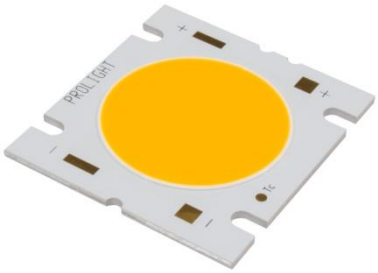
ProLight Opto
Technology Corporation



ProLight PABB-100FxL-xAAx
100W COB Light-Engine LEDs
Technical Datasheet
Version: 1.0

Prolight Opto ® ProEngine Series

Features

- High flux density of lighting source
- Good color uniformity
- RoHS compliant
- Engine Star binning structure, neutral white and warm white with 3 steps guarantee.
- More energy efficient than incandescent and most halogen lamps
- No UV
- Long lifetime

Main Applications

- High specification down lighting
- High profile architectural lighting
- Street lighting
- Stage lighting
- High-Bay & Low-Bay lighting

Introduction

- The input power is 100 Watt, the multi-chip ultra high power ProEngine Series delivers never before seen luminous flux output from a single emitter. The superficial illuminating nature of ProEngine makes them the preference in High-Bay and Low-Bay lighting, typical applications include commercial down lighting, stage lighting, outdoor street lighting and high profile architectural lighting.

2013/05

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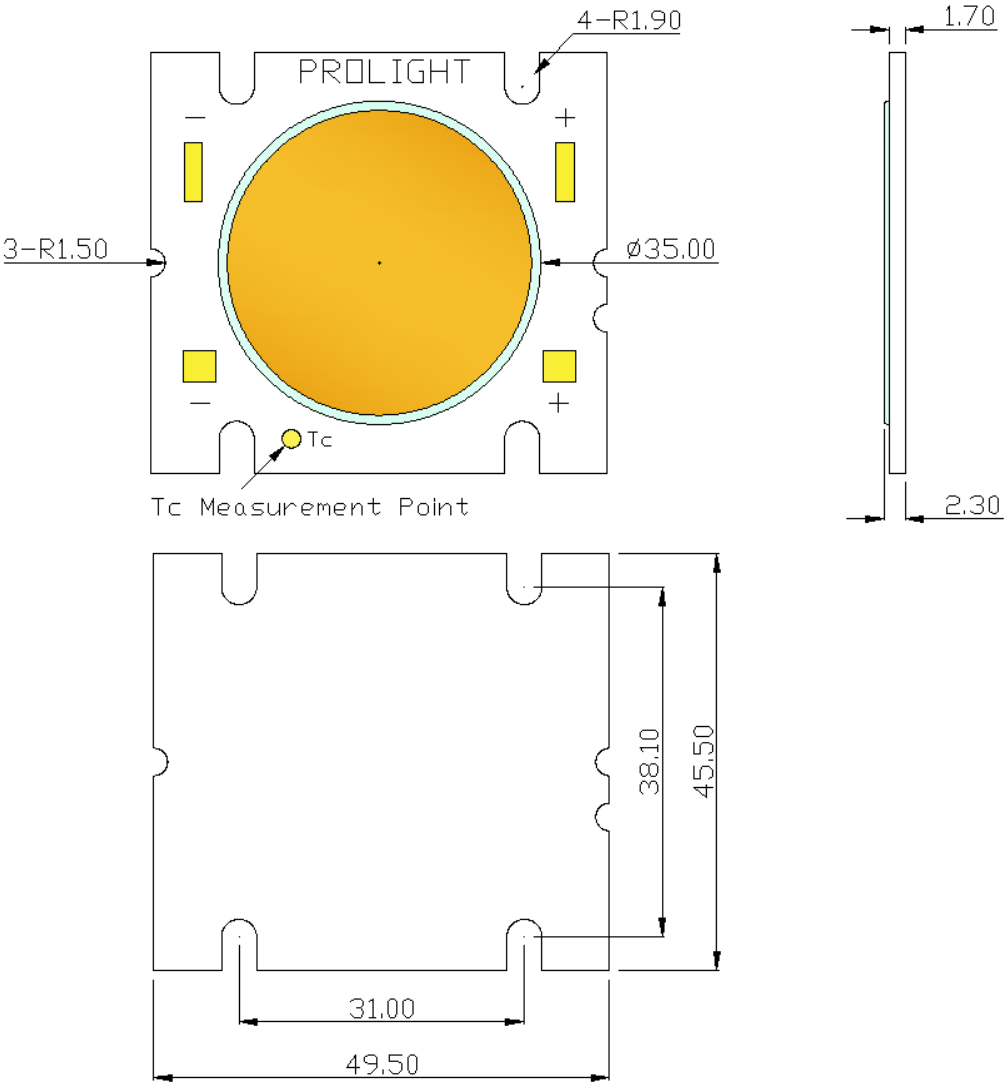
Emitter Mechanical Dimensions



Notes:
1. Solder pads are labeled “+” and “-” to denote positive and negative, respectively.
2. Drawing not to scale.
3. All dimensions are in millimeters.
4. Unless otherwise indicated, tolerances are ± 0.30mm.
5. **Please do not use a force of over 0.3kgf impact or pressure on the lens of the LED, otherwise it will cause a catastrophic failure.**

*The appearance and specifications of the product may be modified for improvement without notice.

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Flux Characteristics, T_C = 25°C

Radiation Pattern	Color	Part Number COB	DC Forward Current (mA)	Luminous Flux Φ_V (lm) Minimum	Luminous Flux Φ_V (lm) Typical	CRI Typical
Lambertian	White	PABB-100FWL-NAAN	2800	9200	10200	72
			3100*	10100	11200	
			3500	11200	12500	
	Neutral White	PABB-100FNL-BAAP	2800	8000	8900	82
			3100*	8800	9700	
			3500	9800	10900	
	Warm White	PABB-100FVL-BAAP	2800	7500	8400	80
			3100*	8300	9200	
			3500	9200	10200	
		PABB-100FVL-DAAP	2800	5600	6200	95
			3100*	6100	6800	
			3500	6700	7500	

- The mark "*" indicated product is tested and binned at the specified drive current.
- ProLight maintains a tolerance of ± 10% on flux and power measurements.
- Please do not drive at rated current more than 1 second without proper heat sink.

Electrical Characteristics at 3100mA, T_C = 25°C

Color	Forward Voltage V_F (V) Min.	Typ.	Max.	Thermal Resistance Junction to Board (℃/W)
White	28.0	30.5	33.0	0.2
Neutral White	28.0	30.5	33.0	0.2
Warm White	28.0	30.5	33.0	0.2

- ProLight maintains a tolerance of ± 1V for Voltage measurements.

Optical Characteristics at 3100mA, T_C = 25°C

Radiation Pattern	Color	Color Temperature CCT Min.	Typ.	Max.	Total included Angle (degrees) $\theta_{0.90V}$	Viewing Angle (degrees) $2\theta_{1/2}$
Lambertian	White	5300 K	5700 K	6020 K	160	120
	Neutral White	3850 K	4000 K	4120 K	160	120
	Warm White	2660 K	2700 K	2790 K	160	120
		2970 K	3000 K	3120 K	160	120

- ProLight maintains a tolerance of ± 5% for CCT measurements.

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Absolute Maximum Ratings

Parameter	White/Neutral White/Warm White
Max DC Forward Current (mA)	3500
Peak Pulsed Forward Current (mA)	7000 (less than 1/10 duty cycle@1KHz)
Average Forward Current (mA)	3500
ESD Sensitivity (HBM per MIL-STD-883E Method 3015.7)	±2000V
LED Junction Temperature	120°C
Operating Board Temperature at Maximum DC Forward Current	-40°C - 90°C
Storage Temperature	-40°C - 120°C
Reverse Voltage	Not designed to be driven in reverse bias

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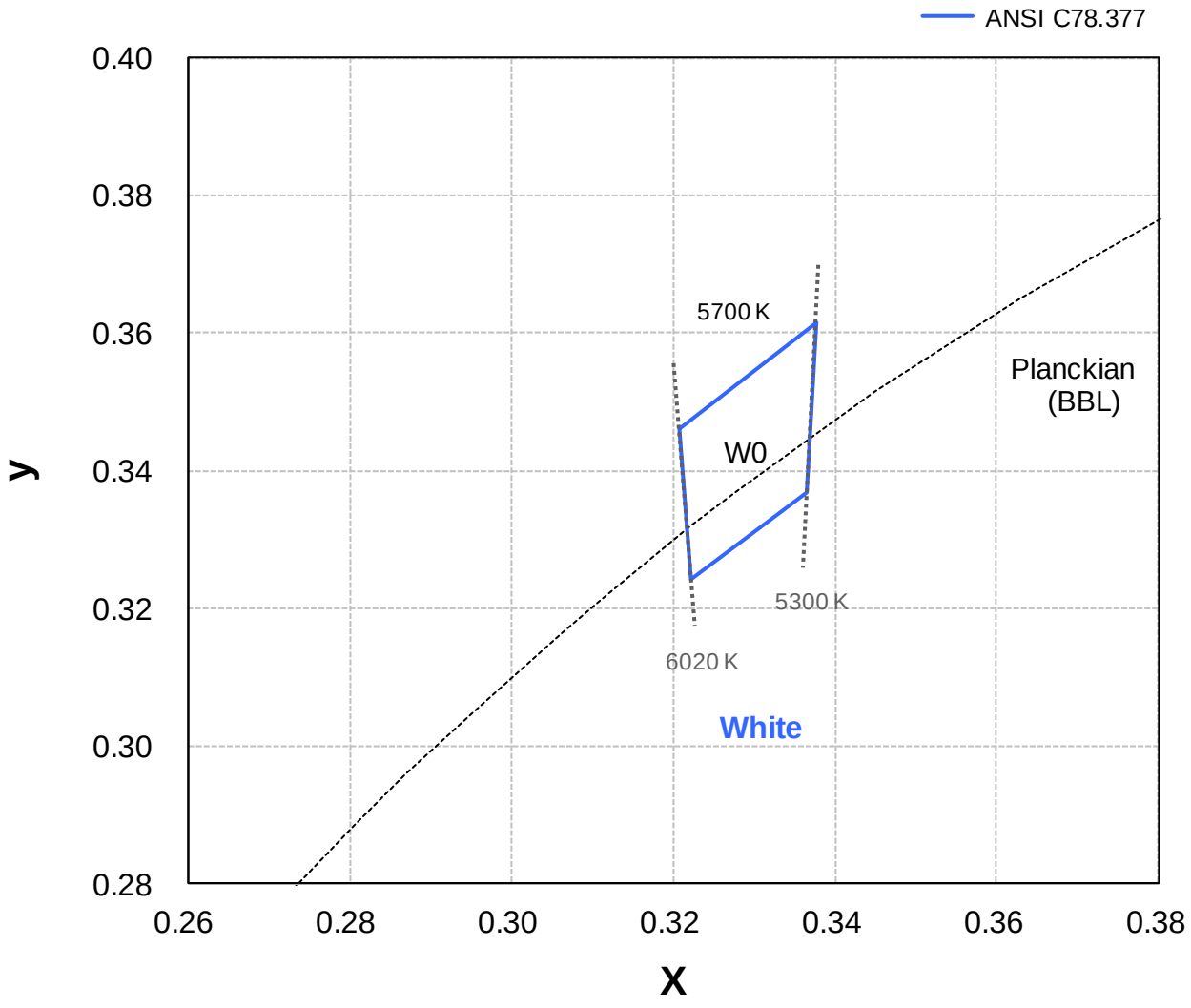
Color Bin

White Binning Structure Graphical Representation



White Bin Structure

Bin Code	x	y	Typ. CCT (K)
W0	0.3376 0.3207 0.3222 0.3366	0.3616 0.3462 0.3243 0.3369	5700

- Tolerance on each color bin (x , y) is ± 0.01

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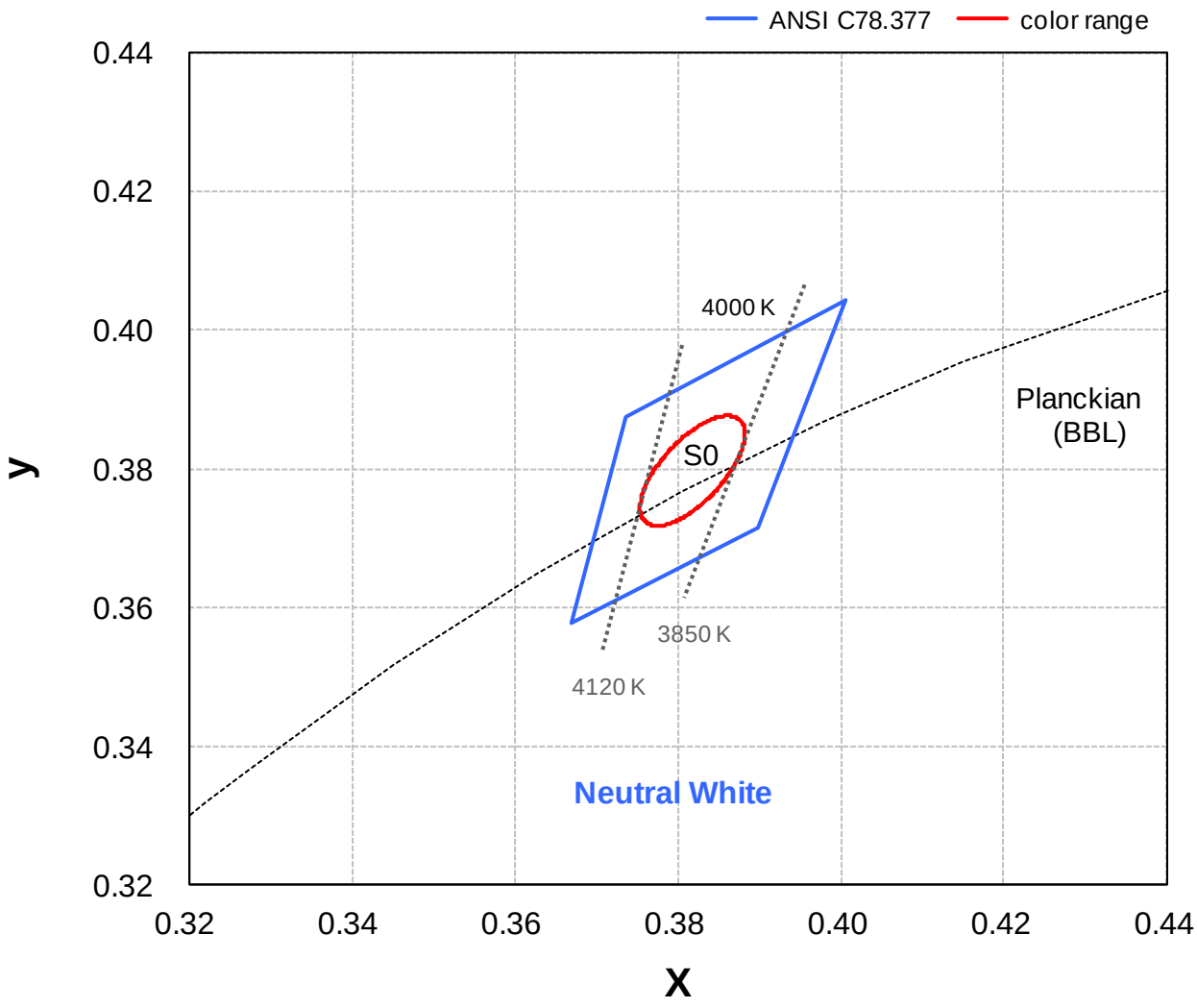
Color Bin

Neutral White Binning Structure Graphical Representation



Neutral White Bin Structure

Bin Code		Center	Oval parameter		Typ. CCT (K)
S0	x	0.3818	a	0.00939	4000
	y	0.3792	b	0.00402	
			θ°	54.00	

- Color range stay within MacAdam “3-step” ellipse from the chromaticity center.
- The chromaticity center refers to ANSI C78.377.
- Tolerance on each color bin (x , y) is ± 0.01

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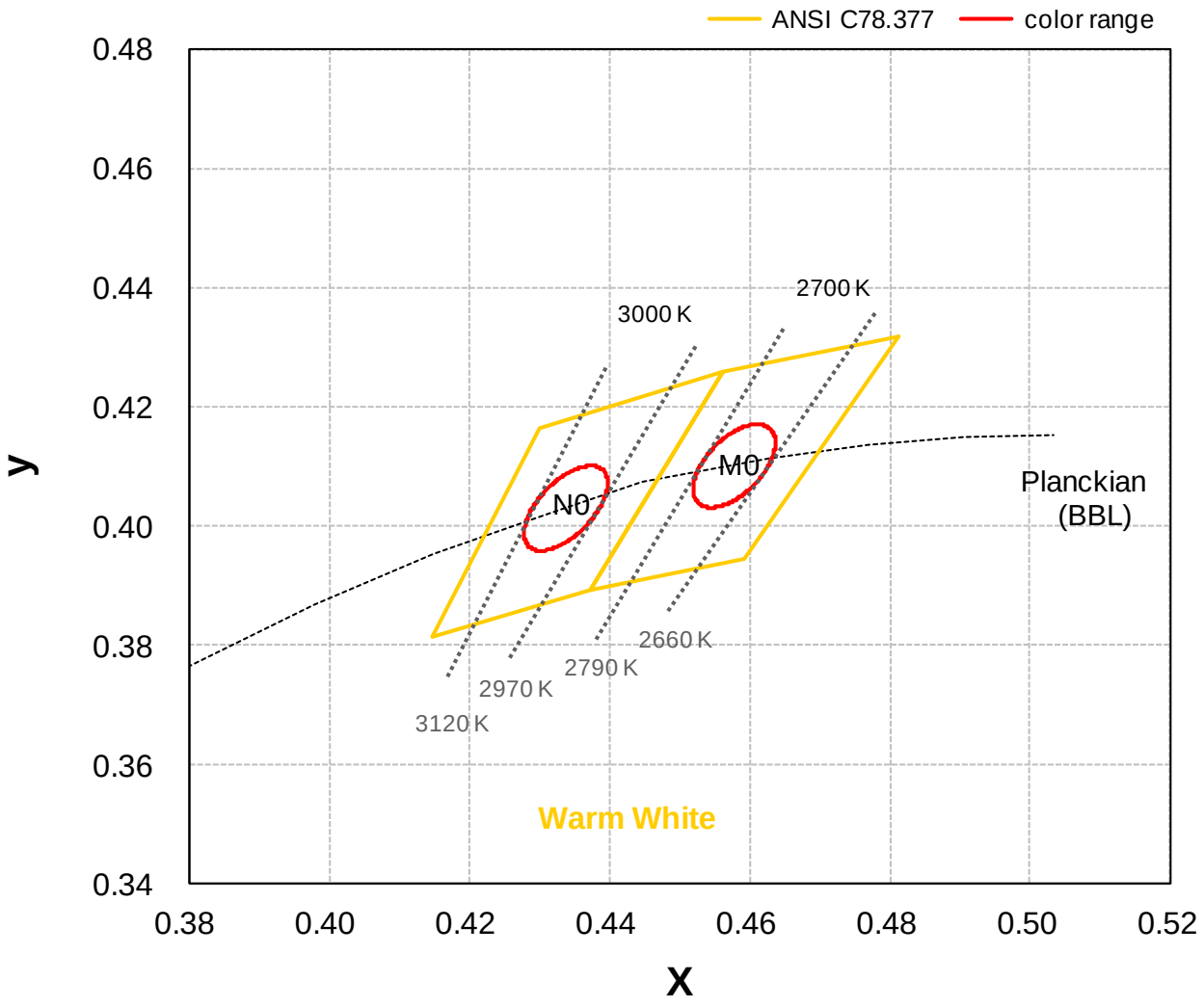
Color Bin

Warm White Binning Structure Graphical Representation



Warm White Bin Structure

Bin Code		Center	Oval parameter		Typ. CCT (K)	Bin Code		Center	Oval parameter		Typ. CCT (K)
M0	x	0.4578	a	0.00774	2700	N0	x	0.4338	a	0.00834	3000
	y	0.4101	b	0.00411			y	0.4030	b	0.00408	
			θ°	57.28					θ°	53.17	

- Color range stay within MacAdam “3-step” ellipse from the chromaticity center.
- The chromaticity center refers to ANSI C78.377.
- Tolerance on each color bin (x , y) is ± 0.01

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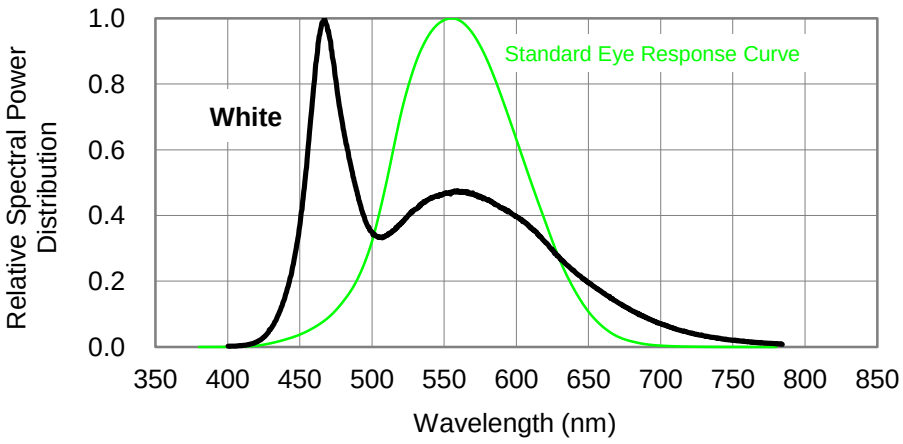
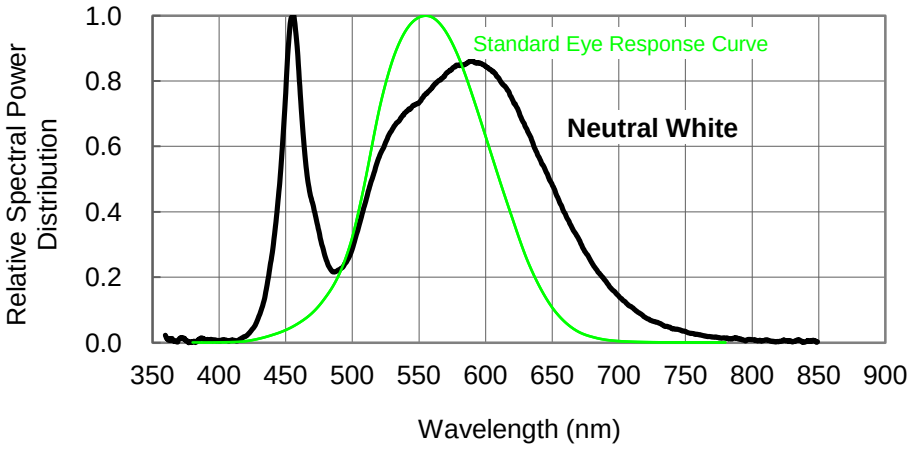
Color Spectrum, T_C = 25°C

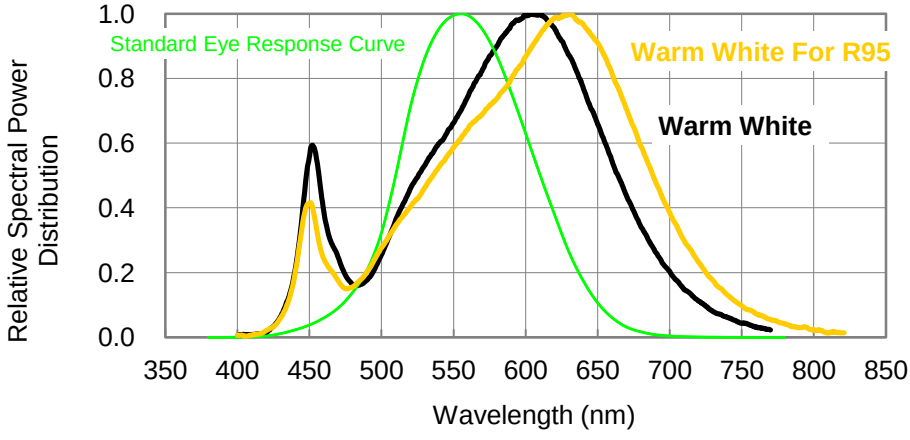
1. White



2. Neutral White



3. Warm White



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Case Temperature Relative Characteristics

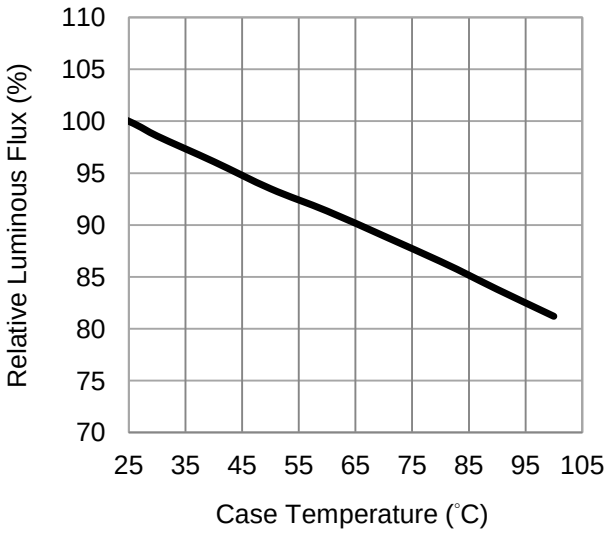

Fig 1. Case Temperature vs. Relative Luminous Flux at 3100mA.

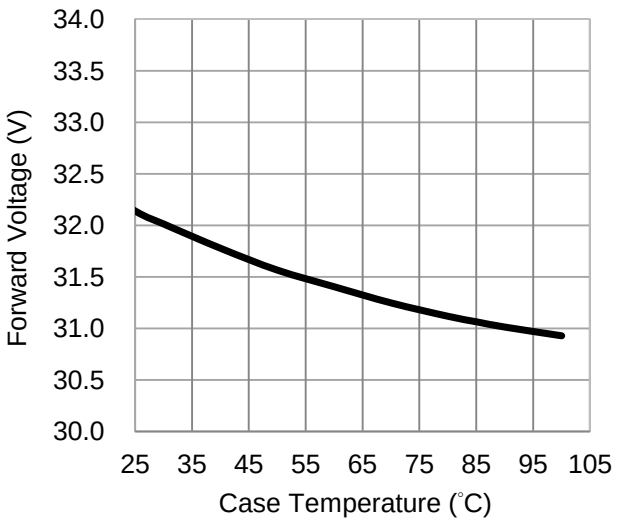

Fig 2. Case Temperature vs. Forward Voltage at 3100mA.

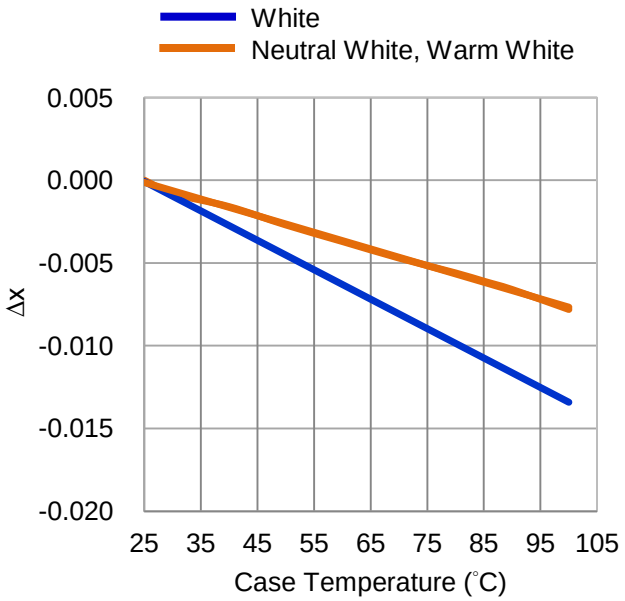

Fig 3. Case Temperature vs. Chromaticity Coordinate Δx at 3100mA.

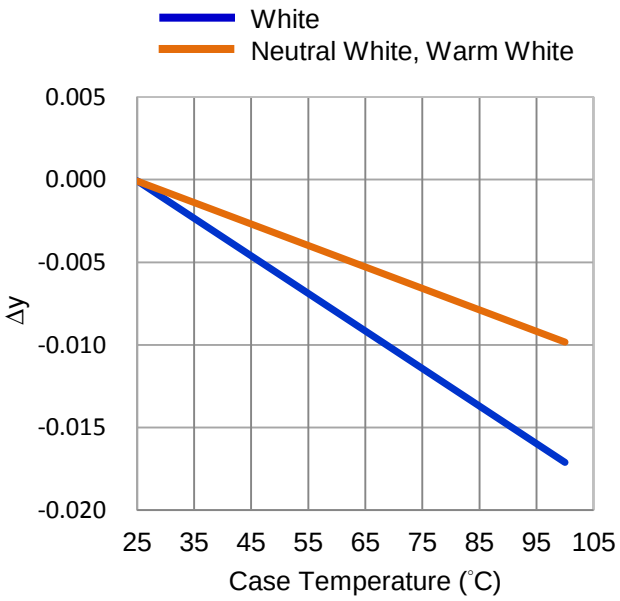

Fig 4. Case Temperature vs. Chromaticity Coordinate Δy at 3100mA.

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Forward Current Relative Characteristics

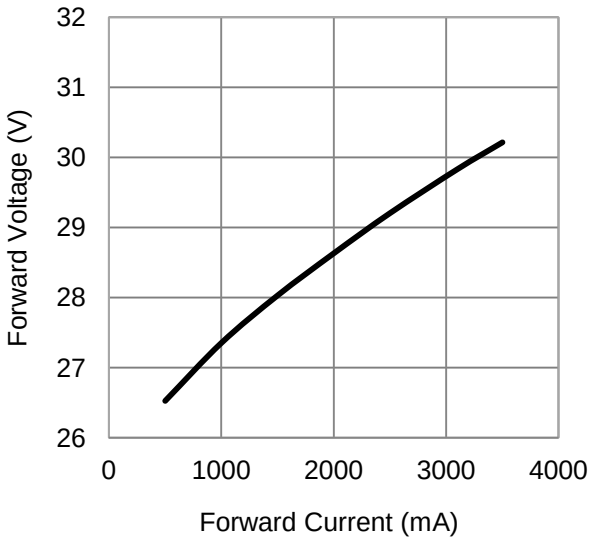

Fig 5. Forward Current vs. Forward Voltage at T_C=25°C.

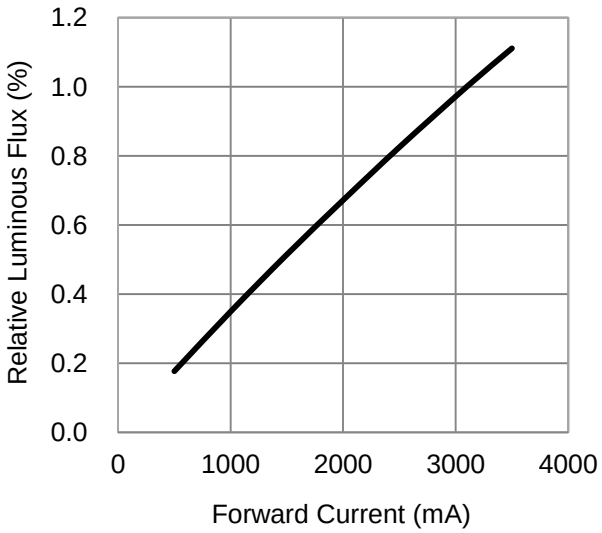

Fig 6. Forward Current vs. Relative Luminous Flux at T_C=25°C.

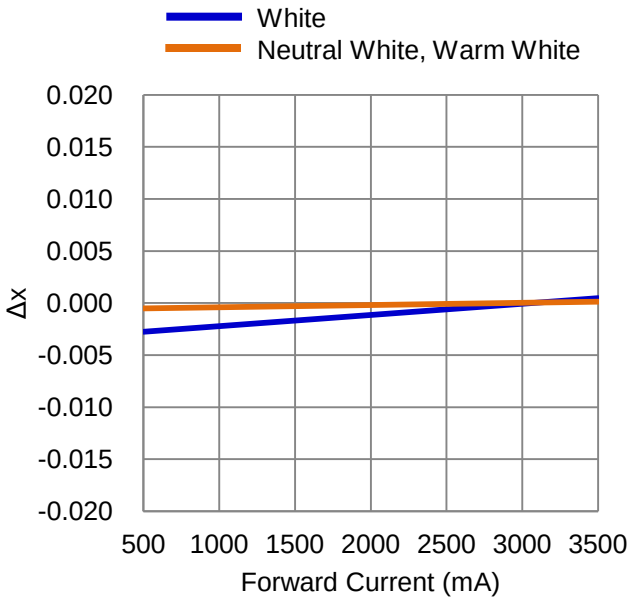

Fig 7. Forward Current vs. Chromaticity Coordinate Δx at 3100mA.

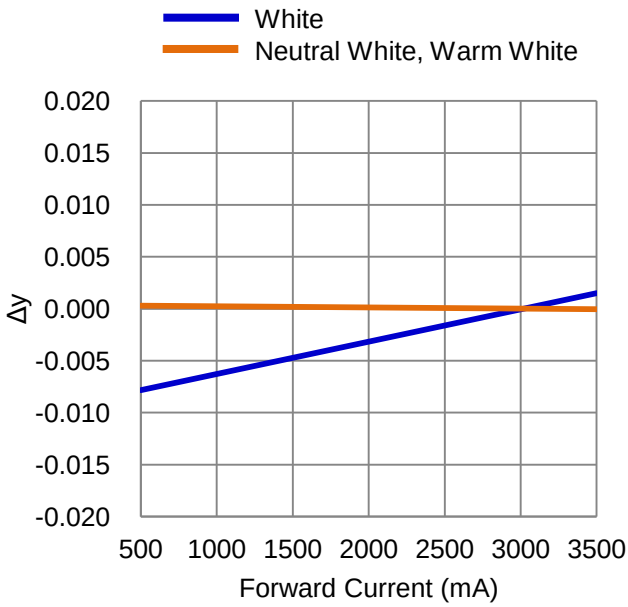

Fig 8. Forward Current vs. Chromaticity Coordinate Δy at 3100mA.

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Case Temperature vs. Junction Temperature Characteristics

T_C (°C)	T_J (°C)		
	2800 (mA)	3100 (mA)	3500 (mA)
0	17	18	21
5	22	23	26
10	27	28	31
15	32	33	36
20	37	38	41
25	42	43	46
30	47	48	51
35	52	53	56
40	57	58	61
45	62	63	66
50	67	68	71
55	72	73	76
60	77	78	81
65	82	83	86
70	87	88	91
75	92	93	96
80	97	98	101
85	102	103	106
90	107	108	111
95	112	113	116
100	117	118	121

Fig 9. Case Temperature vs. Junction Temperature at 2800、3100、3500mA.

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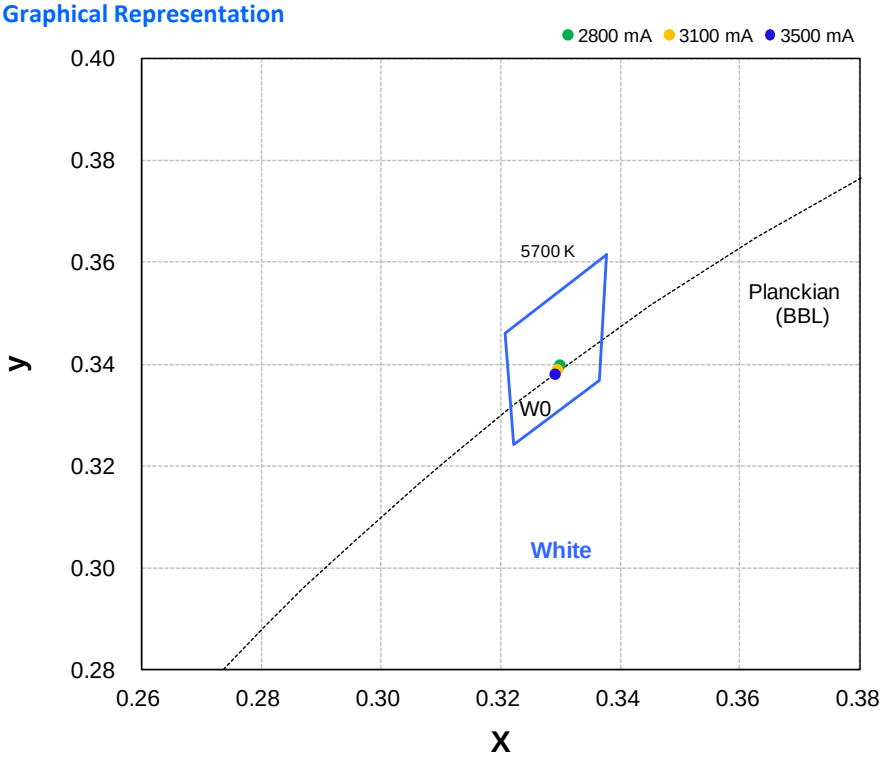
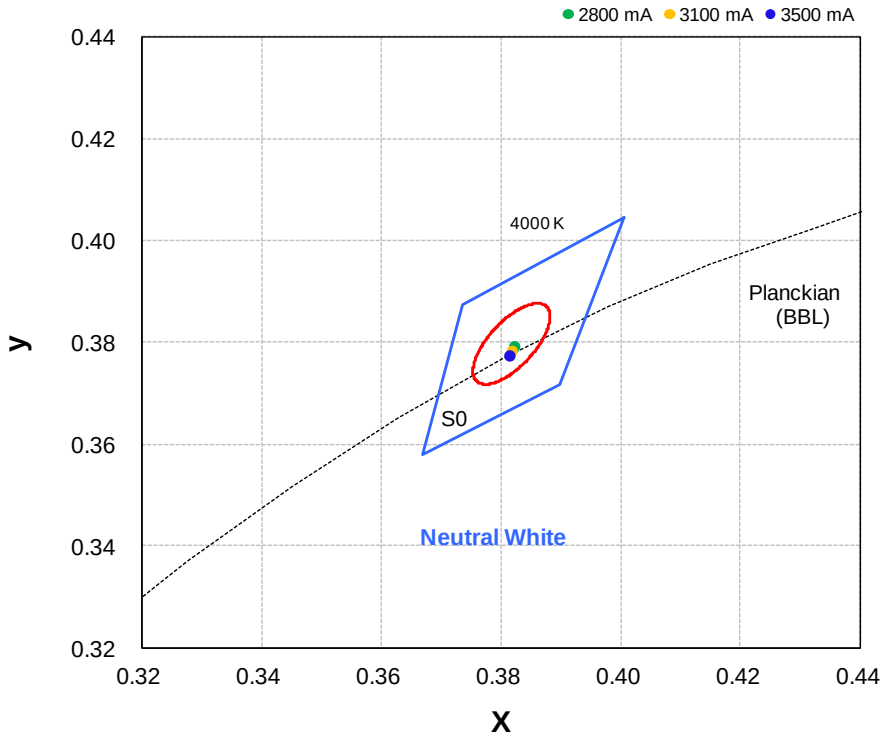
Color Coordinate vs. Forward Current, T_C = 25°C

White Binning Graphical Representation



Neutral White Binning Graphical Representation



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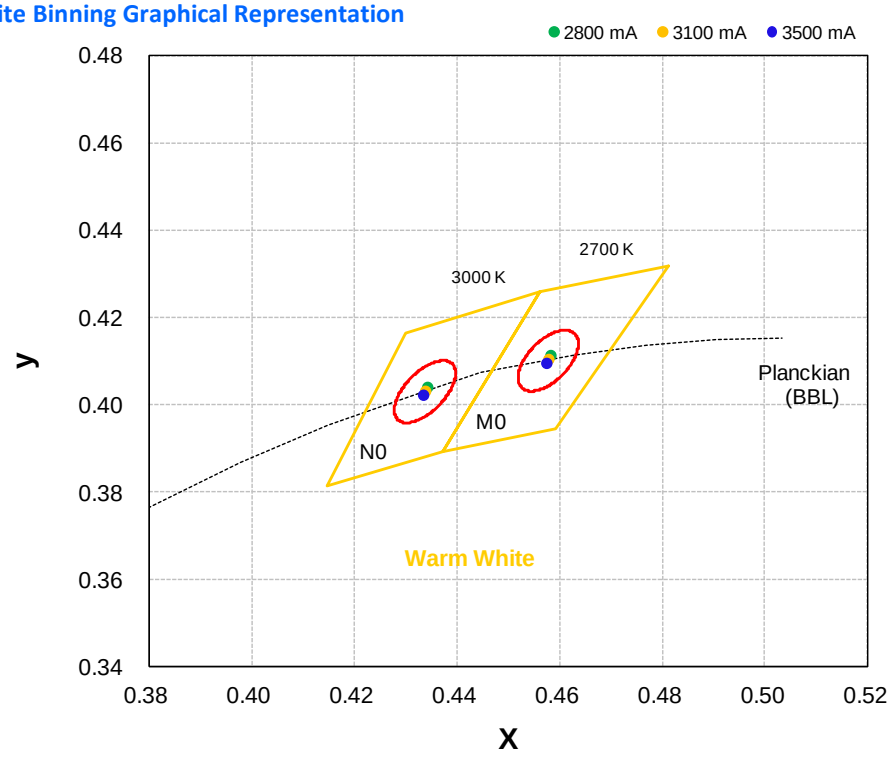
Color Coordinate vs. Forward Current, T_C = 25°C

Warm White Binning Graphical Representation



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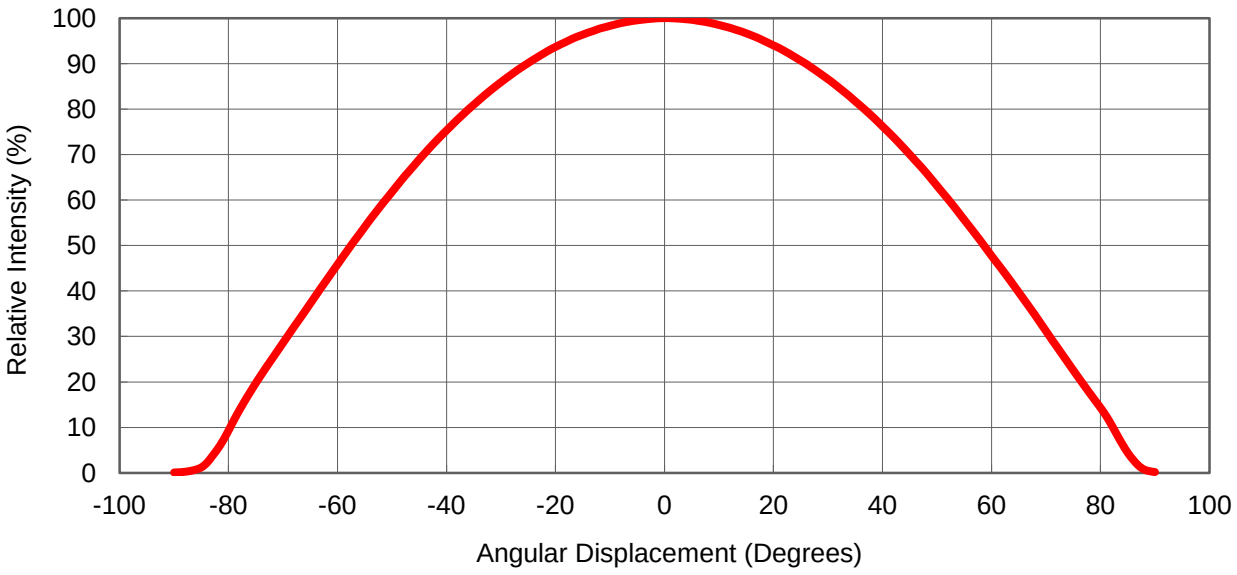
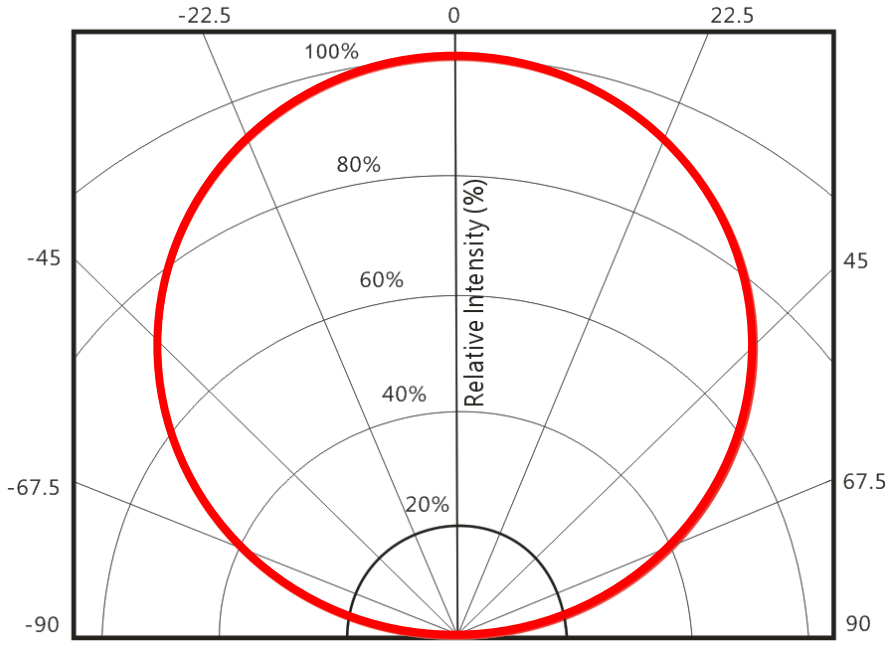
Typical Representative Spatial Radiation Pattern

Lambertian Radiation Pattern



Polar Radiation Pattern



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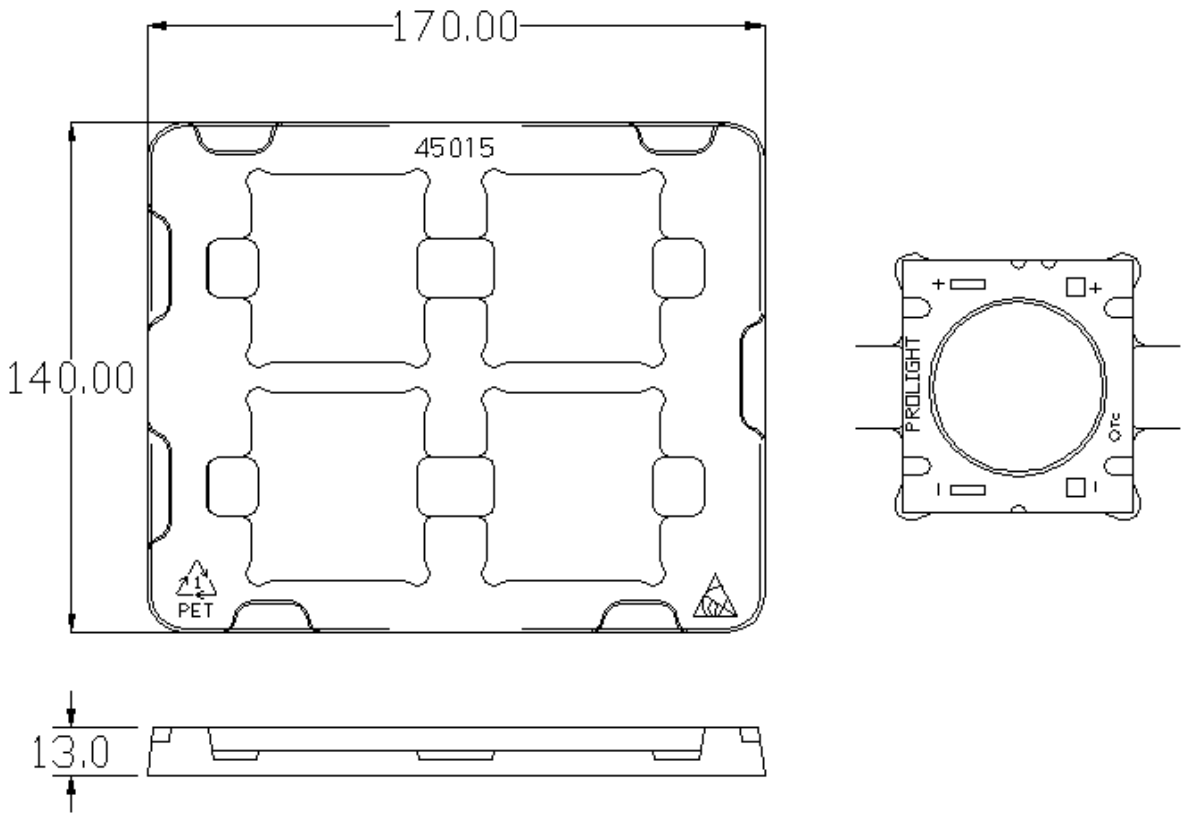
Packing Specifications



Product 4 pcs/tray

Notes:
1. Drawing not to scale.
2. All dimensions are in millimeters.
3. Unless otherwise indicated, tolerances are ± 0.20mm.

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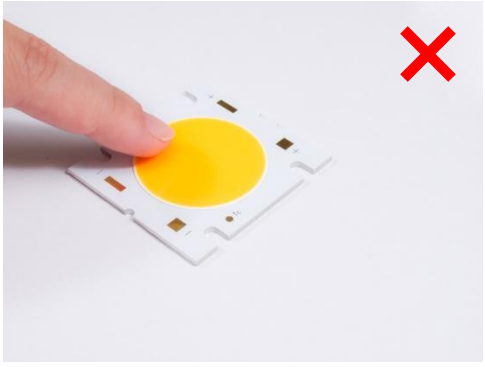
Precaution for Use

- The modules light output are intense enough to cause injury to human eyes if viewed directly. Precautions must be taken to avoid looking directly at the modules with unprotected eyes.
- The modules are sensitive to electrostatic discharge. Appropriate ESD protection measures must be taken when working with the modules. Non-compliance with ESD protection measures may lead to damage or destruction of the product.
- Chemical solvents or cleaning agents must not be used to clean the modules. Mechanical stress on the Emitters must be avoided. It is best to use a soft brush, damp cloth or low-pressure compressed air.
- The products should be stored away from direct light in dry location.
- The appearance, specifications and flux bin of the product may be modified for improvement without notice. Please refer to the below website for the latest datasheets. http://www.prolightopto.com/

Handling of Silicone Lens LEDs

Notes for handling of silicone lens LEDs

- Please do not use a force of over 0.3kgf impact or pressure on the silicone lens, otherwise it will cause a catastrophic failure.
- Avoid touching the silicone lens especially by sharp tools such as Tweezers.
- Avoid leaving fingerprints on the silicone lens.
- Please store the LEDs away from dusty areas or seal the product against dust.
- Please do not mold over the silicone lens with another resin. (epoxy, urethane, etc)



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