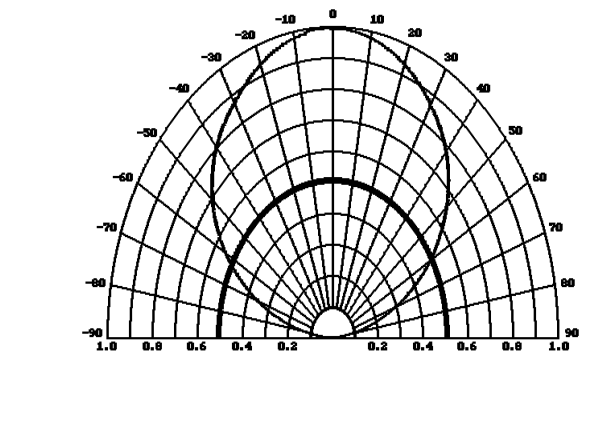
Blue	E	460	462.5	nm
	F	462.5	465	
	G	465	467.5	
	H	467.5	470	

ELECTRO-OPTICAL CHARACTERISTICS (RED):

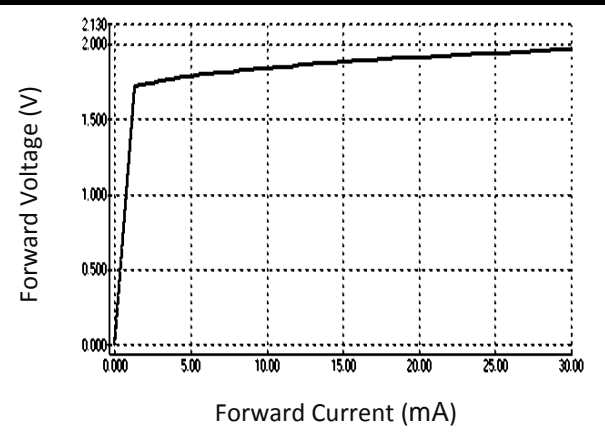
Relative Spectral Distribution



Directive Radiation

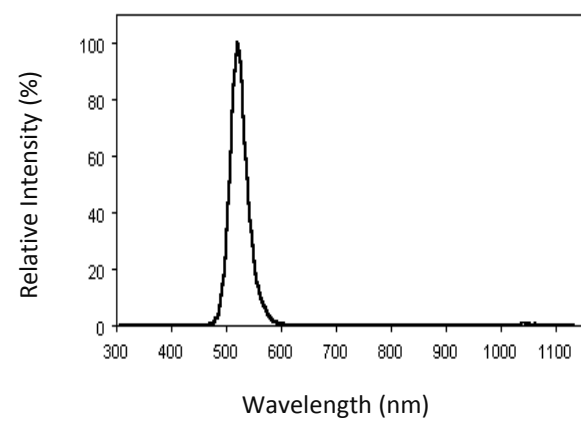


Forward Current v.s. Forward Voltage

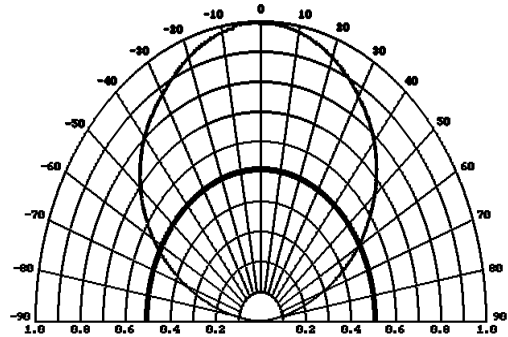


ELECTRO-OPTICAL CHARACTERISTICS (GREEN):

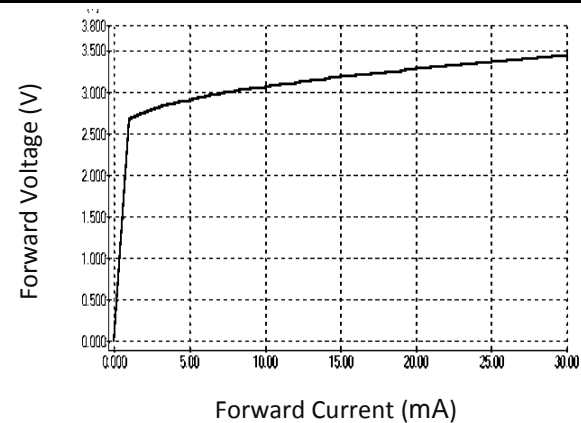
Relative Spectral Distribution



Directive Radiation

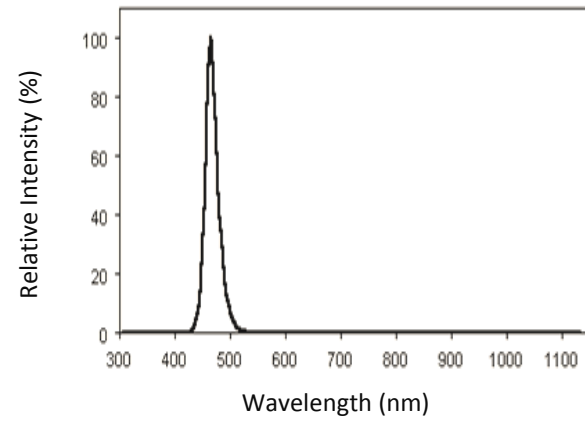


Forward Current v.s. Forward Voltage

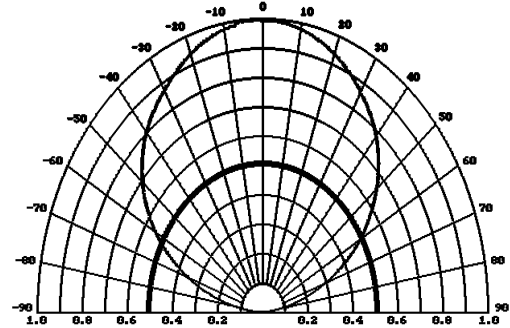


ELECTRO-OPTICAL CHARACTERISTICS (BLUE):

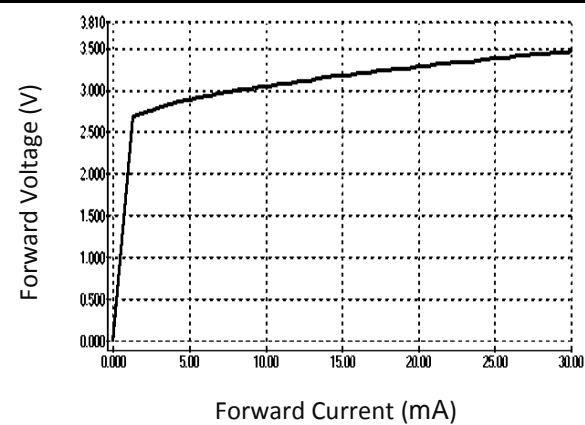
Relative Spectral Distribution



Directive Radiation

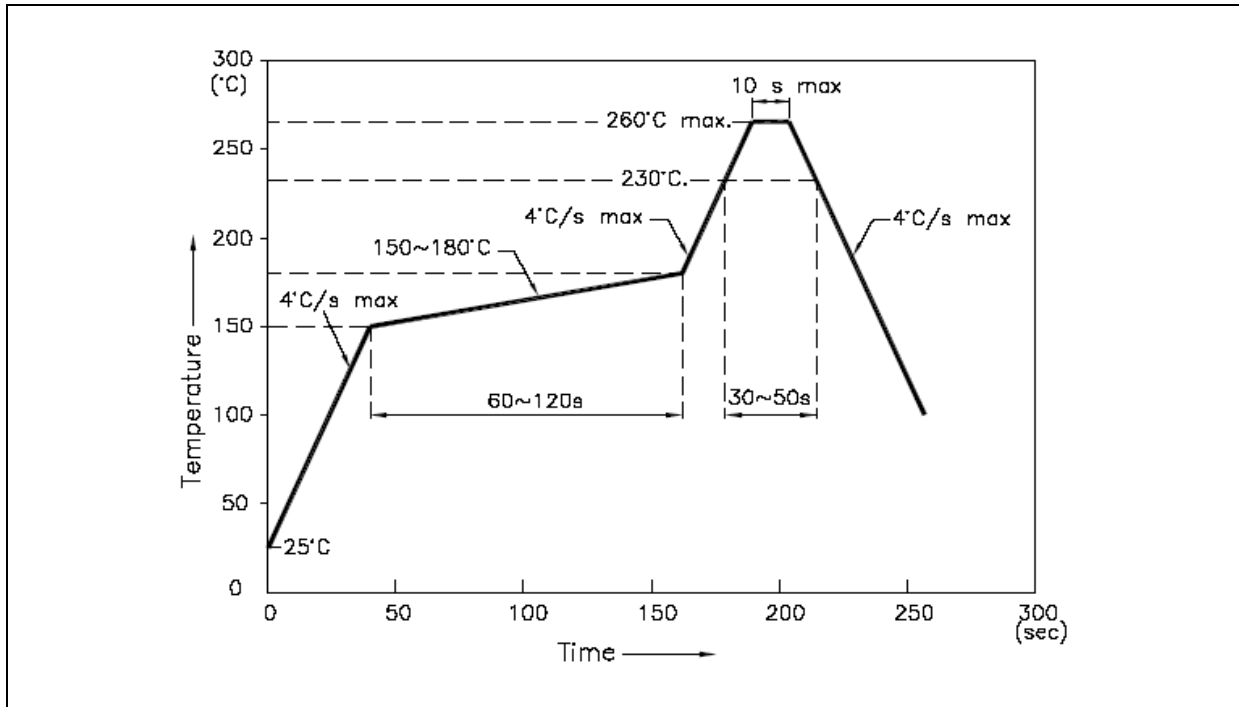


Forward Current v.s. Forward Voltage



RECOMMENDED SOLDERING PROFILE:

Lead-free Solder:

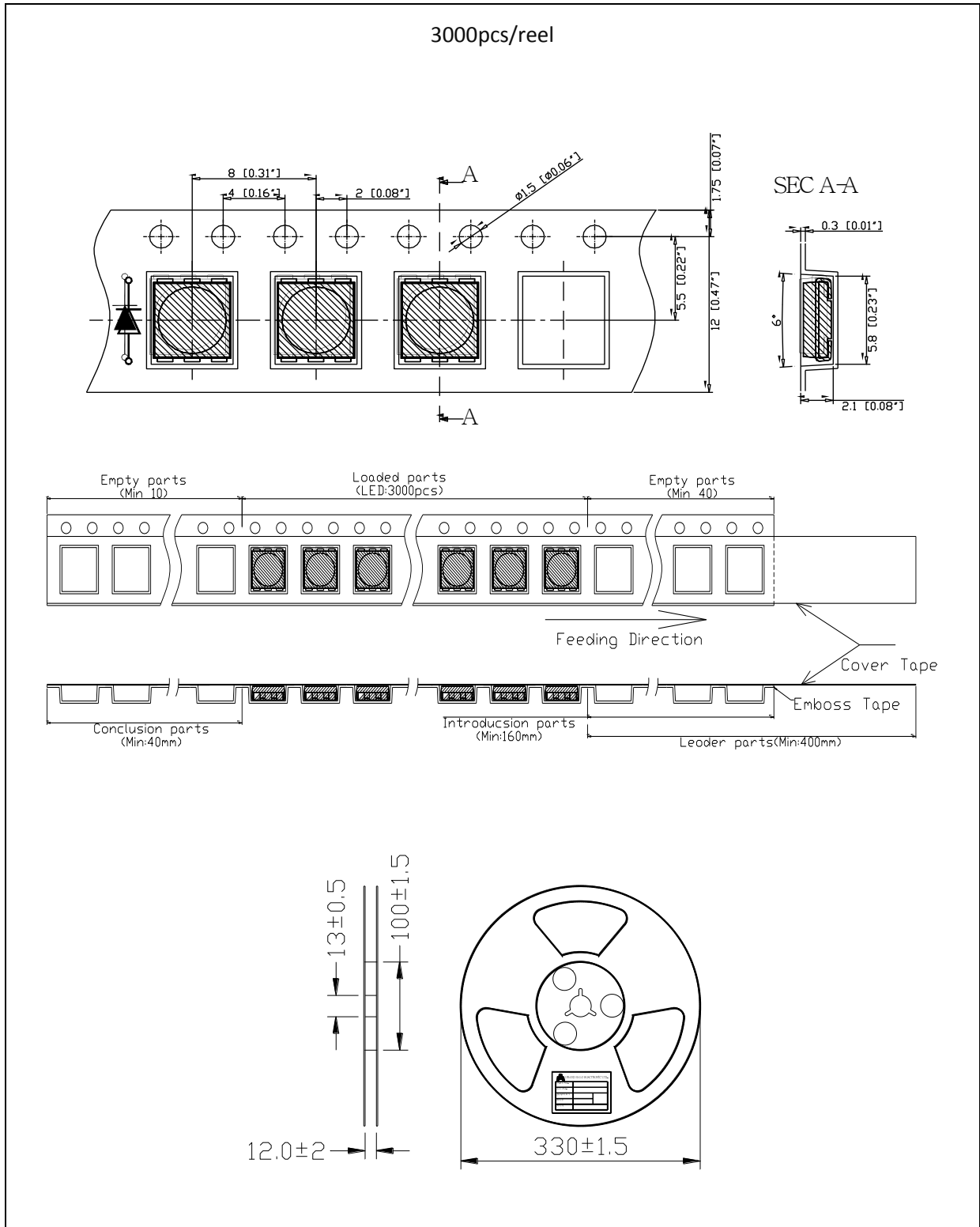


Note:

1. Maximum reflow soldering: 3 times.
2. Recommended soldering temperature 245°C; maximum soldering temperature is 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 month 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 and apply baking at 60°C±5°C for 15hrs before use.

Baking:

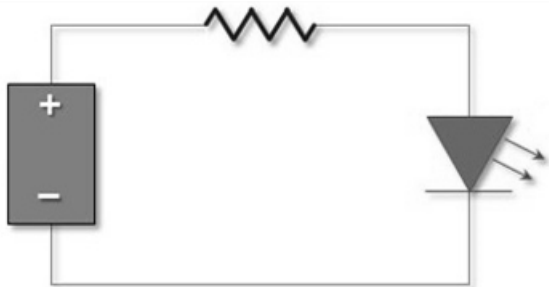
It is recommended to bake the LED before soldering if the pack has been unsealed for longer than 24hrs.

The suggested baking conditions are as followings:

- 70±3°C x 24hrs and <5%RH, taped / reel package.
- 100±3°C x 2hrs, bulk (loose) package.
- 130±3°C x 30min, bulk (loose) 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	03/03/2016	Datasheet set-up.