



**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

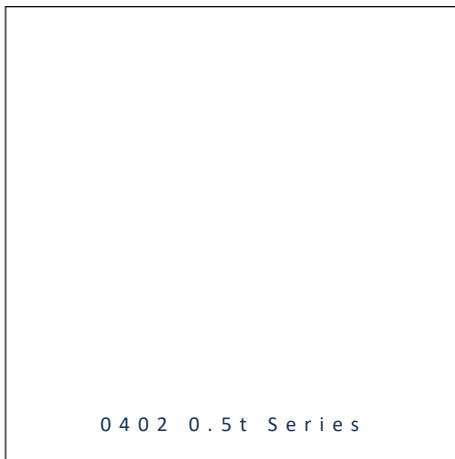


- ▶ PCB / CHIP LED
- ▶ 0402 (1005) 0.5t
- ▶ Warm White (2700K)

NOW50S48



Release Date: 12 December 2019 Version: A1.0



### 0402 0.5t Series

**RoHS**  
Compliant



#### FEATURES:

- **Package:** PCB / CHIP Top View SMT LED
- **Forward Current:** 20mA
- **Forward Voltage (typ.):** 3.1V
- **Luminous Intensity (typ.):** 180mcd @20mA
- **Colour:** Warm White
- **CCT:** 2700K
- **Viewing angle:** 150°
- **Materials:**
  - Die: InGaN
  - Resin: Epoxy (Yellow Diffused)
- **Operating Temperature:** -40~+80°C
- **Storage Temperature:** -40~+85°C
- **Grouping parameters:**
  - Forward voltage
  - Luminous intensity
  - CIE Chromaticity
- **Soldering methods:** Reflow soldering
- **Preconditioning:** acc. to JEDEC Level 3
- **Packing:** 8mm tape with max.5000/reel, ø180mm (7")

#### APPLICATIONS:

- LED Display Backlighting
- Indicator
- Consumer Goods
- 3C Products

## CHARACTERISTICS:

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

Parameter	Symbol	Ratings	Unit
Forward Current	I <sub>F</sub>	30	mA
Peak Forward Current Duty 1/8@1KHz	I <sub>FP</sub>	125	mA
Reverse Voltage	V <sub>R</sub>	5	V
Reverse Current @5V	I <sub>R</sub>	10	μA
Power Dissipation	P <sub>D</sub>	111	mW
Operating Temperature	T <sub>OPR</sub>	-40~+80	°C
Storage Temperature	T <sub>STG</sub>	-40~+85	°C

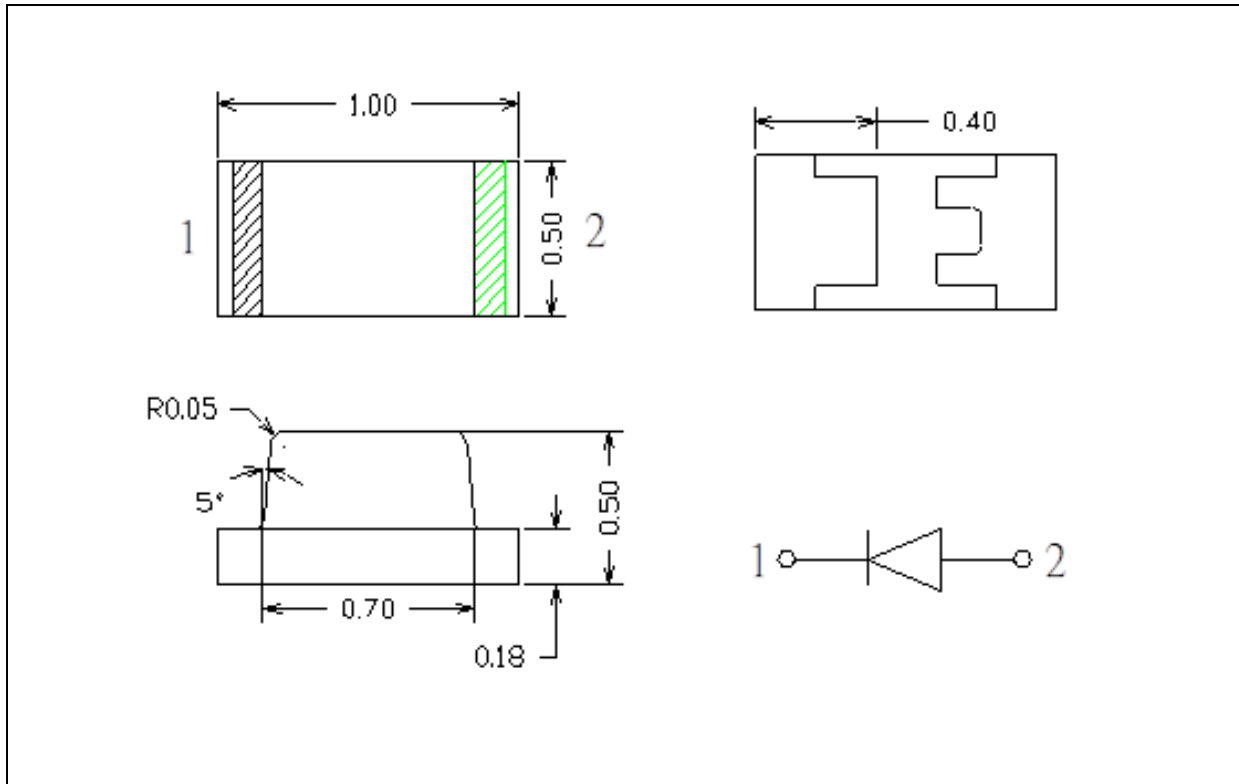
### Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V <sub>F</sub>	2.8	3.1	3.7	V	I <sub>F</sub> =20mA
Luminous Intensity	I <sub>v</sub>	100	180	320	mcd	I <sub>F</sub> =20mA
Chromaticity Coordinates	X	---	0.4500	---	---	I <sub>F</sub> =20mA
	Y	---	0.4040	---		
Colour Temperature	CCT	2000	---	3400	K	I <sub>F</sub> =20mA
Viewing Angle	2θ <sub>1/2</sub>	---	150	---	deg	I <sub>F</sub> =20mA

- Luminous intensity (I<sub>v</sub>) ±15%, Forward Voltage (V<sub>F</sub>) ±0.1V, Viewing angle(2θ<sub>1/2</sub>) ±5%

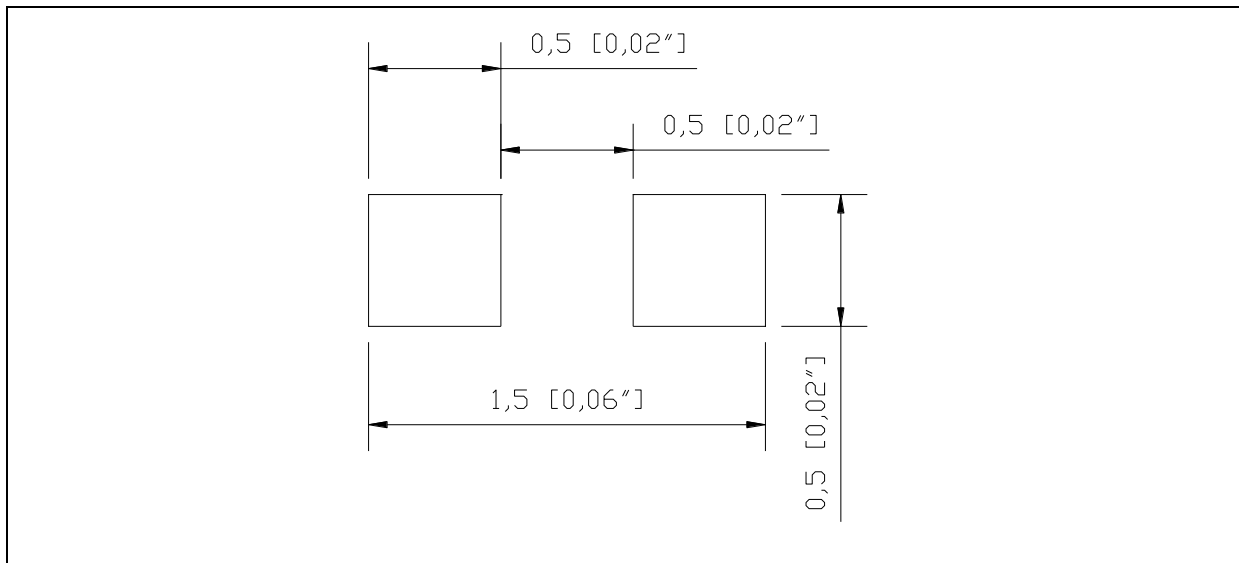
## OUTLINE DIMENSION:

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:**


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

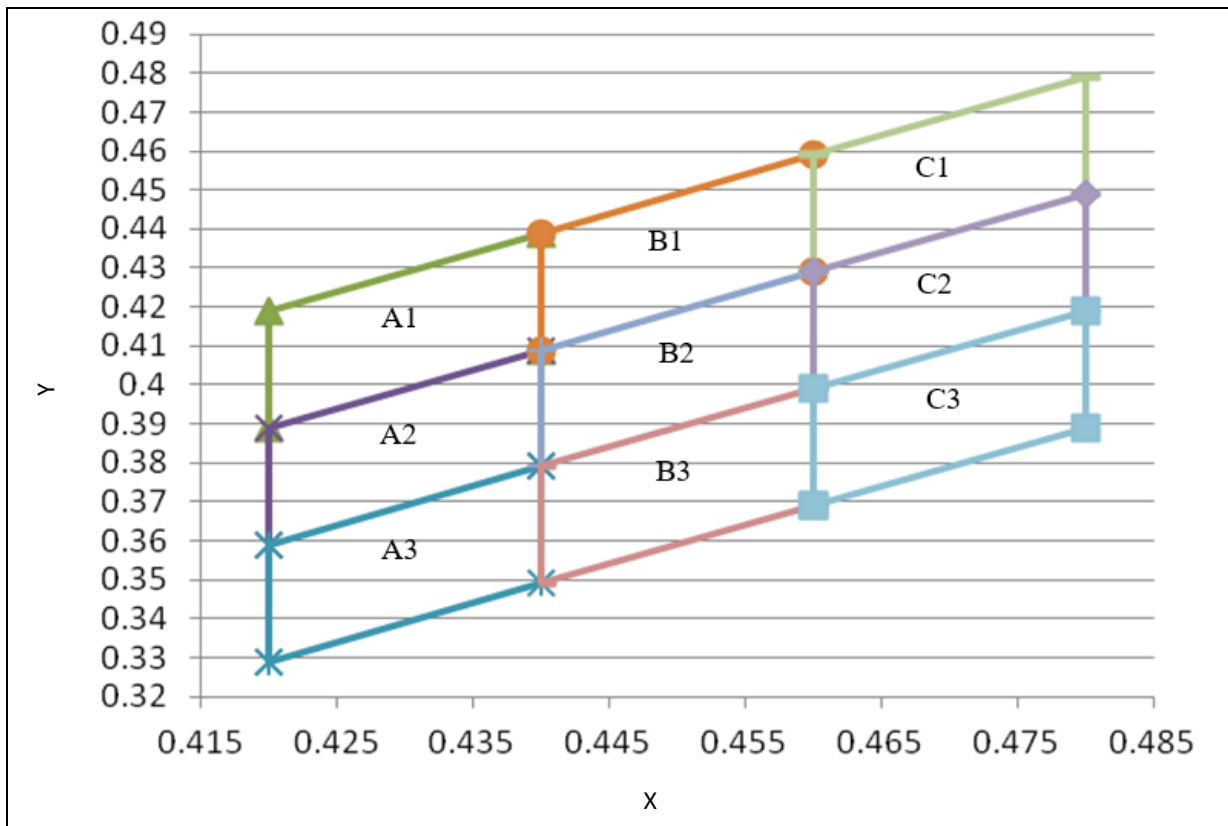
Code	Min.	Max.	Unit
f	2.8	3.1	V
g	3.1	3.4	
h	3.4	3.7	

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

Code	Min.	Max.	Unit
J	100	125	mcd
K	125	160	
L	160	200	
M	200	250	
N	250	320	

Example Group Name on Label:

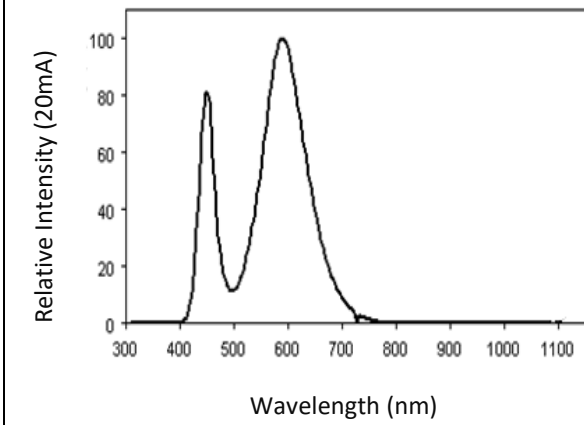
- gMB2 20 = g (3.1~3.4V) ▶ M (200~250mcd) ▶ B2 (X(0.4400~0.4600)/Y(0.3790~0.4290) ▶ 20 (IF=20mA)**

**CIE CHROMATICITY DIAGRAM:**

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

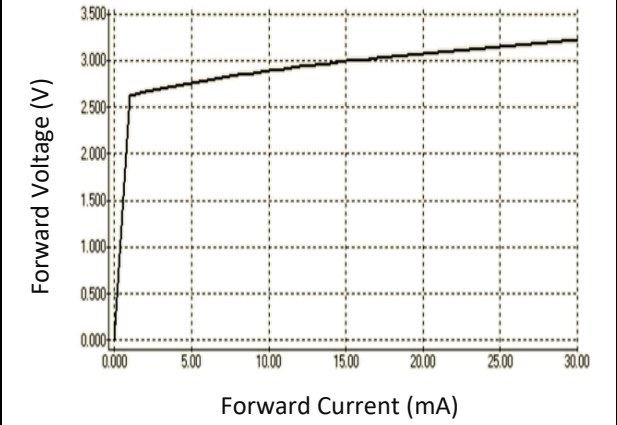
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
A1	0.4200	0.3890	0.4200	0.4190	0.4400	0.4390	0.4400	0.4090
A2	0.4200	0.3590	0.4200	0.3890	0.4400	0.4090	0.4400	0.3790
A3	0.4200	0.3290	0.4200	0.3590	0.4400	0.2790	0.4400	0.2490
B1	0.4400	0.4090	0.4400	0.4290	0.4600	0.4590	0.4600	0.4290
B2	0.4400	0.3790	0.4400	0.4090	0.4600	0.4290	0.4600	0.3990
B3	0.4400	0.3490	0.4400	0.3790	0.4600	0.4990	0.4600	0.3690
C1	0.4600	0.4290	0.4600	0.4590	0.4800	0.4790	0.4800	0.4490
C2	0.4600	0.3990	0.4600	0.4290	0.4800	0.4490	0.4800	0.4190
C3	0.4600	0.3690	0.4600	0.3990	0.4800	0.4190	0.4800	0.3890

**ELECTRO-OPTICAL CHARACTERISTICS:**

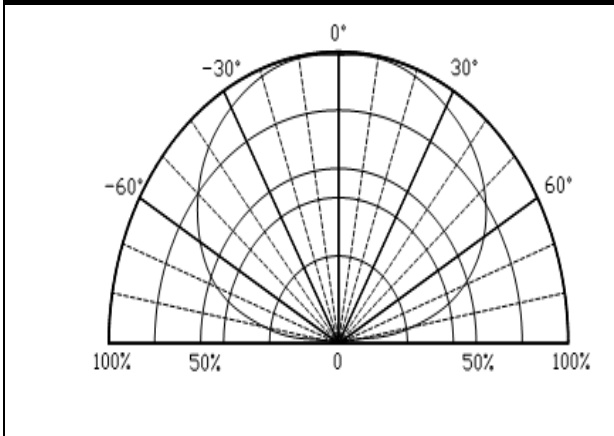
Relative Spectral Distribution



Forward Current v.s. Forward Voltage

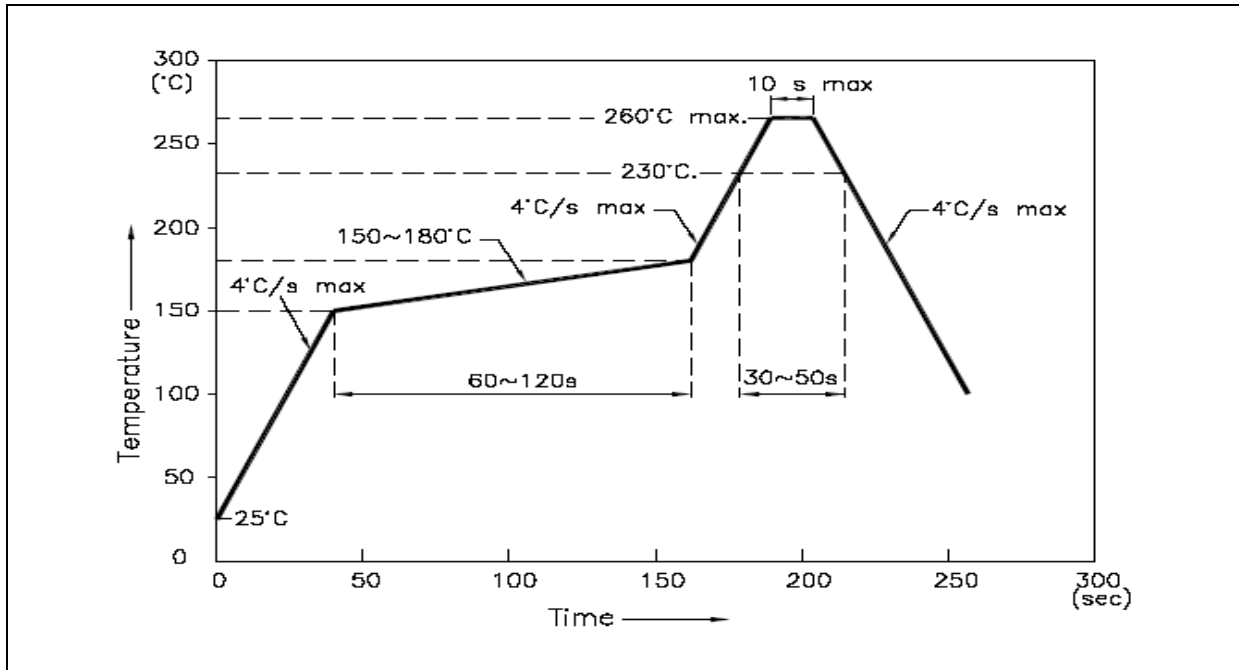


Directive Radiation



## RECOMMENDED SOLDERING PROFILE:

Lead-free Solder:

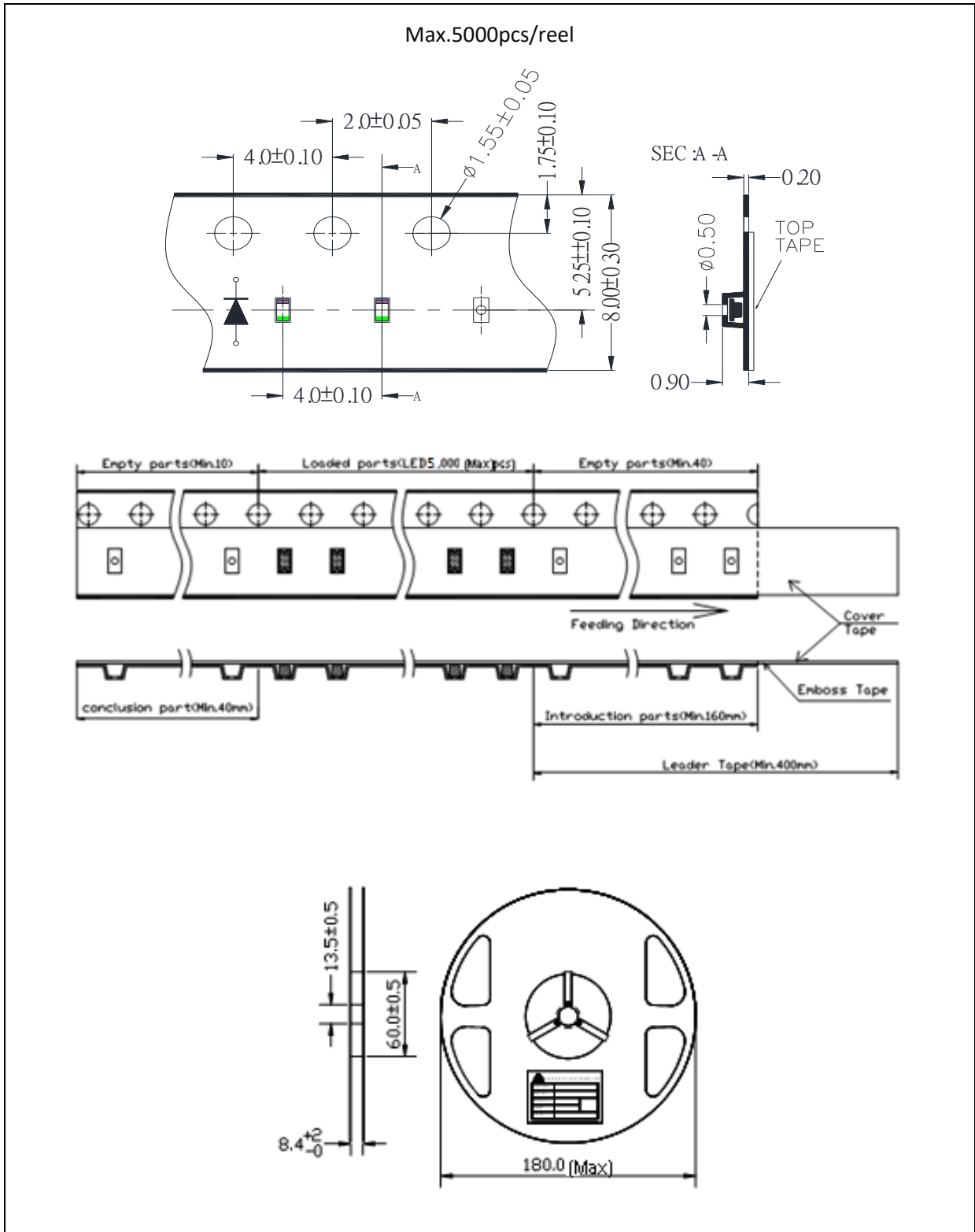


Note:

1. Recommend reflow temperature 245°C. The maximum soldering temperature should be limited to 260°C.
2. Maximum reflow soldering: 2 times.
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 and apply baking before use.

### Baking:

It is recommended to bake the LED before soldering if the pack has been unsealed for longer than 24 hours. 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-electrosatic 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	12/12/2019	Datasheet set-up.