BRIGHTEK

BRIGHTEK (EUROPE) LIMITED

Brighten Up The World With LED !

ISO/TS 16949:2009 BS EN ISO 14001:2004 QC 080000 IECQ HSPM

PRODUCT DATASHEET

ATTENTION
OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES

- ► EMC SMD
- ► 3030 0.65t Series
- ► W/R/G/B 4-in-1

Release Date: 04 September 2022 Version: A1.1

N0M59S32

3030 0.65t Series

3030 0.65t Series

RoHS Compliant

FEATURES:

- **Package:** TOP View EMC WRGB SMT Package
- **Forward Current:** 20/20/20/20mA*
- **Forward Voltage (typ.):** 2.8/2.0/2.9/2.8V
- **Luminous Flux (typ.):** 7.5/3.0/6.2/0.8lm@20mA
- **Colour:** Cook White/Red/Green/Blue
- **CCT/Wavelength:** 5700K/620/525/455nm
- **Viewing angle:** 120°
- **Materials:**
  - Die: InGaN/AlGaInP/InGaN/InGaN
  - Resin: Silicon
  - L/T Finish: Ag plated
- **Operating Temperature:** -40~+105°C
- **Storage Temperature:** -40~+105°C
- **Grouping parameters:**
  - Forward Voltage
  - Luminous Flux
  - CCT/Dominant Wavelength
- **Soldering methods:** Reflow
- **Preconditioning:** MSL 3 according to J-STD020
- **Packing:** 8mm tape with max.5000/reel, ø178mm (7'')

* in order of White/Red/Green/Blue

APPLICATIONS:

- Decorative Lighting
- Portable Lighting
- Outdoor Lighting
- Commercial Lighting
- Architectural Lighting
- Home Appliance
- Led Torch
- Mini Projector

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
DC Forward Current	I_F	60	mA
Pulse Forward Current (width≤100μS; duty≤1/10)	I_{FP}	90	mA
Power Dissipation	P_D	198/150/192/198*	mW
Reverse Voltage	V_R	5	V
Reverse Current @5V	I_R	10	μA
Junction Temperature	T_j	110	°C
Electrostatic Discharge (HBM)	ESD	1000	V
Operating Temperature	T_{OPR}	-40~+105	°C
Storage Temperature	T_{STG}	-40~+105	°C
Soldering Temperature	T_{SOL}	230 or 260 for 10S	°C

* in order of White/Red/Green/Blue

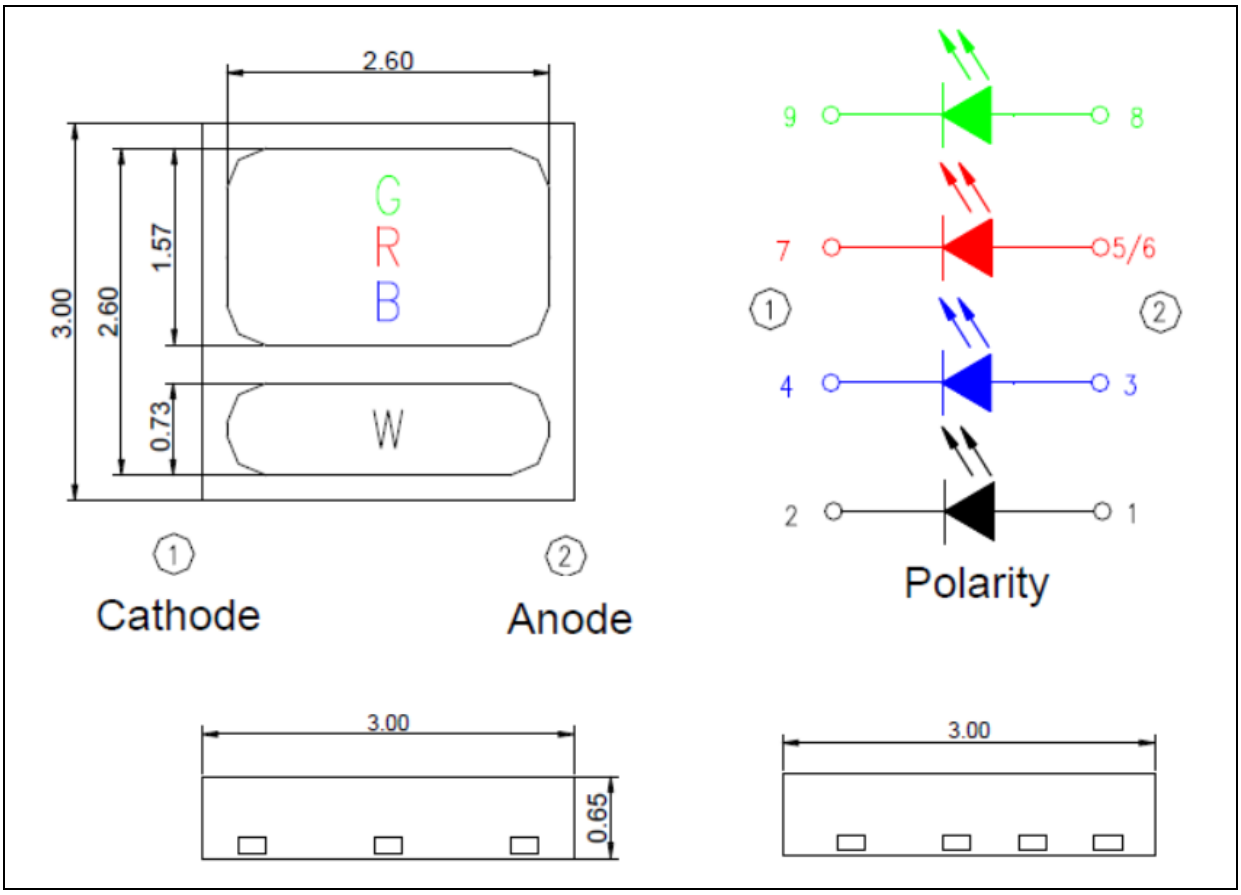
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	2.7/1.9/2.6/2.7*	2.8/2.0/2.9/2.8	3.3/2.5/3.2/3.3	V	I_F=20mA
Luminous Flux	Φ_V	6.0/1.0/4.0/0.1	7.5/3.0/6.2/0.8	14.0/5.0/11.0/3.0	lm	I_F=20mA
White Colour Temperature	CCT	---	5700	---	K	I_F=20mA
R/G/B Dominant Wavelength	λ_D	615/520/450	---	625/530/460	nm	I_F=20mA
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	I_F=20mA

1. Luminous flux (Φ_V) ±10%, Forward Voltage (V_F) ±0.1V
2. * in order of White/Red/Green/Blue

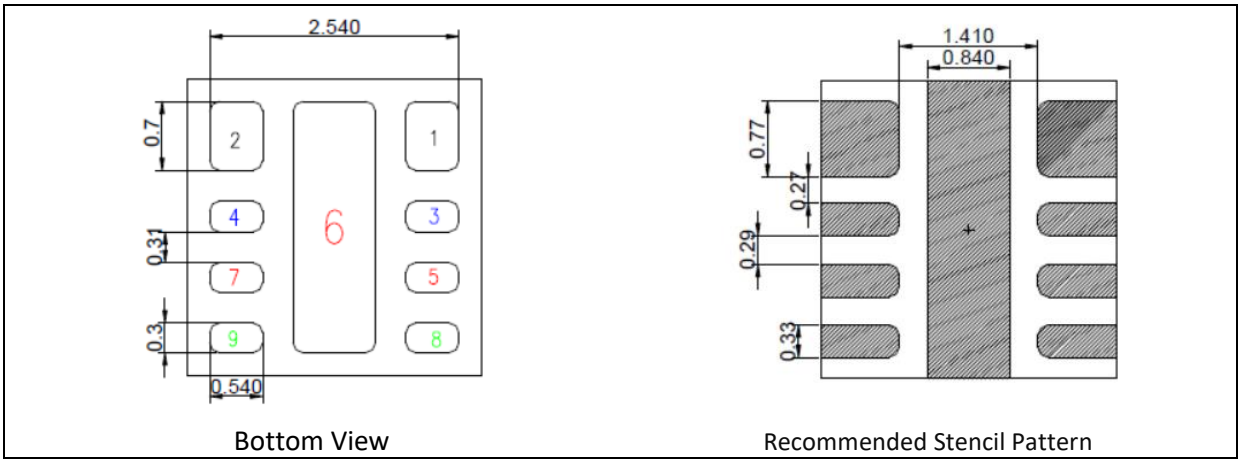
OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance ±0.2mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



Bottom View

Recommended Stencil Pattern

1. Dimensions are in millimetre (mm).
2. Tolerance ±0.1mm with angle tolerance ±0.5°.

BINNING GROUPS:

Forward Voltage Classifications (I_F = 20mA):

Code		Min.	Max.	Unit
White	WA1	2.7	3.3	V
Red	RA1	1.9	2.5	V
Green	GA1	2.7	3.3	V
Blue	BA1	2.6	3.1	V

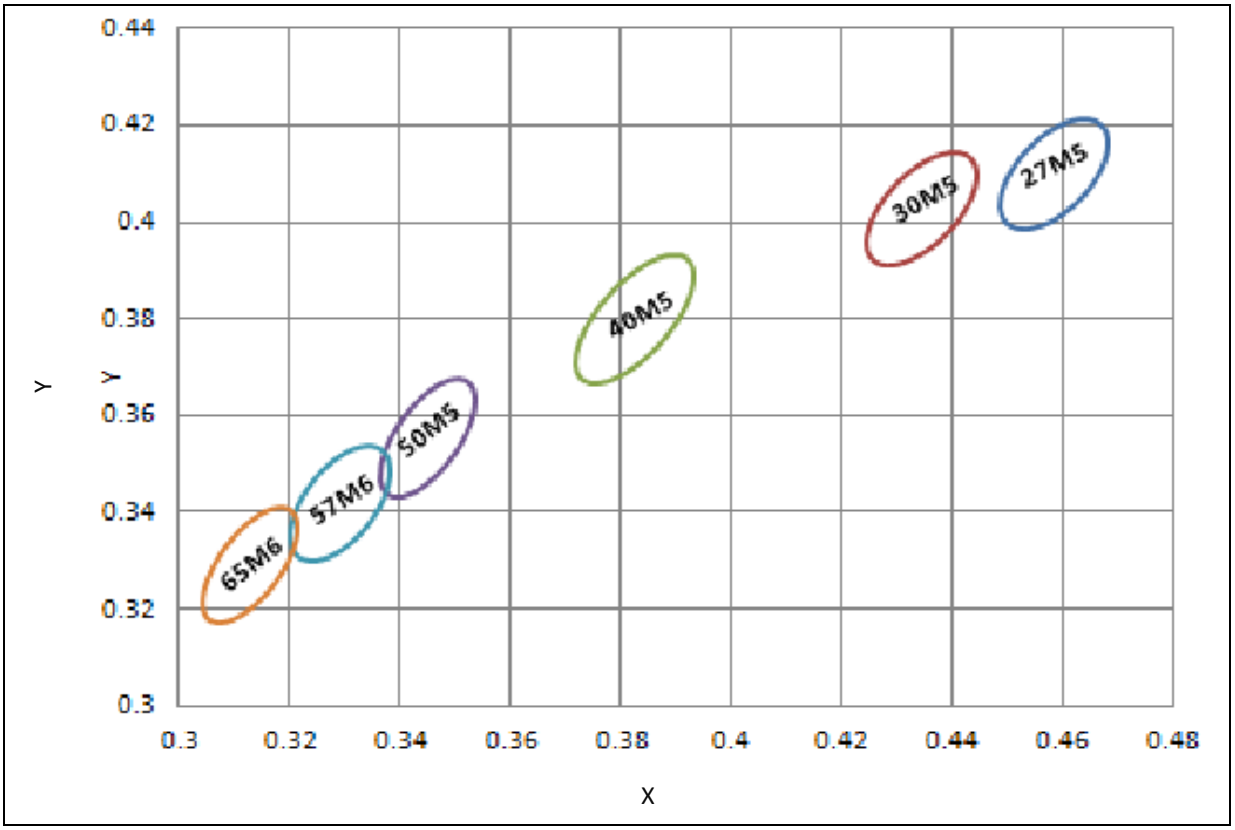
Luminous Flux Classifications (I_F = 20mA):

Code		Min.	Max.	Unit
White	WM1	6	14	lm
Red	RM1	1	5	lm
Green	GM1	4	11	lm
Blue	BM1	0.1	3	lm

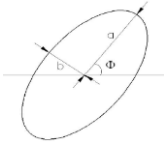
Dominant Wavelength Classifications (I_F = 20mA):

Code		Min.	Max.	Unit
Red	RC1	615	625	nm
	RC2	620	625	
Green	GC1	520	525	nm
	GC2	525	530	
Blue	BC1	450	455	nm
	BC2	455	460	

CIE CHROMATICITY DIAGRAM:



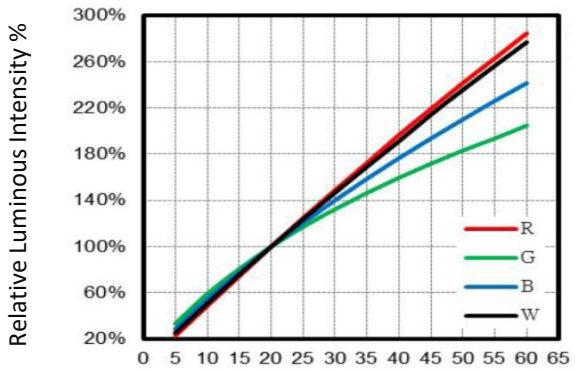
Chromaticity Coordinates Classifications (I_F = 20mA):



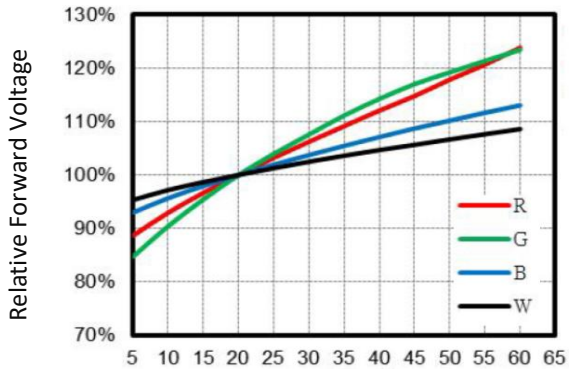
Code	Centre		Radius		Angle
	X	Y	a	b	Φ
57M5	0.3290	0.3417	0.011175	0.005500	58.35

ELECTRO-OPTICAL CHARACTERISTICS:

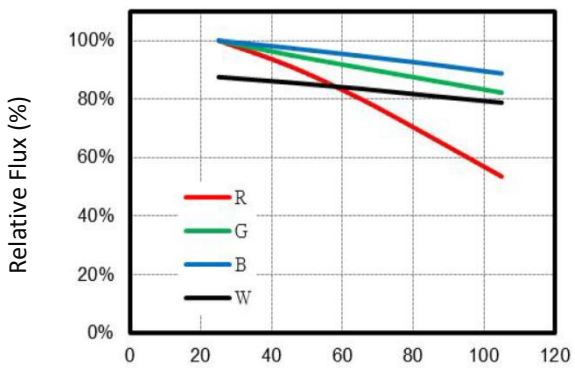
Relative Luminous Intensity v.s. Forward Current



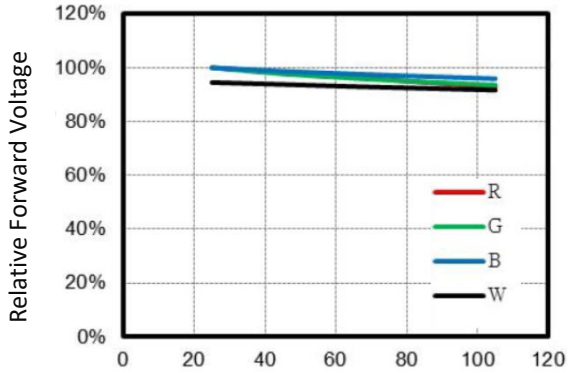
Forward Current v.s. Relative Forward Voltage



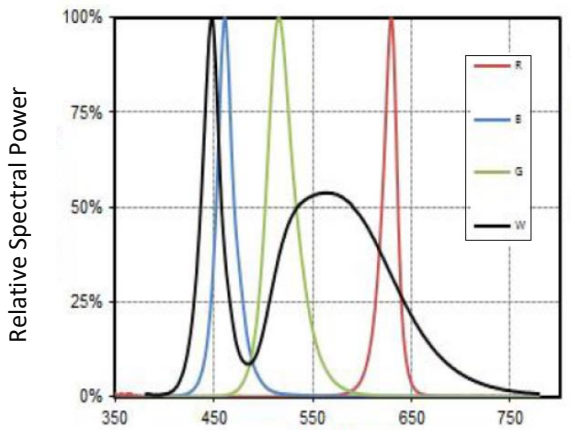
Relative Flux v.s. Soldering Temperature



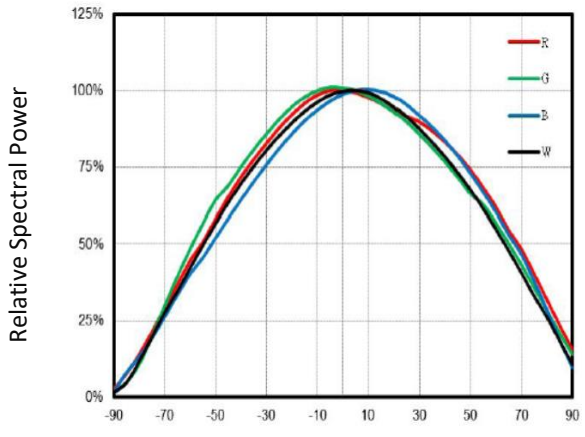
Forward Voltage v.s. Soldering Temperature



Luminous Spectrum

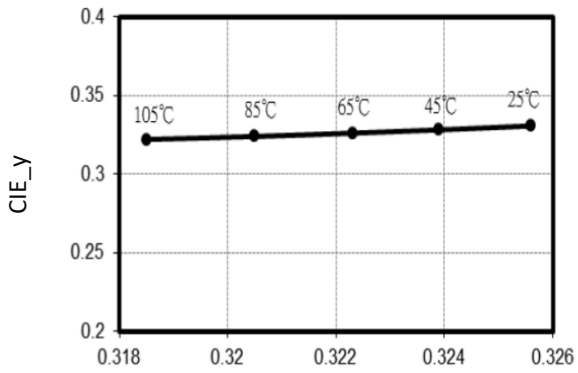


Directive Radiation

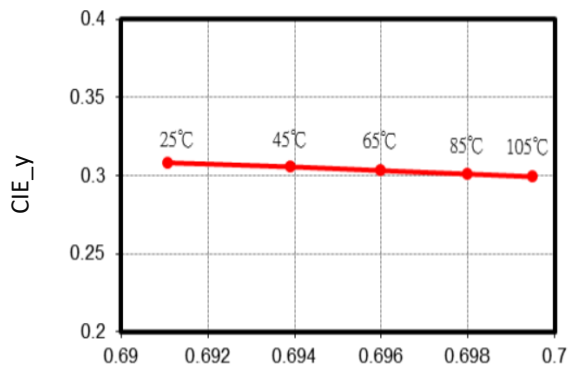


ELECTRO-OPTICAL CHARACTERISTICS:

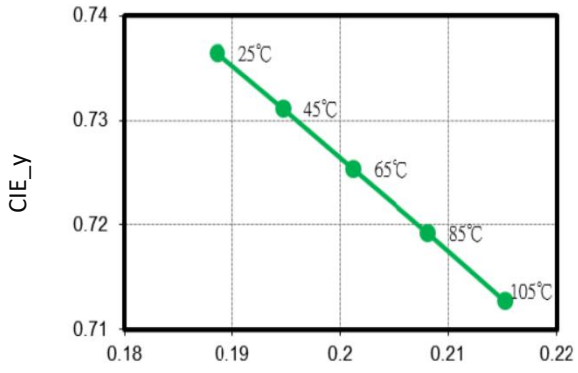
White Shift v.s. Soldering Temperature



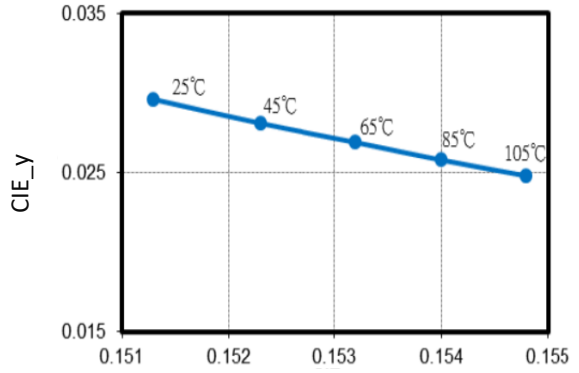
Red Shift v.s. Soldering Temperature



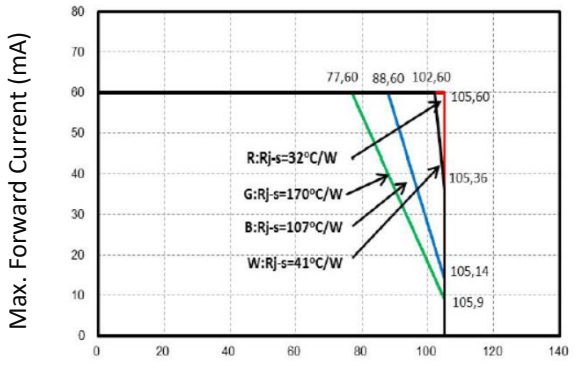
Green Shift v.s. Soldering Temperature



Blue Shift v.s. Soldering Temperature

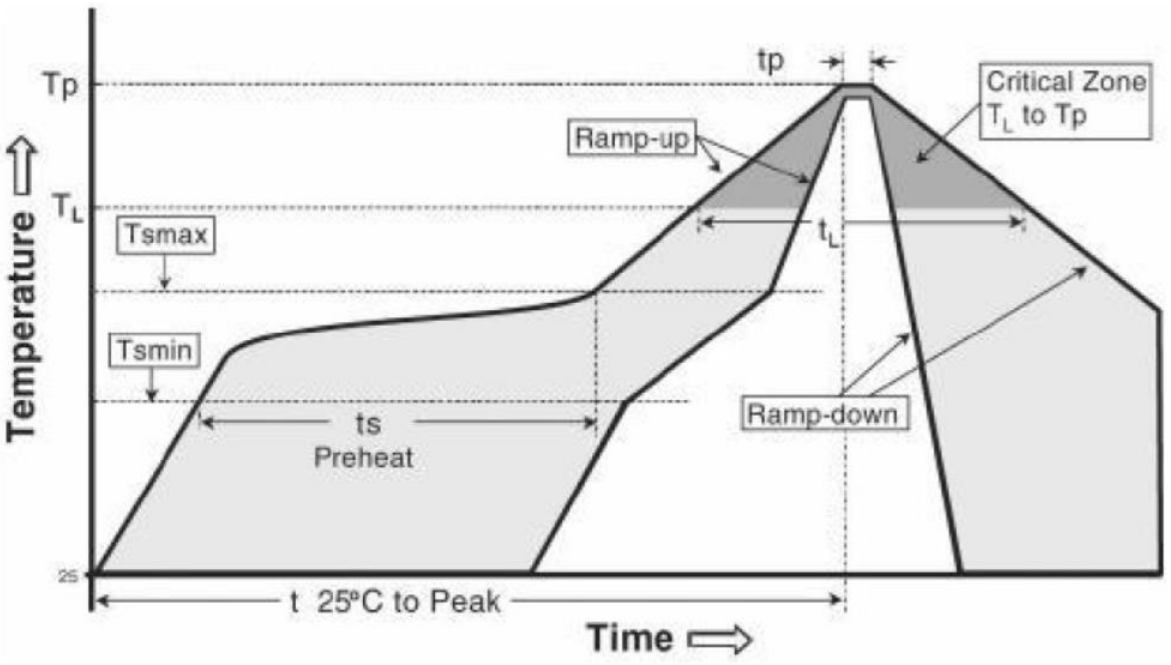


Soldering Temperature v.s. Max. Current



RECOMMENDED SOLDERING PROFILE:

Reflow Lead-free Solder:



Temperature Min. (T_{smin})	150°C
Temperature Max. (T_{smax})	200°C
Period from T_{smin} to T_{smax}	60-120 seconds
Ramp-up Rate (T_L to T_P)	Max. 3°C/second
Liquidous Temperature (T_L)	217°C
Time Maintained above T_L	60-150 seconds
Peak Package Temperature (T_P)	Max. 260°C
Time within 5°C of the Specified Classification Temperature T_C	Max. 30 seconds
Ramp-down Rate (T_P to T_L)	Max. 6°C/second
Time from 25°C to Peak Temperature	Max. 8 mins

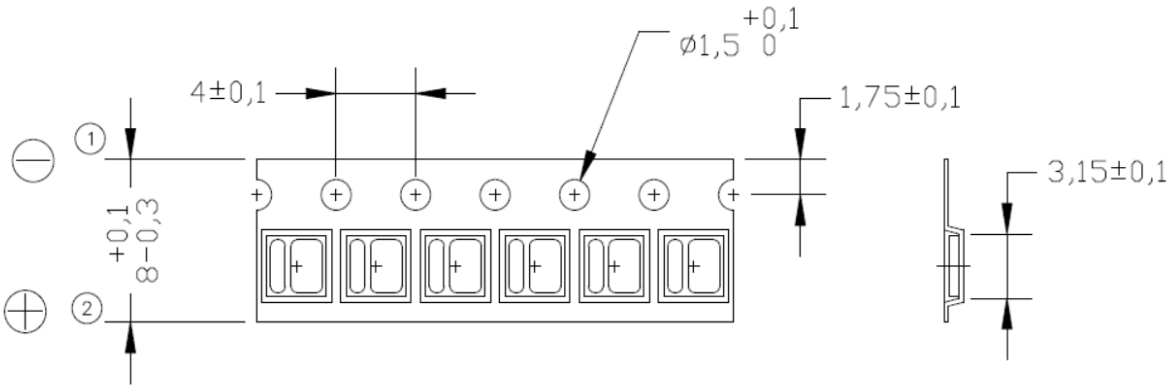
Note:

1. Die slug is to be soldered.
2. Maximum reflow soldering: 2 times. Between two soldering it should not be longer than 24 hours.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.
4. Recommended soldering temperature: 230°C. The maximum soldering temperature should be limited to 260°C for max. 10seconds.

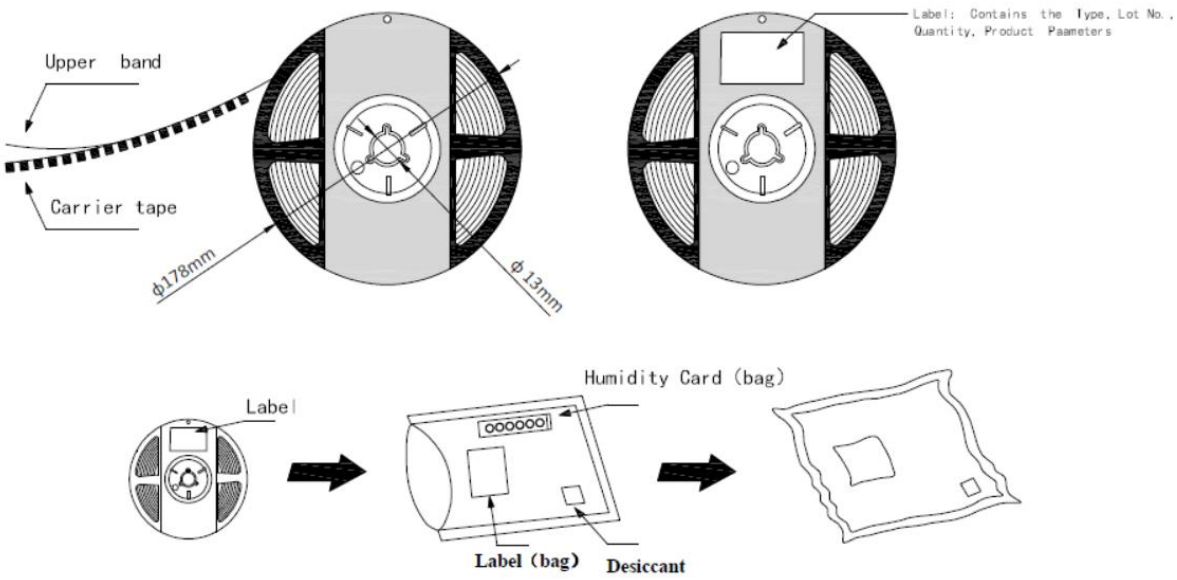
PACKING SPECIFICATION:

Reel Dimension:

Max.5000pcs/reel



1. Cumulative Tolerance: Cumulative Tolerance/10 pitches to be ±0.2mm
2. Adhesion Strength of Cover Tape Adhesion strength to be 0.1-0.7N when the cover tape is turned off from the carrier tape at the angle of 10˚ to the carrier tape.
3.



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 descanting agent <10% R.H. and apply baking before use.

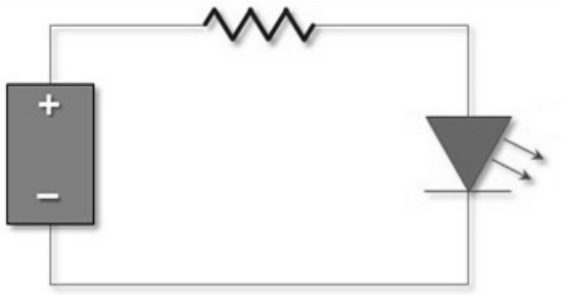
Baking:

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±5°C x 24hrs 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 handing 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	02/06/2021	Datasheet set-up.
A1.1	04/09/2022	Refine wavelength bin gape and update flux rating.