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

- ▶ Ceramic SMD
- ▶ 3535 2.3t
- ▶ Warm White 3500K

Release Date: 03 March 2024 Version: A1.4

N0W56S35 (CRI 90)

3535 Ceramic Series

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RoHS Compliant

APPLICATIONS:

- General Lighting
- Portable Lighting
- Commercial Lighting
- Indoor Lighting
- Architecture Lighting
- High Bay Light

FEATURES:

- **Package:** Top View Ceramic Package
- **Forward Current:** 350~1000mA
- **Forward Voltage (typ.):** 2.9V
- **Luminous Flux (typ.):** 149lm@350mA
- **Colour:** Warm White
- **Colour Temperature (typ.):** 3500K
- **Viewing Angle:** 120°
- **Materials:**
  - Die: InGaN
  - Resin: Silicon (Yellow Diffused)
  - Package: Ceramic
- **Operating Temperature:** -40~+105°C
- **Storage Temperature:** -40~+85°C
- **Electrostatics Discharge:** 1000V
- **Grouping Parameters:**
  - Forward Voltage
  - Luminous Flux
  - CIE Chromaticity
- **Soldering Methods:** Reflow Soldering
- **MSL Level:** MSL3 according to J-STD020
- **Packing:** 12mm tape with max.900/reel, ø165mm (6.5'')

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
DC Forward Current	I_F	1000	mA
Pulse Forward Current (Duty 1/10, width≤100µS)	I_{PF}	1500	mA
Power Dissipation	P_D	3400	mW
Reverse Voltage	V_R	5	V
Reverse Current @10V	I_R	10	µA
Junction Temperature	T_j	125	°C
Electrostatic Discharge	ESD	1000	V
Thermal Resistance (Junction to Solder Point)	$R_{th(j-sp)}$	5	°C/W
Operating Temperature	T_{OPR}	-40~+105	°C
Storage Temperature	T_{STG}	-40~+85	°C
Soldering Temperature	T_{SOL}	230/260 for 10S	°C
Colour Rendering Index	CRI	min. 90 typ. 92	---

1. Rth(j-sp) is the thermal resistance from LED junction to solder point on MCPCB with electrical power.

CHARACTERISTICS:

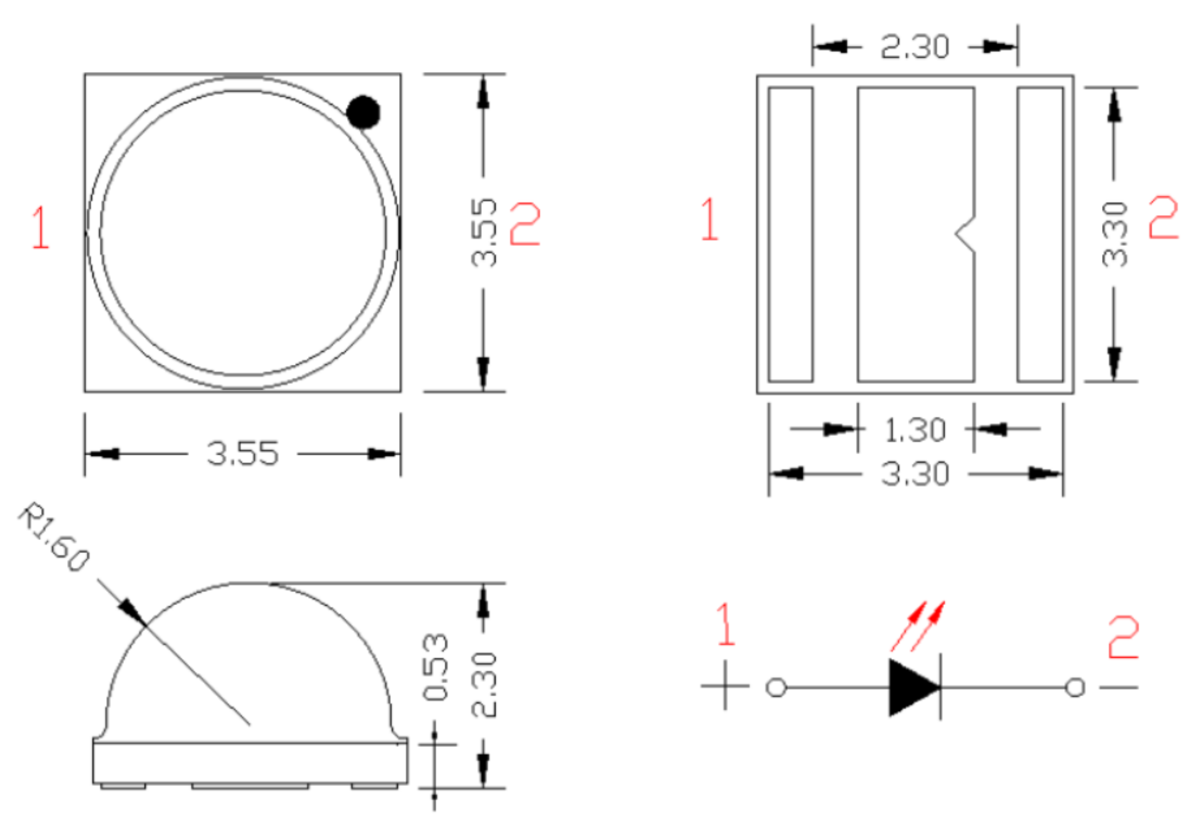
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	2.6	2.9	3.4	V	I_F=350mA
Luminous Flux (Tj=25°C)	Φ_V	130	149	---	lm	I_F=350mA
		---	278	---		I_F=700mA
Luminous Flux (Tj=85°C)	Φ_V	---	135	---	lm	I_F=350mA
		---	247	---		I_F=700mA
Chromaticity Coordinates	X	0.3889	---	0.4222	---	I_F=350mA
	Y	0.3690	---	0.4127		
Colour Temperature	CCT	---	3500	---	K	I_F=350mA
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	I_F=350mA

1. Luminous flux (Φ_V) ±10%, Forward Voltage (V_F) ±0.1V, CRI ±2

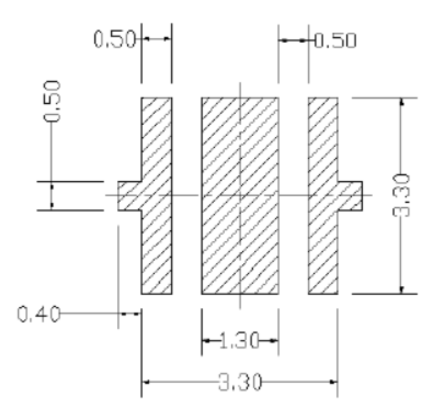
OUTLINE DIMENSION:

Package Dimension:

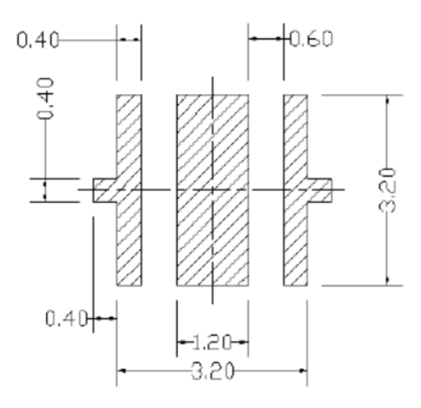


1. All dimensions are in millimetre (mm).
2. Tolerance ±0.2mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



Recommended PCB Solder Pad



Recommended Stencil Pad

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

BINNING GROUPS:

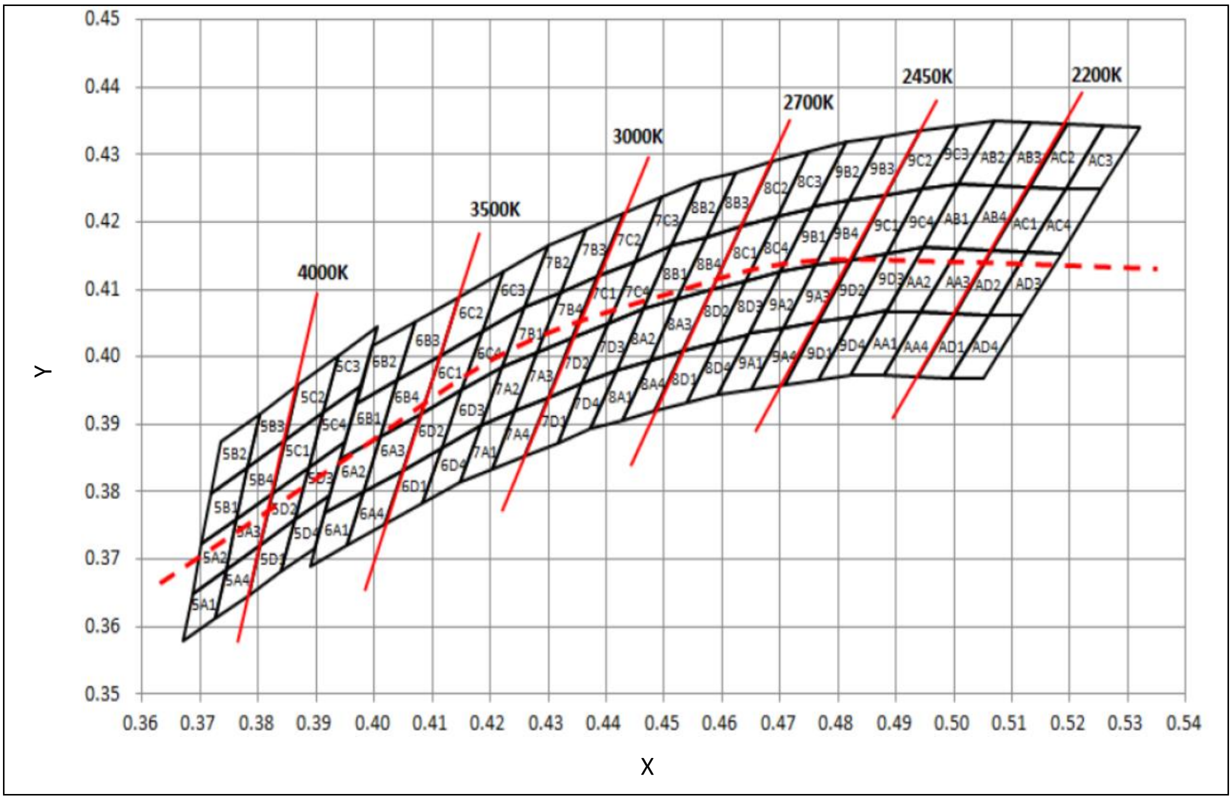
Forward Voltage Classifications (I_F = 350mA):

Code	Min.	Max.	Unit
G3	2.6	2.8	V
H3	2.8	3.0	
J3	3.0	3.2	
K3	3.2	3.4	

Luminous Flux Classifications (I_F = 350mA):

Code	Min.	Max.	Unit
2F	130	139	lm
2G	139	148	
2H	148	156	
2J	156	164	

CIE CHROMATICITY DIAGRAM:



Chromaticity Coordinates Classifications (I_F = 350mA):

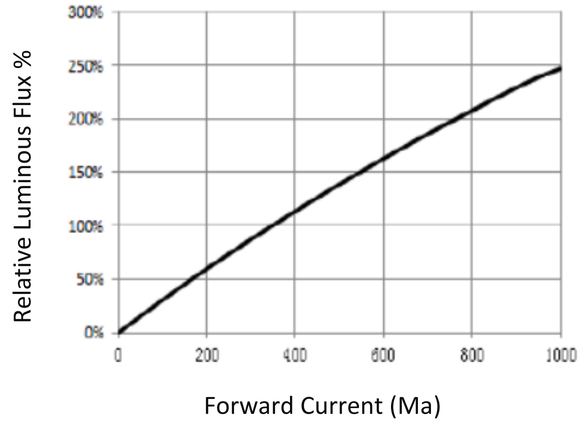
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
6C3	0.4186	0.4037	0.4222	0.4127	0.4299	0.4165	0.4259	0.4073
6C4	0.4150	0.3950	0.4186	0.4037	0.4259	0.4073	0.4221	0.3984
6D3	0.4116	0.3865	0.4150	0.3950	0.4221	0.3984	0.4183	0.3898
6D4	0.4082	0.3782	0.4116	0.3865	0.4183	0.3898	0.4147	0.3814
6C2	0.4113	0.4001	0.4146	0.4089	0.4222	0.4127	0.4186	0.4037
6C1	0.4080	0.3916	0.4113	0.4001	0.4186	0.4037	0.4150	0.3950
6D2	0.4048	0.3832	0.4080	0.3916	0.4150	0.3950	0.4116	0.3865
6D1	0.4017	0.3751	0.4048	0.3832	0.4116	0.3865	0.4082	0.3782
6B3	0.4040	0.3966	0.4071	0.4052	0.4146	0.4089	0.4113	0.4001
6B4	0.4010	0.3882	0.4040	0.3966	0.4113	0.4001	0.4080	0.3916
6A3	0.3981	0.3800	0.4010	0.3882	0.4080	0.3916	0.4048	0.3832
6A4	0.3953	0.3720	0.3981	0.3800	0.4048	0.3832	0.4017	0.3751

Chromaticity Coordinates Classifications (I_F = 350mA):

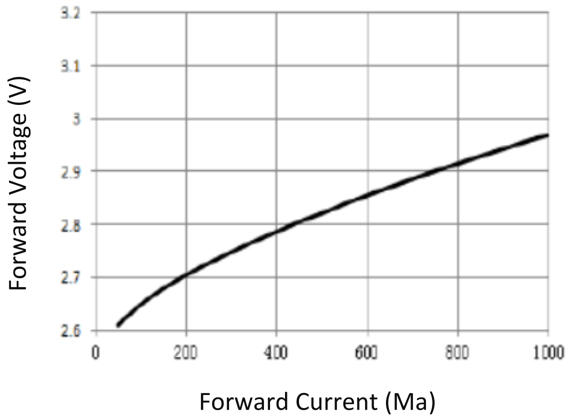
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
6B2	0.3968	0.3930	0.3996	0.4015	0.4071	0.4052	0.4040	0.3966
6B1	0.3941	0.3848	0.3968	0.3930	0.4040	0.3966	0.4010	0.3882
6A2	0.3915	0.3768	0.3941	0.3848	0.4010	0.3882	0.3981	0.3800
6A1	0.3889	0.3690	0.3915	0.3768	0.3981	0.3800	0.3953	0.3720

ELECTRO-OPTICAL CHARACTERISTICS:

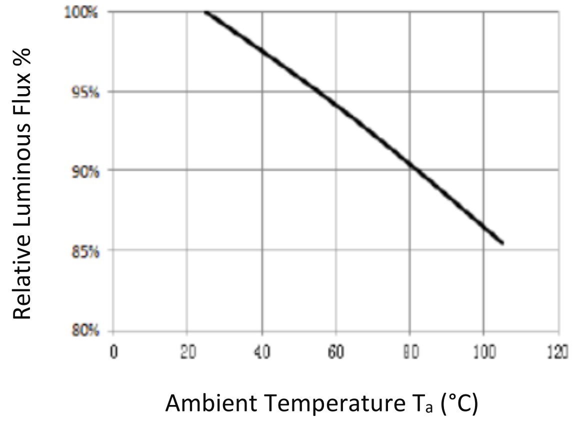
Relative Luminous Flux v.s. Forward Current



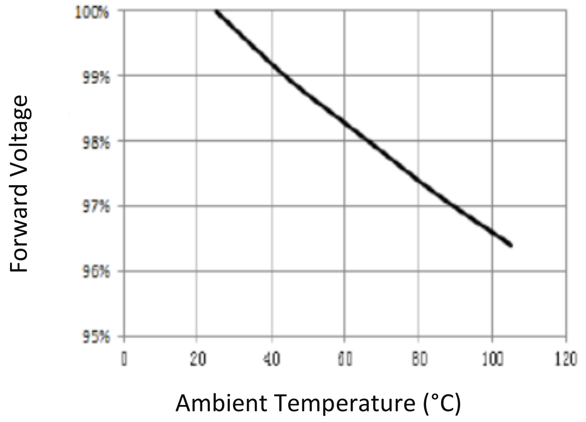
Forward Current v.s. Forward Voltage



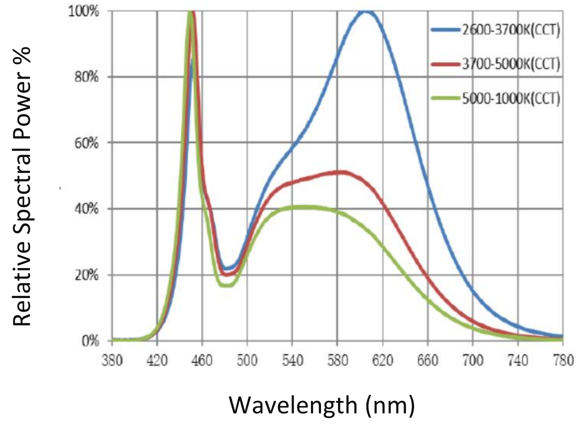
Relative Luminous Flux v.s. Ambient Temp.



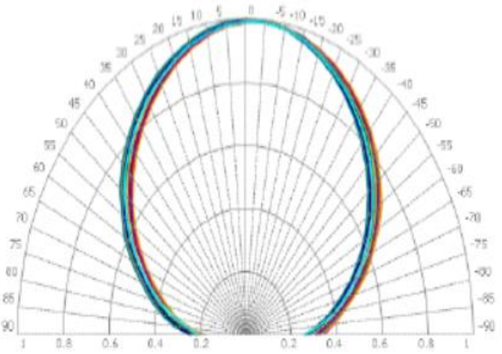
Forward Voltage v.s. Ambient Temp.



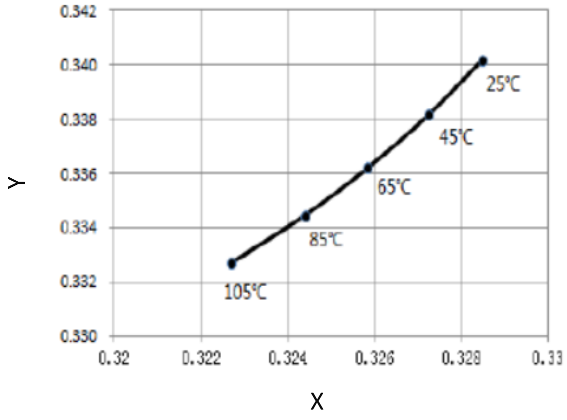
Relative Spectral Power v.s. Wavelength



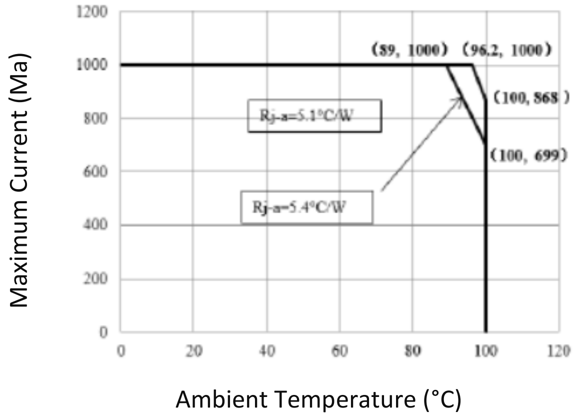
Directive Radiation



Ambient Temperature v.s. CIE X, Y Shift

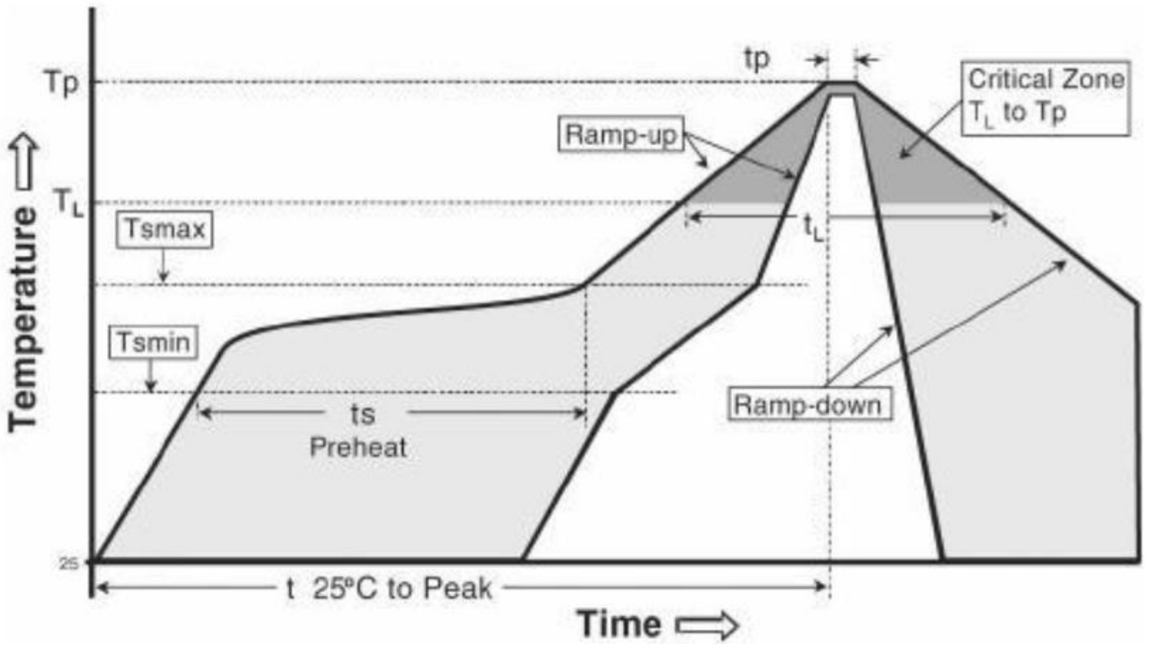


Forward Current Derating Curve



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

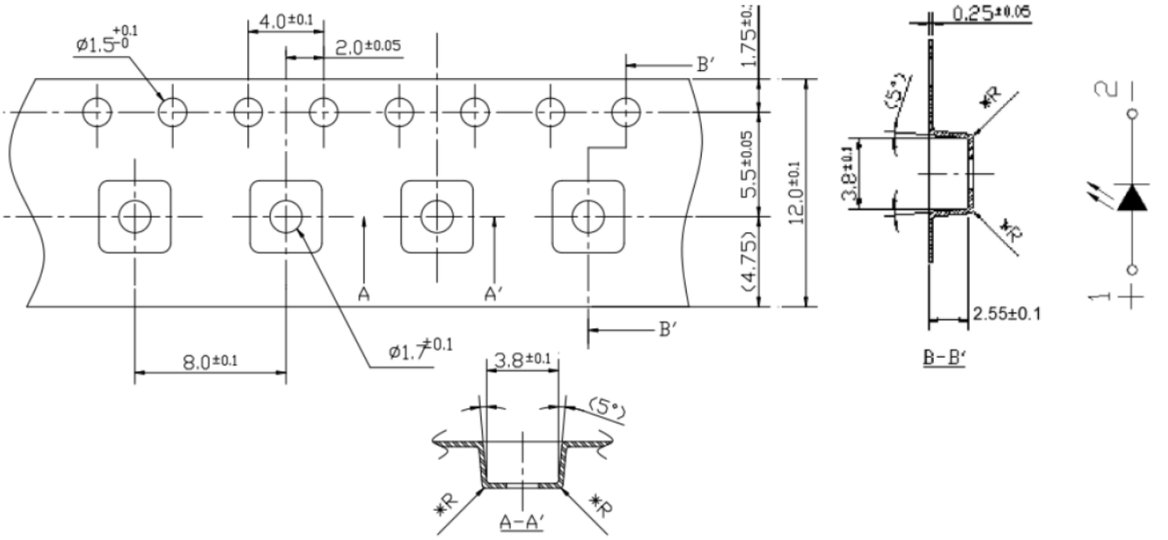
Note:

1. Maximum reflow soldering: 2 times.
2. Before, during, and after soldering, should not apply stress on the components and PCB board.
3. Recommended soldering temperature: 240°C. The maximum soldering temperature should be limited to 260°C for max. 10seconds.

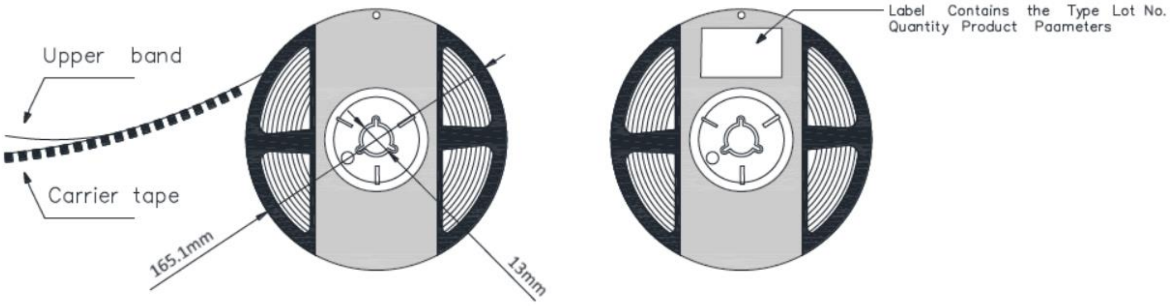
PACKING SPECIFICATION:

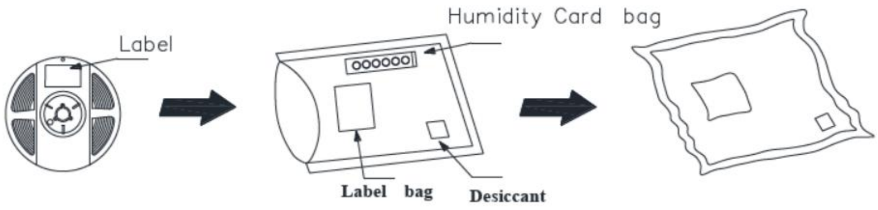
Reel Dimension:

Max.900pcs/reel



1. Cumulative Tolerance: Cumulative Tolerance/10 pitches to be ±0.25mm
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.

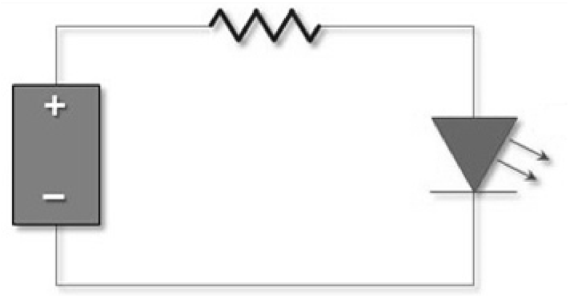
Baking:

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	24/09/2020	Datasheet set-up.
A1.1	22/03/2022	New datasheet format.
A1.2	23/03/2022	Revise temperature range.
A1.3	07/09/2023	Revised bin table.
A1.4	03/03/2024	Add 700mA typical lumen information.