Cree® SMD LED
Model # LM1-PPP1-01-N1
Data Sheet

120-degree, 3.2 x 2.8-mm, SMT LED in full color with water-transparent lens

Applications

- Indoor and Outdoor Displays
- Backlighting
- Coupling into Light Guides
- RGB Full-Color Displays

Absolute Maximum Ratings (T_A = 25°C)

Items	Symbol	Absolute Maximum Rating			Unit
		R	G	B	
Forward Current Note 1	I_F	50	25	25	mA
Peak Forward Current Note 2	I_{FP}	200	100	100	mA
Reverse Voltage	V_R	5	5	5	V
Power Dissipation	P_D	125	100	100	mW
Operation Temperature	T_{opr}	-40 ~ +100			°C
Storage Temperature	T_{stg}	-40 ~ +100			°C
Junction Temperature	T_J	+110	110	110	°C
Junction/ambient 1 chip on Note 3	R_{THJA}	450	400	450	°C/W
Junction/ambient 3 chips on Note 3	R_{THJA}	650	580	680	°C/W
Junction/solder point 1 chip on	R_{THJS}	300	280	300	°C/W
Junction/solder point 3 chips on	R_{THJS}	450	430	480	°C/W

Notes:
1. Single-color light.
2. Pulse width <=0.1 msec, duty <=1/10.
3. R_{TH} test condition: mounted on PC Board FR 4 (pad size >=16mm^2)

Typical Electrical & Optical Characteristics (T_A = 25°C)

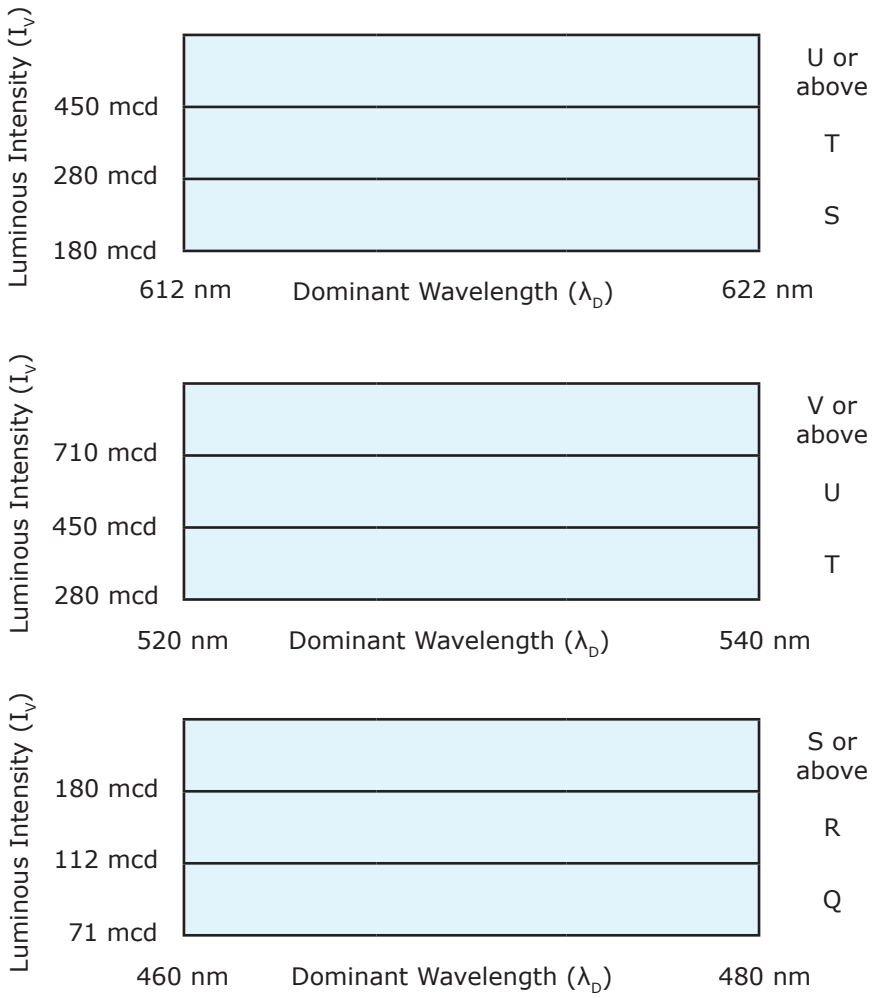
Characteristics	Condition	Symbol	Values			Unit
			R	G	B	
Wavelength at peak emission	I_F = 20 mA	λ_{PEAK}	620	520	465	nm
Dominant Wavelength	I_F = 20 mA	λ_{DOM}	612~622	520~540	460~480	nm
Spectral bandwidth at 50% I_{REL} max	I_F = 20 mA	λ	24	38	28	nm
Viewing Angle at 50% I_V	I_F = 20 mA	2θ½	120	120	120	deg
Forward Voltage	I_F = 20 mA	$V_{F(avg)}$	2.0	3.4	3.4	V
		$V_{F(max)}$	2.5	4.0	4.0	V
Luminous Intensity	I_F = 20 mA	$I_{V(min)}$	180	280	71	mcd
		$I_{V(avg)}$	300	450	110	mcd
Reverse Current (max)	V_R = 5 V	I_R	10	10	10	µA

Standard Bins for LM1-PPP1-01-N1 (I_F = 20 mA)

Lamps are sorted to luminous intensity (I_V) and dominant wavelength (λ_D) bins shown.

Orders for LM1-PPP1-01-N1 may be filled with any or all bins contained as below.

All luminous intensity (I_V) and dominant wavelength (λ_D) values shown and specified are at I_F = 20 mA.



Important Notes:

1. All ranks will be included per delivery; rank ratio will be based on the dice distribution.
2. Tolerance of measurement of luminous intensity is ±10%.
3. Tolerance of measurement of the dominant wavelength is ±1 nm.
4. Tolerance of measurement of V_F is ±0.05 V.
5. Packaging methods are available for selection; please refer to the "Cree LED Lamp Packaging Standard" document.
6. Please refer to the "Cree LED Lamp Reliability Test Standards" document for reliability test conditions.
7. Please refer to the "Cree LED Lamp Soldering & Handling" document for information about how to use this LED product safely.

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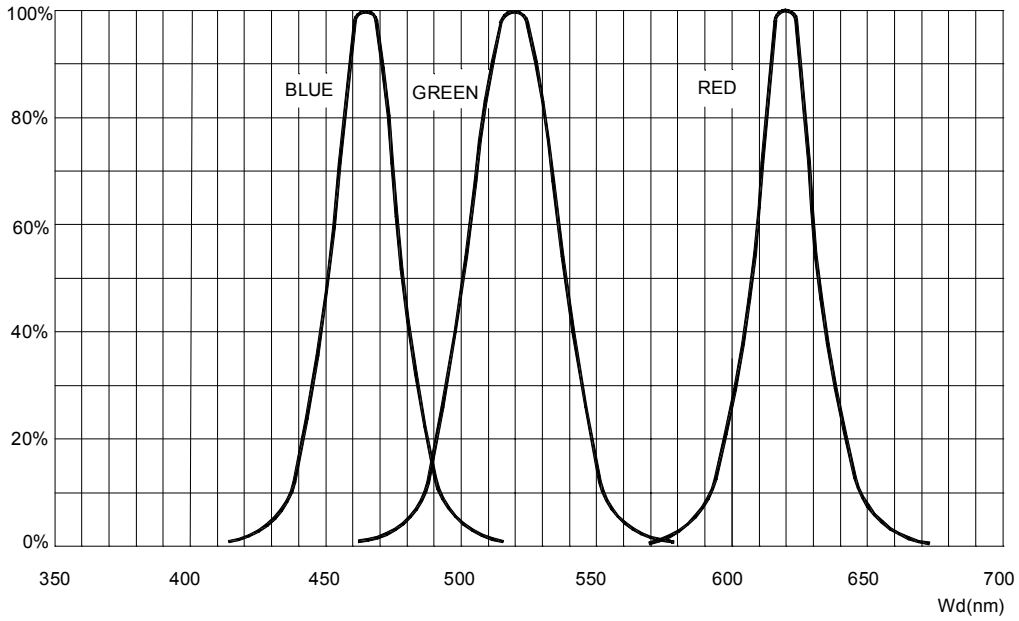
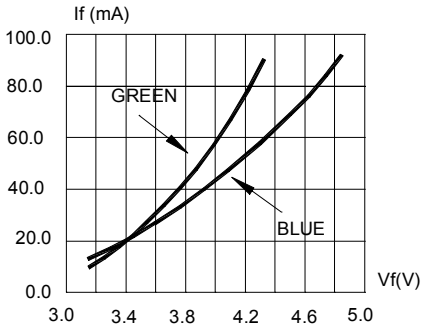
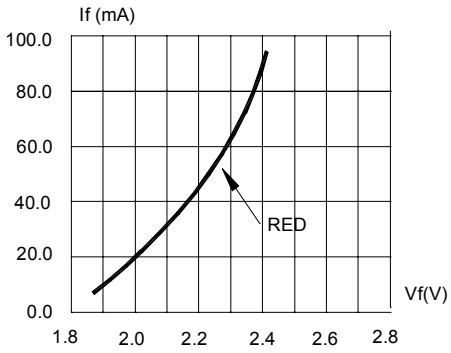
Graphs



RELATIVE INTENSITY VS, DOMINANT WAVE LENGTH



FORWARD CURRENT VS.
FORWARD VOLTAGE.



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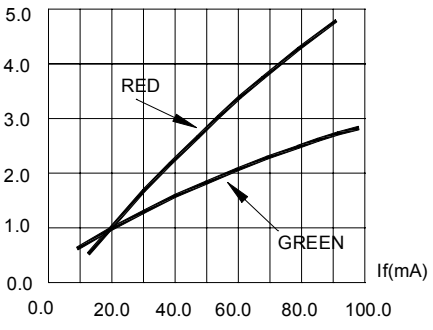
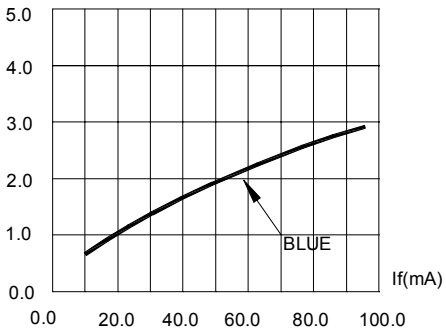
FORWARD VOLTAGE.



RELATIVE LUMINOUS INTENSITY VS.
FORWARD CURRENT.



RELATIVE LUMINOUS INTENSITY VS.
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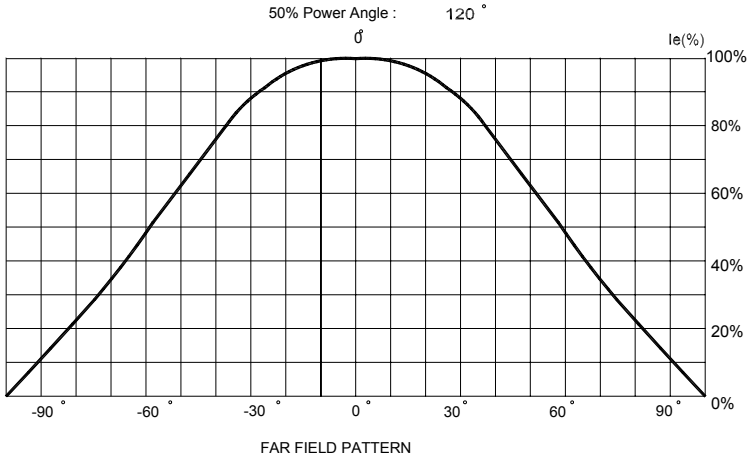
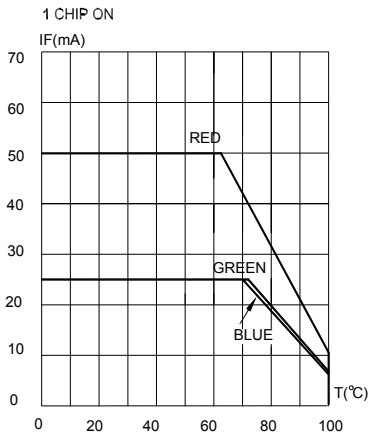
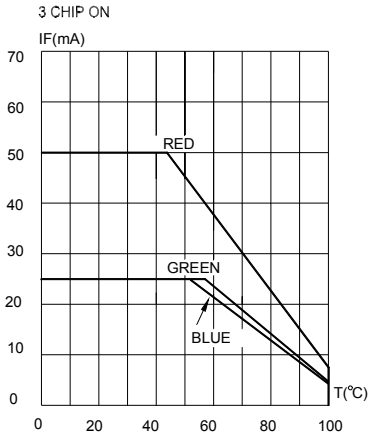


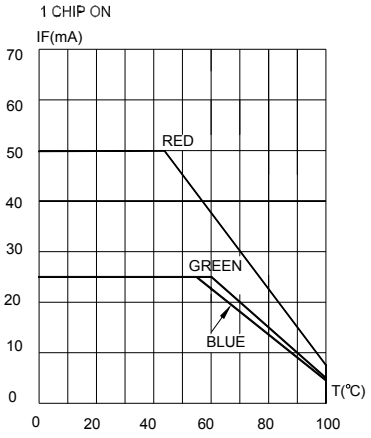
FAR FIELD PATTERN



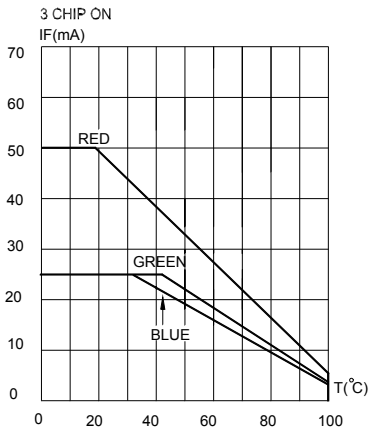
MAXIMUM FORWARD DC CURRENT
VS, SOLDER POINT TEMPERATURE.



MAXIMUM FORWARD DC CURRENT
VS, SOLDER POINT TEMPERATURE.



MAXIMUM FORWARD DC CURRENT
VS, AMBIENT TEMPERATURE.



MAXIMUM FORWARD DC CURRENT
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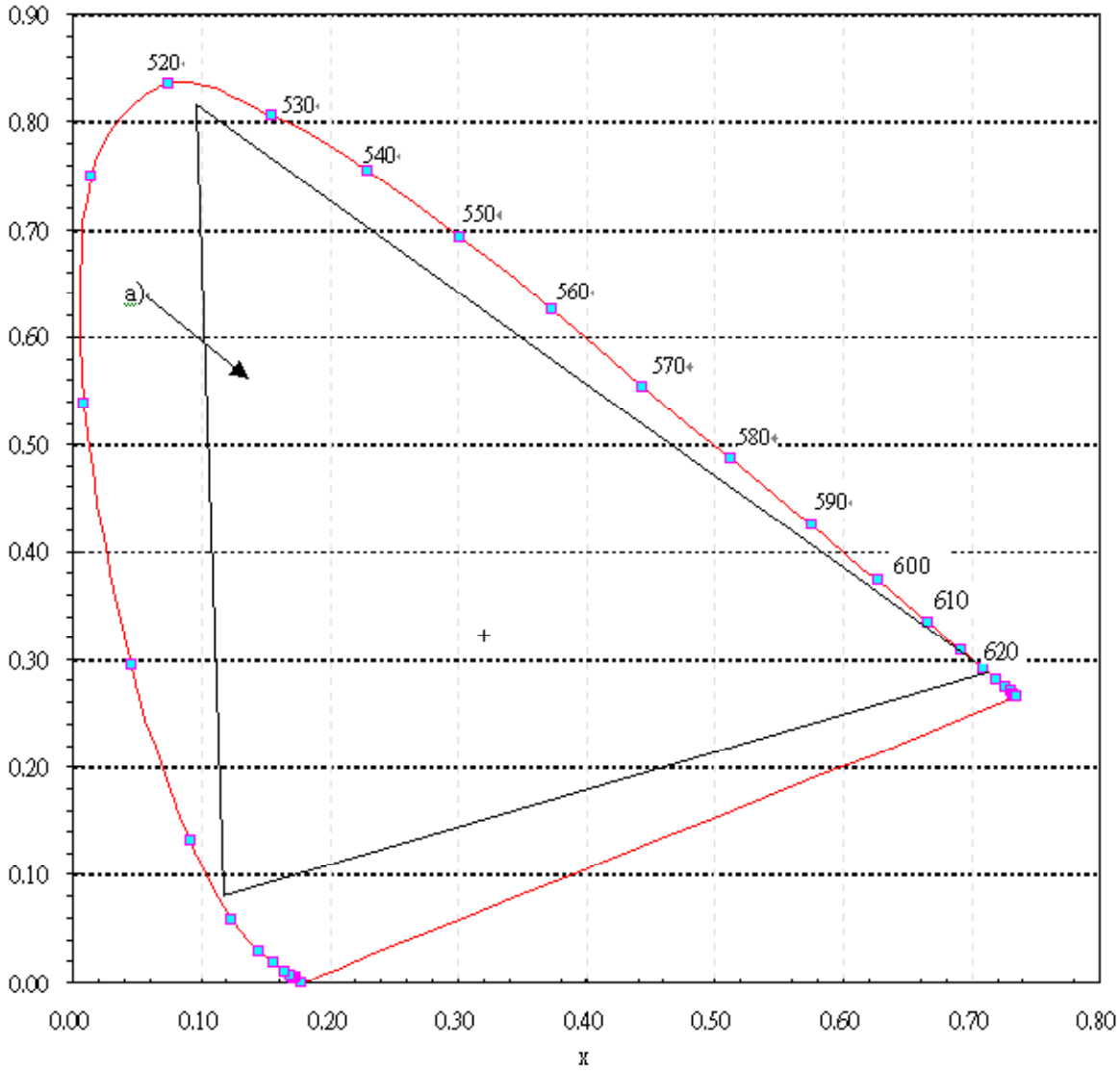
CIE 1931 Graph



The color coordinates of the mixed light can be expected within the area of the color triangle marked "a)". The achromatic point (x=0.33,y=0.33) is marked "+".

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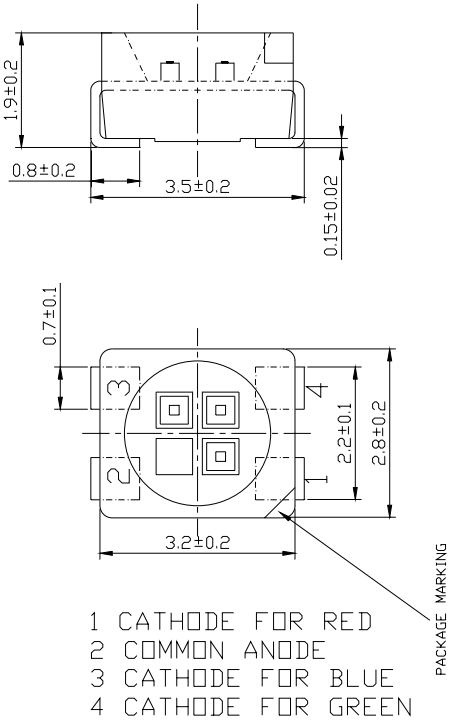
Mechanical Dimensions

All dimensions are in mm.



Notes

RoHS Compliance

The levels of environmentally sensitive, persistent biologically toxic (PBT), persistent organic pollutants (POP), or otherwise restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), as amended through April 21, 2006.

Vision Advisory Claim

Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.

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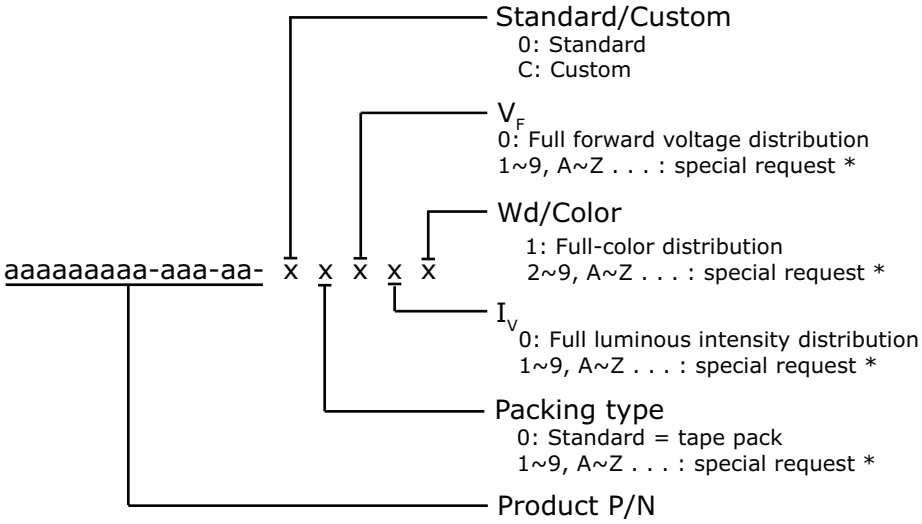
Kit Number System

Cree LED lamps are tested and sorted into performance bins. A bin is specified by ranges of color, forward voltage, and brightness. Sorted LEDs are packaged for shipping in various convenient options. Please refer to the "Cree LED Lamp Packaging Standard" document for more information about shipping and packaging options.

Cree LEDs are sold by order codes in combinations of bins called kits. Order codes are configured in the following manner:



* Contact your Cree sales representative for ordering information.

Standard Available Kits*

Kit Number	Description
Contact Cree Sales	SMD 120 Full Color, Tape & Reel

* Please contact your Cree representative about the availability of non-standard kits.

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