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

- ▶ PLCC2
- ▶ K1 Series
- ▶ Cool White (6300K)

Release Date: 06 June 2014 Version: A1.0

N0W09S24 (Tube)
N0W09S24RL (Reel)

K1 Series

K1 Series

RoHS Compliant

FEATURES:

- **Package:** PLCC White SMT Package
- **Forward Current:** 700mA
- **Forward Voltage (typ.):** 3.2V
- **Luminous Flux (typ.):** 220lm @700mA
- **Colour:** Cool White
- **CCT:** 6300K
- **Viewing angle:** 120°
- **Materials:**
  - Die: InGaN
  - Resin: Silicon (Water Clear)
- **Operating Temperature:** -30~+100°C
- **Storage Temperature:** -40~+120°C
- **Grouping parameters:**
  - Forward voltage
  - Luminous flux
  - CIE Chromaticity
- **Soldering methods:** Reflow soldering
- **Preconditioning:** acc. to JEDEC Level 3
- **Packing:** 2000pcs/carton (40 tubes); 50pcs/tube
  24mm tape with 1000pcs/reel, ø330mm (13'')

APPLICATIONS:

- General Lighting
- Commercial Lighting
- Residential Lighting
- Architectural Lighting
- Flash Lighting
- Reading Lights

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Forward Current	I_F	700	mA
Peak Forward Current Duty 1/10@10KHz	I_{FP}	800	mA
Operating Temperature	T_{OPR}	-30~+100	°C
Storage Temperature	T_{STG}	-40~+120	°C
Junction Temperature	T_j	110	°C
Temperature Coefficient of VF	$\Delta V_F/\Delta T_j$	-2	mV/°C
Thermal Resistance Junction to Lead	$T_{juction\text{-}lead}$	12	°C/W

1. Not suitable to be driven in reverse bias.

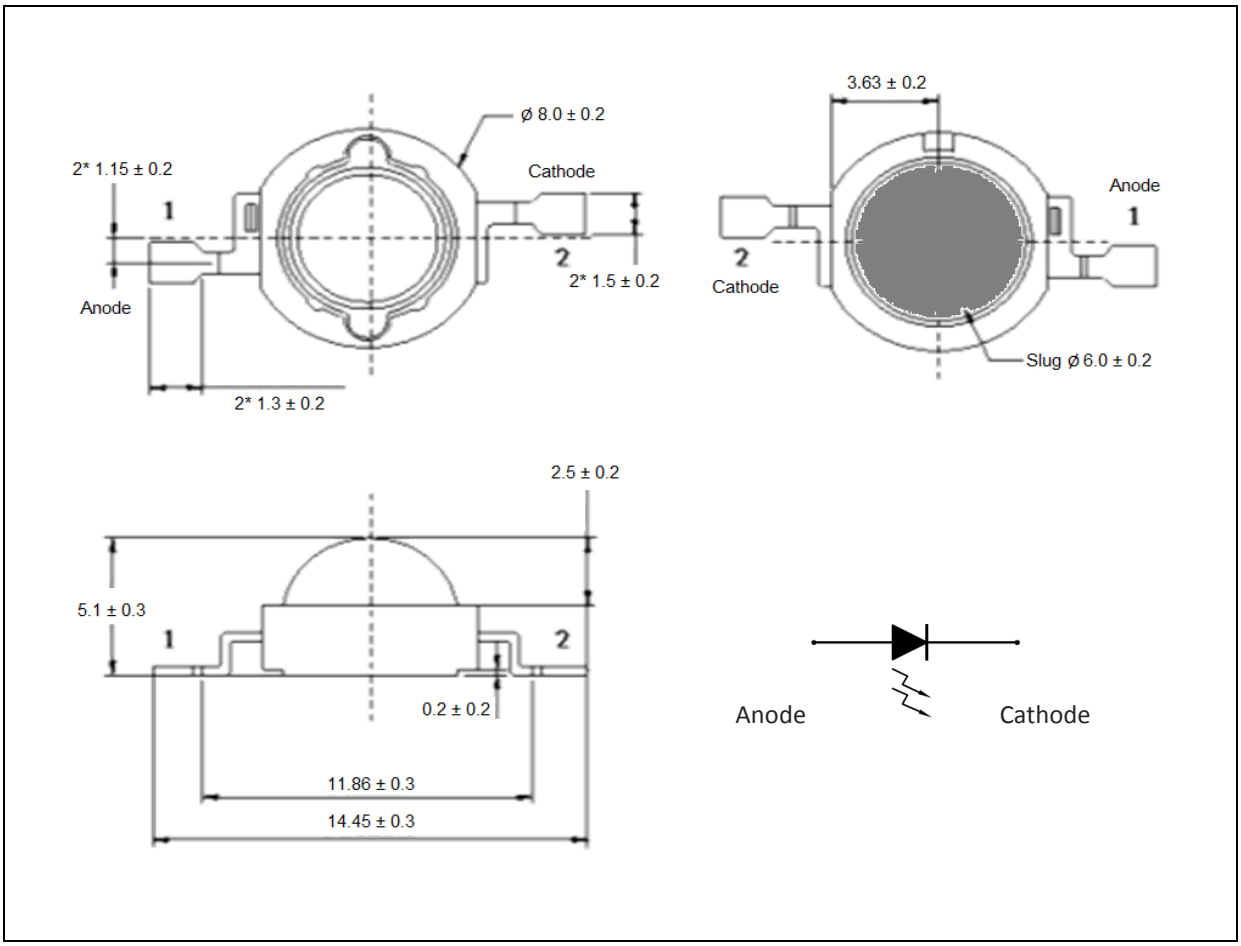
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	2.8	3.2	3.6	V	I_F=700mA
Luminous Flux	Φ_V	150	220	---	lm	I_F=700mA
Chromaticity Coordinates	X	0.2740	---	0.3480	---	I_F=700mA
	Y	0.2700	---	0.3850		
Colour Temperature	CCT	5000	6300	10000	K	I_F=700mA
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	I_F=700mA

2. Luminous intensity (I_V) ±15%, Forward Voltage (V_F) ±0.1V, Viewing angle($2\theta_{1/2}$) ±5%
3. IS standard testing

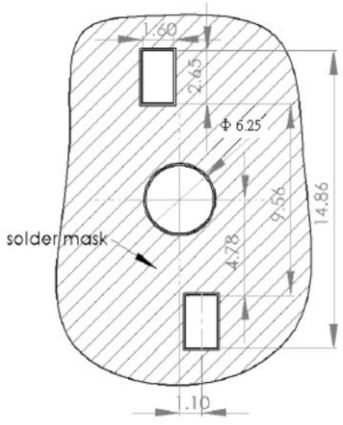
OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance ±0.1mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



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

BINNING GROUPS:

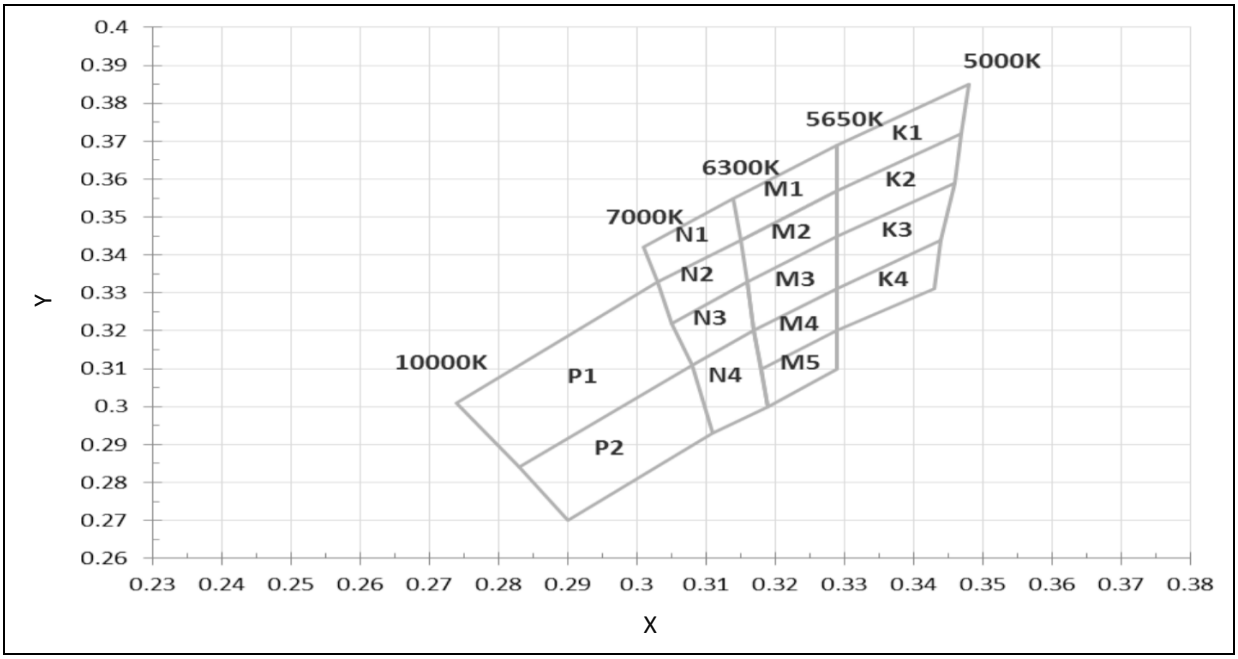
Forward Voltage Classifications (I_F = 700mA):

Code	Min.	Max.	Unit
1	2.8	2.9	V
2	2.9	3.0	
3	3.0	3.1	
4	3.1	3.2	
5	3.2	3.3	
6	3.3	3.4	
7	3.4	3.5	
8	3.5	3.6	

Luminous Flux Classifications (I_F = 700mA):

Code	Min.	Max.	Unit
38	150	160	lm
39	160	170	
40	170	180	
41	180	190	
42	190	200	
43	200	210	
44	210	220	
45	220	230	
46	230	240	
47	240	250	
48	250	260	

CIE CHROMATICITY DIAGRAM:

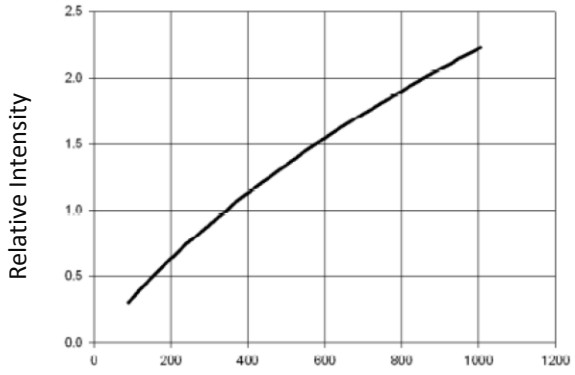


Chromaticity Coordinates Classifications (I_F = 700mA):

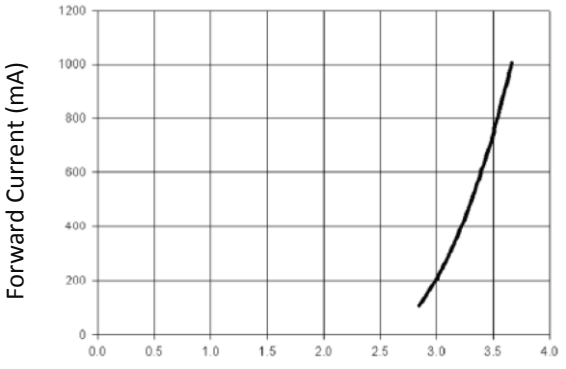
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
P1	0.3080	0.3110	0.2830	0.2840	0.2740	0.3010	0.3030	0.3330
P2	0.3080	0.3110	0.3110	0.2930	0.2900	0.2700	0.2830	0.2840
N1	0.3030	0.3330	0.3010	0.3420	0.3140	0.3550	0.3150	0.3440
N2	0.3050	0.3220	0.3030	0.3330	0.3150	0.3440	0.3160	0.3330
N3	0.3080	0.3110	0.3050	0.3220	0.3160	0.3330	0.3170	0.3200
N4	0.3080	0.3110	0.3170	0.3200	0.3190	0.3000	0.3110	0.2930
M1	0.3140	0.3550	0.3290	0.3690	0.3290	0.3570	0.3150	0.3440
M2	0.3150	0.3440	0.3290	0.3570	0.3290	0.3450	0.3160	0.3330
M3	0.3290	0.3450	0.3290	0.3310	0.3170	0.3200	0.3160	0.3330
M4	0.3290	0.3310	.03290	0.3200	0.3180	0.3100	0.3170	0.3200
M5	0.3290	0.3200	0.3290	0.3100	0.3190	0.3000	0.3180	0.3100
K1	0.3290	0.3570	0.3290	0.3690	0.3480	0.3850	0.3470	0.3720
K2	0.3290	0.3450	0.3290	0.3570	0.3470	0.3720	0.3460	0.3590
K3	0.3290	0.3310	0.3290	0.3450	0.3460	0.3590	0.3440	0.3440
K4	0.3290	0.3310	0.3440	0.3440	0.3430	0.3310	0.3290	0.3200

ELECTRO-OPTICAL CHARACTERISTICS:

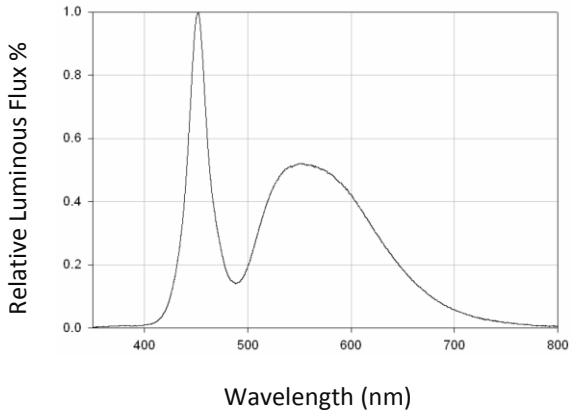
Relative Intensity v.s. Forward Current



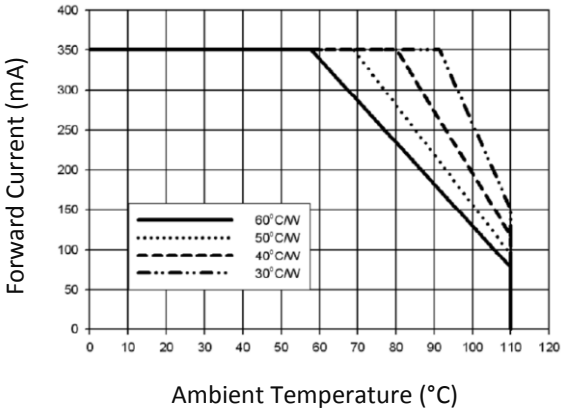
Forward Current v.s. Forward Voltage



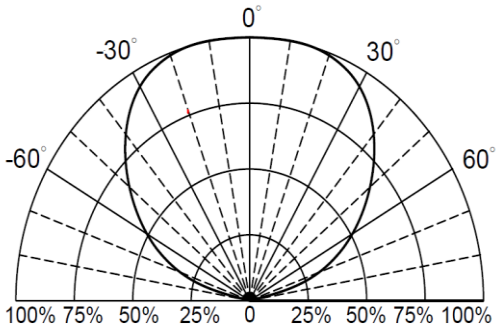
Luminous Spectrum



Current Derating Curves

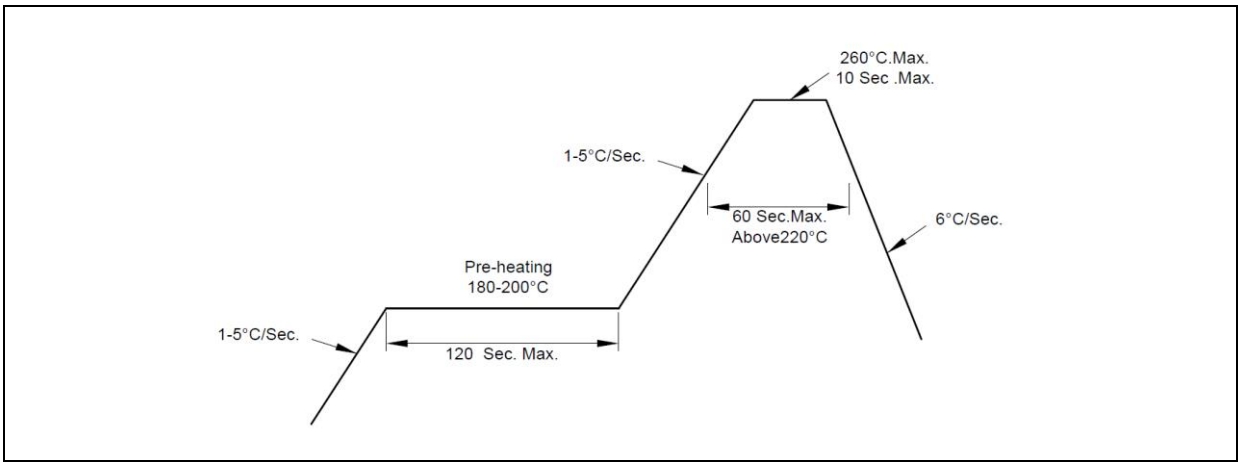


Directive Radiation



RECOMMENDED SOLDERING PROFILE:

Lead-free Solder:

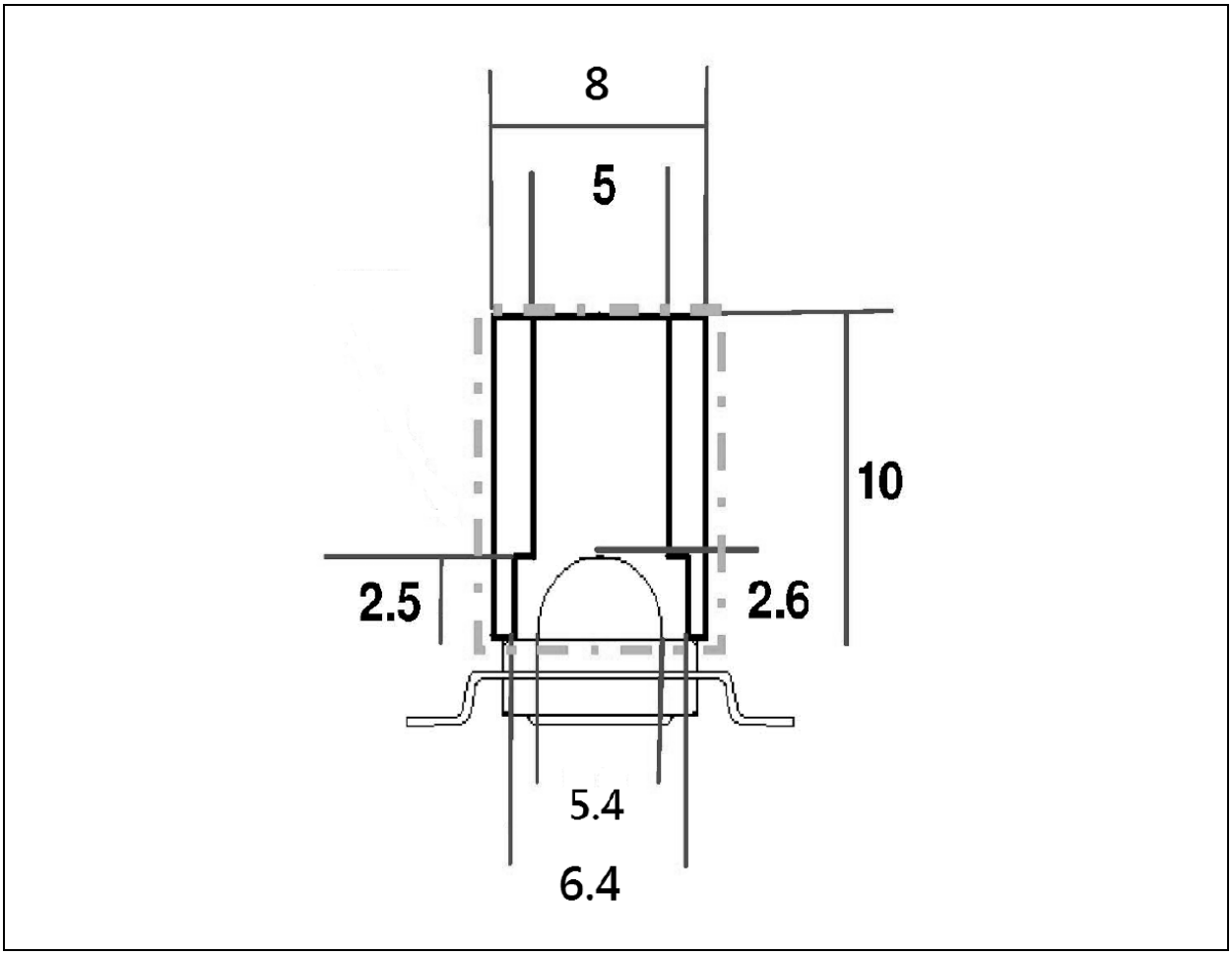


Note:

1. Maximum reflow soldering: 1 times.
2. Before, during, and after soldering, should not apply stress on the components and PCB board.

RECOMMENDED NOZZLE FOR SMT:

Recommended Pick & Place Nozzle:



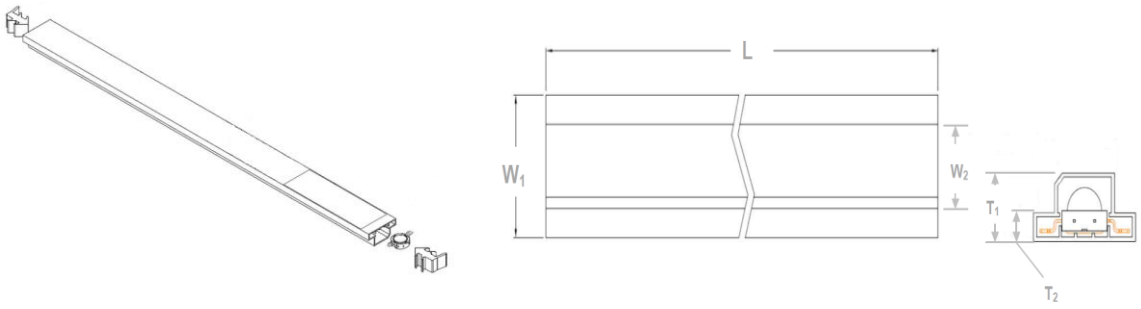
1. All dimensions are in millimetre (mm).
2. Tolerance ±0.1mm, unless otherwise noted.

PACKING SPECIFICATION:

Tube Dimension:

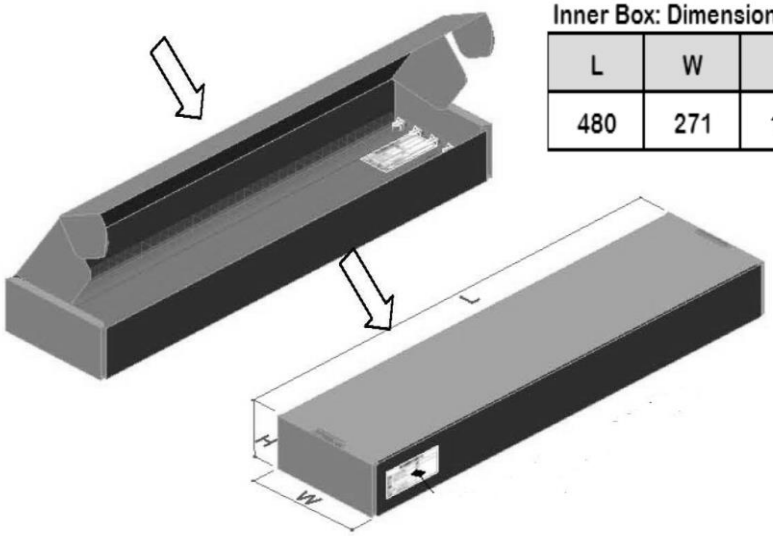
N0W09S24

2000pcs/carton (40 tubes); 50pcs/tube



Unit(mm)

W_1	W_2	T_1	T_2	L
16.5	9.7	7.9	3.3	420



Inner Box: Dimension(mm)

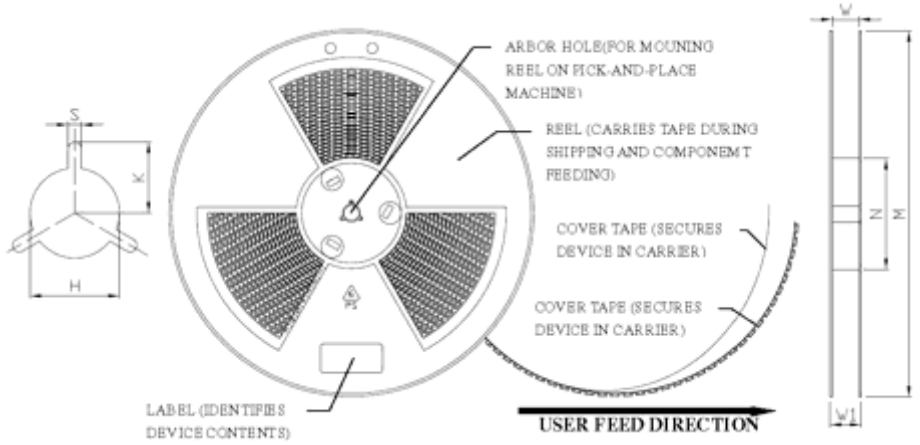
L	W	H
480	271	172

PACKING SPECIFICATION:

Reel Dimension:

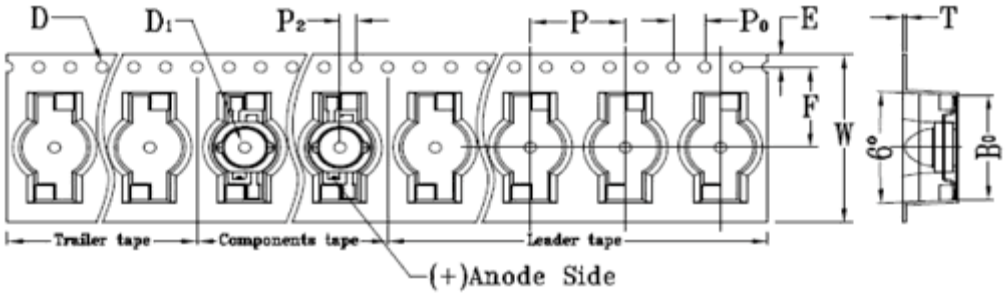
N0W09S24RL

1000pcs/reel



Unit: mm

M	N	W	W1	H	K	S
Φ330.0	Φ99.5	24.4	29	Φ13.5	10.75	2.5
±1.0	±1.0	±1.0	±1.0	±0.5	±0.5	±0.5



Unit: mm

W	P	E	F	P_2	D	D_1	P_0	A_0	B_0	K_0	T
24.0	12.0	1.75	11.5	2.0	1.5	1.5	4.0	8.2	15.0	6.7	0.4
±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	±0.25	±0.1	±0.1	±0.1	±0.1	±0.05

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 month 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 and apply baking at 60°C±5°C for 15hrs before use.

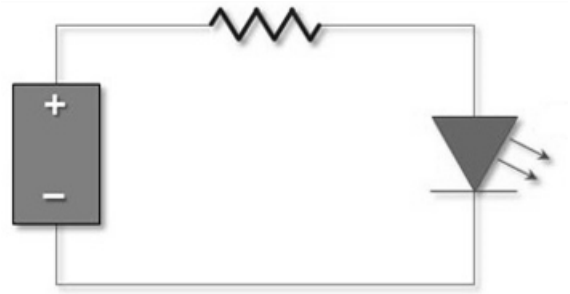
Baking:

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:

- 70±3°C x 24hrs and <5%RH, taped / reel package.
- 100±3°C x 2hrs, bulk (loose) package.
- 130±3°C x 30min, bulk (loose) 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	06/06/2014	Datasheet set-up.