BRIGHTEK

BRIGHTEK (EUROPE) LIMITED

Brighten Up The World With LED !

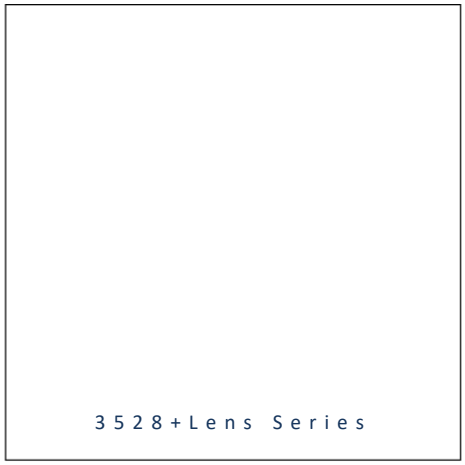
ISO/TS 16949:2009 BS EN ISO 14001:2004 QC 080000 IECQ HSPM

PRODUCT DATASHEET

- ▶ PLCC2 Top View
- ▶ 3528+Lens 3.6t Series
- ▶ Cyan (505nm)

Release Date: 21 May 2024 Version: A1.1

N0B18S44



3528+Lens Series

RoHS Compliant

FEATURES:

- **Package:** PLCC2 SMT Package with Lens
- **Forward Current:** 20mA
- **Forward Voltage (typ.):** 3.3V
- **Luminous Intensity (typ.):** 5400mcd@20mA
- **Colour:** Cyan
- **Dominant Wavelength (typ.):** 505nm
- **Viewing Angle:** 30°
- **Materials:**
  - Die: InGaN
  - Resin: Epoxy (Water Clear)
  - L/F Finish: Ag Plated
- **Operating Temperature:** -40~+80°C
- **Storage Temperature:** -40~+85°C
- **Grouping Parameters:**
  - Forward voltage
  - Luminous intensity
  - Dominant wavelength
- **Soldering Methods:** Reflow soldering
- **MSL Level:** acc. to JEDEC Level 3
- **Packing:** 12mm tape with max.2000pcs/reel, ø330mm (13'')

APPLICATIONS:

- LED Display
- Indicator
- Traffic Display
- Decoration Lighting
- Railway Singal

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Forward Current	I_F	30	mA
Peak Forward Current Duty 1/8@1KHz	I_{FP}	125	mA
Reverse Voltage	V_R	5	V
Reverse Current @5V	I_R	10	μA
Power Dissipation	P_D	111	mW
Operating Temperature	T_{OPR}	-40~+80	°C
Storage Temperature	T_{STG}	-40~+85	°C

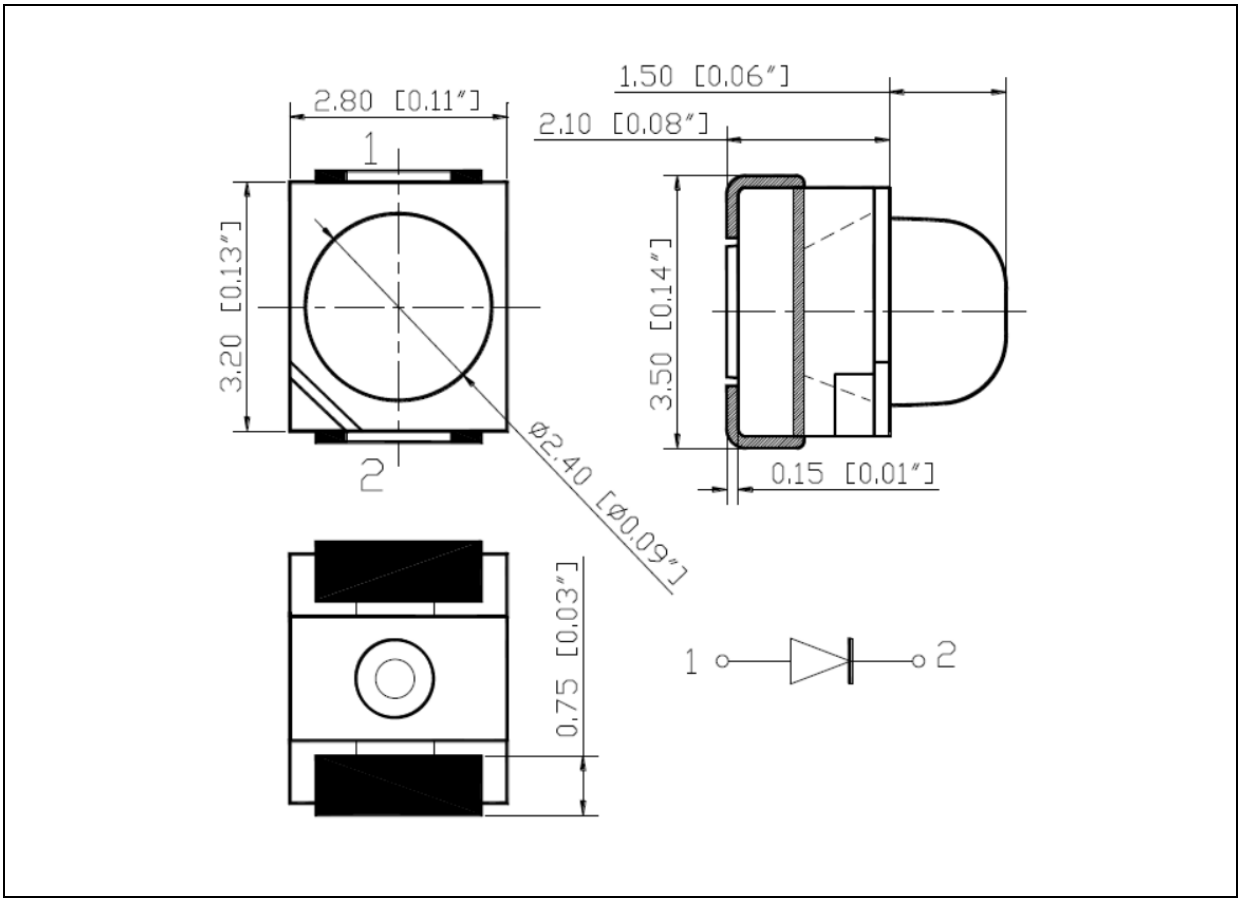
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	2.8	3.3	3.7	V	I_F=20mA
Luminous Intensity	I_V	2000	3400	6800	mcd	I_F=20mA
Dominant Wavelength	λ_D	500	505	510	nm	I_F=20mA
Peak Wavelength	λ_P	---	500	---	nm	I_F=20mA
Spectral Half Bandwidth	$\Delta\lambda$	---	27	---	nm	I_F=20mA
Viewing Angle	$2\theta_{1/2}$	---	30	---	deg	I_F=20mA

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

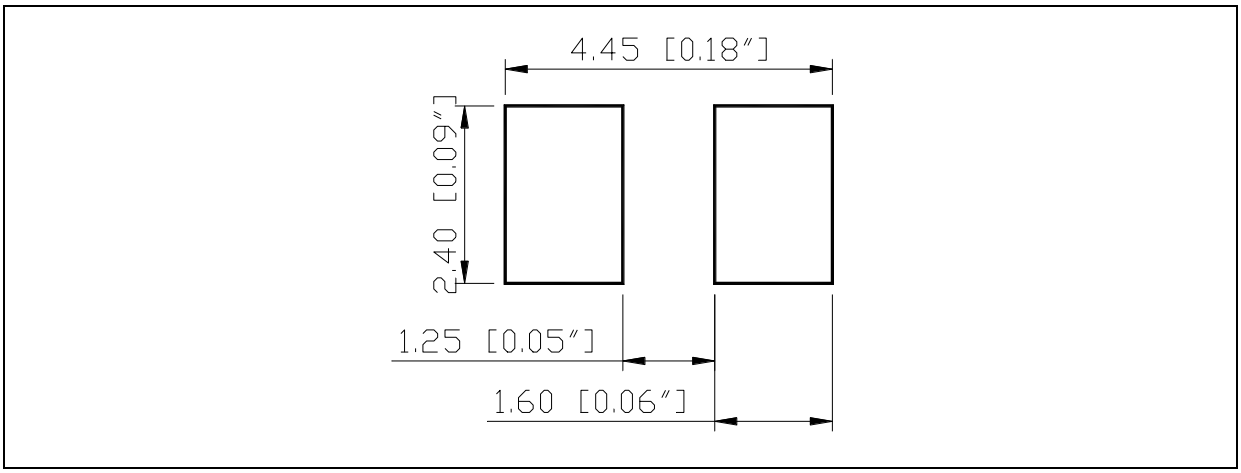
OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance ±0.2mm, 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 = 20mA):

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 = 20mA):

Code	Min.	Max.	Unit
W	2000	2500	mcd
X	2500	3200	
Y	3200	4000	
Z	4000	5200	
a	5200	6800	

Wavelength Classifications (I_F = 20mA):

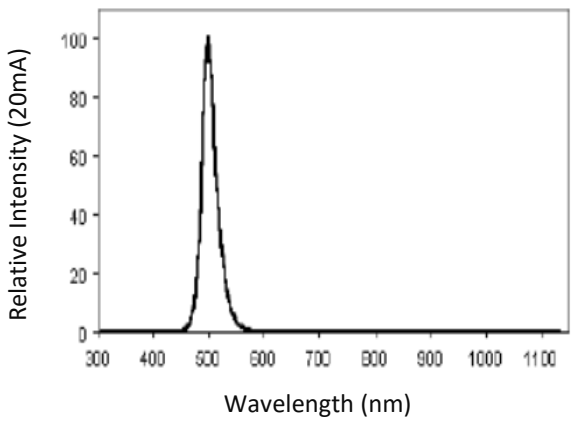
Code	Min.	Max.	Unit
M	500	502.5	nm
N	502.5	505	
O	505	507.5	
P	507.5	510	

Example Binning Information on Label:

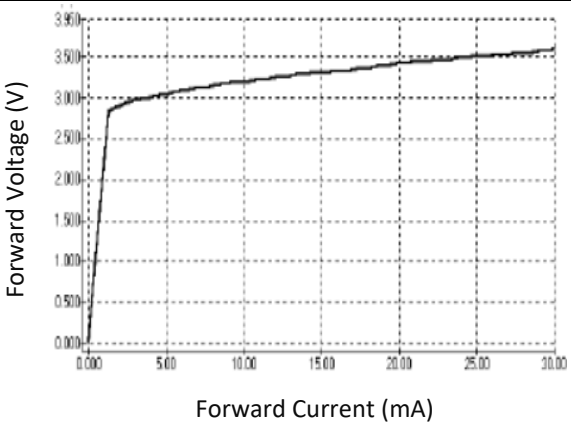
Code	Vf (V)	Iv (mcd)	λd (nm)	Test Condition
gYN 20	g= 3.1~3.4	Y= 3200~4000	N= 502.5~505	20= 20mA

ELECTRO-OPTICAL CHARACTERISTICS:

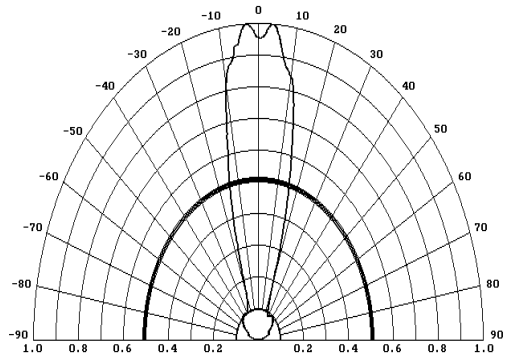
Relative Spectral Distribution



Forward Current v.s. Forward Voltage

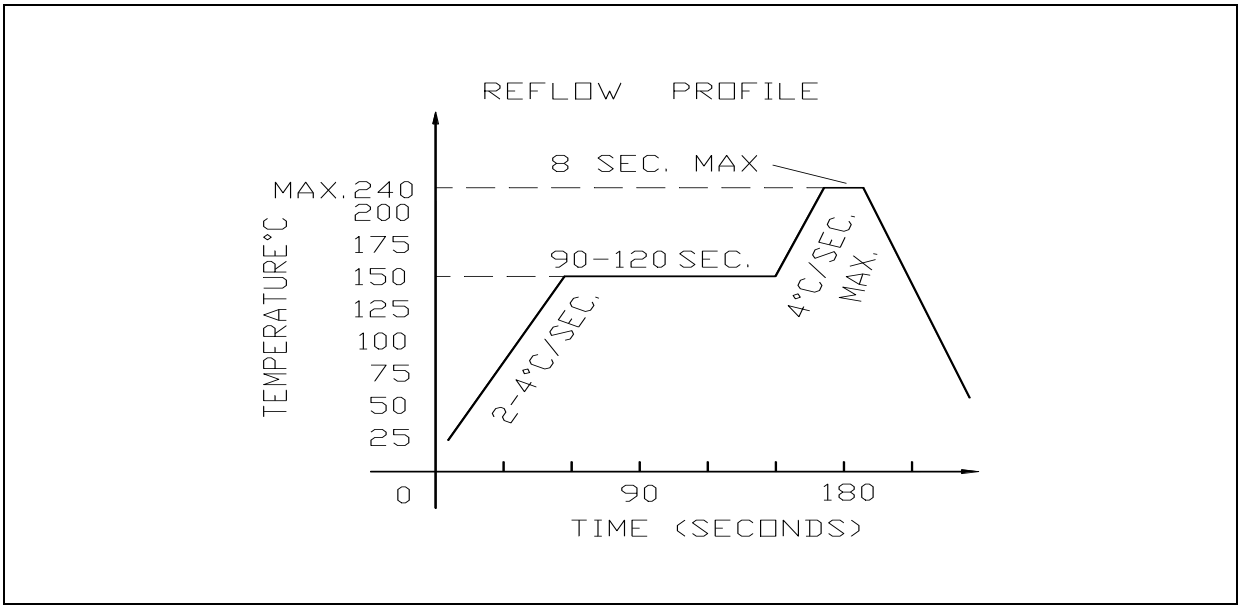


Directive Radiation



RECOMMENDED SOLDERING PROFILE:

Lead-free Solder:



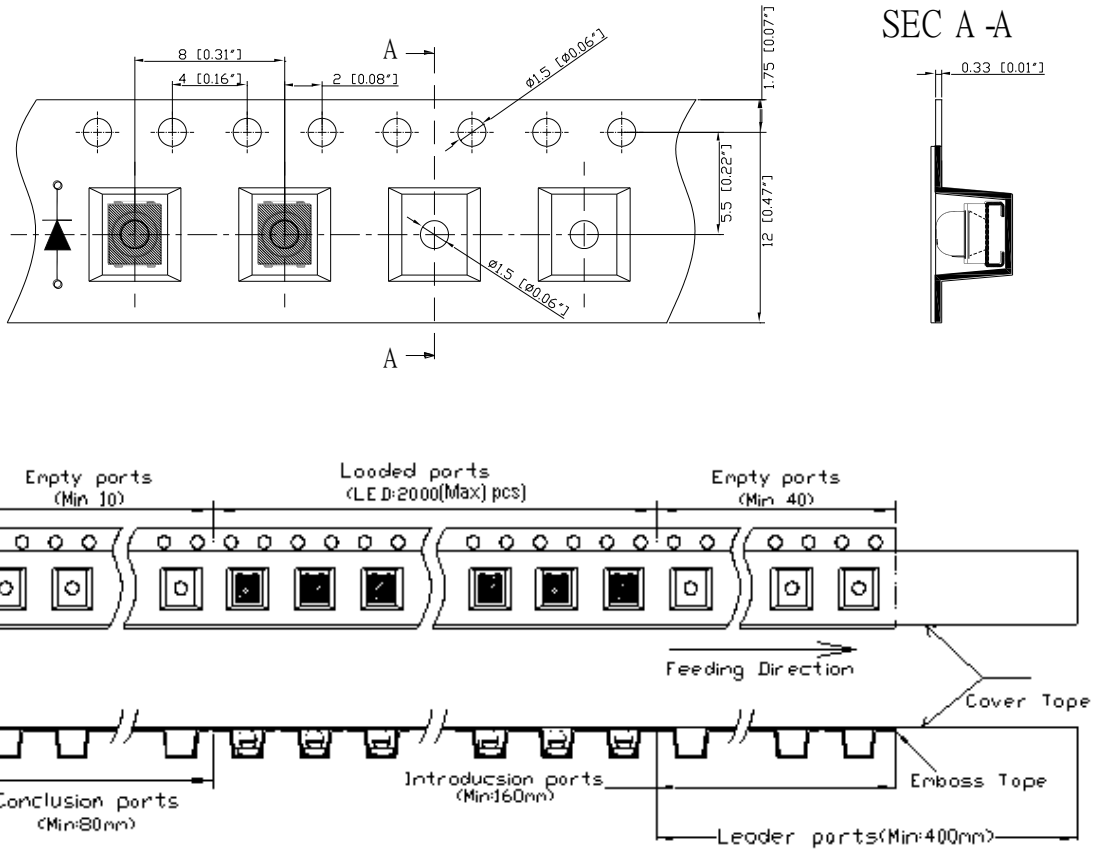
Note:

1. Maximum reflow soldering: 1 time.
2. The maximum soldering temperature is 240°C.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

PACKING SPECIFICATION:

Reel Dimension:

Max.2000pcs/reel



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.

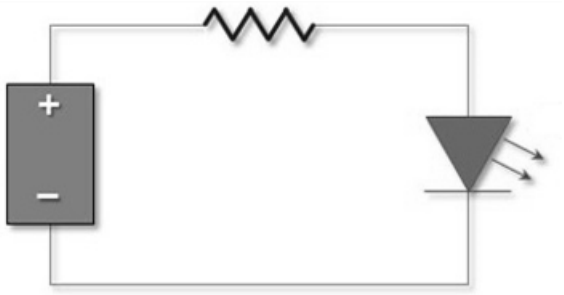
Baking:

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	14/07/2016	Datasheet set-up.
A1.1	21/05/2024	Revise part number description.