SPECIFICATION
RGBW ON TOP SMD TYPE LED

NEWSTAR-50RGBW-BW-000
NEWSTAR-50RGBW-WT-000

Description: 5.5x5x1.6mm Top SMD Type 4-chips 0.4 Watt Power RGBW Flash color LED

Rev. No.: 01

Date: 2016-08-30

Formal Specification

SPECIFICATION OF CHIP ARRAY ON TOP SMD TYPE LED

NEWSTAR-50RGBW-BW-000
NEWSTAR-50RGBW-WT-000

RGBW LED provides the leading Chip on Top SMD type of LED technology for high efficiency solid-state lighting solutions. It offers excellent uniformity, flexibility and cost efficiency along with compact size and wide range of color selections. All components are produced by packing high-performance LED chips and silicon resin with proprietary phosphors.

1. Features and Benefits

. Ideal for LED lighting application to avoid multi-shadows
. Higher heat conductivity for better thermal management
. Provide variable and innovative array LED layout designs and combinations
. Reduce the initial development cost and time
. High lumen-performance per dollar cost
. Lead free reflow solder compatible with RoHS compliant

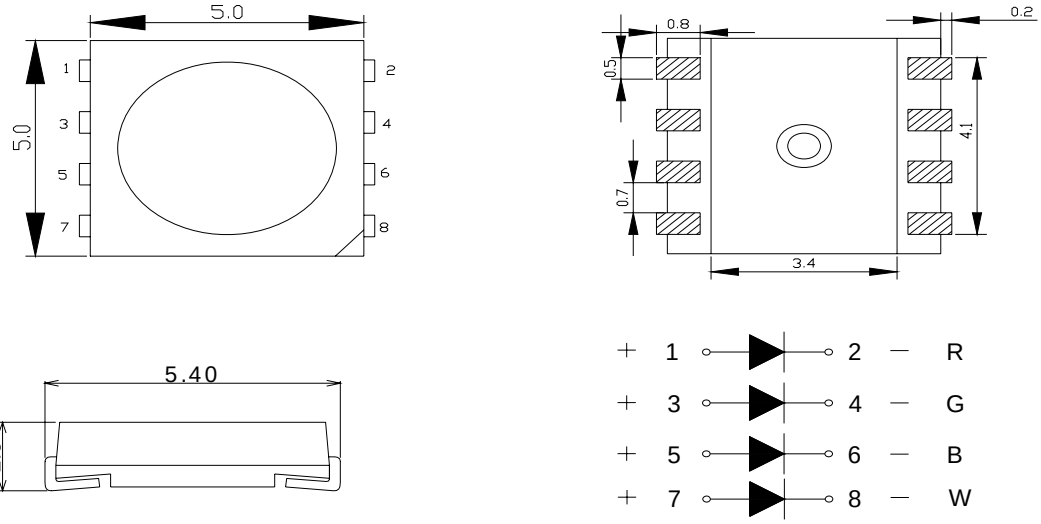
2. Applications

. Solid State Lighting
. Indoor/Outdoor/Decoration
. Signal Light Engine
. Commercial Display
. Industrial Light Engine

3. Dimensions and Materials

. Dimensions: 5.5 mm x 5 mm x 1.6 mm
. Packages: Top SMD
. Capsulated Resin: Silicone Resin with Silicate Phosphor
. Electrodes: Ag Plating
. Chips: Total 4 chips packed in cavity

Mechanical Dimensions



Notes:
1. All dimensions are in millimeters.
2. Tolerance is ±0.2mm unless otherwise noted

4. Electrical/Optical Characteristics

(Thermal Pad Temperature @25℃)

ITEM		SYMBOL	TEST CONDITIONS	UNIT	MIN.	TYP.	MAX.
Forward Voltage		Vf	If=4*20 mA	V	1.8	3.2	3.4
Reverse Current		Ir	Vr=5V	μA	-	-	5
Viewing Angle		2θ 1/2	If=4*20 mA	deg	-	120	-
Color Rendering Index(*1)		RA	If=4*20 mA	-	70	80	90
Color temperature		CCT	If=4*20 mA	K	6000	6500	7000
					2400	2600	2800
Junction/Solder 4 chips on (*1)		Rθj-c	If=4*20 mA	℃/W	-	-	230
Dominant Wavelength		Wd	R	nm	620	625	630
			G		515	520	525
			B		460	470	475
Luminous Flux(*3)	R	Φv	If=4*20 mA	lm	2	-	3
	G				3	-	4
	B				1	-	2
	W				6	7	8

*1: Rth test condition: Mounted on PC Board FR 4(pad size≥16mm2)
*2: Measurement tolerance of the luminous intensity: ±10%. This value for reference only.
*3: Measurement tolerance of the luminous intensity: ±10%.

5. Absolute Maximum Ratings

(Thermal Pad Temperature @25℃)

ITEM	SYMBOL	ABSOLUTE MAXIMUM RATING	UNIT
D.C Forward Current	If	4*20	mA
Pulse Forward Current (*1)	Ifp	100	mA
Reverse Voltage	Vr	5	V
Power Dissipation	Pd	4x0.065	W
Operating Temperature	Topr	-25~+85	℃
Storage Temperature	Tstg	- 40~+100	℃
Soldering Temperature (Reflow) (*2)	Tsld	max.240 < 5 sec	℃

*1: Ifp conditions: 1/10 Duty Cycle & 0.1ms for pulse width.
*2: Reflow method: 1.6mm from body for 5 seconds not exceeding the recommended maximum temperature.

6. Luminous Flux Rank

LEDs are sorted to Luminous Flux –lm bins shown. Orders for The LED may be filled with any or all bins contained as below. All Luminous Flux-lm values shown and specified are at IF =4x20mA.

	RED		GREEN		Blue		WHITE	
Luminous Flux Rank	C	D	D	E1	B	C	F1	F2
Luminous Flux (lm)	2-3	3-4	3-4	4-5	1-2	2-3	6-7	7-8

7. Forward Voltage Rank

LEDs are sorted to VF bins shown. Orders for The LED may be filled with any or all bins contained as below.
All VF values shown and specified are at IF =4x20mA.

Rank	V1	V2	V3	V4	V5	V6	V7	V8
Voltage (V)	1.8-2.0V	2.0-2.2V	2.2-2.4V	2.4-2.6V	2.6-2.8V	2.8-3.0V	3.0-3.2V	3.2-3.4V

Note: Measurement tolerance of the forward voltage: ±0.06V

8. Dominant Wavelength Rank

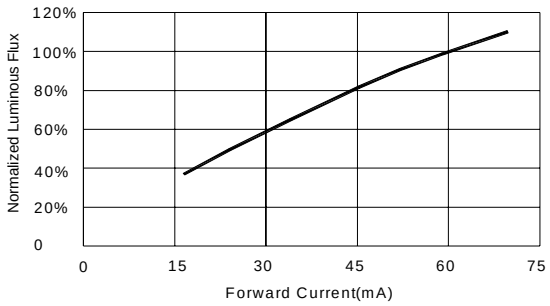
KL-S5050-04004-RGBW-BW/WT-000 Dominant Wavelength Rank

	Red		Green		Blue		
Dominant Wavelength Rank	HR1	HR2	PG2	PG3	BL5	BL6	BL7
Dominant Wavelength(nm)	620-625	625-630	515-520	520-525	460-465	465-470	470-475

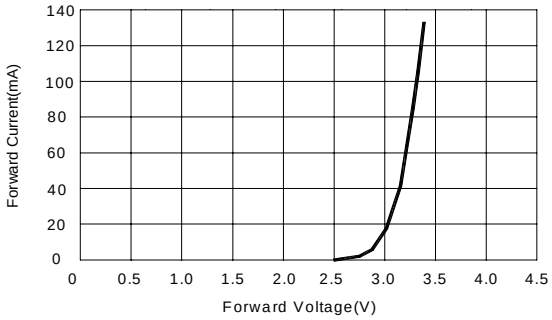
Note: Measurement tolerance of the Dominant Wavelength: ±1nm

9. Optical-Electrical Characteristic Graphs

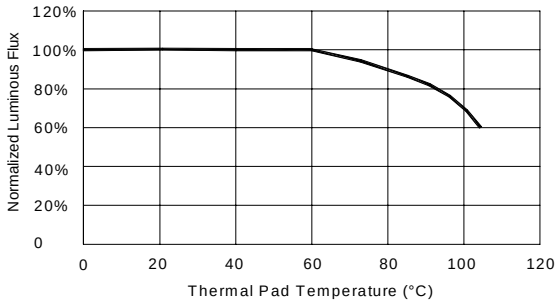
Forward Current vs. Typical Relative Luminous Flux



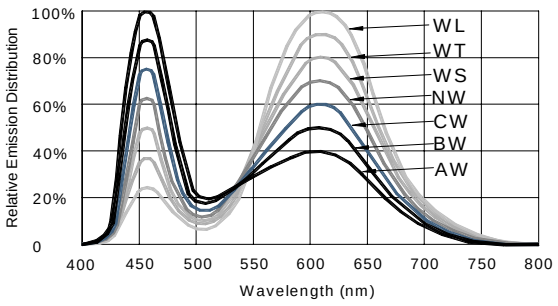
Forward Voltage vs. Forward Current



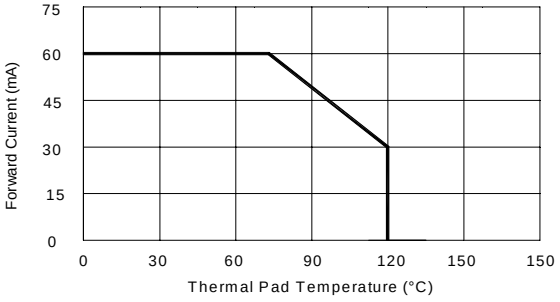
Thermal Pad Temperature vs. Relative Light Output



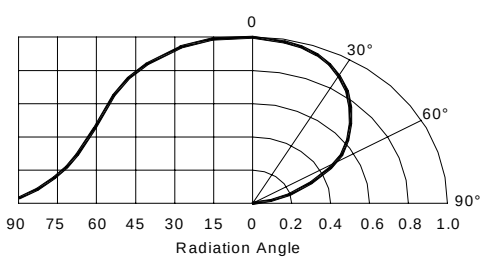
Wavelength Characteristics



Thermal Pad Temperature vs. Forward Current

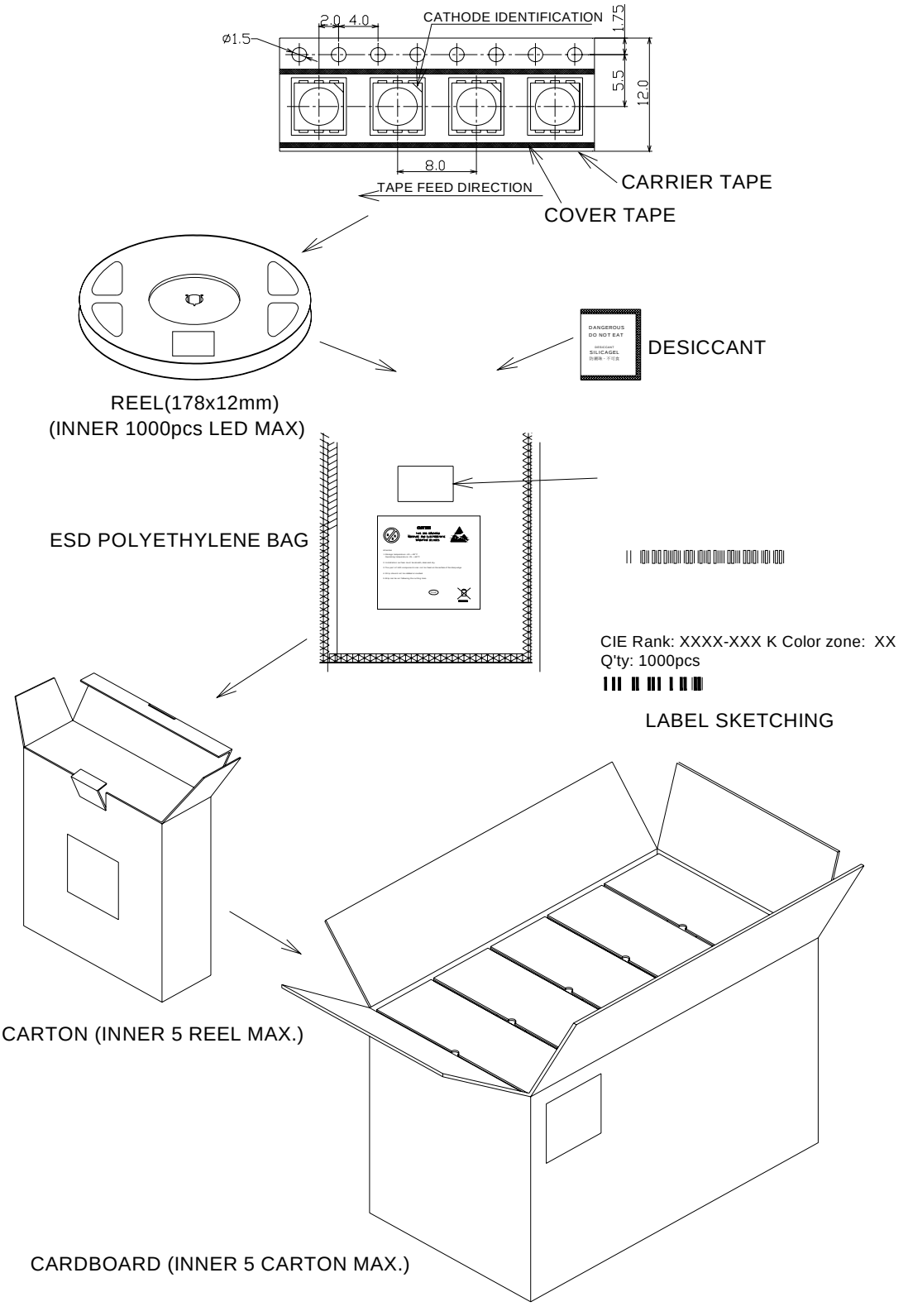


Typical Radiation Pattern 120°



10. Packaging Standard:

NEWSTAR-50RGBW-BW/WT-000



Change History

FCN No.	Date	Rev. No.	Changes/Reason of changes
	2016-08-30	01	Initial Document

Items	Signatures	Date	Note
Prepared by	CHENSHIHONG	2016-08-30	
Checked by	Betty Lu	2016-08-30	
Approved by	Betty Lu	2016-08-30	
FCN#			