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

- ▶ PLCC4 SMD
- ▶ 3528 1.9t Series
- ▶ Red (625nm) / Blue (470nm)

Release Date: 04 June 2022 Version: A1.2

N0D17S32

3528 1.9t Series

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RoHS Compliant

FEATURES (Red/Blue):

- **Package:** PLCC4 Dual Colour White SMD Package
- **Forward Current:** 20/20mA*
- **Forward Voltage (typ.):** 1.9/3.2V
- **Luminous Intensity (typ.):** 210/270mcd@20mA
- **Colour:** Red/Blue
- **CCT/Wavelength:** 625/467nm
- **Viewing angle:** 120/120°
- **Materials:**
  - Die: AlGaInP/InGaN
  - 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'')

APPLICATIONS:

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

* In the order of Red/Blue.

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Forward Current	I_F	30/30*	mA
Pulse Forward Current Duty 1/10 Width 0.1mS	I_{PF}	100	mA
Reverse Voltage	V_R	5	V
Reverse Current @5V	I_R	10	μA
Power Dissipation	P_D	80/100	mW
Junction Temperature	T_j	110	°C
Soldering Temperature	T_{sol}	260	°C
Operating Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-40~+100	°C

1. * In the order of Red/Blue.

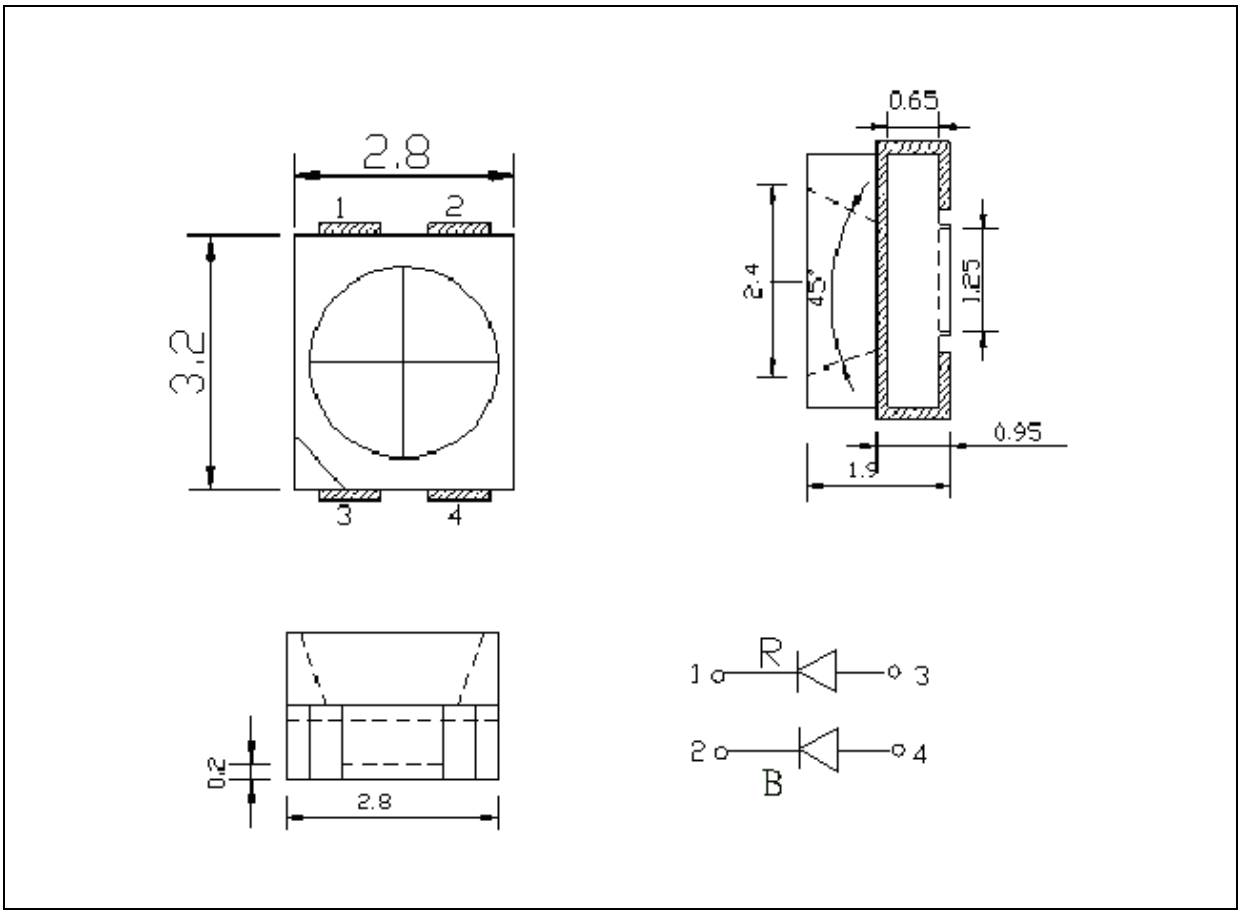
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Red - Forward Voltage	V_F	1.7	1.9	2.4	V	I_F=20mA
Red - Luminous Intensity	I_V	160	210	---	mcd	I_F=20mA
Red - Wavelength	W_P	620	---	630	nm	I_F=20mA
Blue - Forward Voltage	V_F	2.8	32.	3.8	V	I_F=20mA
Blue - Luminous Intensity	I_V	210	270	---	mcd	I_F=20mA
Blue - Wavelength	W_P	462.5	---	472.5	nm	I_F=20mA
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	I_F=20mA

1. Luminous intensity (I_V) ±5%, Forward Voltage (V_F) ±0.1V

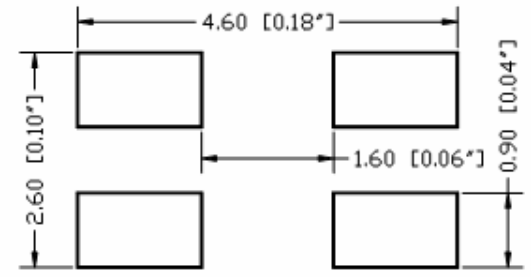
OUTLINE DIMENSION:

Package Dimension:



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

Recommended Soldering Pad Dimension:



Recommended PCB Solder Pad

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
Red	C	1.7	1.9	V
	D	1.9	2.1	
	E	2.1	2.2	
	F	2.2	2.4	
Blue	I	2.8	3.0	V
	J	3.0	3.2	
	K	3.2	3.4	
	L	3.4	3.6	

Luminous Intensity Classifications (I_F = 20mA):

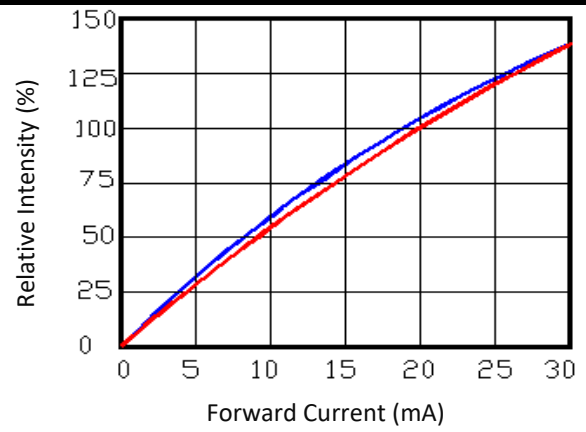
Code		Min.	Max.	Unit
Red	8	160	210	mcd
	9	210	270	
	10	270	350	
	11	350	460	
Blue	9	210	270	mcd
	10	270	350	
	11	350	460	
	12	460	600	

Wavelength Classifications (I_F = 20mA):

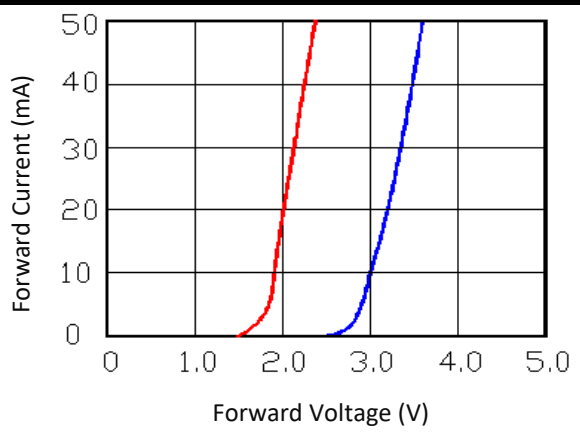
Code		Min.	Max.	Unit
Red	C	620	625	nm
	D	625	630	
Blue	D	462.5	467.5	nm
	E	467.5	472.5	

ELECTRO-OPTICAL CHARACTERISTICS:

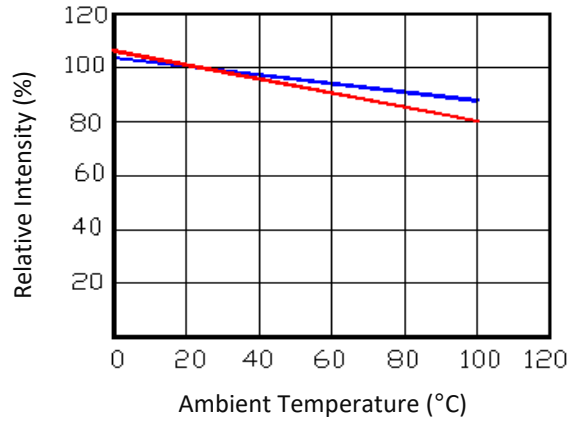
Relative Intensity v.s. Forward Current



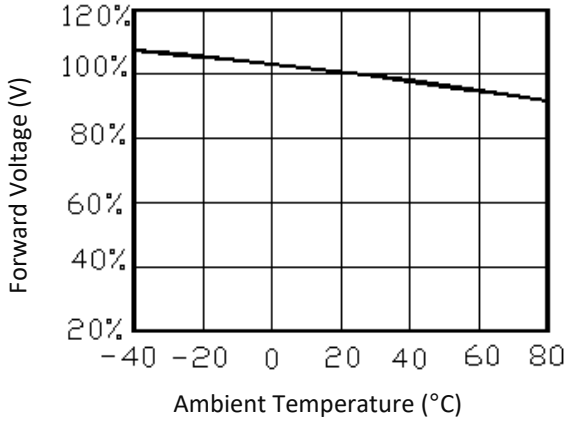
Forward Current v.s. Forward Voltage



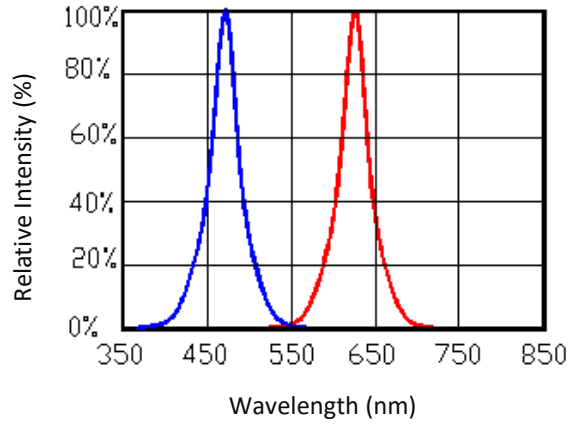
Relative Intensity v.s. Ambient Temperature



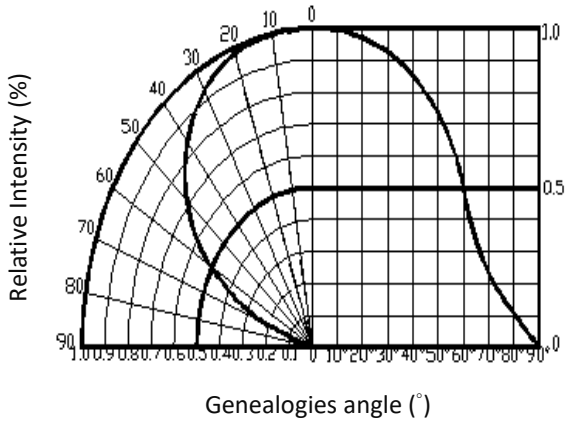
Forward Voltage v.s. Ambient Temperature



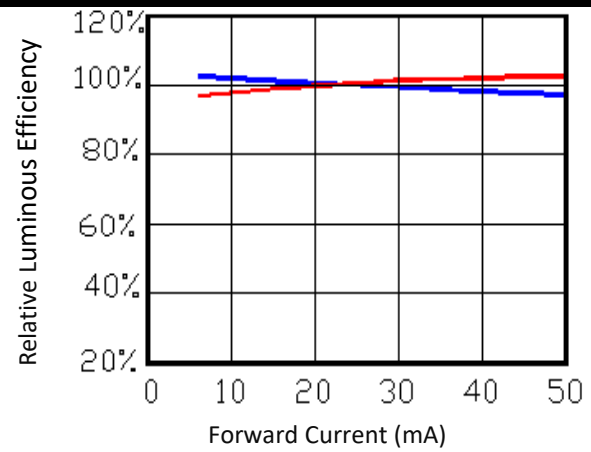
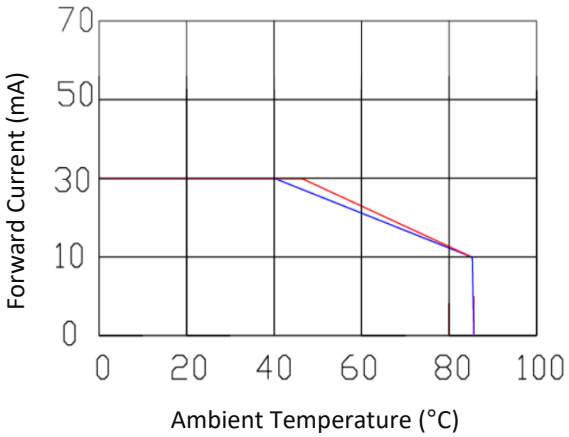
Relative Spectral Distribution



Directive Radiation

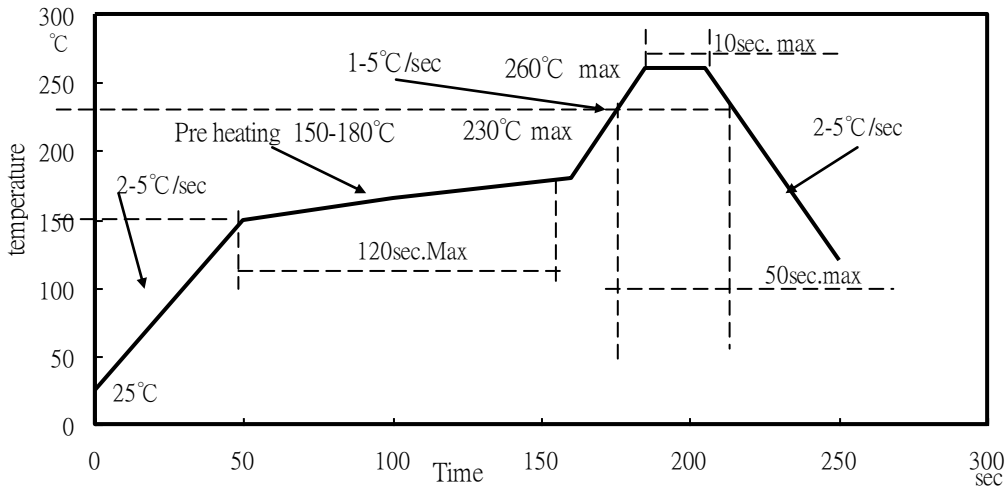


ELECTRO-OPTICAL CHARACTERISTICS:

Efficiency Shift v.s. Forward Current	Maximum Current v.s. Ambient Temperature
	

RECOMMENDED SOLDERING PROFILE:

Lead-free Solder:



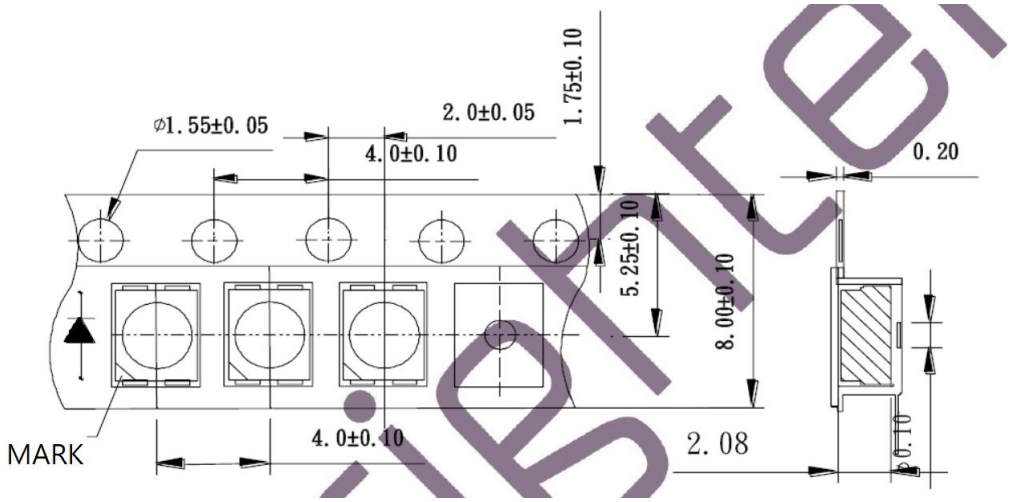
Note:

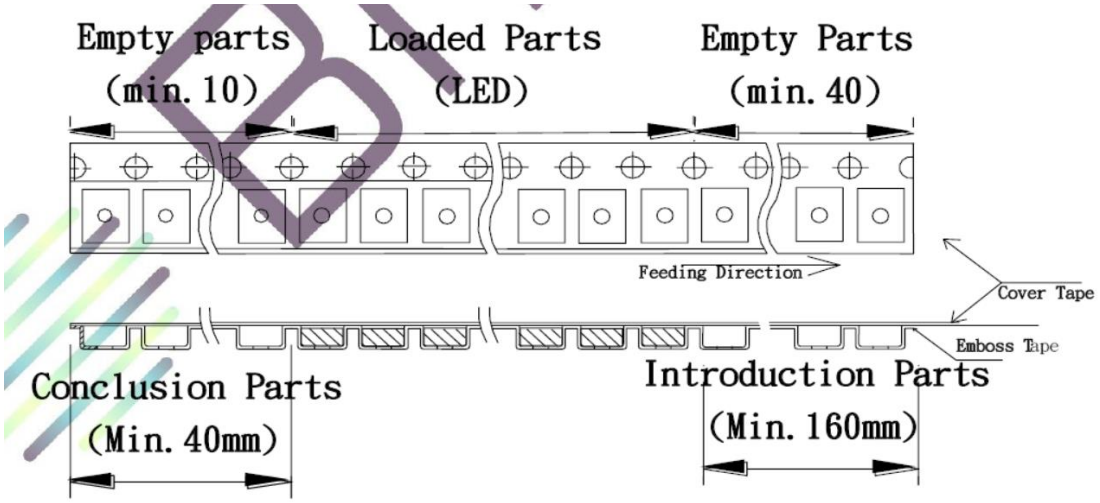
1. Maximum reflow soldering: 3 times.
2. Recommended soldering temperature 240°C; the maximum soldering temperature should be limited to 260°C.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

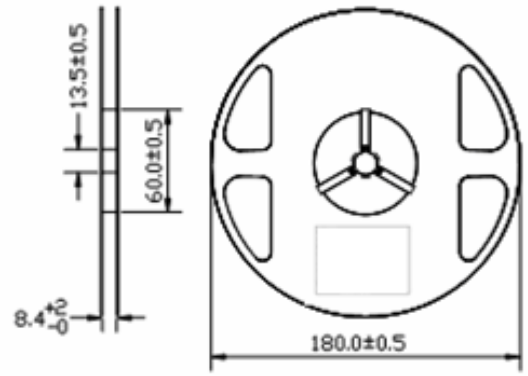
PACKING SPECIFICATION:

Reel Dimension:

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.

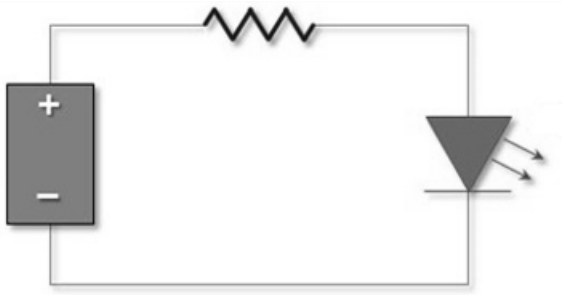
Baking:

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 6hrs 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	04/04/2016	Datasheet set-up.
A1.1	13/04/2019	Update specifications and binning table.
A1.2	04/06/2022	Revise efficiency chart.