



BRIGHTTEK
BRIGHTTEK (EUROPE) LIMITED

Brighten up The World With LED!



ISO/TS 16949:2009



BSI
BS EN ISO 14001:2004



QC 800000 IECQ HSP98

PRODUCT DATASHEET



- ▶ PLCC6 SMD
- ▶ 5050 1.6t Series
- ▶ Red / Green / Blue

NOM48S05



Release Date: 10 January 2019 Version: A1.1



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.):** 680/1500/340mcd@20mA
- **Colour:** Red/Green/Blue
- **CCT/Wavelength:** 622/527/467nm
- **Viewing angle:** 120/120/120°
- **Materials:**
 - Die: AlGaInP/InGaN/InGaN
 - 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 4 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.

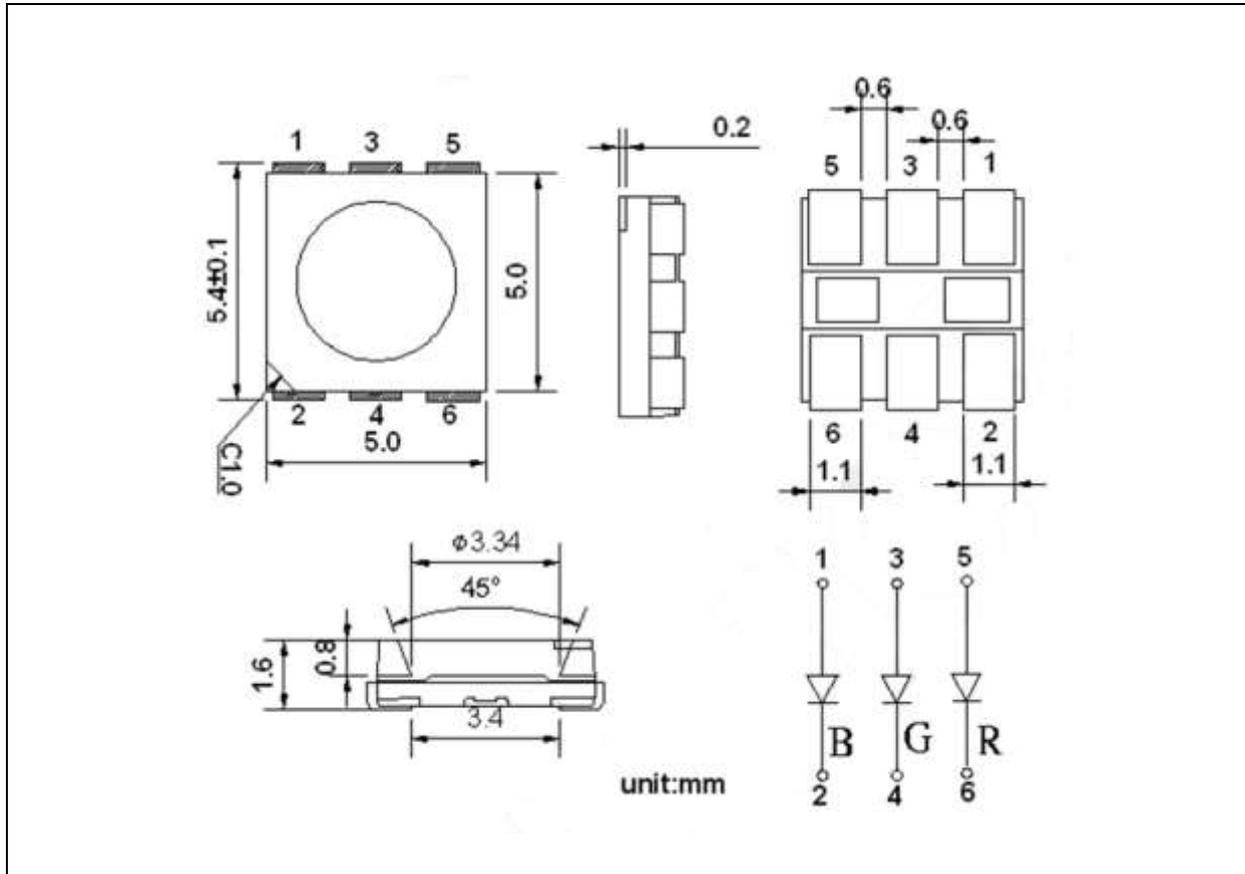
Electrical & Optical Characteristics (Ta=25°C)

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	575	680	---	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	1280	1500	---	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	245	340	---	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

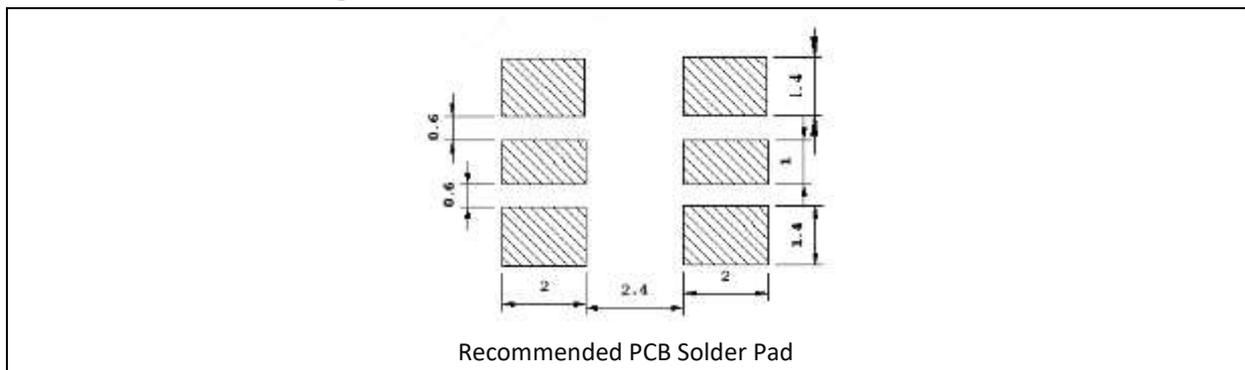
OUTLINE DIMENSION:

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
R13	575	720	mcd
R14	720	900	
R15	900	1125	

G12	1280	1600	mcd
G13	1600	2000	
G14	2000	2500	

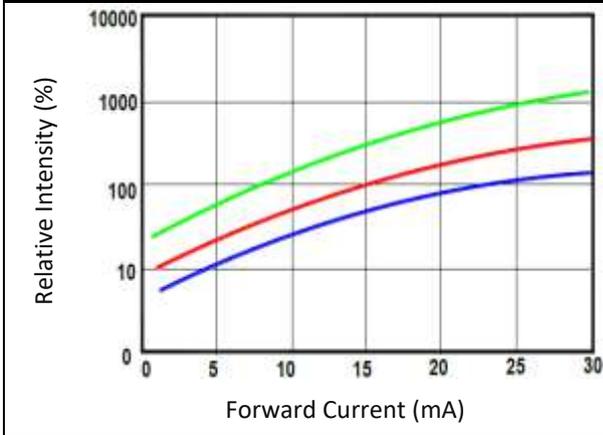
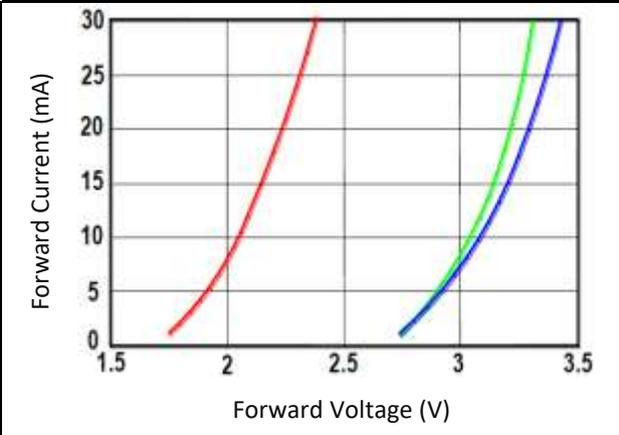
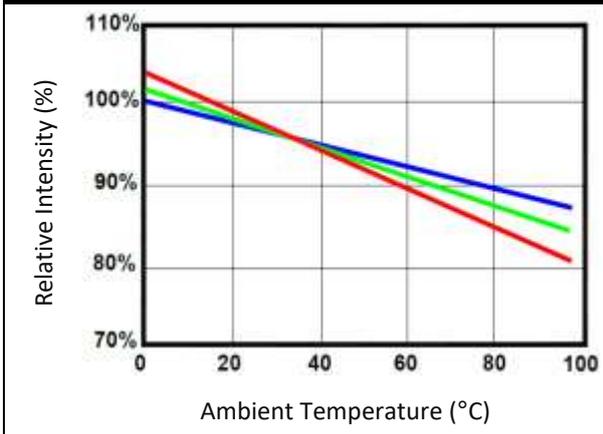
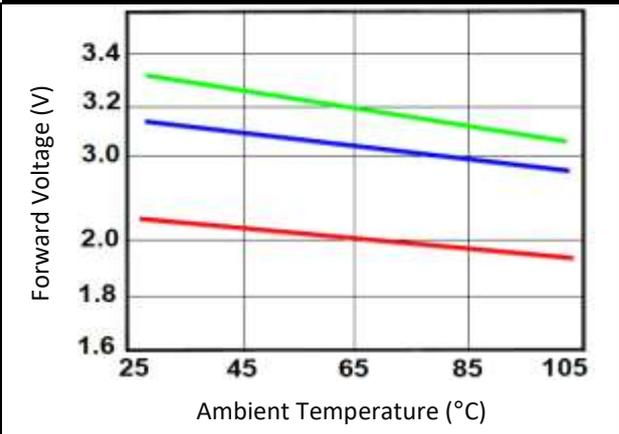
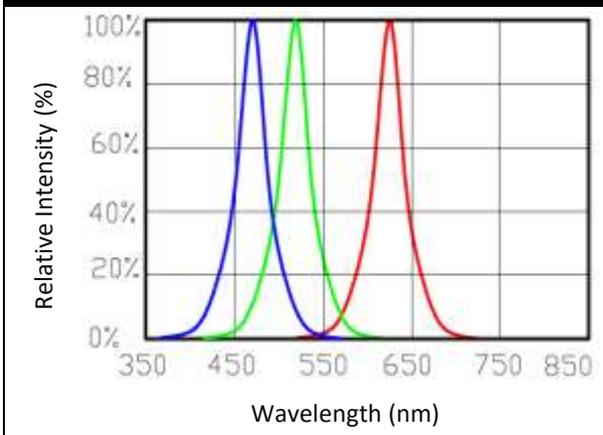
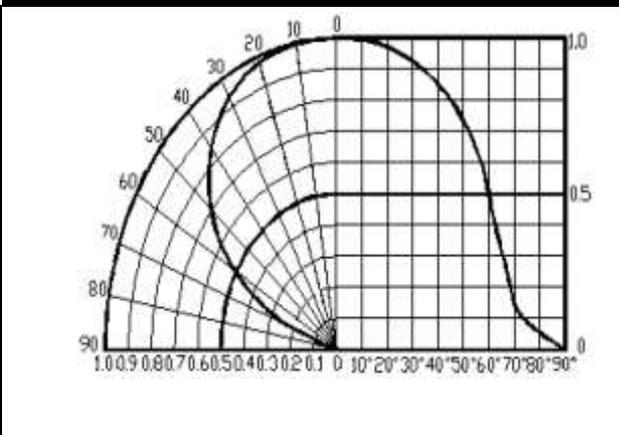
B11	245	305	mcd
B12	305	385	
B13	385	480	

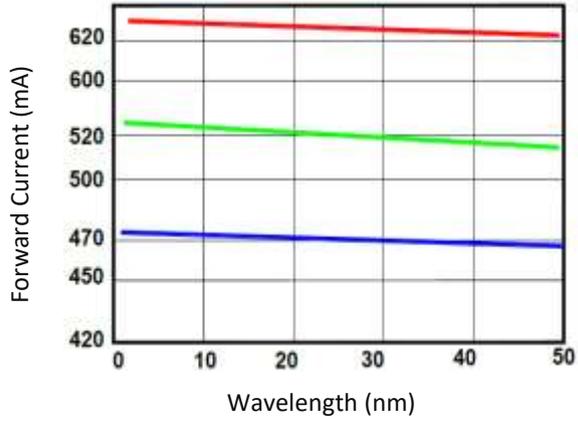
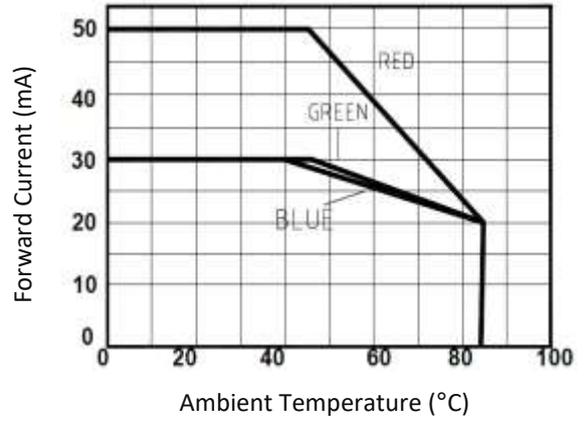
 Wavelength Classifications ($I_F = 20\text{mA}$):

Code	Min.	Max.	Unit
R2	615	620	nm
R3	620	625	
R4	625	630	

G2	520	525	nm
G3	525	530	
G4	530	535	

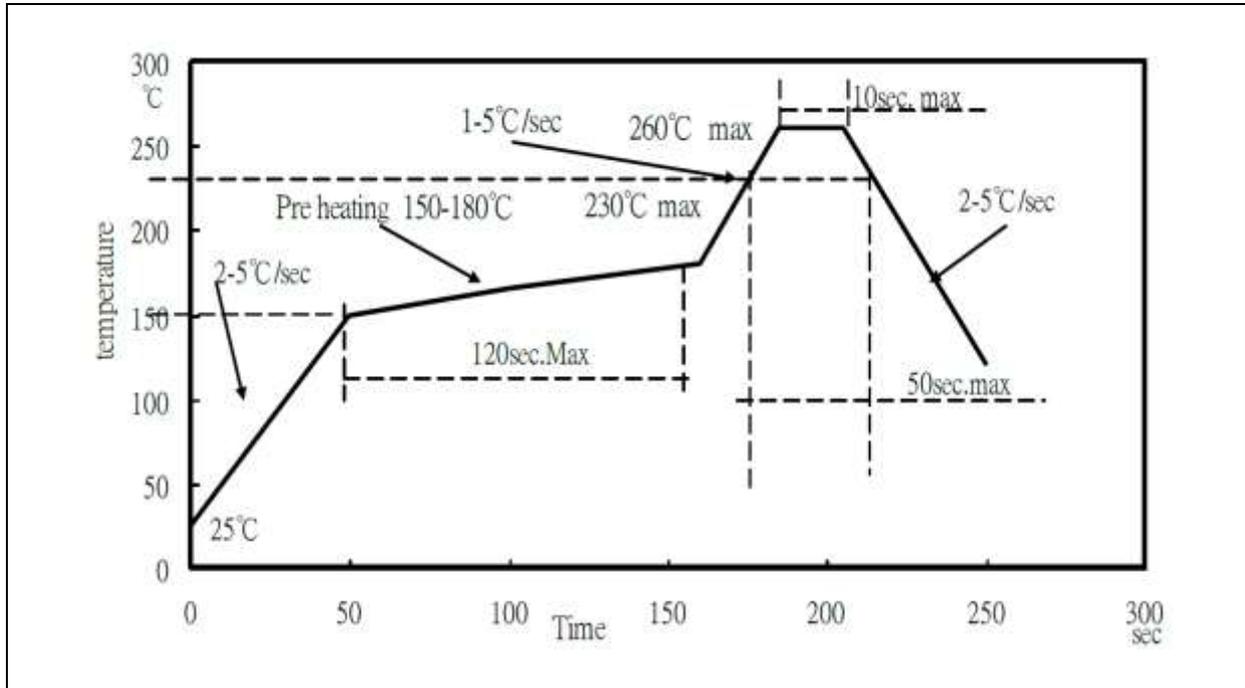
B2	461	466	nm
B3	466	471	
B4	471	476	

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:

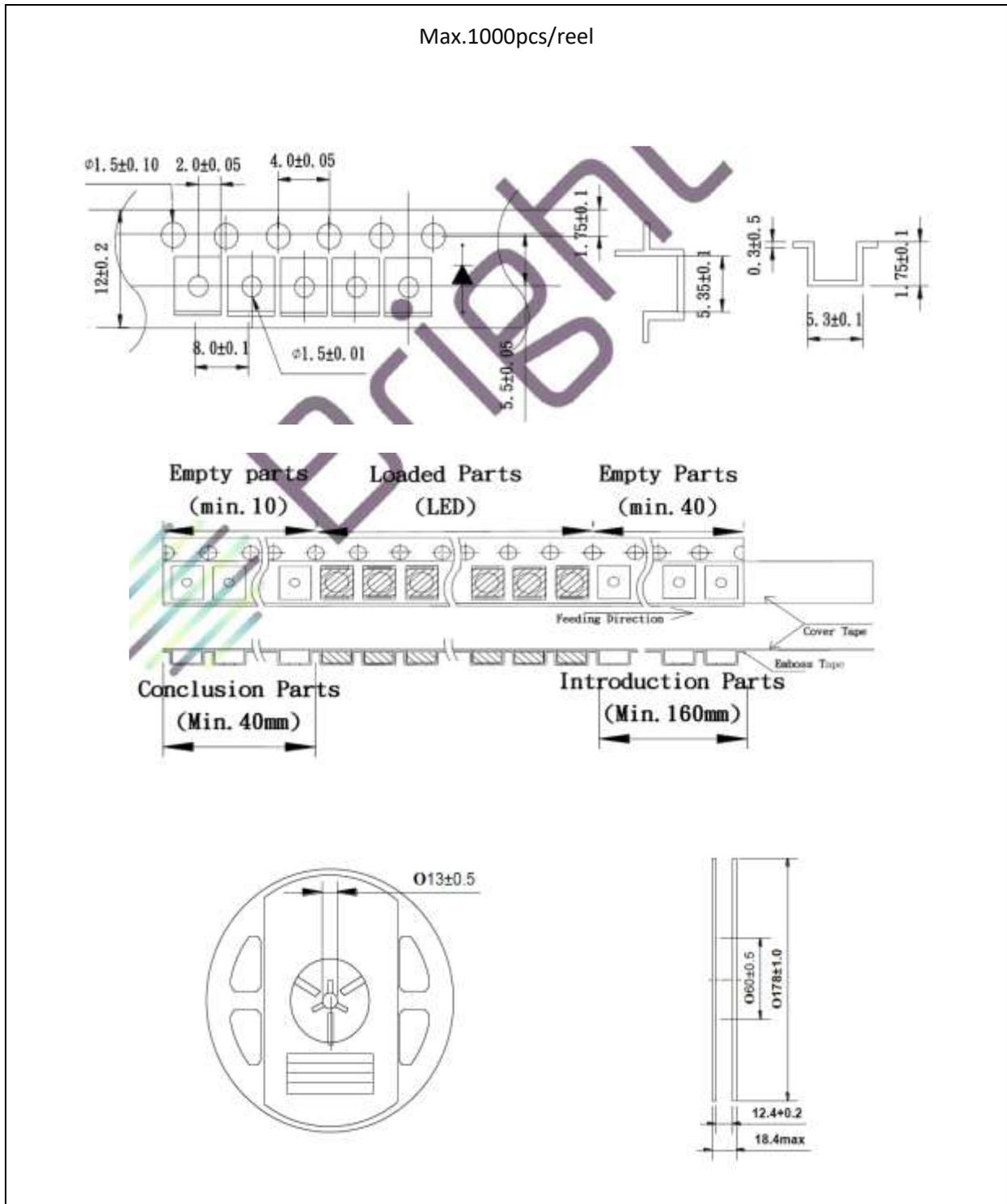


Note:

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 and apply baking at 60°C±5°C for 15hrs before use.

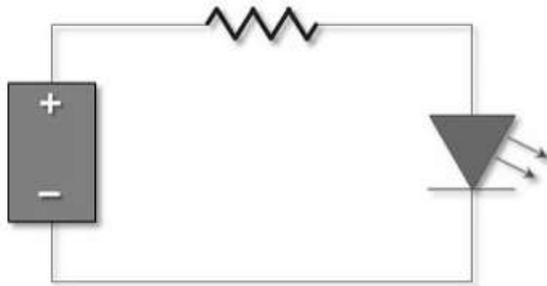
Baking:

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:

- 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	03/03/2016	Datasheet set-up.
A1.1	10/01/2019	Revise bin range.