



**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

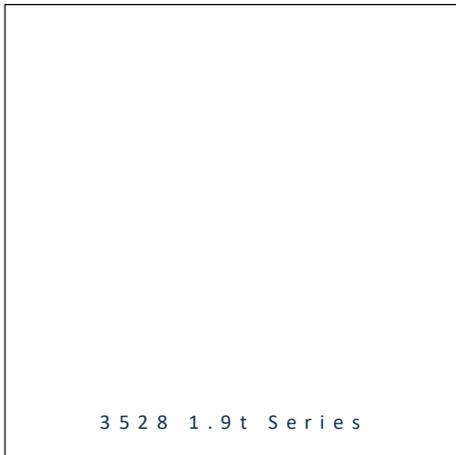


- ▶ PLCC4 SMD
- ▶ 3528 1.9t Series
- ▶ Red (625nm) / Green (570nm)

NOD64S69



Release Date: 20 May 2023 Version: A1.0



3528 1.9t Series

### 3528 1.9t Series

**RoHS**  
Compliant



#### FEATURES (Red/Green):

- **Package:** PLCC4 Dual Colour White SMD Package
- **Forward Current:** 20/20mA\*
- **Forward Voltage (typ.):** 1.9/2.1V
- **Luminous Intensity (typ.):** 210/90mcd@20mA
- **Colour:** Red/Green
- **Dominant Wavelength (typ.):** 625/570nm
- **Viewing Angle:** 120/120°
- **Materials:**
  - Resin: Silicone (Water Clear)
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+100°C
- **Grouping Parameters:**
  - Forward voltage
  - Luminous intensity
  - Dominant wavelength
- **Soldering Methods:** IR Reflow soldering
- **Preconditioning:** MSL 2a according to JEDEC
- **Packing:** 8mm tape with max.2000pcs/reel, ø180mm (7")

\* In the order of Red/Green.

#### APPLICATIONS:

- Decoration Lighting
- Light Strip
- Display
- Commercial Lighting
- Consumer Goods

## CHARACTERISTICS:

### Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Forward Current	I <sub>F</sub>	30/30*	mA
Pulse Forward Current Duty 1/10, Width 0.1ms	I <sub>PF</sub>	100	mA
Power Dissipation	P <sub>D</sub>	80	mW
Reverse Voltage	V <sub>R</sub>	5	V
Reverse Current @5V	I <sub>R</sub>	10	μA
Junction Temperature	T <sub>j</sub>	110	°C
Soldering Temperature	T <sub>sol</sub>	260	°C
Electrostatic Discharge (HBM)	ESD	2000	V
Operating Temperature	T <sub>OPR</sub>	-40~+85	°C
Storage Temperature	T <sub>STG</sub>	-40~+100	°C

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

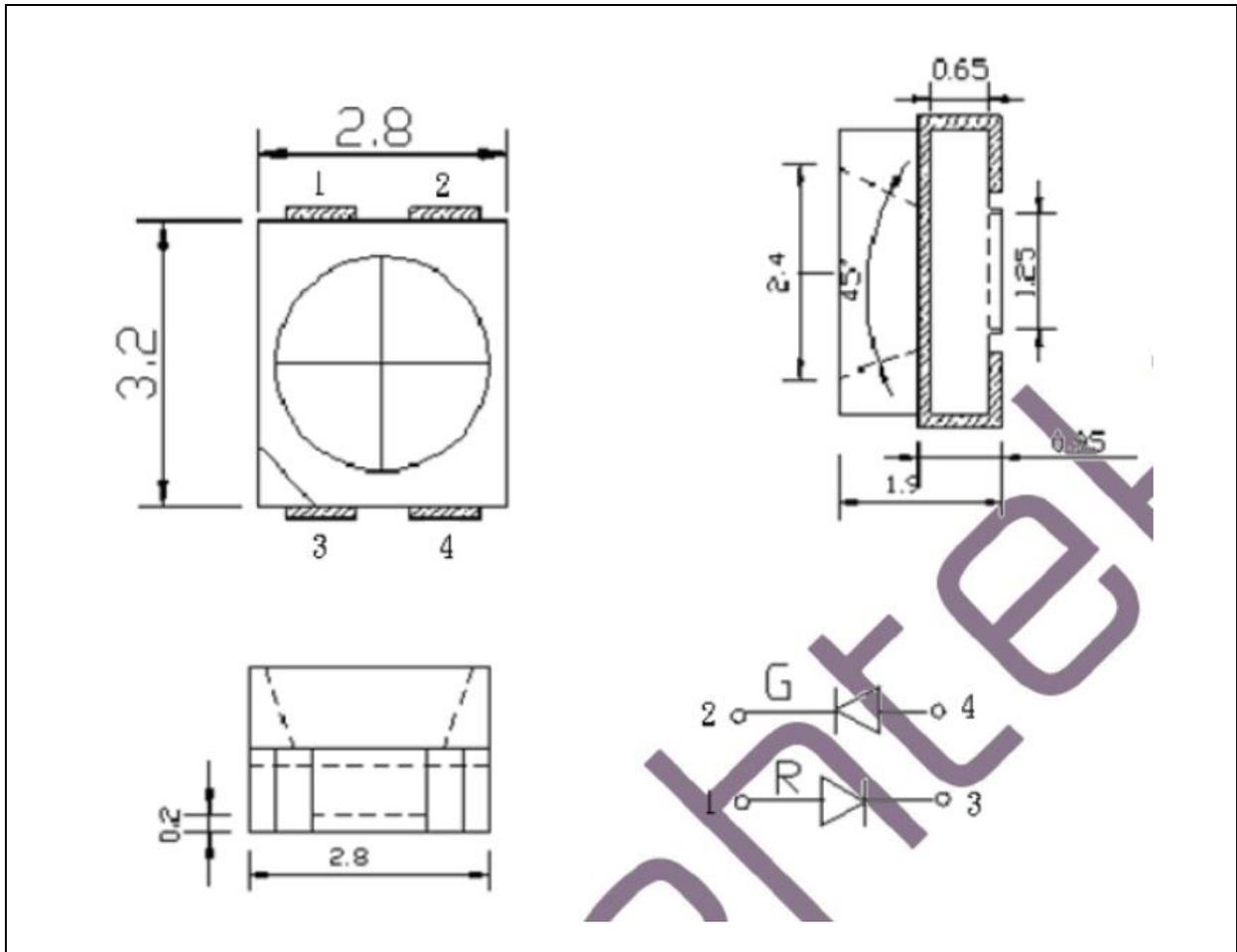
### Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Red - Forward Voltage	V <sub>F</sub>	1.7	1.9	2.4	V	I <sub>F</sub> =20mA
Red - Luminous Intensity	I <sub>v</sub>	120	210	---	mcd	I <sub>F</sub> =20mA
Red - Wavelength	W <sub>P</sub>	620	---	630	nm	I <sub>F</sub> =20mA
Green - Forward Voltage	V <sub>F</sub>	1.7	2.1	2.4	V	I <sub>F</sub> =20mA
Green - Luminous Intensity	I <sub>v</sub>	55	90	---	mcd	I <sub>F</sub> =20mA
Green - Wavelength	W <sub>P</sub>	565	---	580	nm	I <sub>F</sub> =20mA
Viewing Angle	2θ <sub>1/2</sub>	---	120	---	deg	I <sub>F</sub> =20mA

1. Luminous intensity (I<sub>v</sub>) ±5%, Forward Voltage (V<sub>F</sub>) ±0.1V

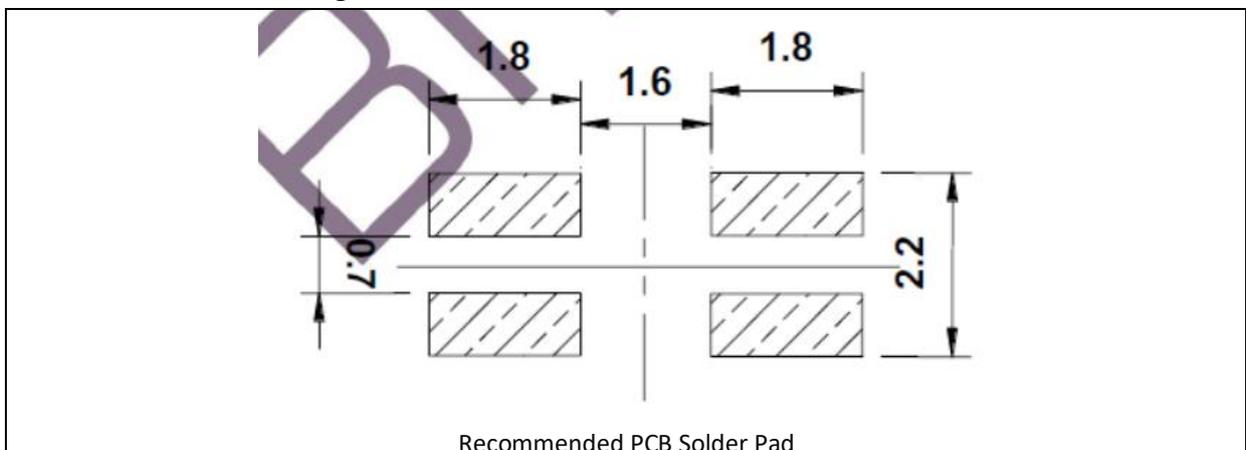
## OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance  $\pm 0.1\text{mm}$ , 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:**


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

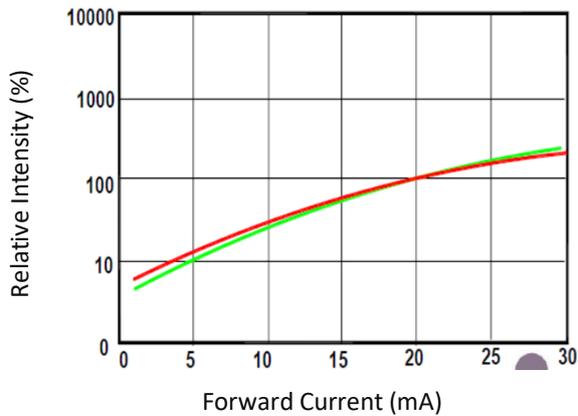
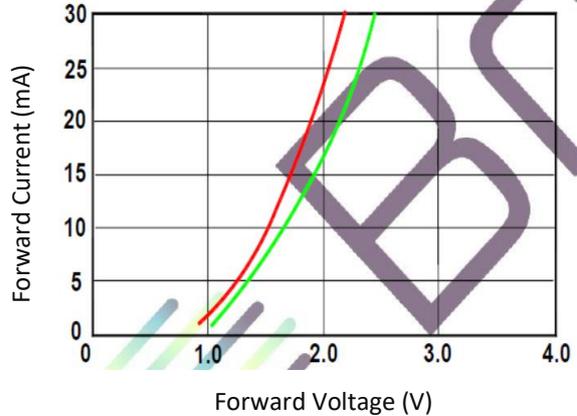
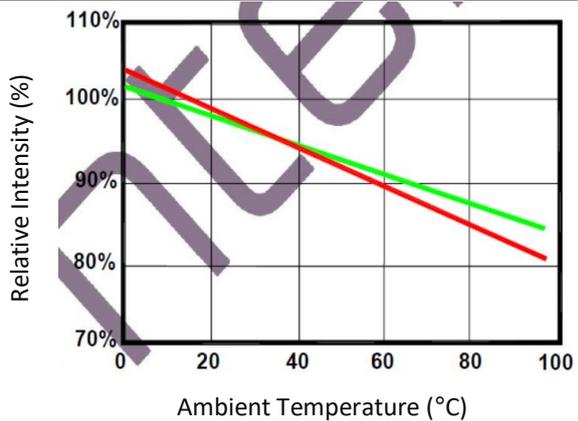
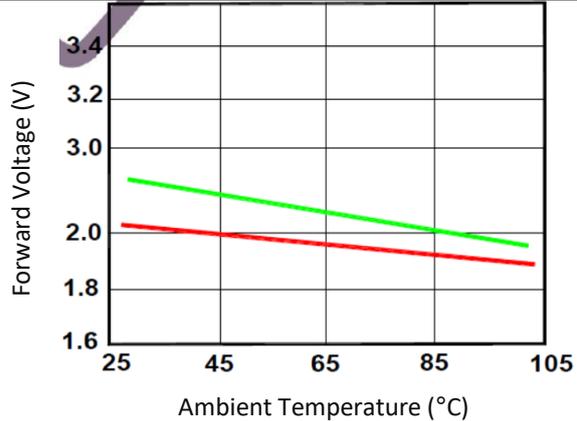
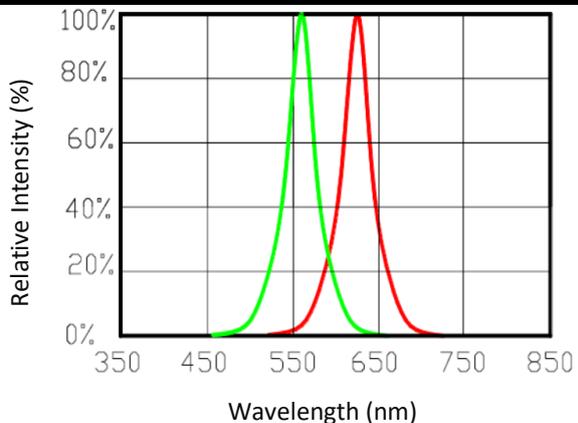
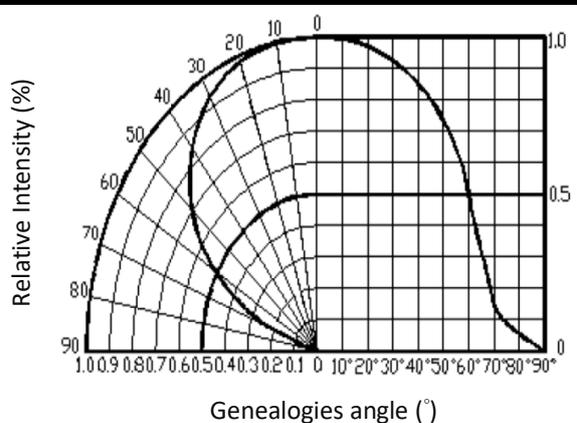
Code		Min.	Max.	Unit
Red	C	1.7	1.9	V
	D	1.9	2.1	
	E	2.1	2.2	
	F	2.2	2.4	
Green	C	1.7	1.9	V
	D	1.9	2.1	
	E	2.1	2.2	
	F	2.2	2.4	

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

Code		Min.	Max.	Unit
Red	7	120	160	mcd
	8	160	210	
	9	210	270	
	10	270	350	
	11	350	460	
Green	4	55	70	mcd
	5	70	90	
	6	90	120	
	7	120	160	
	8	160	210	

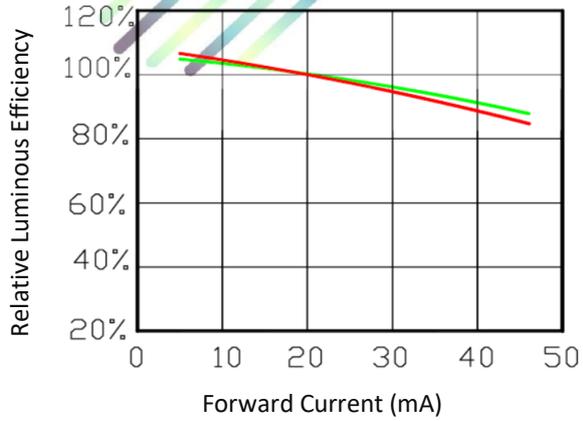
 Dominant Wavelength Classifications ( $I_F = 20\text{mA}$ ):

Code		Min.	Max.	Unit
Red	C	620	625	nm
	D	625	630	
Green	F	565	570	nm
	G	570	575	
	H	575	580	

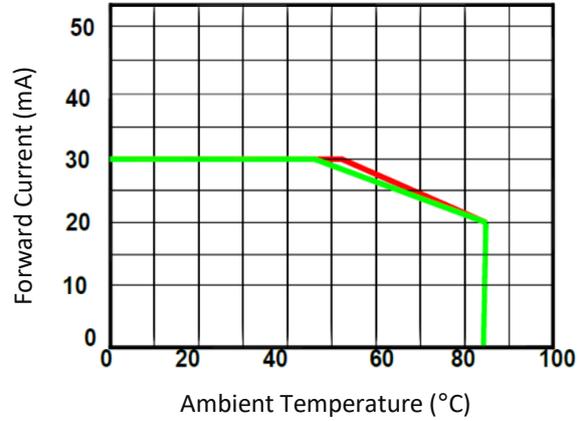
**ELECTRO-OPTICAL CHARACTERISTICS:**
**Relative Intensity v.s. Forward Current**

**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:**

Efficiency v.s. Forward Current

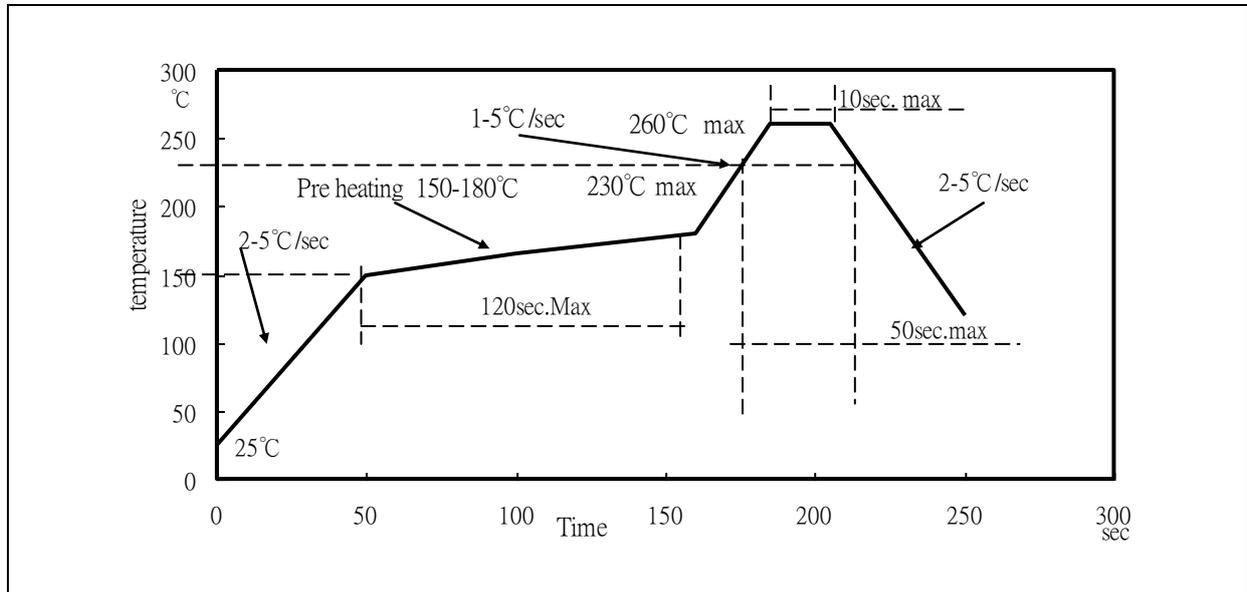


Maximum Current v.s. Ambient Temperature



## RECOMMENDED SOLDERING PROFILE:

### Lead-free Solder:

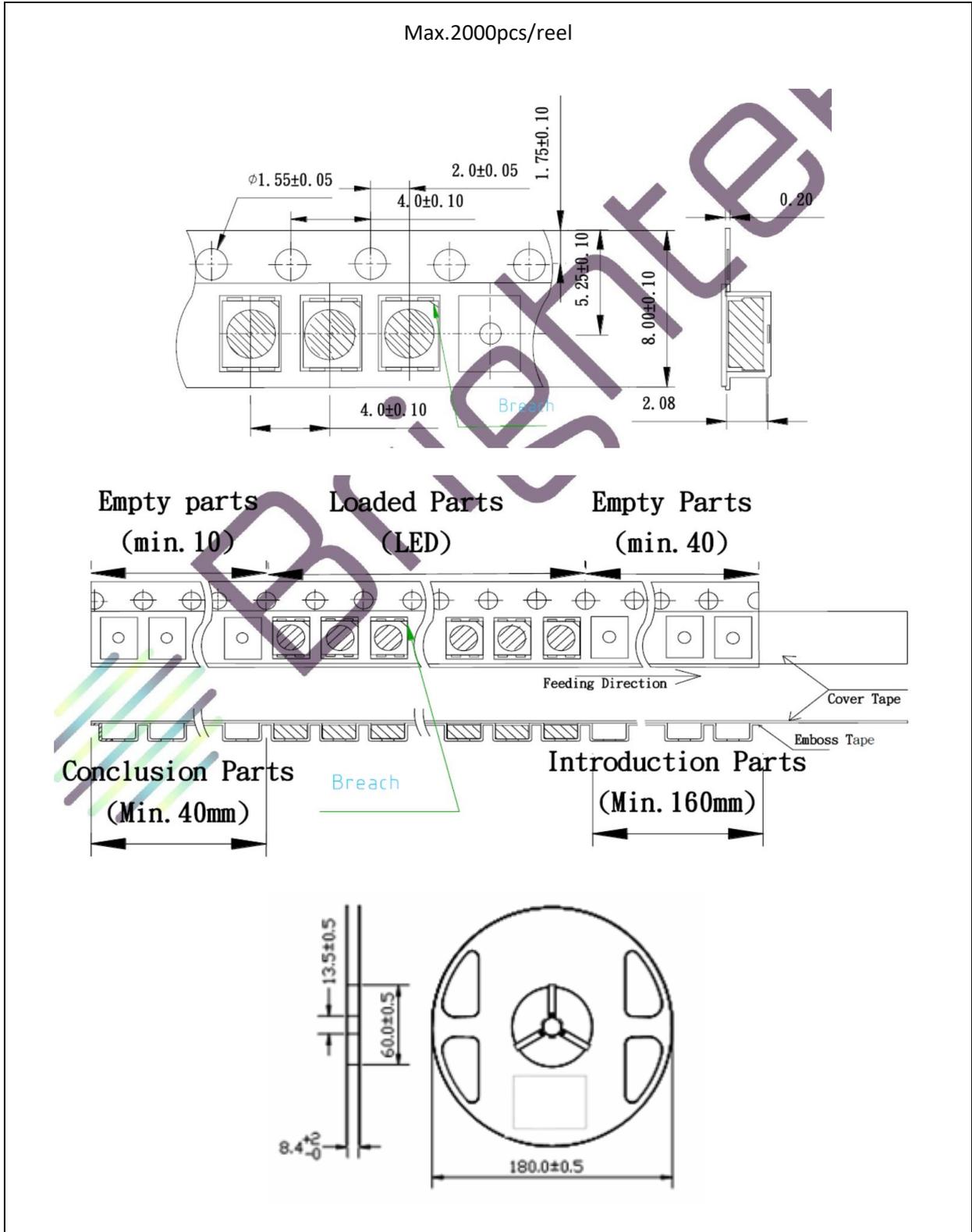


### Note:

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

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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.

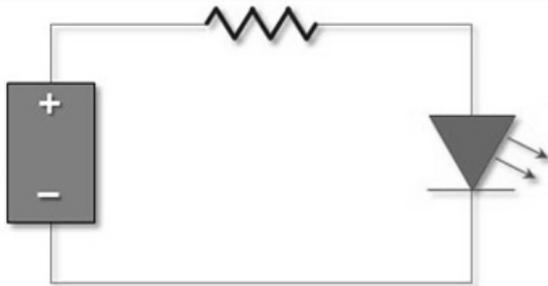
### Baking:

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 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	20/05/2023	Datasheet set-up.