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 1.8t Series
- ▶ Red (617nm)

Release Date: 22 July 2022 Version: A1.0

N0R62S01-50MA

3528 1.8t Series

RoHS Compliant

AUTOMOTIVE AEC-Q102

FEATURES:

- **Package:** PLCC4 Top View White SMT Package
- **Forward Current:** 50mA
- **Forward Voltage (typ.):** 2.2V
- **Luminous Intensity (typ.):** 3100mcd@50mA
- **Colour:** Red
- **Wavelength:** 612~621nm
- **Viewing angle:** 120°
- **Materials:**
  - Resin: Silicon (Water Clear)
  - L/T Finish: Ag plated
- **Operating Temperature:** -40~+105°C
- **Storage Temperature:** -40~+105°C
- **ESD (HBM):** 2kV
- **Grouping parameters:**
  - Forward voltage
  - Luminous intensity
  - Dominant Wavelength
- **Soldering methods:** IR Reflow
- **MSL:** acc. to JEDEC Level 2a (J-STD20D)
- **Packing:** 8mm tape with max.2000/reel, ø180mm (7'')

APPLICATIONS:

- Automotive
- Decorative Lighting
- Indicator
- Backlighting
- Dashboard
- Display
- Information Board
- Light Strip

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Forward Current	I_F	70	mA
Pulse Forward Current Duty 1/10, width 0.1mS	I_{PF}	150	mA
Reverse Voltage	V_R	10	V
Reverse Current @10V	I_R	10	μA
Junction Temperature	Tj	125	°C
Electrostatics Discharge (HBM)	ESD	2000	V
Thermal Resistance Junction/Solder Point	R_{thJ-S}	100	°C/W
Thermal Resistance Junction/Ambient Point	R_{thJ-A}	200	°C/W
Operating Temperature	T_{OPR}	-40~+105	°C
Storage Temperature	T_{STG}	-40~+105	°C
Soldering Temperature	T_{SD}	260	°C

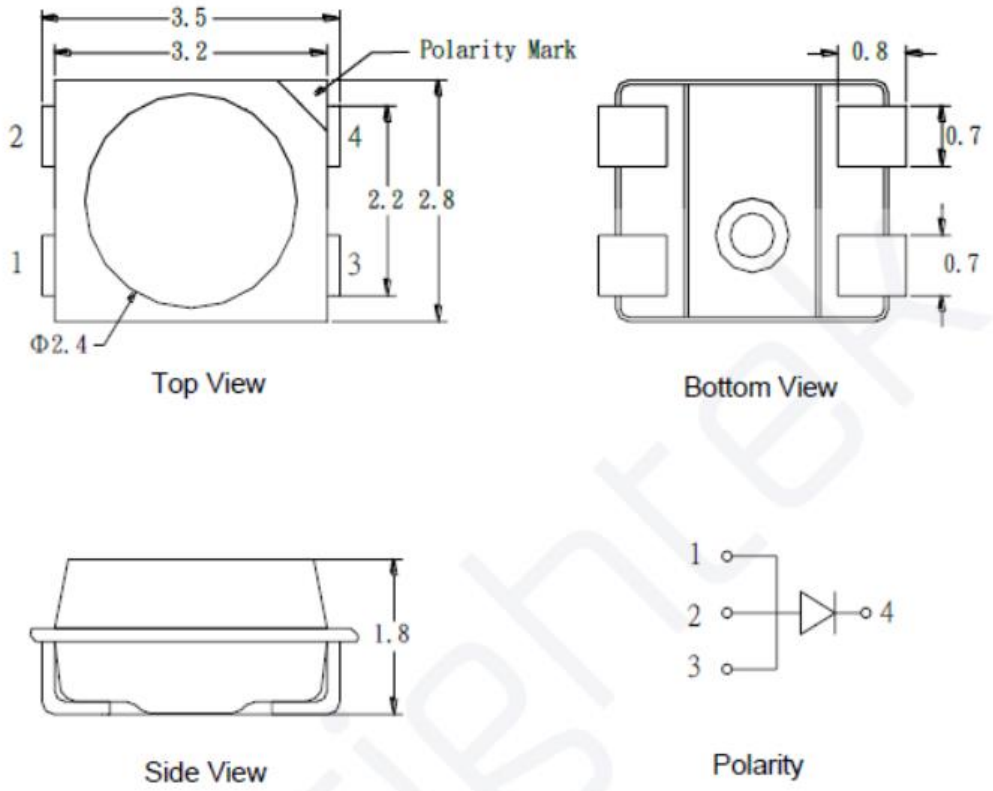
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	1.8	2.2	2.4	V	I_F=50mA
Luminous Intensity	I_V	2500	3100	---	mcd	I_F=50mA
Dominant Wavelength	λ_D	612	---	621	nm	I_F=50mA
Peak Wavelength	λ_P	---	621	---	nm	I_F=50mA
Spectral Width 50%	$\Delta\lambda$	---	16	---	nm	I_F=50mA
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	I_F=50mA

1. Luminous intensity (I_V) ±10%, Forward Voltage (V_F) ±0.1V, Viewing angle($2\theta_{1/2}$) ±5%, Wavelength ±1nm

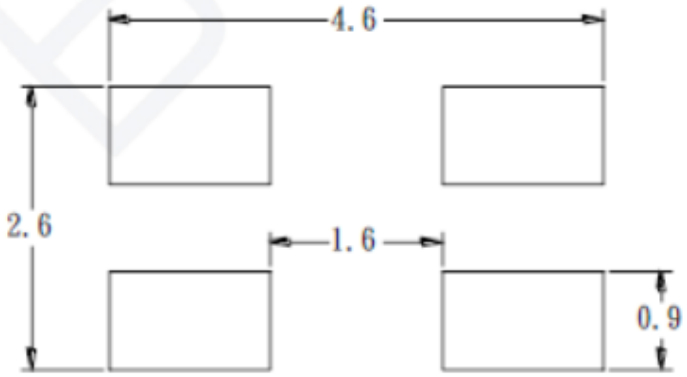
OUTLINE DIMENSION:

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 = 50mA):

Code	Min.	Max.	Unit
E	1.8	2.0	V
F	2.0	2.2	
G	2.2	2.4	

Luminous Intensity Classifications (I_F = 50mA):

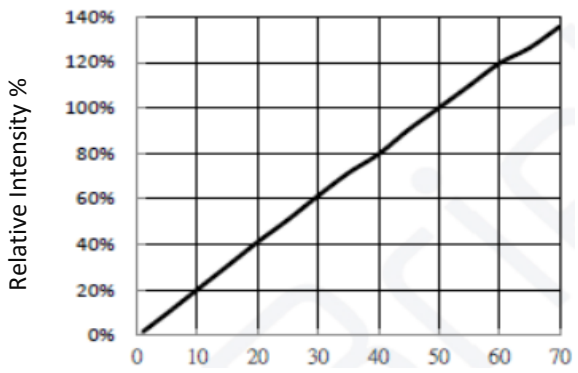
Code	Min.	Max.	Unit
26	2500	3200	mcd
27	3200	4000	

Dominant Wavelength Classifications (I_F = 50mA):

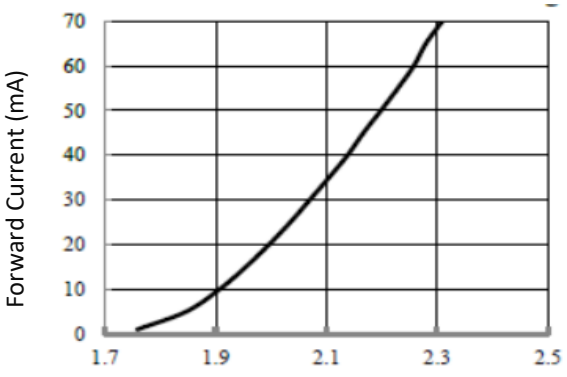
Code	Min.	Max.	Unit
A5	612	615	nm
A6	615	618	
V1	618	621	

ELECTRO-OPTICAL CHARACTERISTICS:

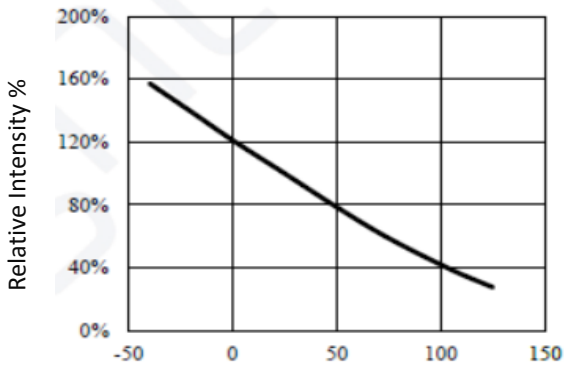
Relative Intensity v.s. Forward Current



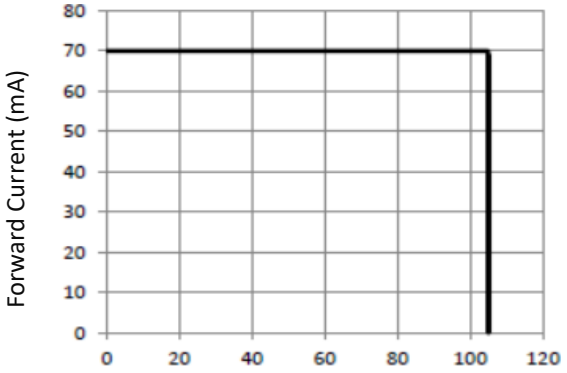
Forward Current v.s. Forward Voltage



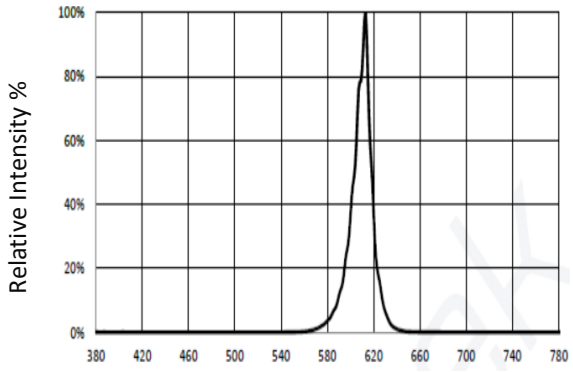
Relative Intensity v.s. Temperature



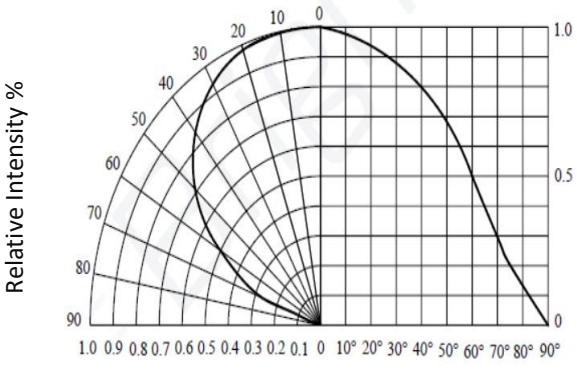
Forward Current Derating Curve



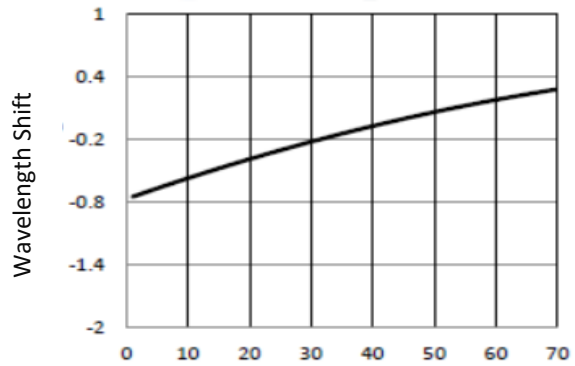
Relative Intensity v.s. Wavelength

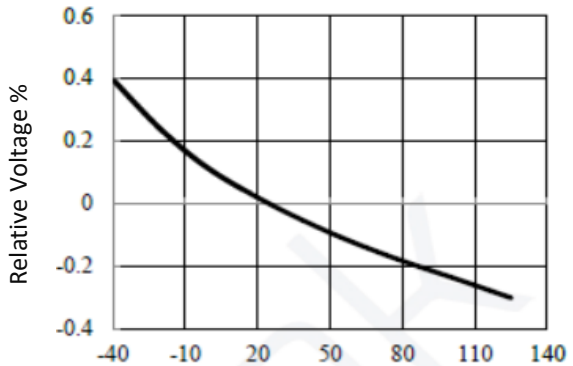


Directive Radiation

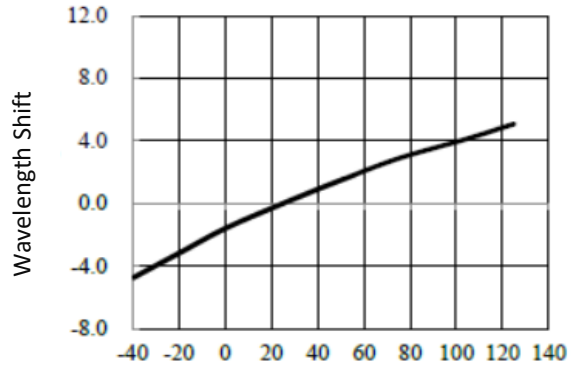


Wavelength Shift v.s. Forward Current	Relative Voltage v.s. Temperature



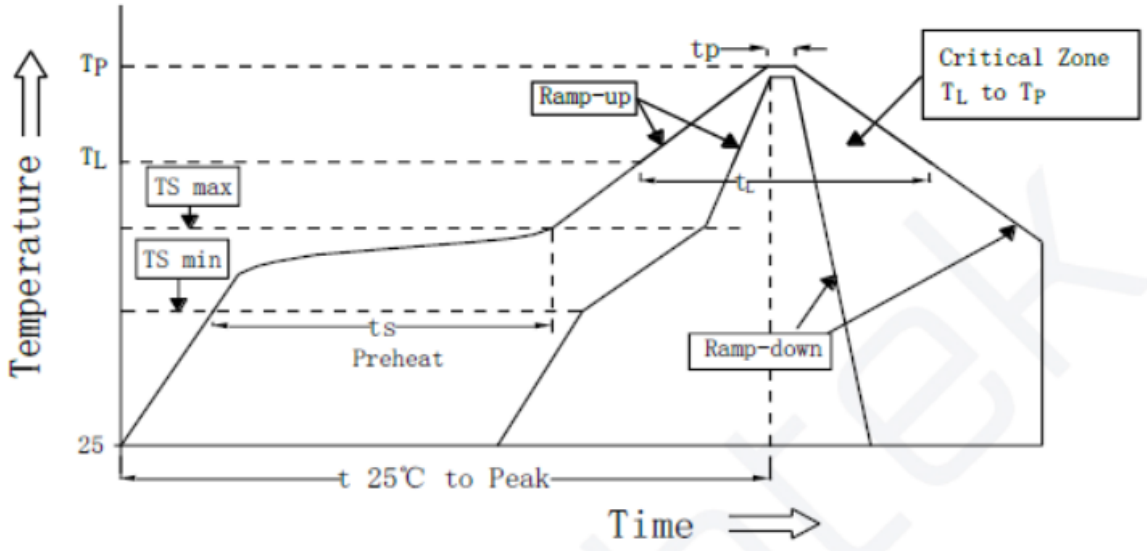


Wavelength Shift v.s. Solder Temperature



RECOMMENDED SOLDERING PROFILE:

IR Reflow Lead-free Solder:



Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Min.	Recommendation	Max.	
Ramp-up rate to preheat (25°C to 150°C)	-	-	2	3	K/s
Time t_S ($T_{S\,min}$ to $T_{S\,max}$)	t_S	60	100	120	s
Ramp-up rate to peak ($T_{S\,max}$ to T_P)	-	-	2	3	K/s
Liquidus temperature	T_L	-	217	-	°C
Time above liquidus temperature	t_L	-	80	100	s
Peak temperature	T_P	-	245	260	°C
Time within 5 °C of the specified peak temperature T_P - 5 K	t_P	-	-	10	s
Ramp-down Rate (T_P to 100 °C)	-	-	3	4	K/s
Time 25 °C to T_P	-	-	-	480	s

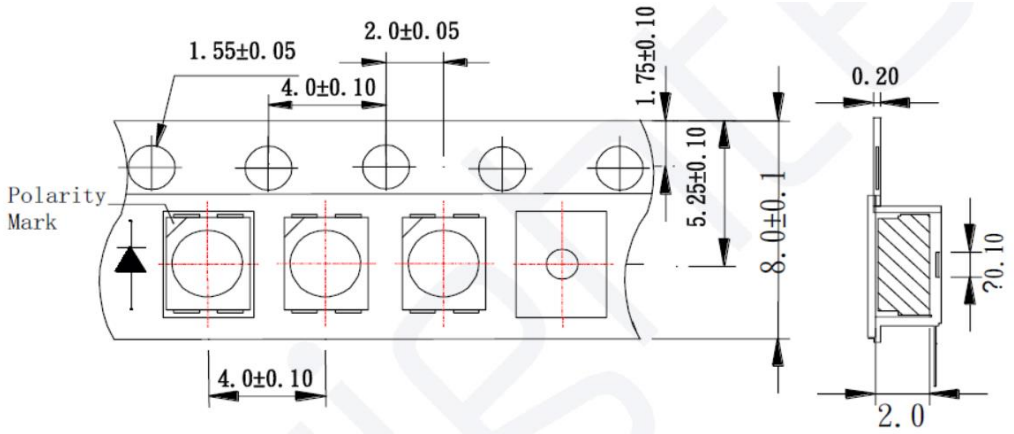
Note:

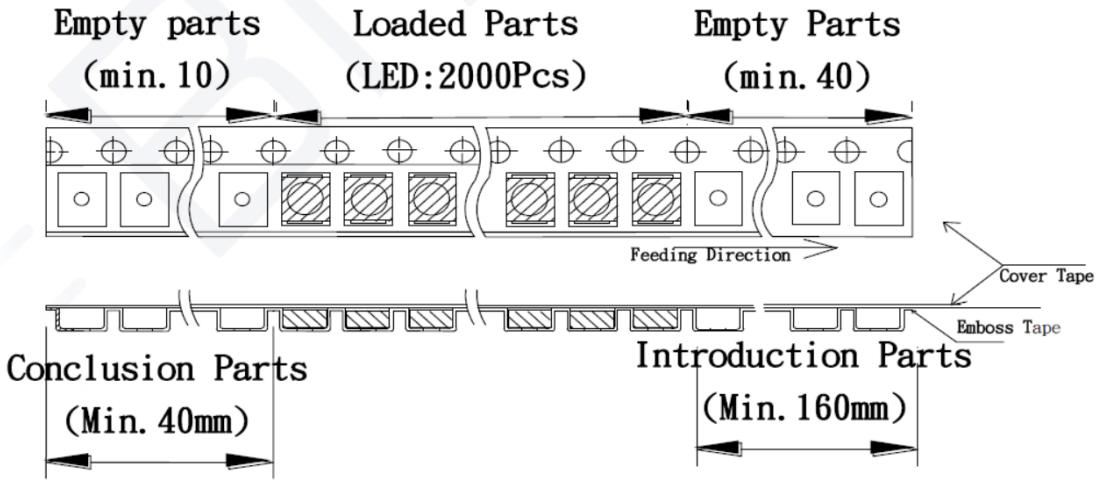
1. Maximum reflow soldering: 3 times.
2. Recommended reflow temperature 240°C. The maximum soldering temperature should be limited to 260°C.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

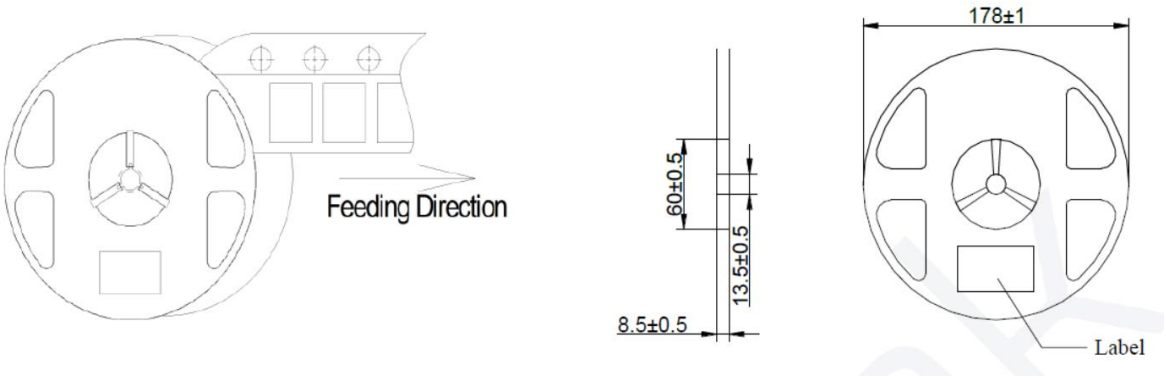
PACKING SPECIFICATION:

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 before use.

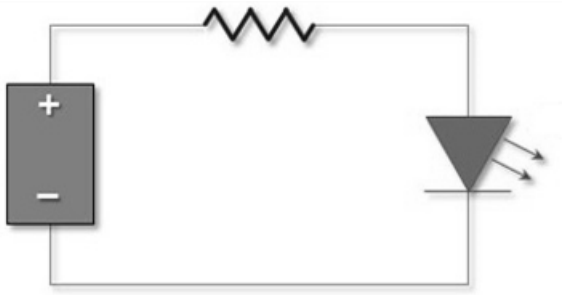
Baking:

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±3°C x 6hrs and <5%RH, for 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	22/07/2022	Datasheet set-up.