BRIGHTEK

BRIGHTEK (EUROPE) LIMITED

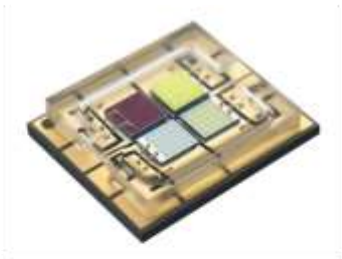
Brighten Up The World With LED!

PRODUCT DATASHEET

- ► Ceramic SMD
- ► 4757 1.21t Series
- ► W/R/G/B 4-in-1

Release Date: 24 May 2022 Version: A1.2

N0M60S98Z



4757 1.21t Series

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RoHS Compliant

FEATURES:

* in order of White/Red/Green/Blue

- **Package:** TOP View Ceramic WRGB SMT Package
- **Forward Current:** 1~3A per colour
- **Forward Voltage (typ.):** 3.5/2.8/3.5/3.5V*
- **Luminous Flux (typ.):** 330lm/150lm/300lm/1500mW@1A
- **Colour:** Cook White/Red/Green/Royal Blue
- **CCT/Wavelength:** 6500K/625/525/455nm
- **Viewing angle:** 120°
- **Materials:**
  - Die: InGaN/AlGaInP/InGaN/InGaN
  - Resin: Glass
  - L/T Finish: Au plated
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+105°C
- **Electrostatic Discharge (HBM):** 8000V per colour
- **Grouping parameters:**
  - Forward Voltage
  - Luminous Flux
  - CCT/Dominant Wavelength
- **Soldering methods:** Reflow
- **MSL Level:** 3 according to J-STD020
- **Packing:** 12mm tape with max.500/reel, ø178mm (7'')

APPLICATIONS:

- Decorative Lighting
- Stage 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	2000	mA
Pulse Forward Current (width≤100μS; duty≤1/10)	I_{FP}	3000	mA
Reverse Voltage	V_R	5	V
Junction Temperature	T_j	125	°C
Electrostatic Discharge (HBM)	ESD	8000	V
Thermal Resistance *	R_{thj-sp}	3.5	°C/W
Operating Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-40~+105	°C
Soldering Temperature	T_{SOL}	230 or 260 for 10S	°C

* R_{th} measured at 1A for each colour.

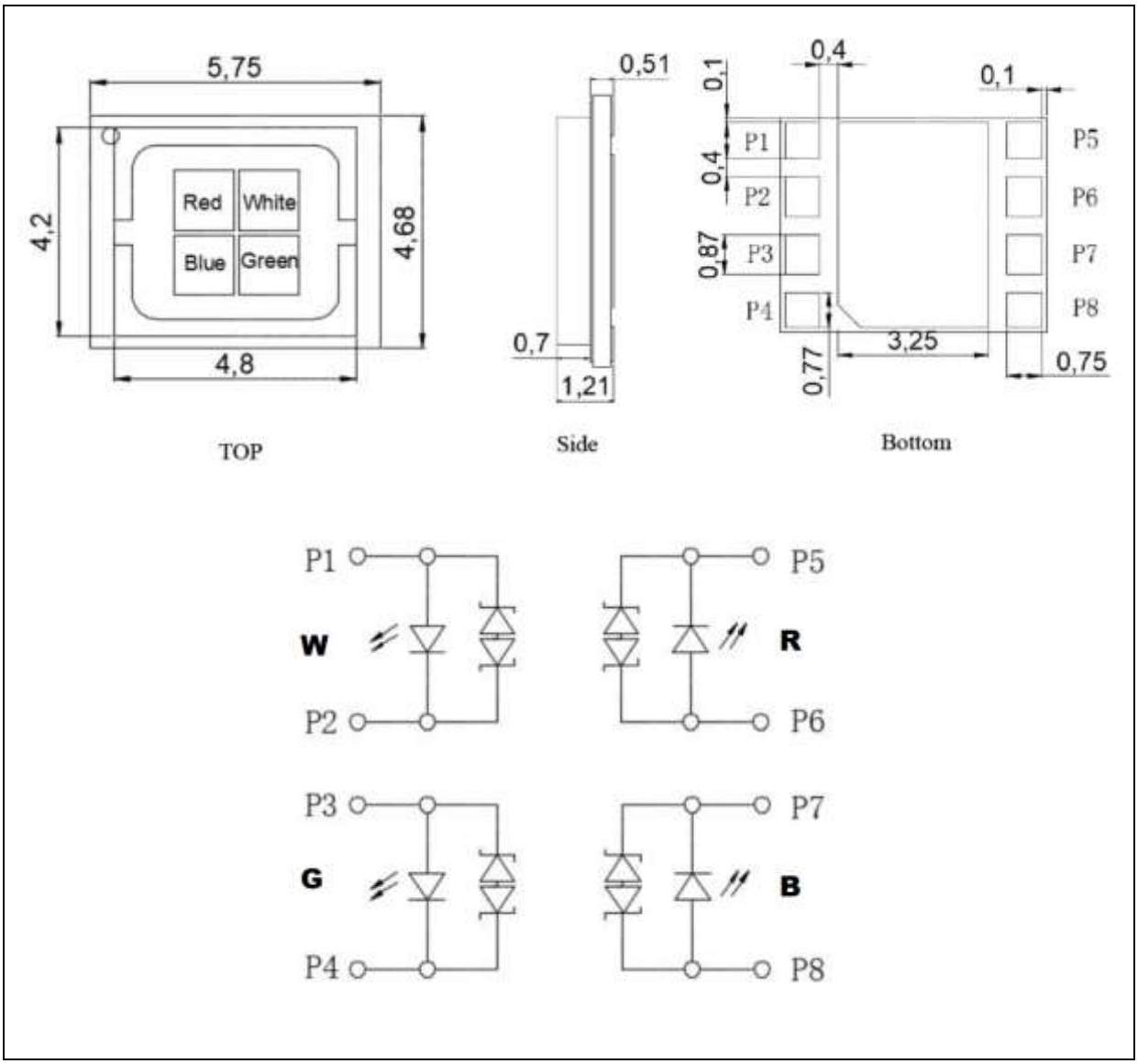
Electrical & Optical Characteristics (Ta=25°C)

Parameter		Symbol	Values			Unit	Test Condition
			Min.	Typ.	Max.		
Forward Voltage		V_F	2.6/1.8/2.6/2.6*	3.5/2.8/3.5/3.5	4.8/3.6/4.8/4.8	V	I_F=1A
Luminous Flux	W	Φ_V	200	330	---	lm	I_F=1A
	R		100	150	---		
	G		200	300	---		
Radiant Power	B	Po	1000	1500	---	mW	I_F=1A
Luminous Flux	W	Φ_V	---	530	---	lm	I_F=2A
	R		---	2	---		
	G		---	377	---		
Radiant Power	B	Po	---	2550	---	mW	I_F=2A
Chromaticity Coordinates		X	---	0.3130	---	---	IF=1A
		Y	---	0.3280	---		
White Colour Temperature		CCT	---	6500	---	K	I_F=1A
R/G/B Dominant Wavelength		λ_D	610/520/450	620/525/455	630/530/460	nm	I_F=1A
Viewing Angle		$2\theta_{1/2}$	---	120	---	deg	I_F=1A

1. Luminous flux (Φ_V) ±10%, Forward Voltage (V_F) ±0.5V
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.

BINNING GROUPS:

Forward Voltage Classifications (I_F = 1A):

Code		Min.	Max.	Unit
White	GB1	2.6	4.8	V
Red	RE0	1.8	3.6	V
Green	GB1	2.6	4.8	V
Blue	GB1	2.6	4.8	V

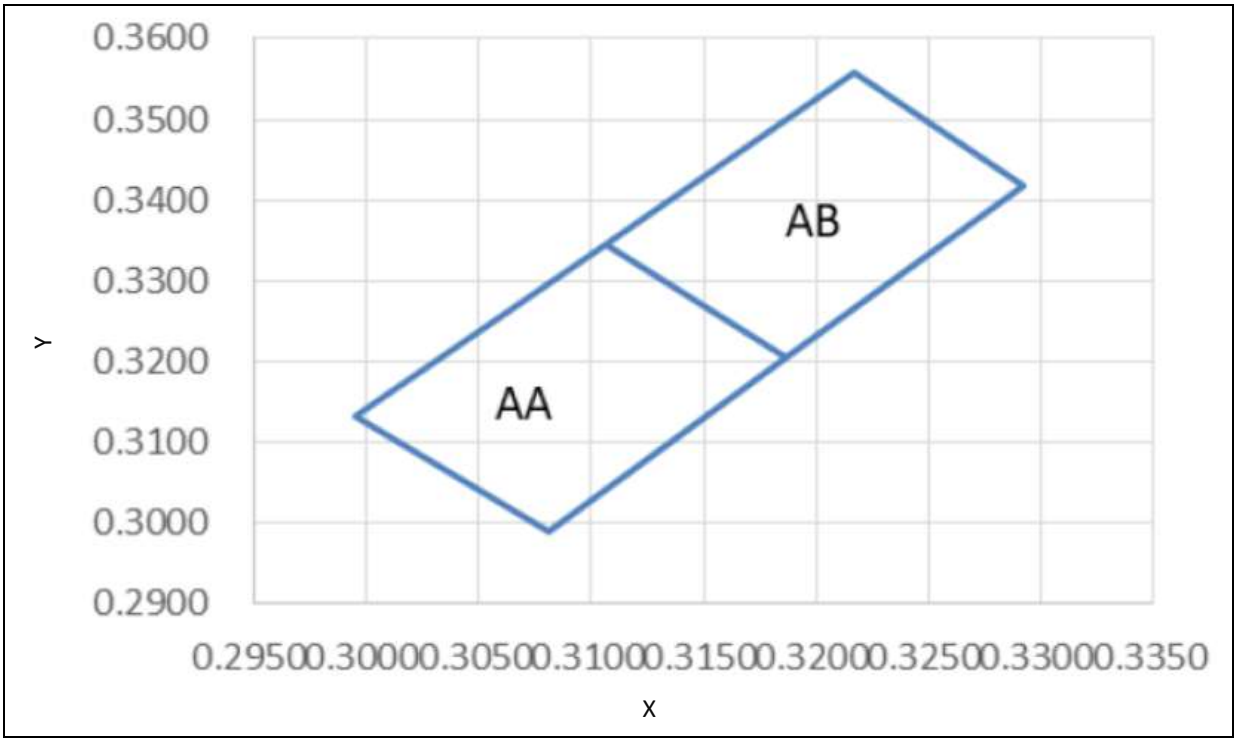
Luminous Flux/Radiant Power Classifications (I_F = 1A):

Code		Min.	Max.	Unit
White	AB4	200	400	lm
Red	AB2	100	200	lm
Green	AB4	200	400	lm
Blue	BB2	1000	2000	mW

Dominant Wavelength Classifications (I_F = 1A):

Code		Min.	Max.	Unit
Red	CA0	610	630	nm
Green	DC3	520	525	nm
	DD3	525	530	
Blue	EC3	450	455	nm
	ED3	455	460	

CIE CHROMATICITY DIAGRAM:

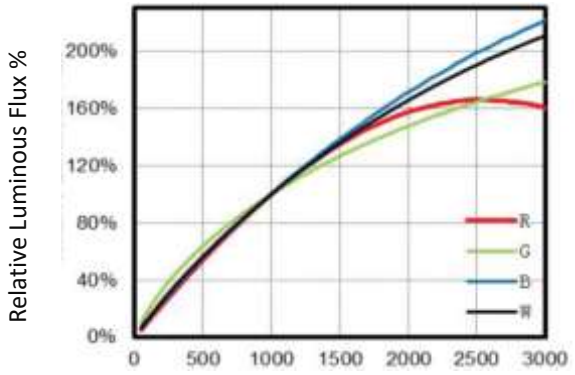


Chromaticity Coordinates Classifications (I_F = 1A):

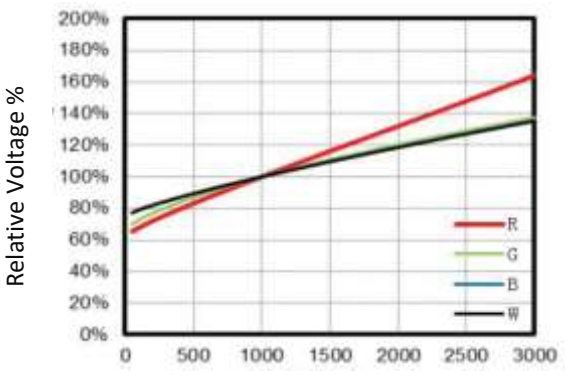
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
AA	0.2995	0.3132	0.3106	0.3345	0.3187	0.3204	0.3081	0.2990
AB	0.3106	0.3345	0.3217	0.3558	0.3292	0.3418	0.3187	0.3204

ELECTRO-OPTICAL CHARACTERISTICS:

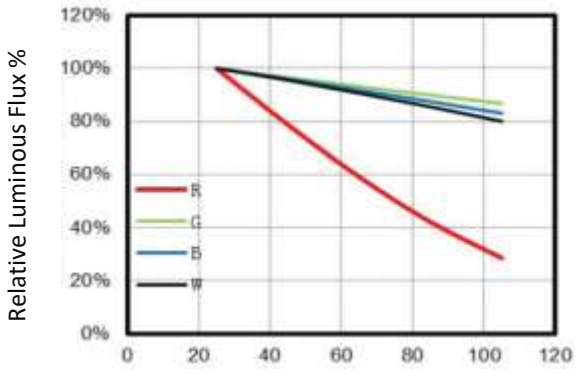
Relative Luminous Intensity v.s. Forward Current



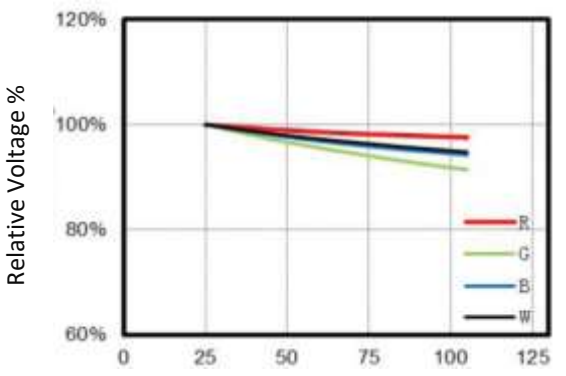
Forward Current v.s. Forward Voltage



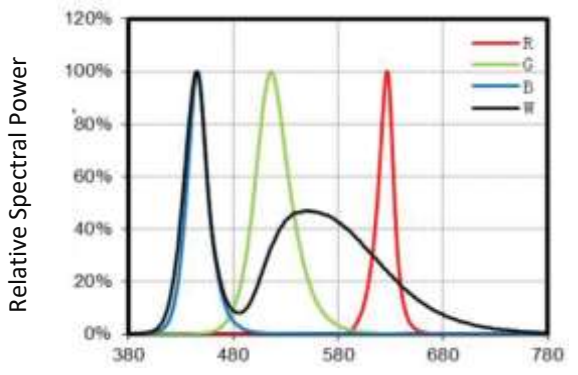
Soldering Temperature v.s. Luminous Flux



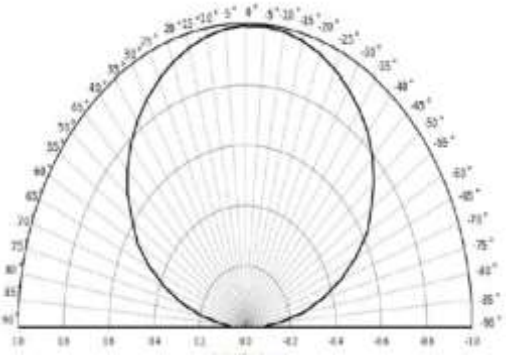
Soldering Temperature v.s. Forward Voltage



Luminous Spectrum

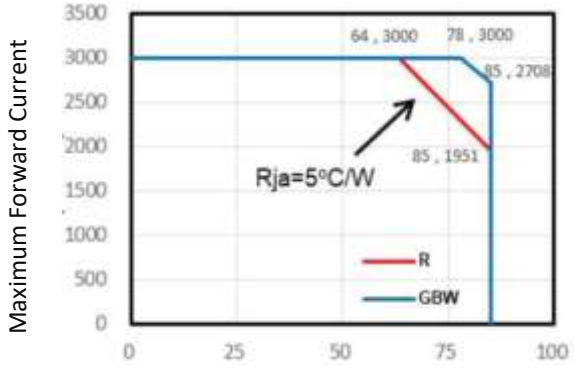


Directive Radiation



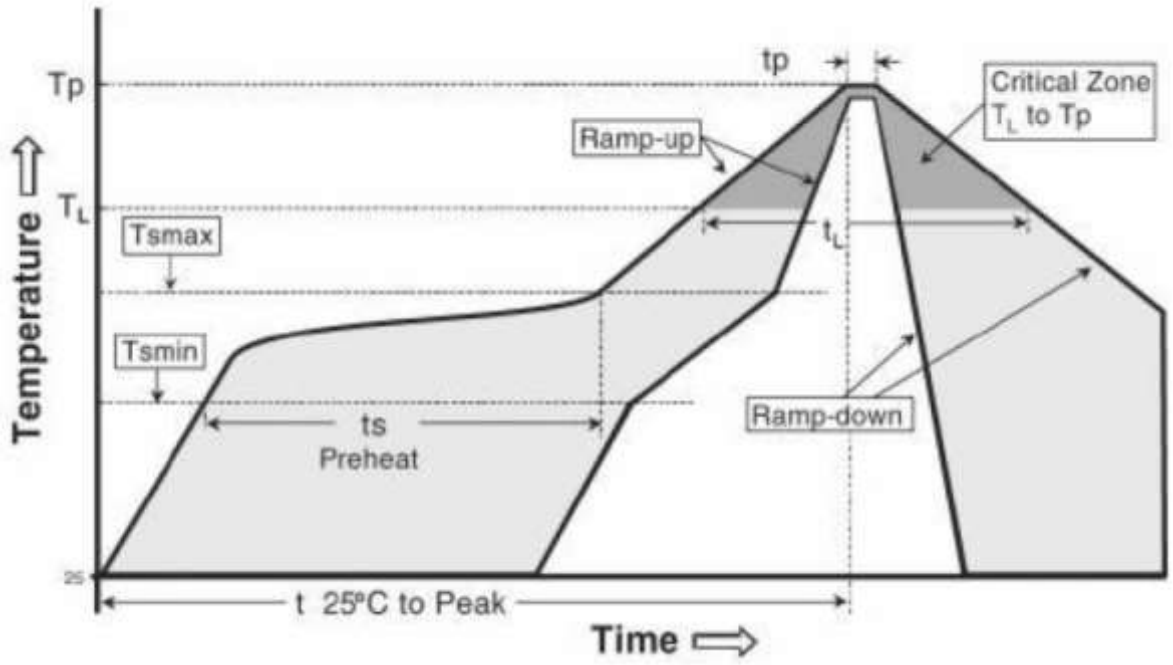
ELECTRO-OPTICAL CHARACTERISTICS:

Ambient Temperature v.s. Max. Forward 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

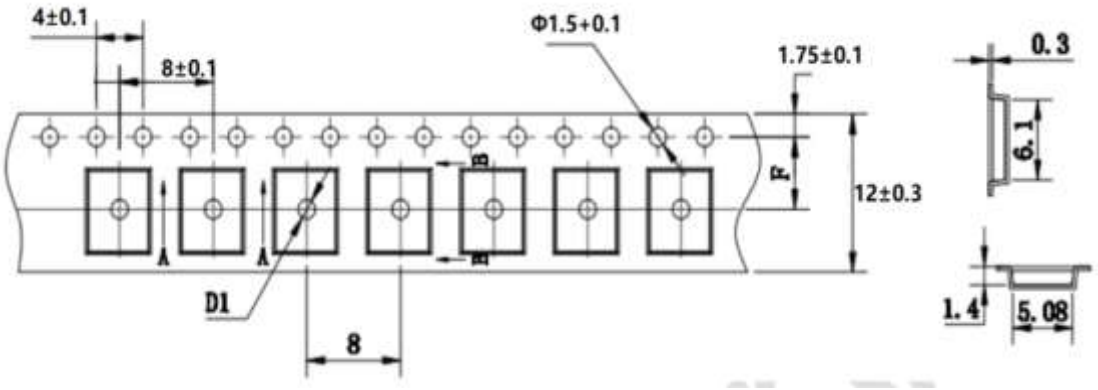
Note:

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: 240°C. The maximum soldering temperature should be limited to 260°C for max. 10seconds.

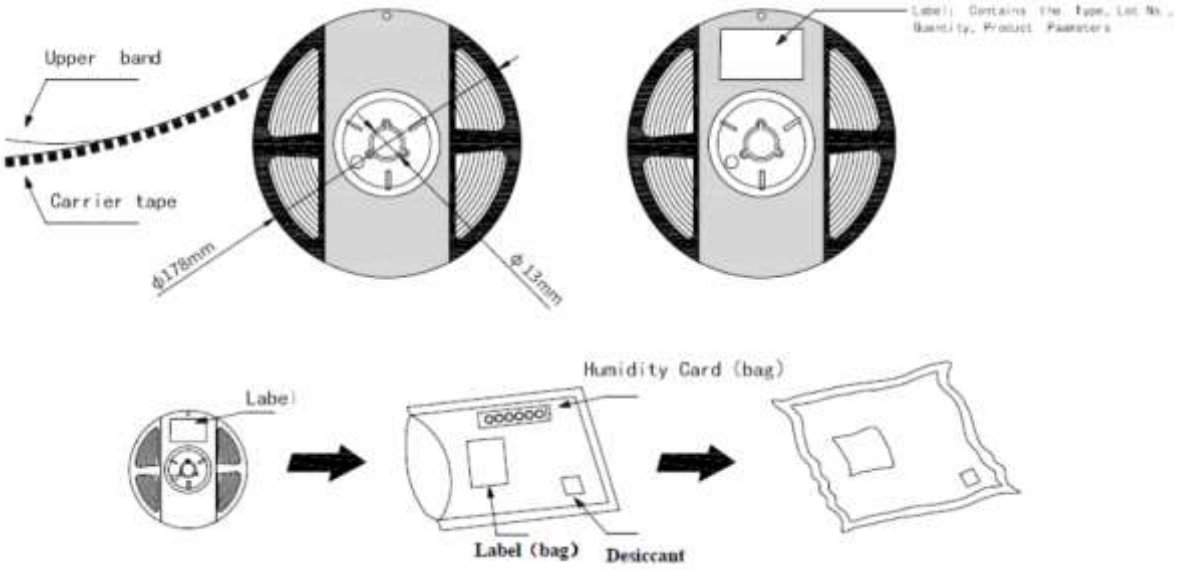
PACKING SPECIFICATION:

Reel Dimension:

Max.500pcs/reel



Cumulative Tolerance: Cumulative Tolerance/10 pitches to be ±0.2mm



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.

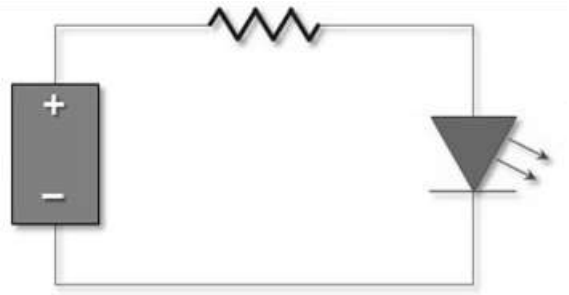
Baking:

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):

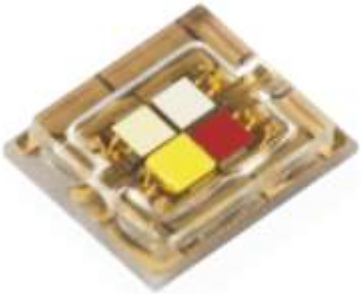
Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrosatic glove is recommended when handing the LED all time. All devices, equipment, machinery, work tables, and storage racks must be properly grounded.

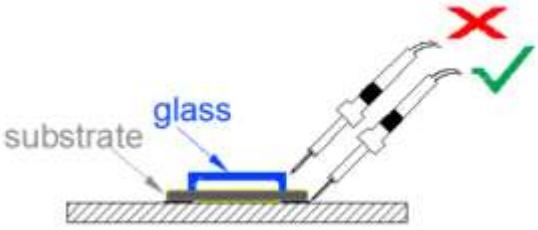
In the events of manual working in process, make sure the devices are well protected from ESD at any time.

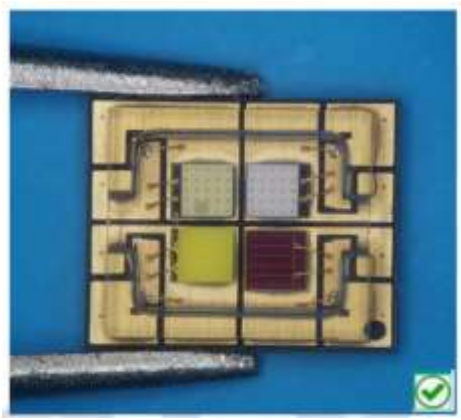
Precautions for taking the product (including glass):

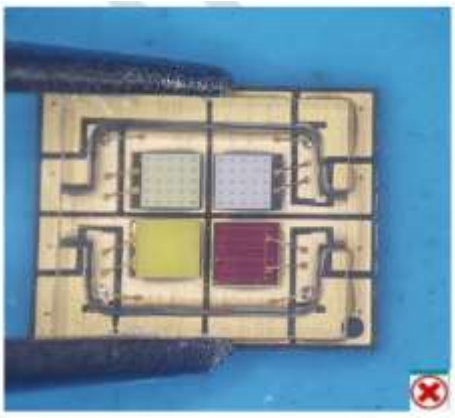
Product is packaged with glass cover to protect the light-emitting zone, please pay attention to the following matters:

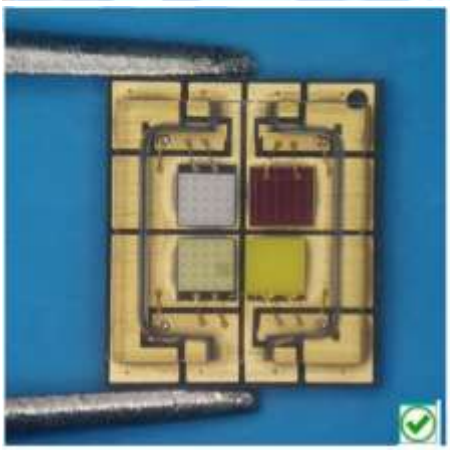
1. Please avoid the light-emitting area from being pressed, rubbed, and contact with sharp metal part which would damage the product.
2. Pay attention to the protection of LED surface to avoid damage, pollution, thus will affect normal optical characteristic.
3. Please use anti-static tweezer instead of hand when take LED device, and avoid touching glass, just take the edge of substrate (as below figure).
4. When repairing of the LEDS which have been soldered is unavoidable, a double-head soldering iron should be better to use, if using general electric soldering iron, do not touch light-emitting zone (glass).

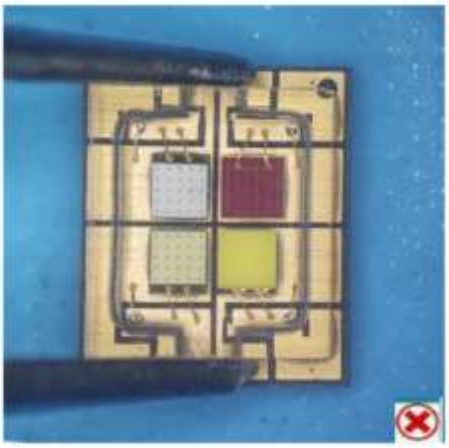












REVISION RECORD:

Version	Date	Summary of Revision
A1.0	11/05/2022	Datasheet set-up.
A1.1	12/05/2022	Add typical value at 2A current.
A1.2	24/05/2022	Revised bin ranges.