



# 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



- ▶ EMC SMD
- ▶ 5050 0.7t Series
- ▶ W/R/G/B 4-in-1

# NOM62S22



Release Date: 05 September 2022 Version: A1.0



5050 0.7t Series

## 5050 0.7t Series

**RoHS**  
Compliant



### FEATURES:

- **Package:** TOP View EMC WRGB SMT Package
- **Forward Current:** 150/150/150/150mA\*
- **Forward Voltage (typ.):** 3.2/2.3/3.2/3.2V
- **Luminous Flux (typ.):** 69/26/52/21lm@150mA
- **Colour:** Natural White/Red/Green/Blue
- **CCT/Wavelength:** 4000K/622/525/475nm
- **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:** 12mm tape with max.2000/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 <sub>F</sub>	180	mA
Pulse Forward Current (width≤100μS; duty≤1/10)	I <sub>FP</sub>	210	mA
Power Dissipation	P <sub>D</sub>	580/400/580/580*	mW
Reverse Voltage	V <sub>R</sub>	5	V
Reverse Current @5V	I <sub>R</sub>	1	μA
Junction Temperature	T <sub>j</sub>	120/110/120/120	°C
Thermal Resistance	R <sub>thj-sp</sub>	28/17/52/19	°C/W
Operating Temperature	T <sub>OPR</sub>	-40~+105	°C
Storage Temperature	T <sub>STG</sub>	-40~+105	°C
Soldering Temperature	T <sub>SOL</sub>	230 or 260 for 10S	°C

\* in order of White/Red/Green/Blue

### Electrical & Optical Characteristics (Ta=25°C)

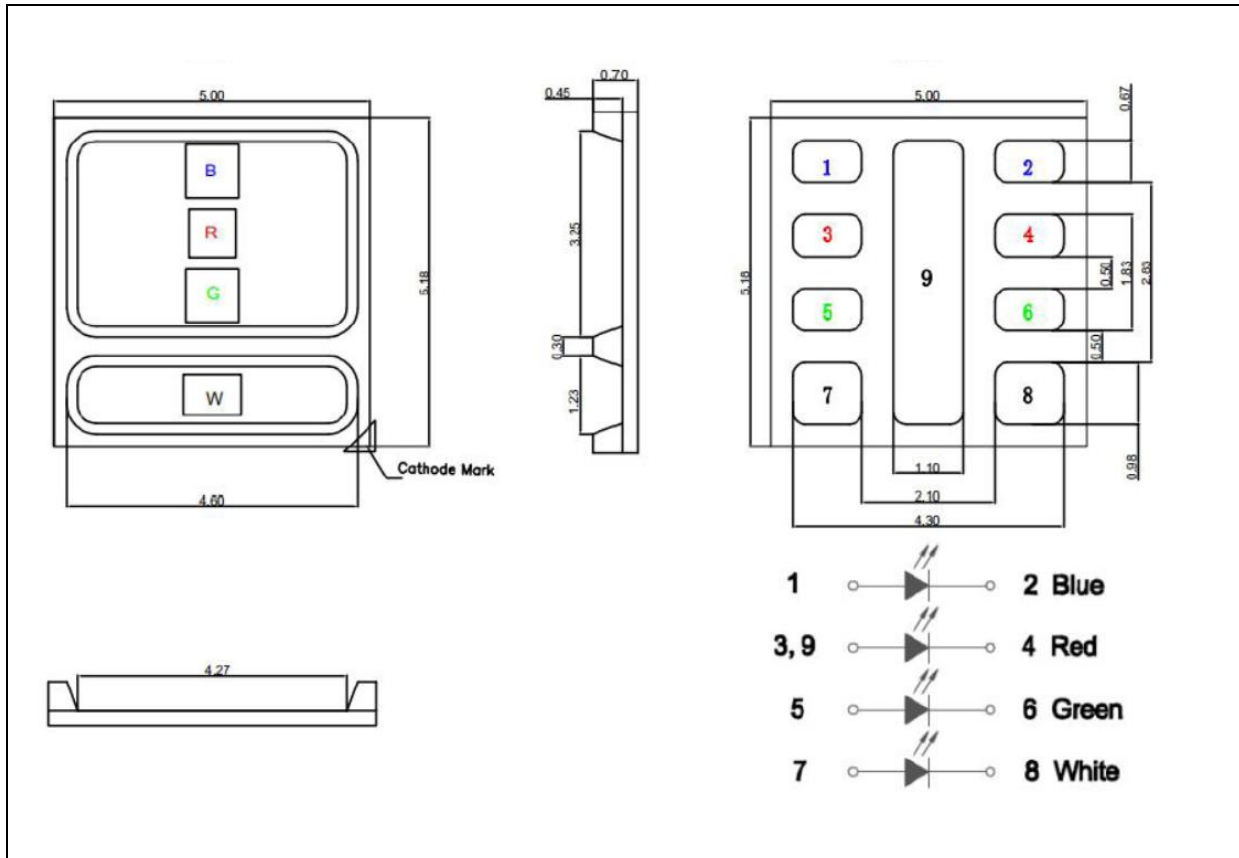
Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V <sub>F</sub>	2.8/1.9/2.8/2.8*	3.2/2.2/3.2/3.2	3.6/2.5/3.6/3.6	V	I <sub>F</sub> =150mA
Luminous Flux	Φ <sub>v</sub>	50/15/30/10	69/26/52/21	100/35/60/30	lm	I <sub>F</sub> =150mA
White Colour Temperature	CCT	---	4000	---	K	I <sub>F</sub> =150mA
R/G/B Dominant Wavelength	λ <sub>D</sub>	618/520/470	622/525/475	625/530/480	nm	I <sub>F</sub> =150mA
Viewing Angle	2θ <sub>1/2</sub>	---	120	---	deg	I <sub>F</sub> =150mA

1. Luminous flux (Φ<sub>v</sub>) ±10%, Forward Voltage (V<sub>F</sub>) ±0.1V
2. \* in order of White/Red/Green/Blue



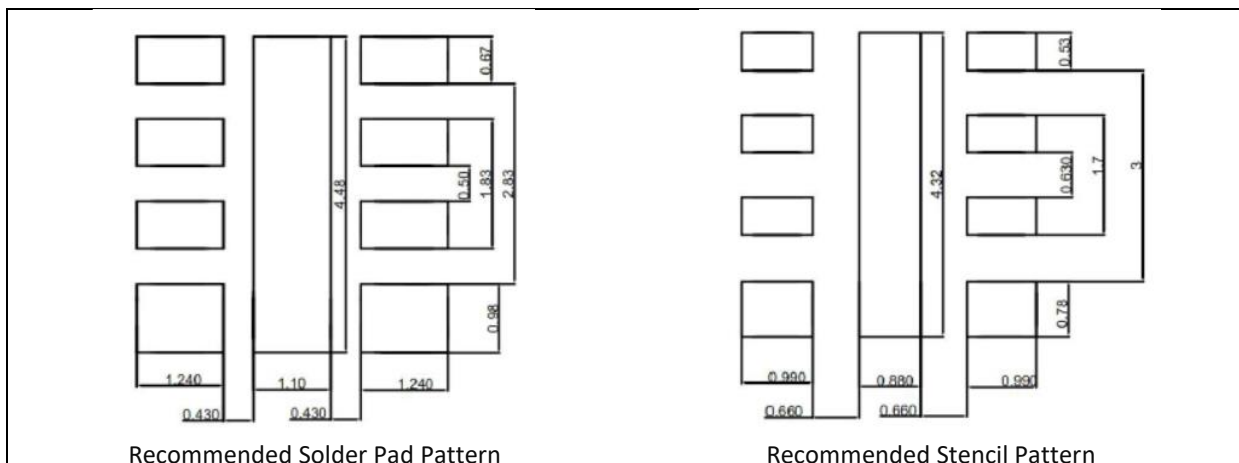
## OUTLINE DIMENSION:

### Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance  $\pm 0.2\text{mm}$ , unless otherwise noted.

### Recommended Soldering Pad Dimension:



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

## BINNING GROUPS:

Forward Voltage Classifications ( $I_F = 150\text{mA}$ ):

Code		Min.	Max.	Unit
White	WV1	2.8	3.6	V
Red	RV1	1.9	2.5	V
Green	GV1	2.8	3.6	V
Blue	BV1	2.8	3.6	V

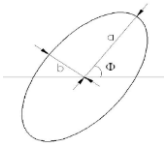
Luminous Flux Classifications ( $I_F = 150\text{mA}$ ):

Code		Min.	Max.	Unit
White	EW1	50	100	lm
Red	ER1	15	35	lm
Green	EG1	30	60	lm
Blue	EB1	10	30	lm

Dominant Wavelength Classifications ( $I_F = 150\text{mA}$ ):

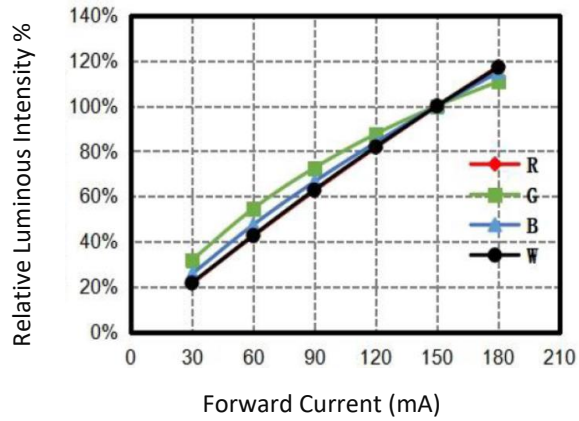
Code		Min.	Max.	Unit
Red	RB2	618	625	nm
Green	GC1	520	525	nm
	GC2	525	530	
Blue	BD1	470	475	nm
	BD2	475	480	

Chromaticity Coordinates Classifications ( $I_F = 150\text{mA}$ ):

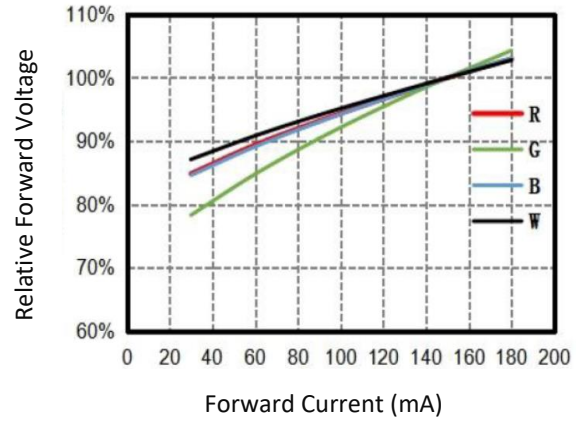
	Code	Centre		Radius		Angle
		X	Y	a	b	$\Phi$
	40M5	0.3818	0.3797	0.015650	0.006700	53.432

## ELECTRO-OPTICAL CHARACTERISTICS:

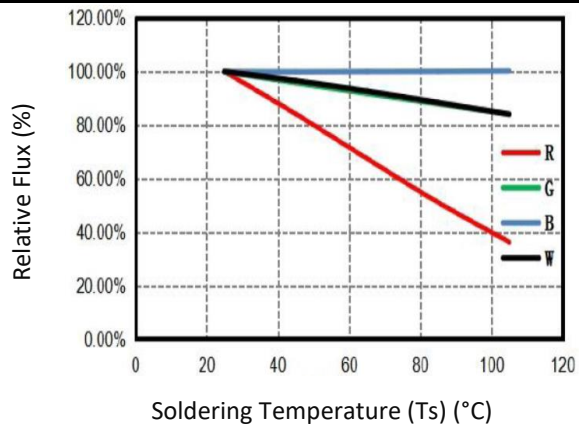
Relative Luminous Intensity v.s. Forward Current



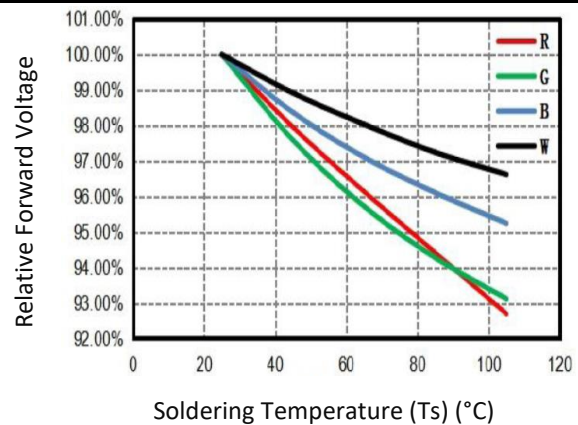
Forward Current v.s. Relative Forward Voltage



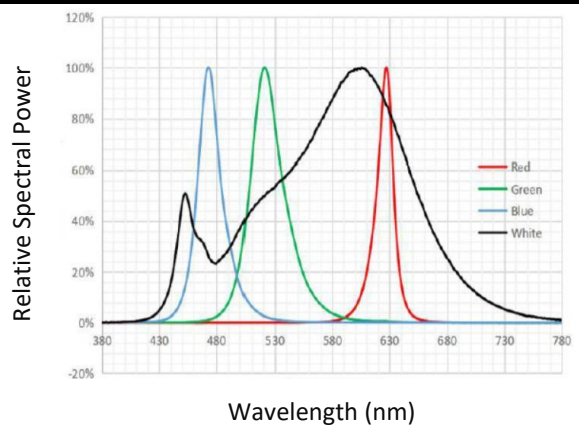
Relative Flux v.s. Soldering Temperature



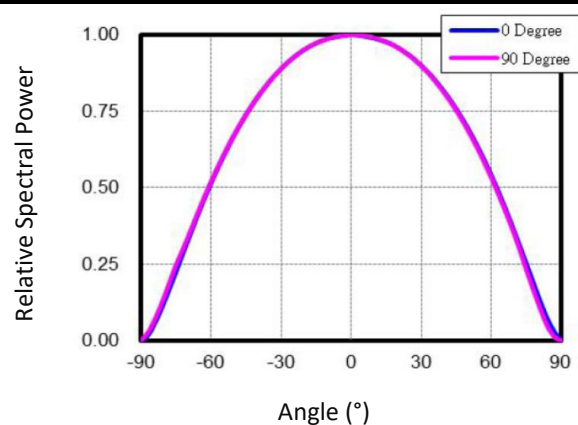
Forward Voltage v.s. Soldering Temperature



Luminous Spectrum

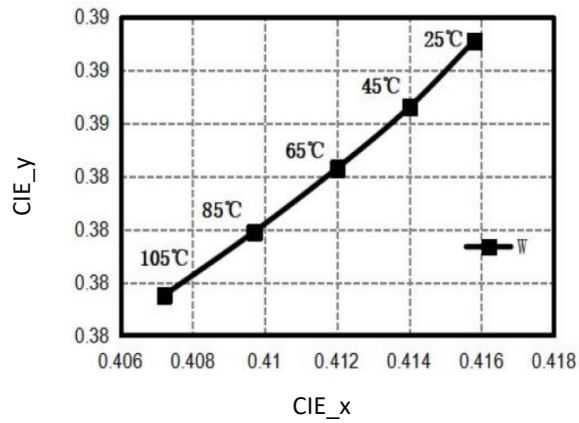


Directive Radiation

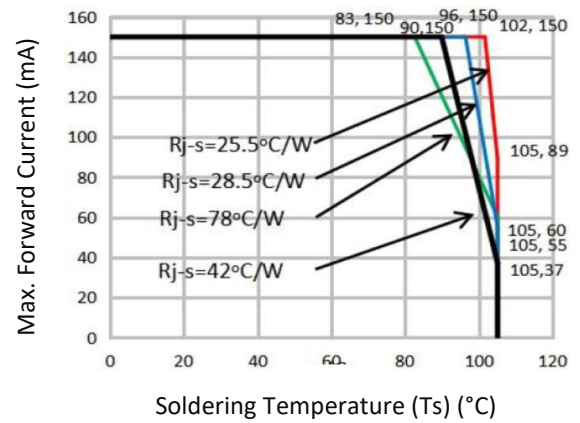


## ELECTRO-OPTICAL CHARACTERISTICS:

Colour Shift v.s. Soldering Temperature

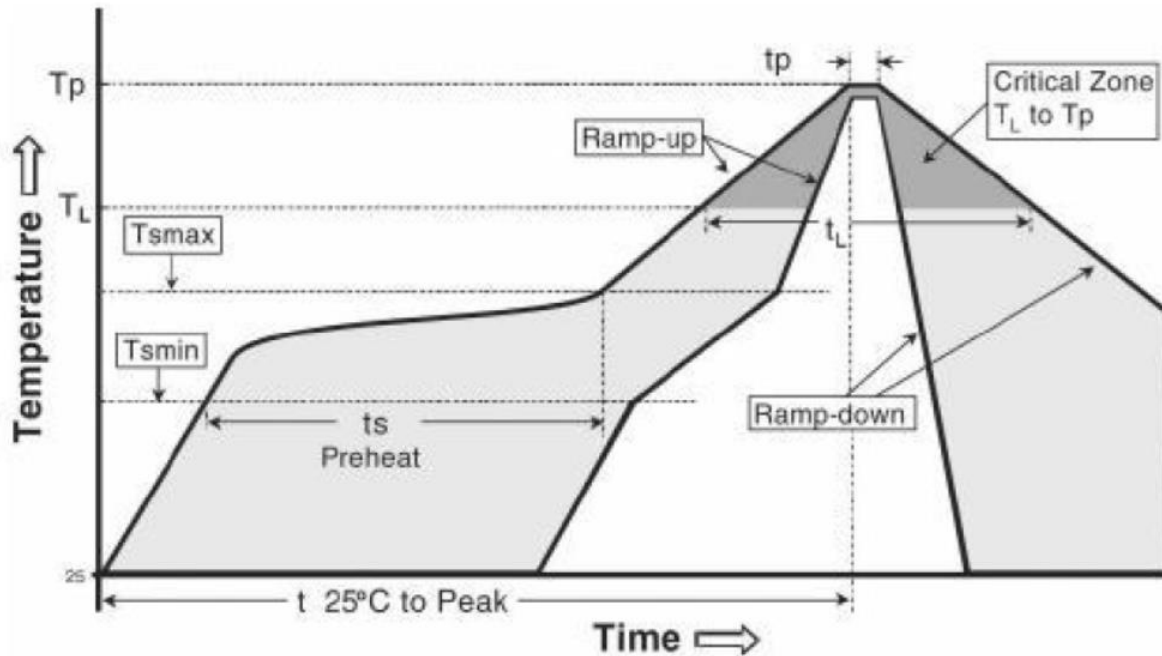


Soldering Temperature v.s. Max. Current



## RECOMMENDED SOLDERING PROFILE:

Reflow Lead-free Solder:



Temperature Min. (T <sub>smin</sub> )	150°C
Temperature Max. (T <sub>smax</sub> )	200°C
Period from T <sub>smin</sub> to T <sub>smax</sub>	60-120 seconds
Ramp-up Rate (T <sub>L</sub> to T <sub>p</sub> )	Max. 3°C/second
Liquidous Temperature (T <sub>L</sub> )	217°C
Time Maintained above T <sub>L</sub>	60-150 seconds
Peak Package Temperature (T <sub>p</sub> )	Max. 260°C
Time within 5°C of the Specified Classification Temperature T <sub>c</sub>	Max. 30 seconds
Ramp-down Rate (T <sub>p</sub> to T <sub>L</sub> )	Max. 6°C/second
Time from 25°C to Peak Temperature	Max. 8 mins

Note:

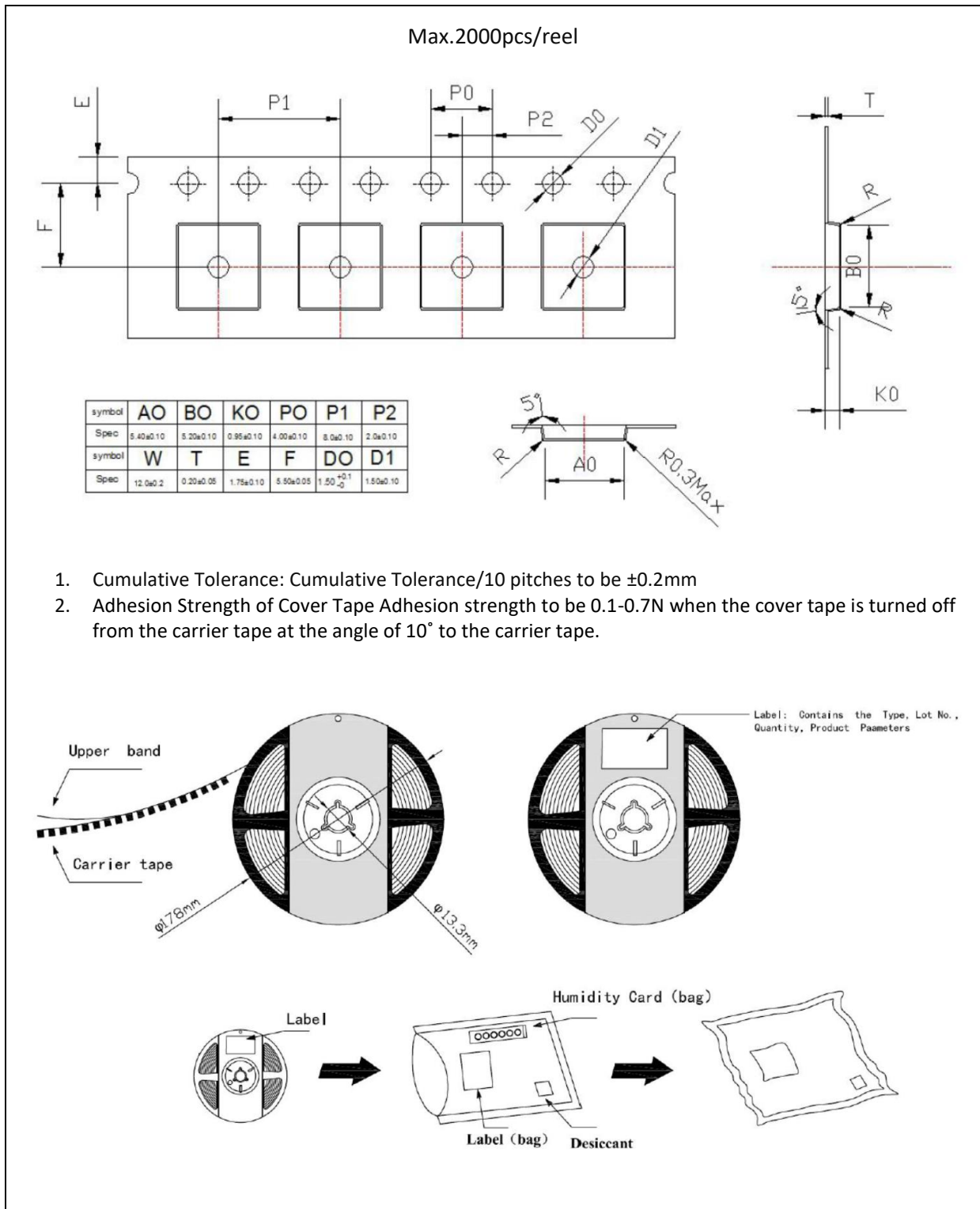
1. Die slug is to be soldered.
2. Maximum reflow soldering: 2 times. Between two soldering it should not be longer than 24 hours.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.
4. Recommended soldering temperature: 230°C. The maximum soldering temperature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





## PACKING SPECIFICATION:

Reel Dimension:





## PRECAUTIONS OF USE:

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### 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±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-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:**

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Version	Date	Summary of Revision
A1.0	05/09/2022	Datasheet set-up.