



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 1.6t Series
- ▶ Red / Green / Blue

NOM03S95



Release Date: 09 August 2022 Version: A1.2



5050 1.6t Series

RoHS
Compliant



FEATURES (Red/Green/Blue*):

- **Package:** PLCC6 RGB Top View SMD Package
- **Forward Current:** 20/20/20mA
- **Forward Voltage (typ.):** 2.0/3.2/3.2V
- **Luminous Flux (typ.):** 700/1750/320mcd@20mA
- **Colour:** Red/Green/Blue
- **CCT/Wavelength:** 622/527/467nm
- **Viewing angle:** 120/120/120°
- **Materials:**
 - Resin: Silicone (Water Clear)
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+100°C
- **ESD:** 1000V (HBM)
- **Grouping parameters:**
 - Forward voltage
 - Luminous intensity
 - Dominant Wavelength
- **Soldering methods:** IR Reflow soldering
- **Preconditioning:** MSL 5 according to JEDEC
- **Packing:** 12mm tape with max.1000pcs/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	50/30/30*	mA
Pulse Forward Current (duty 1/10; width 0.1ms)	I _{MAX}	100	mA
Power Dissipation	P _D	100/80/80	mW
Reverse Voltage	V _R	5	V
Reverse Current @5V	I _R	10	μA
Electrostatic Discharge (HBM)	ESD	1000	V
Junction Temperature	T _j	110	°C
Soldering Temperature	T _{sol}	260	°C
Operating Temperature	T _{OPR}	-40~+85	°C
Storage Temperature	T _{STG}	-40~+100	°C

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

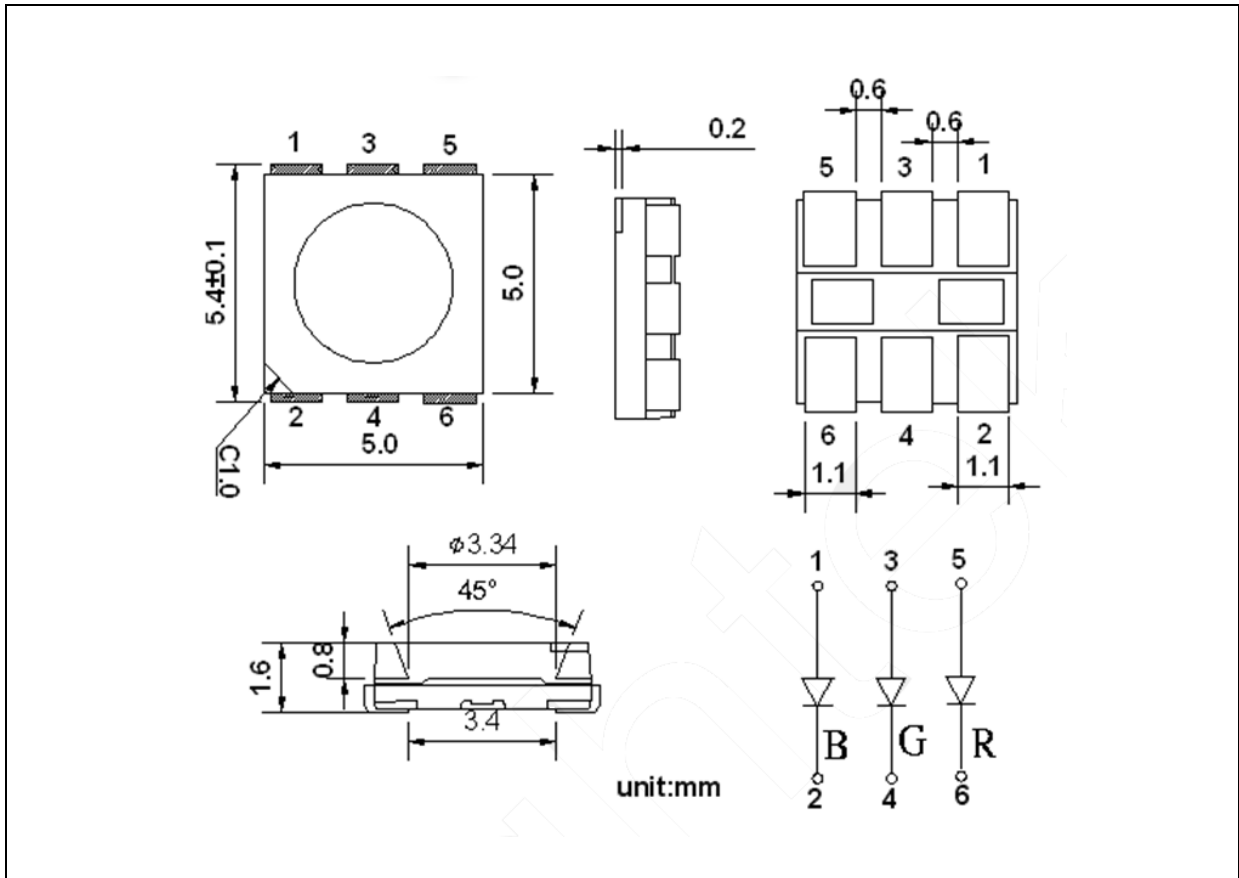
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Red - Forward Voltage	V _F	1.8	2.0	2.6	V	I _F =20mA
Red - Luminous Intensity	I _V	---	700	---	mcd	I _F =20mA
Red - Wavelength	W _P	615	---	630	nm	I _F =20mA
Green - Forward Voltage	V _F	2.8	3.2	3.6	V	I _F =20mA
Green - Luminous Intensity	I _V	---	1750	---	mcd	I _F =20mA
Green - Wavelength	W _P	520	---	535	nm	I _F =20mA
Blue - Forward Voltage	V _F	2.8	3.2	3.6	V	I _F =20mA
Blue - Luminous Intensity	I _V	---	320	---	mcd	I _F =20mA
Blue - Wavelength	W _P	461	---	476	nm	I _F =20mA
Viewing Angle	2θ _{1/2}	---	120	---	deg	I _F =20mA

1. Luminous intensity (I_V) ±5%, Forward Voltage (V_F) ±0.1V

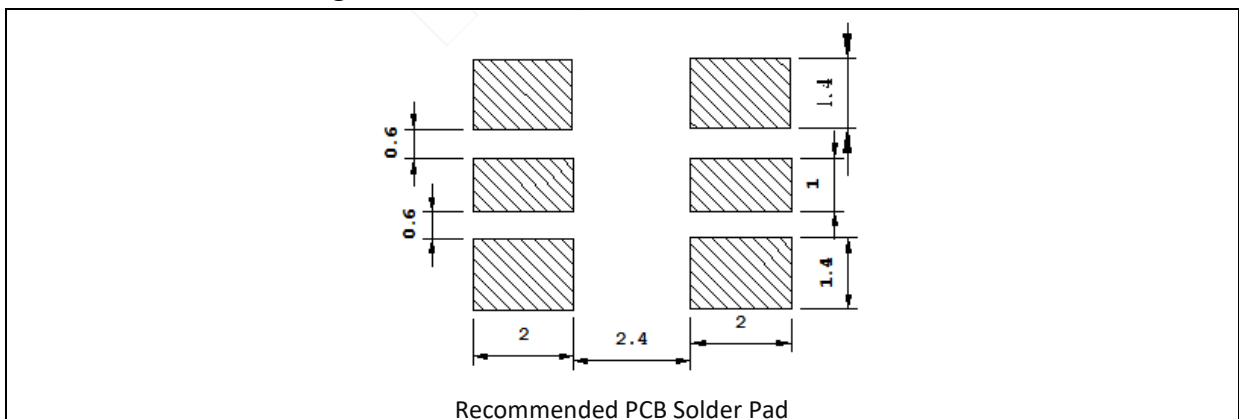
OUTLINE DIMENSION:

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	1.8	2.6	V
G	2.8	3.6	
B	2.8	3.6	

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

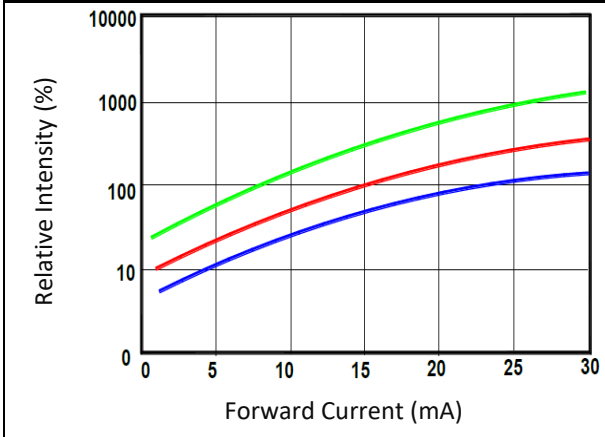
Code	Min.	Max.	Unit
R	13	575	mcd
	14	720	
	15	900	
G	12	1280	mcd
	13	1600	
	14	2000	
B	11	245	mcd
	12	305	
	13	385	

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

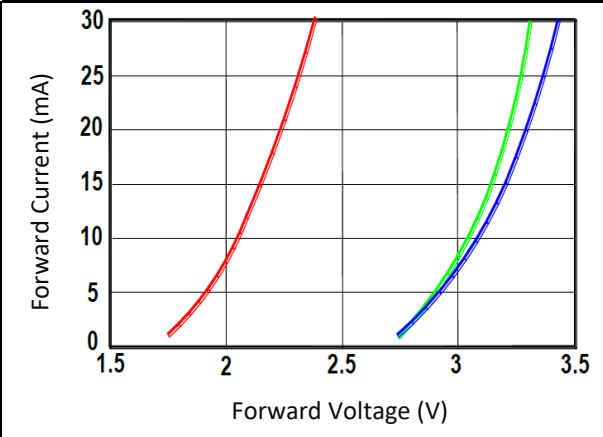
Code	Min.	Max.	Unit
R	2	615	nm
	3	620	
	4	625	
G	2	520	nm
	3	525	
	4	530	
B	2	461	nm
	3	466	
	4	471	

ELECTRO-OPTICAL CHARACTERISTICS:

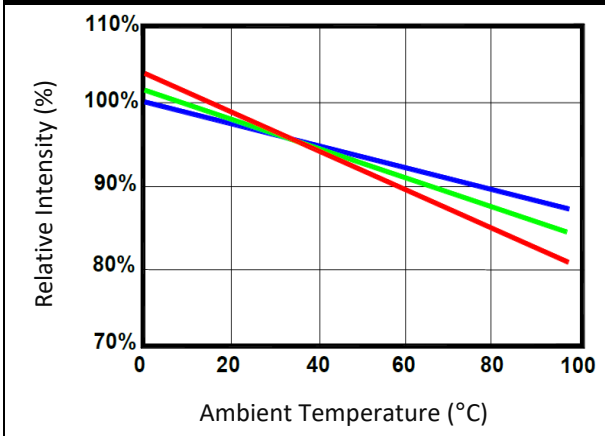
Relative Intensity v.s. Forward Current



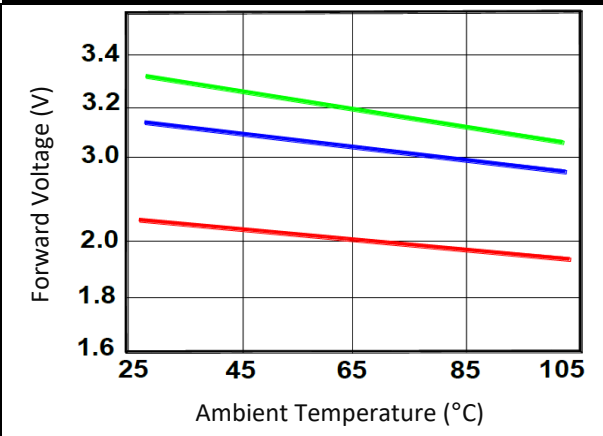
Forward Current v.s. Forward Voltage



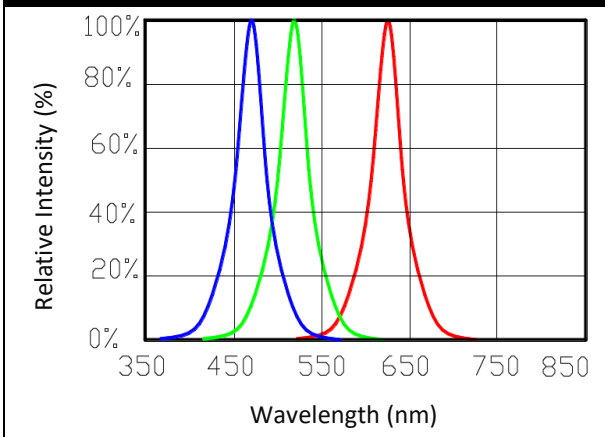
Relative Intensity v.s. Ambient Temperature



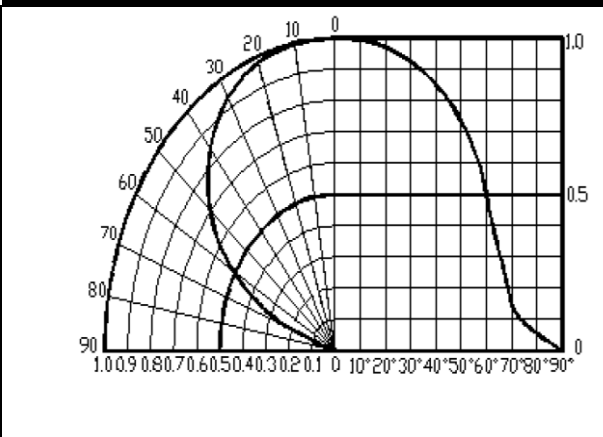
Forward Voltage v.s. Ambient Temperature



Relative Spectral Distribution

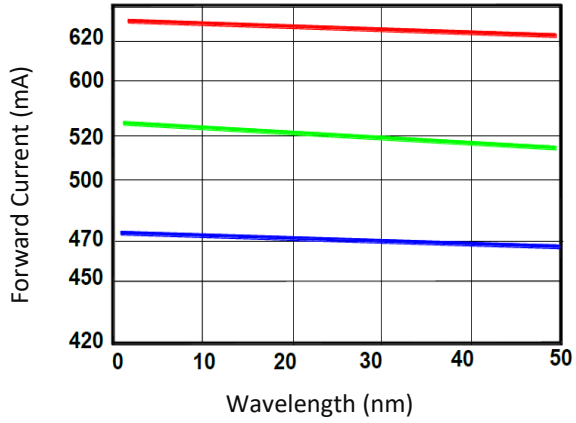


Directive Radiation

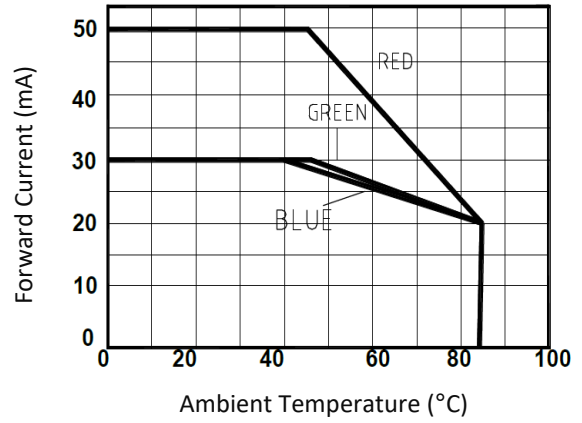


ELECTRO-OPTICAL CHARACTERISTICS:

Wavelength Shift v.s. Forward Current

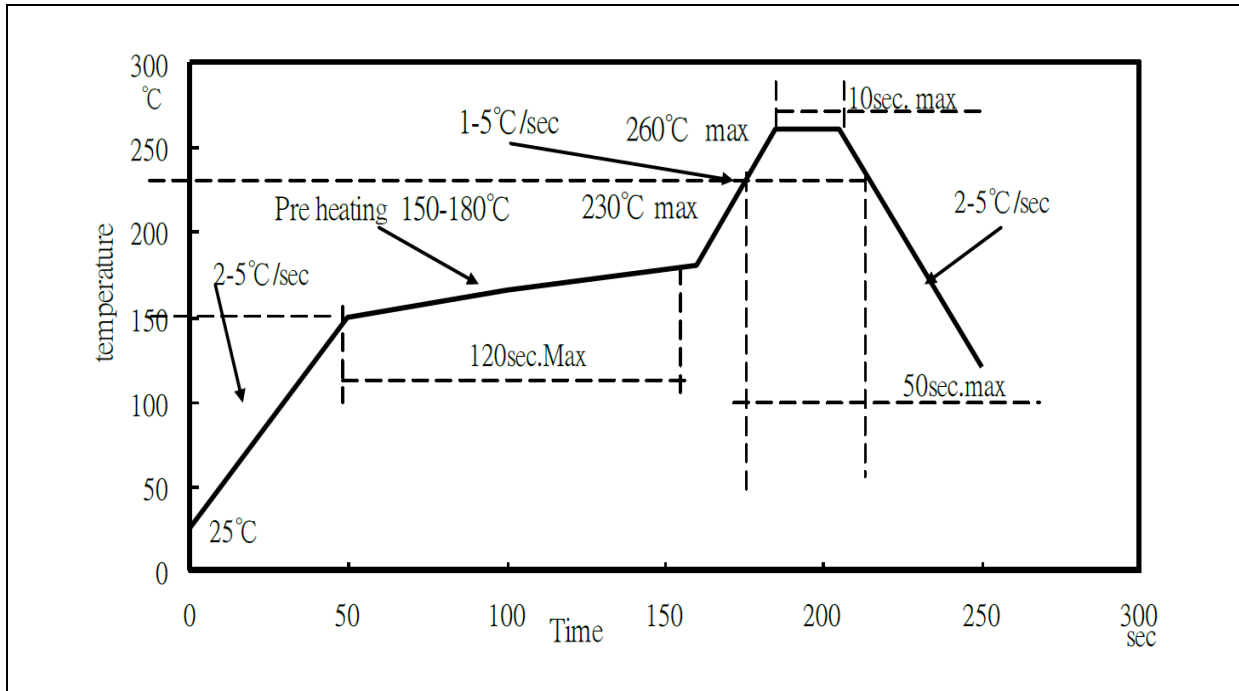


Maximum Current v.s. Ambient Temperature



RECOMMENDED SOLDERING PROFILE:

Lead-free Solder:

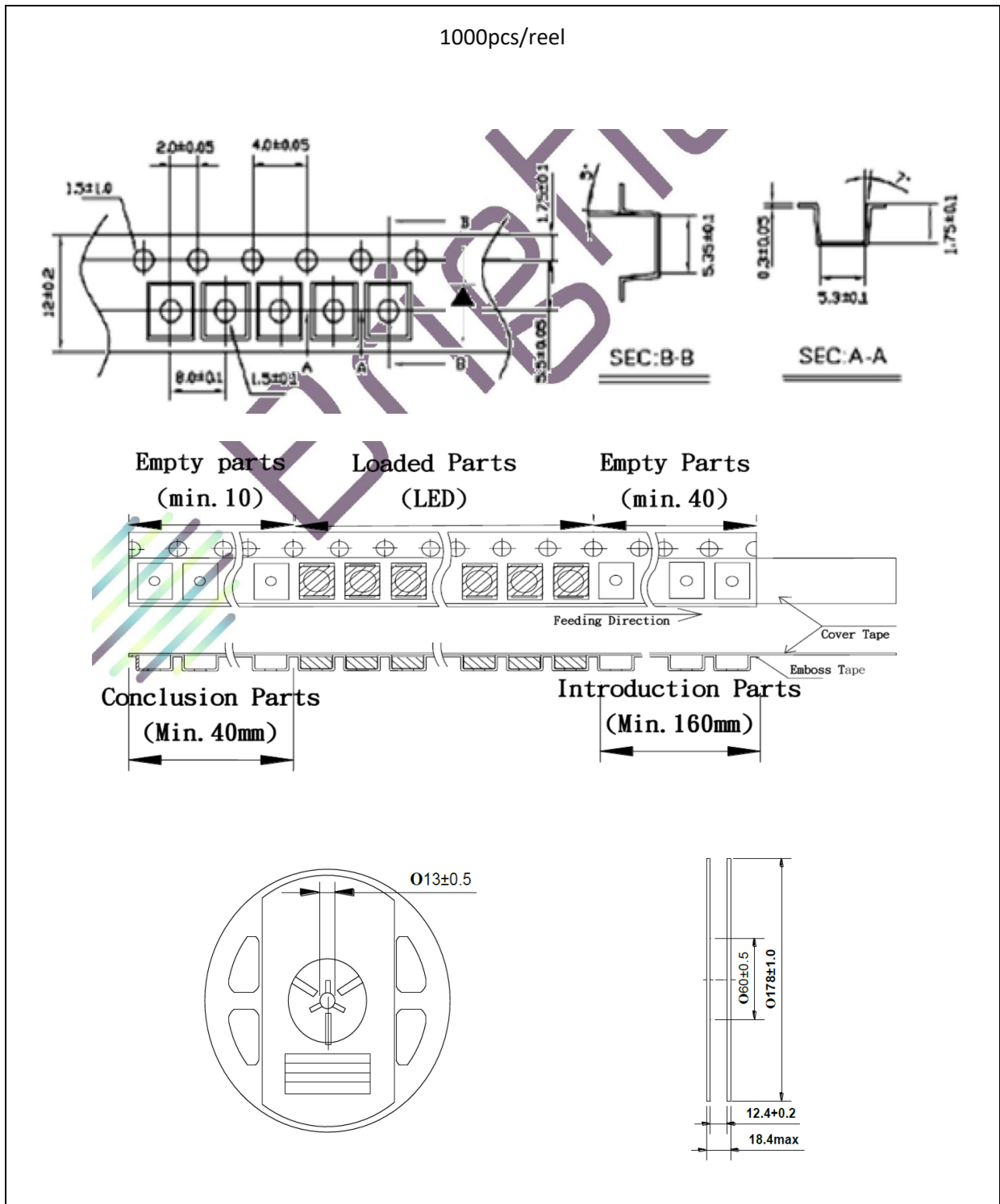


Note:

1. Maximum reflow soldering: 3 times.
2. Recommended soldering temperature 240°C; 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:

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.

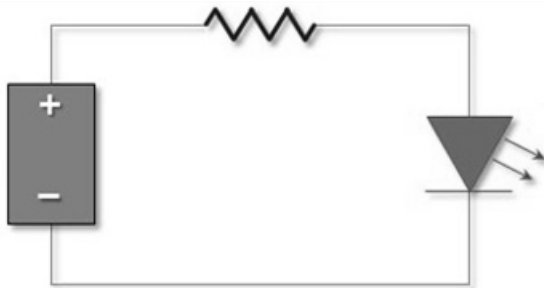
Baking:

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-electrosatic 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.
A1.1	10/01/2019	Revise bin range.
A1.2	09/08/2022	Revise storage condition.