



BRIGHTTEK

BRIGHTTEK (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 Top View
- ▶ 2121 1.9t Series
- ▶ Red / Green / Blue

NOM68S44BF



Release Date: 16 December 2024 Version: A1.0



2121 1.9t Series

2121 1.9t Series

RoHS
Compliant



FEATURES (Red/Green/Blue):

- **Package:** PLCC4 Common Anode Top View SMD Package
- **Forward Current:** 15/8/5mA*
- **Forward Voltage (typ.):** 2.0/2.7/2.7V
- **Luminous Intensity (typ.):** 350/500/52mcd@15/8/5mA
- **Colour:** Red/Green/Blue
- **Dominant Wavelength (typ.):** 622/525/470nm
- **Viewing Angle:** 120°
- **Materials:**
 - Die: AlGaInP/InGaN/InGaN
 - Resin: Epoxy (Water Diffused)
- **Operating Temperature:** -30~+85°C
- **Storage Temperature:** -40~+85°C
- **ESD:** 2000/1000/1000V (HBM)
- **Grouping Parameters:**
 - Forward Voltage
 - Luminous Intensity
 - Dominant Wavelength
- **Soldering Methods:** IR Reflow soldering
- **MSL:** Level 5a according to J-STD020
- **Packing:** 8mm tape with max.8,000pcs/reel, ø328mm (13")
 - * In the order of Red/Green/Blue

APPLICATIONS:

- Decoration Lighting
- Dashboards Backlight
- Indicator
- Light Pipe Application
- 3C Consumer Goods
- RGB LED Display
- Gaming Devices

CHARACTERISTICS:

Absolute Maximum Characteristics ($T_a=25^{\circ}\text{C}$)

Parameter	Symbol	Ratings	Unit
Forward Current	I_F	25/25/20 ¹	mA
Peak Forward Current (duty factor 10%, 1kHz) ²	I_{FP}	50/50/50	mA
Power Dissipation	PD	60/82.5/65	mW
Reverse Voltage	V_R	5/5/5	V
Reverse Current @5V	I_R	10/10/10	μA
Electrostatic Discharge (HBM)	ESD	2000/1000/1000	V
Operating Temperature	T_{OPR}	-30~+85	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-40~+85	$^{\circ}\text{C}$

1. In the order of Red/Green/Blue.
2. Derate linearly as shown in derating curve.

Electrical & Optical Characteristics (T_a=25°C)

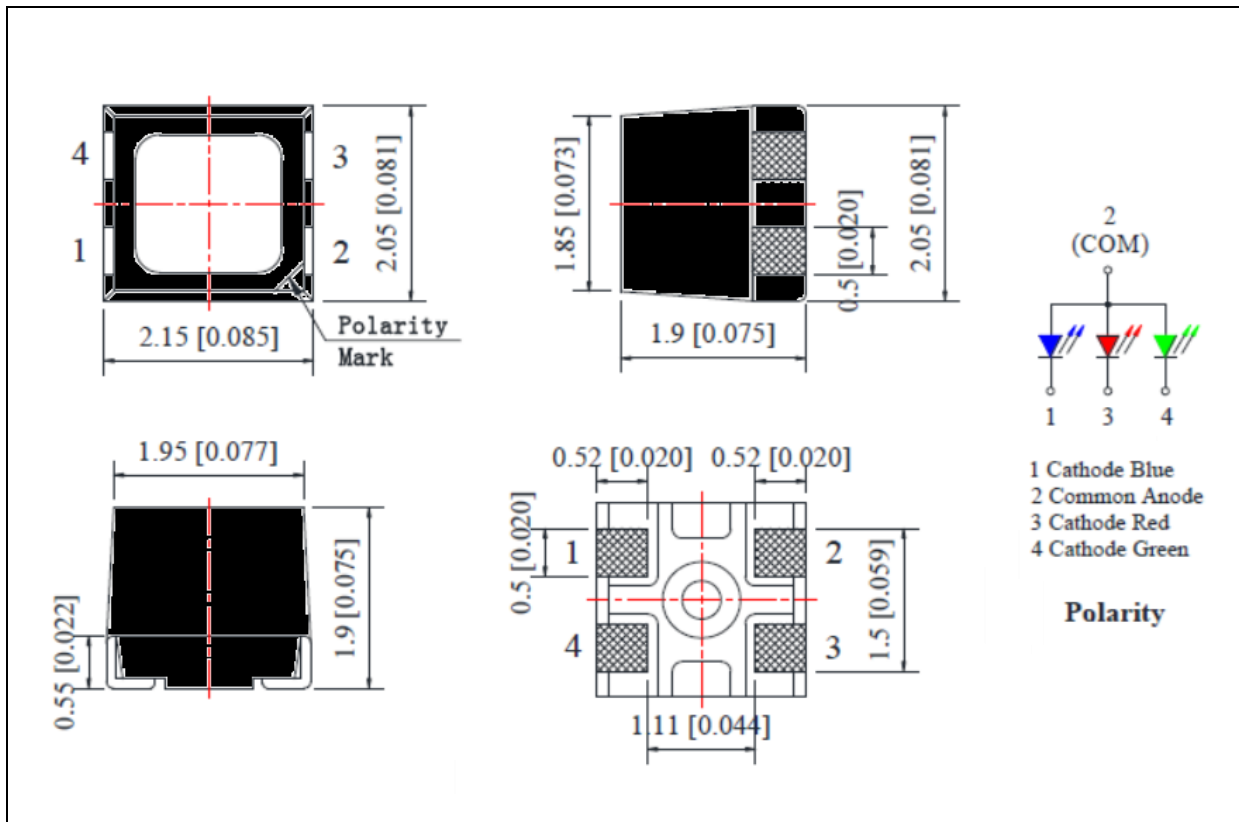
Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Red - Forward Voltage	V _F	1.6	2.0	2.4	V	I _F =15mA
Red - Luminous Intensity ¹	I _V	230	350	---	mcd	
Red - Peak Wavelength	λ _P	---	632	---	nm	
Red - Dominant Wavelength ²	λ _D	---	622	---	nm	
Red - Spectral Line Half Width	Δλ	---	15	---	nm	
Green - Forward Voltage	V _F	2.4	2.7	3.3	V	I _F =8mA
Green - Luminous Intensity	I _V	350	500	---	mcd	
Green - Peak Wavelength	W _P	---	520	---	nm	
Green - Dominant Wavelength	λ _D	---	525	---	nm	
Green - Spectral Line Half Width	Δλ	---	25	---	nm	
Blue - Forward Voltage	V _F	2.4	2.7	3.3	V	I _F =5mA
Blue - Luminous Intensity	I _V	35	52	---	mcd	
Blue - Peak Wavelength	W _P	---	468	---	nm	
Blue - Dominant Wavelength	λ _D	---	470	---	nm	
Blue - Spectral Line Half Width	Δλ	---	19	---	nm	
Viewing Angle ³	2θ _{1/2}	---	120	---	deg	I _F =15/8/5mA

1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.
2. The dominant wavelength (λ_d) is derived from the CIE chromaticity diagram and represents the single wavelength which defines the colour of the device.
3. 2θ_{1/2} is the o-axis angle where the luminous intensity is 1/2 the peak intensity.



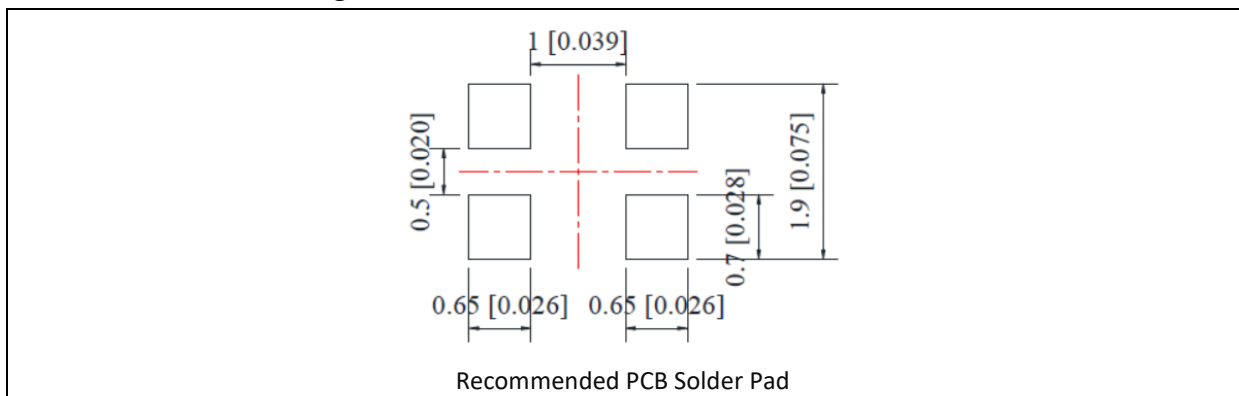
OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance $\pm 0.25\text{mm}$, unless otherwise noted.
3. Protruded resin under flange is 1.00mm max.

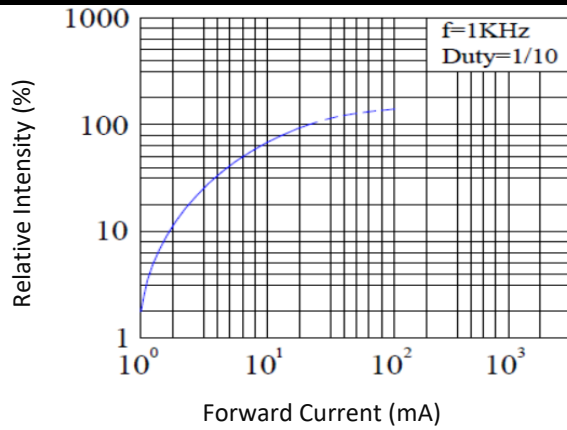
Recommended Soldering Pad Dimension:



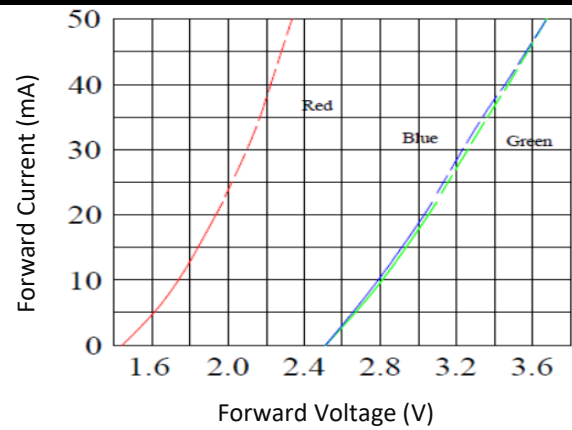
1. Dimensions are in millimetre (mm).
2. Tolerance $\pm 0.1\text{mm}$ with angle tolerance $\pm 0.5^\circ$.
3. Suggested stencil $t=0.12\text{mm}$.

ELECTRO-OPTICAL CHARACTERISTICS:

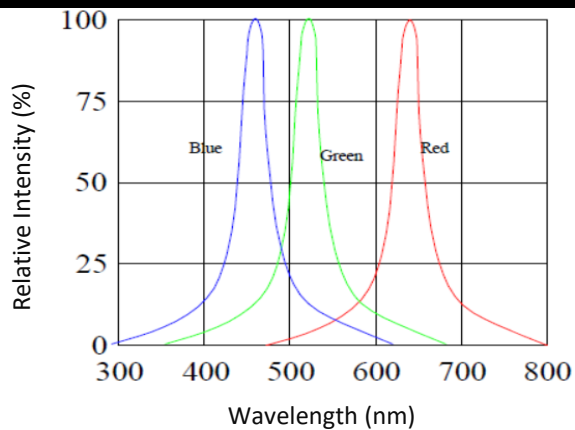
Relative Intensity v.s. Forward Current



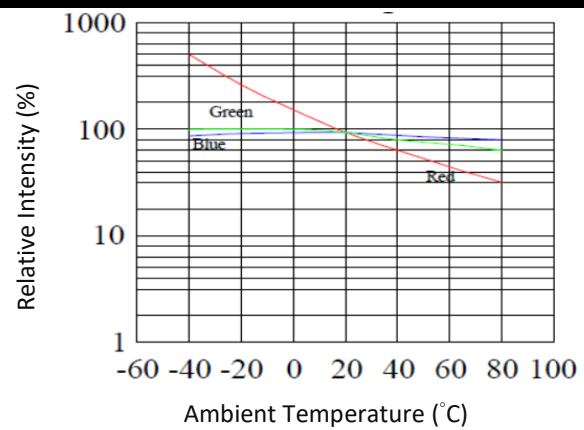
Forward Current v.s. Forward Voltage



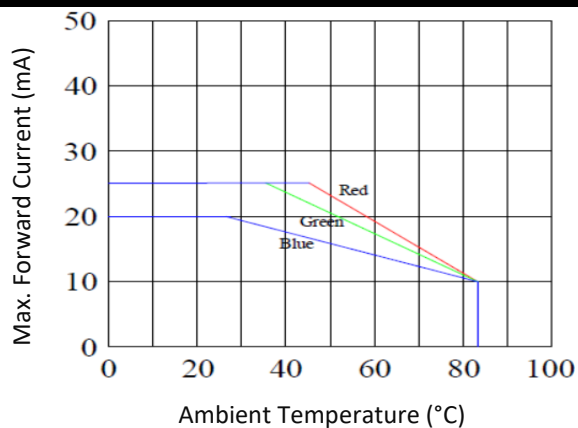
Relative Spectral Distribution



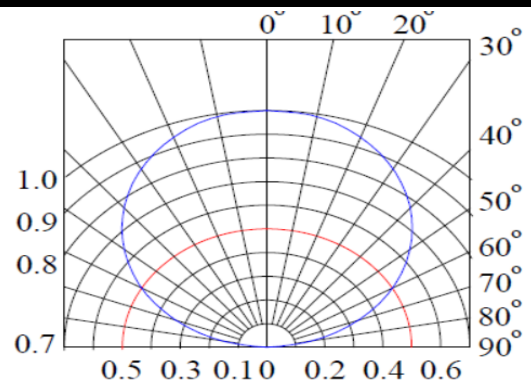
Relative Intensity v.s. Ambient Temperature



Max. Forward Current De-Rating Chart



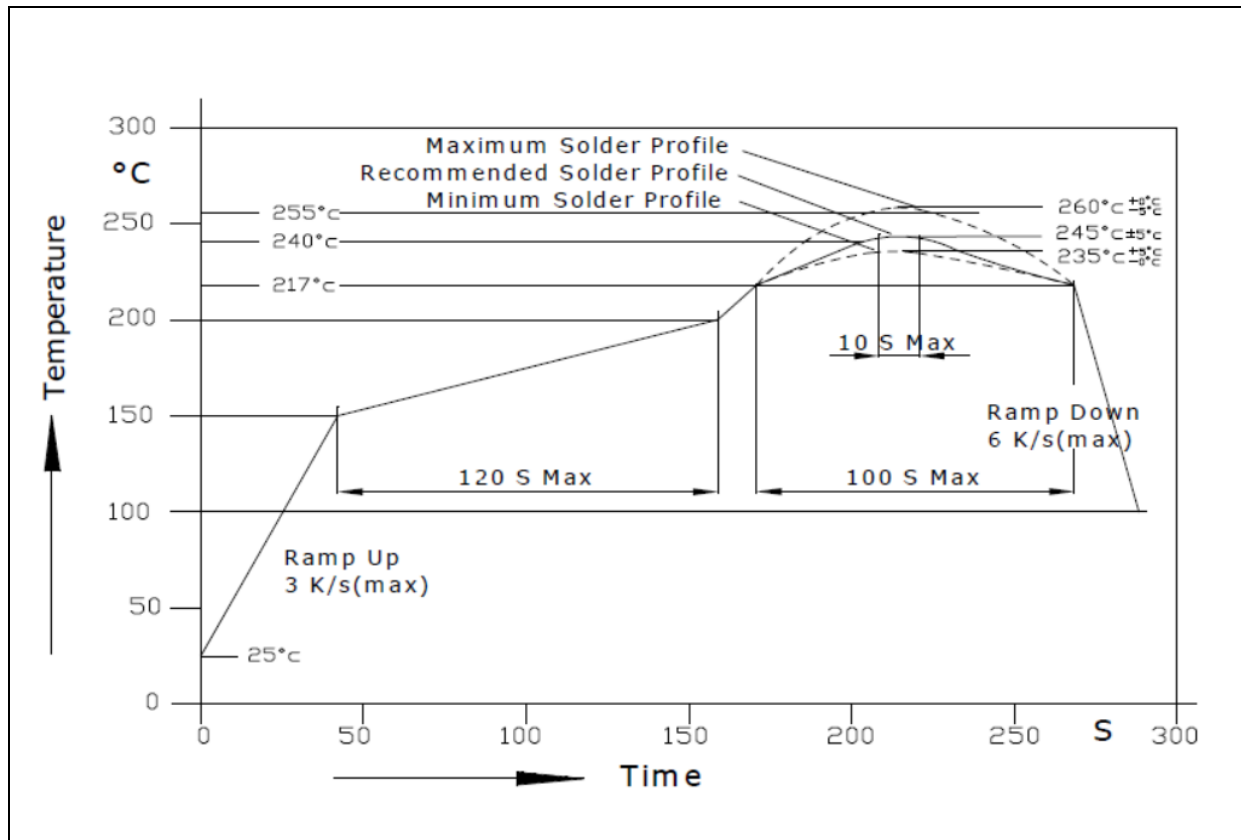
Directive Radiation





RECOMMENDED SOLDERING PROFILE:

Lead-free Solder:



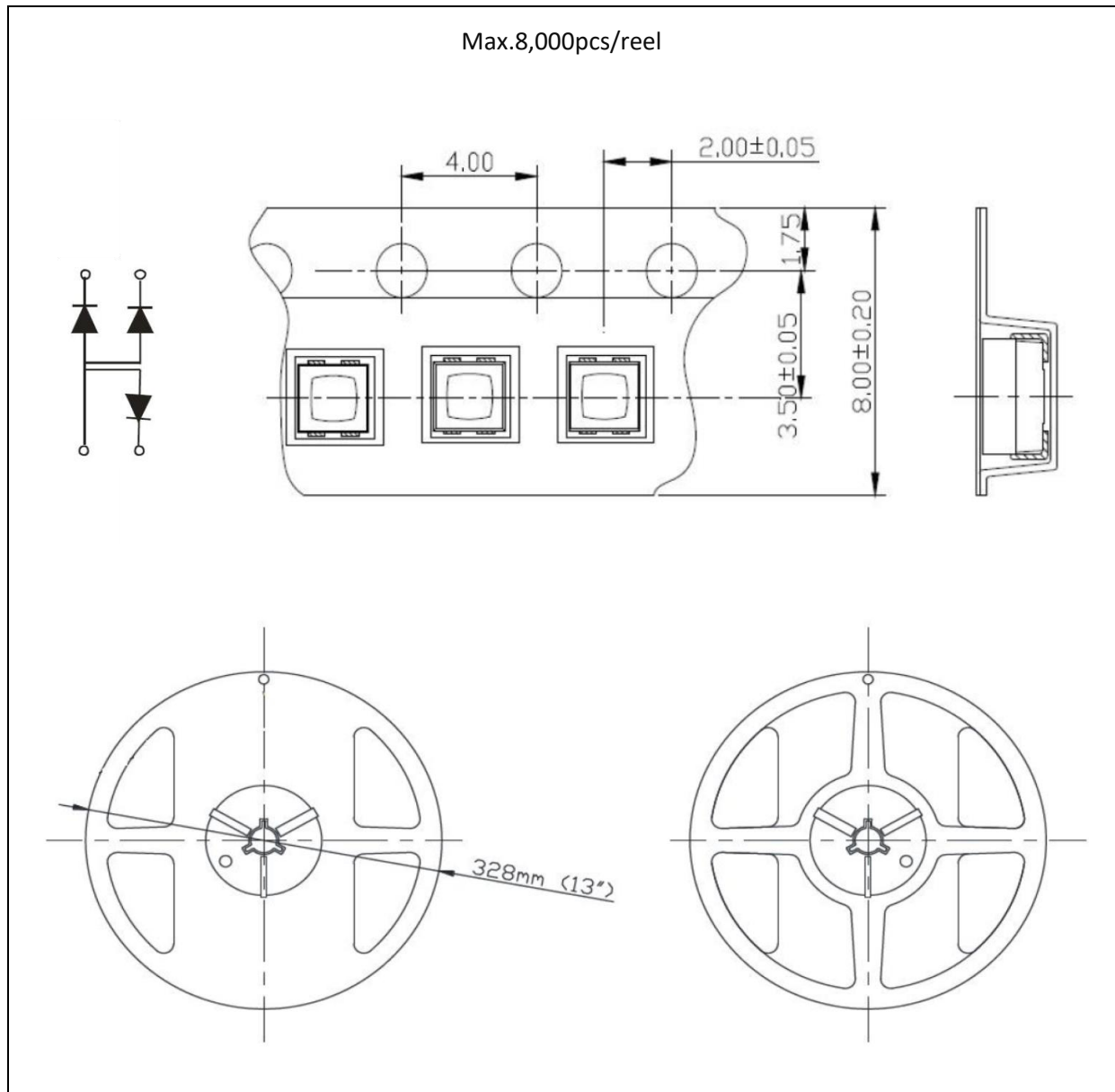
Note:

1. Maximum reflow soldering: 2 times.
2. Recommended reflow temperature is 240°C; the maximum soldering temperature should be limited to 250°C.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.



PACKING SPECIFICATION:

Reel Dimension:



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 24 hours. Otherwise, they should be kept in a damp-proof box with desiccant 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 follows:

- 65±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-electrostatic glove is recommended when handling 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	16/12/2024	Datasheet set-up.