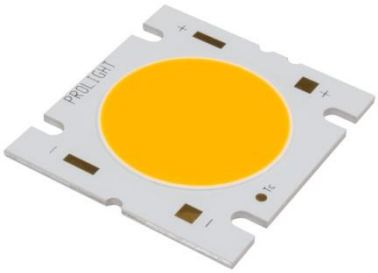
ProLight Opto
Technology Corporation



ProLight PABB-200FxL-xDDx
200W COB Light-Engine LEDs
Technical Datasheet
Version: 1.2

Prolight Opto ® ProEngine Series

Features

- High flux density of lighting source
- Good color uniformity
- RoHS compliant
- Energy 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 lighting

Introduction

- The input power is 200 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 lighting, typical applications include commercial down lighting, stage lighting, outdoor street lighting and high profile architectural lighting.

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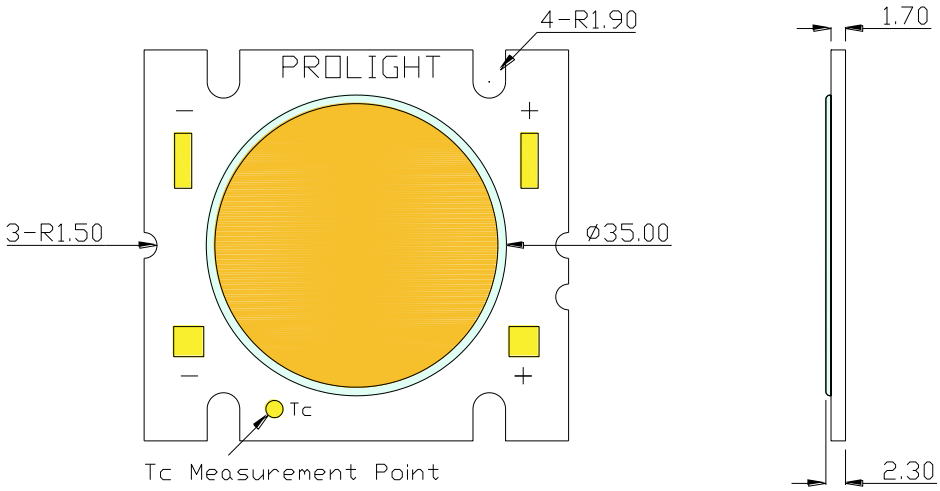
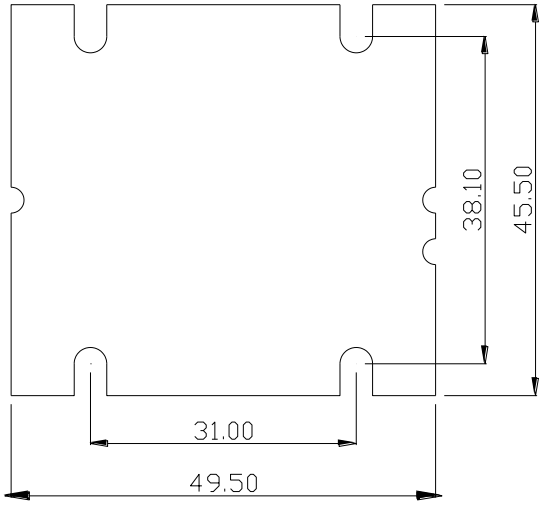
2014/04
DS-0172

Emitter Mechanical Dimensions





Notes:
1. Slots in aluminum-core PCB for M2.5 or #4 mounting screw.
2. Solder pads are labeled “+” and “-” to denote positive and negative, respectively.
3. Drawing not to scale.
4. All dimensions are in millimeters.
5. Unless otherwise indicated, tolerances are ± 0.30mm.
6. **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 Minimum
Lambertian	White	PABB-200FWL-NDDN	3500	15600	17300	70
			4000	17100	19000	
			4500*	19000	21100	
	Neutral White	PABB-200FNL-BDDP	3500	13900	15400	80
			4000	15300	17000	
			4500*	16900	18800	
	Warm White	PABB-200FVL-BDDP	3500	12800	14800	80
			4000	14100	16300	
			4500*	15600	18100	
		PABB-200FVL-DDDP	3500	10200	11800	93
			4000	11200	13000	
			4500*	12400	14400	

- The mark "*" indicated product is tested and binned at the specified drive current.
- ProLight maintains a tolerance of ± 10% on flux and power measurements.
- ProLight maintains a tolerance of ± 2 on CRI measurements.
- Please do not drive at rated current more than 1 second without proper heat sink.

Electrical Characteristics at 4500mA, T_C = 25°C

Color	Forward Voltage V_F (V) Min.	Typ.	Max.	Thermal Resistance Junction to Board (℃/W)
White	36.5	40.0	42.5	0.1
Neutral White	36.5	40.0	42.5	0.1
Warm White	36.5	40.0	42.5	0.1

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

Optical Characteristics at 4500mA, 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	3840 K	4000 K	4130 K	160	120
	Warm White	2650 K	2700 K	2800 K	160	120
		2860 K	2940 K	3020 K	160	120
		2960 K	3000 K	3130 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)	4500
Peak Pulsed Forward Current (mA)	9000 (less than 1/10 duty cycle@1KHz)
Average Forward Current (mA)	4500
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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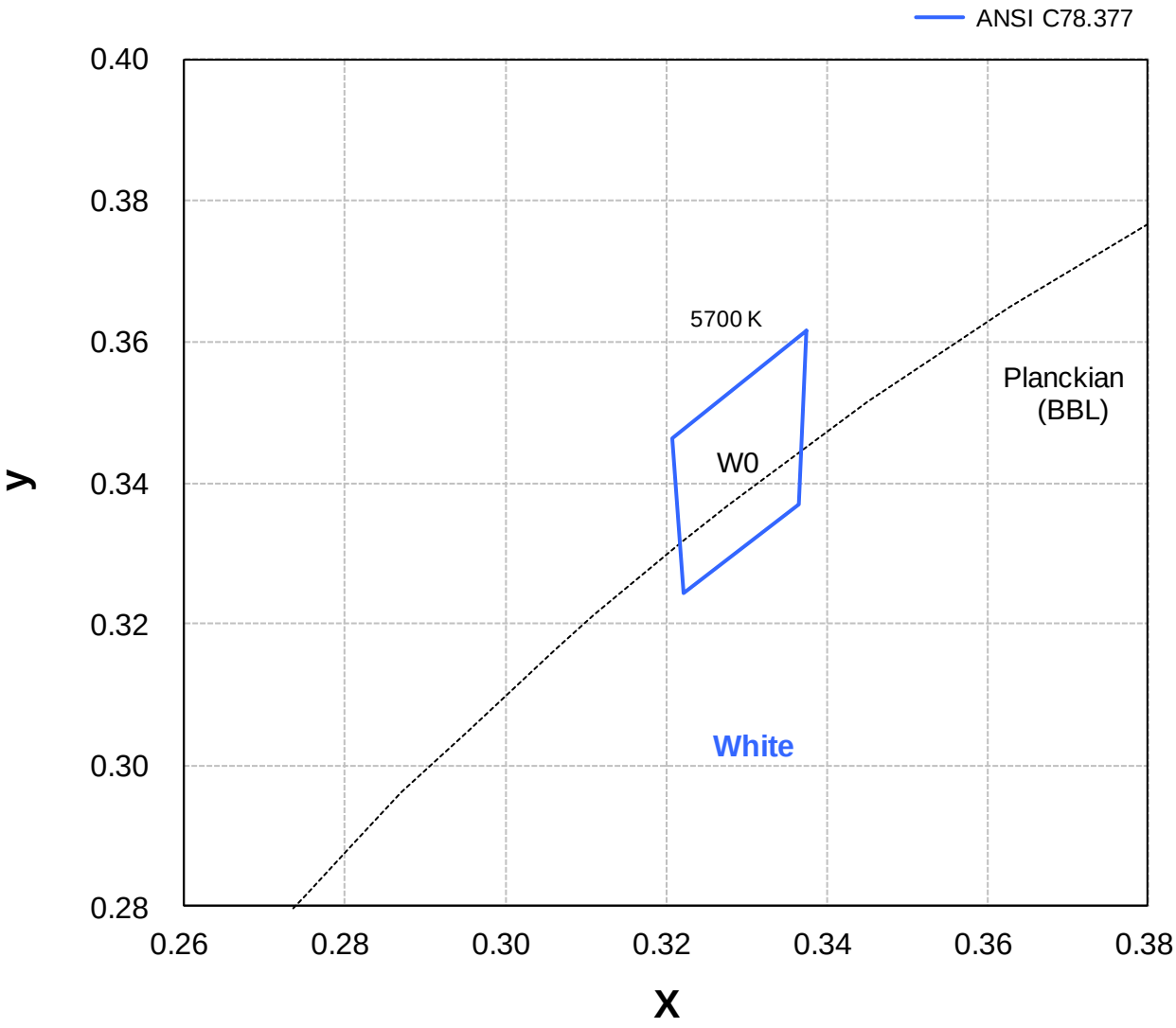
Color Bin

White Binning Structure Graphical Representation



White Bin Structure

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

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

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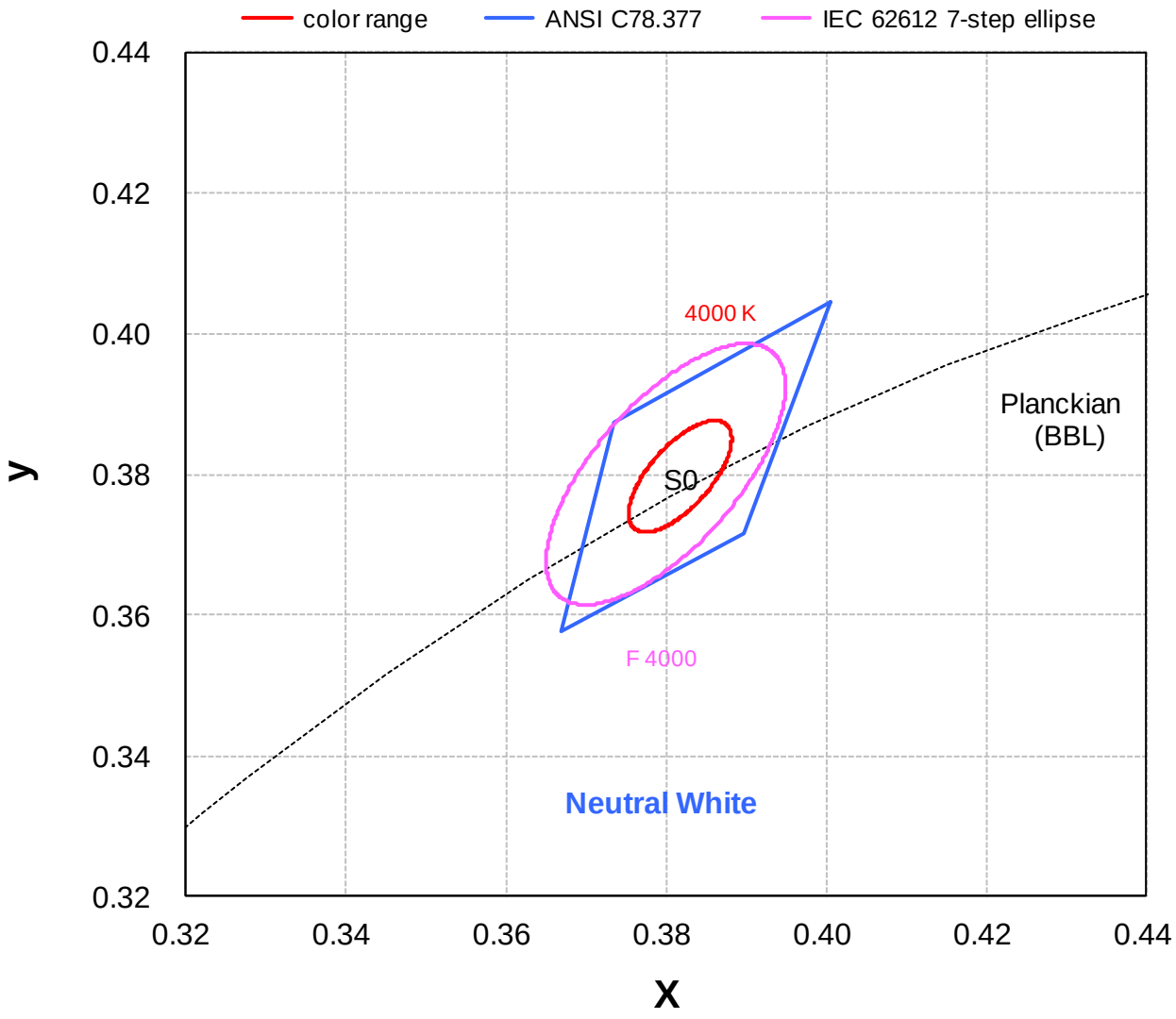
Color Bin

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	0.3797	b	0.00402	
			Θ°	53.72	

- 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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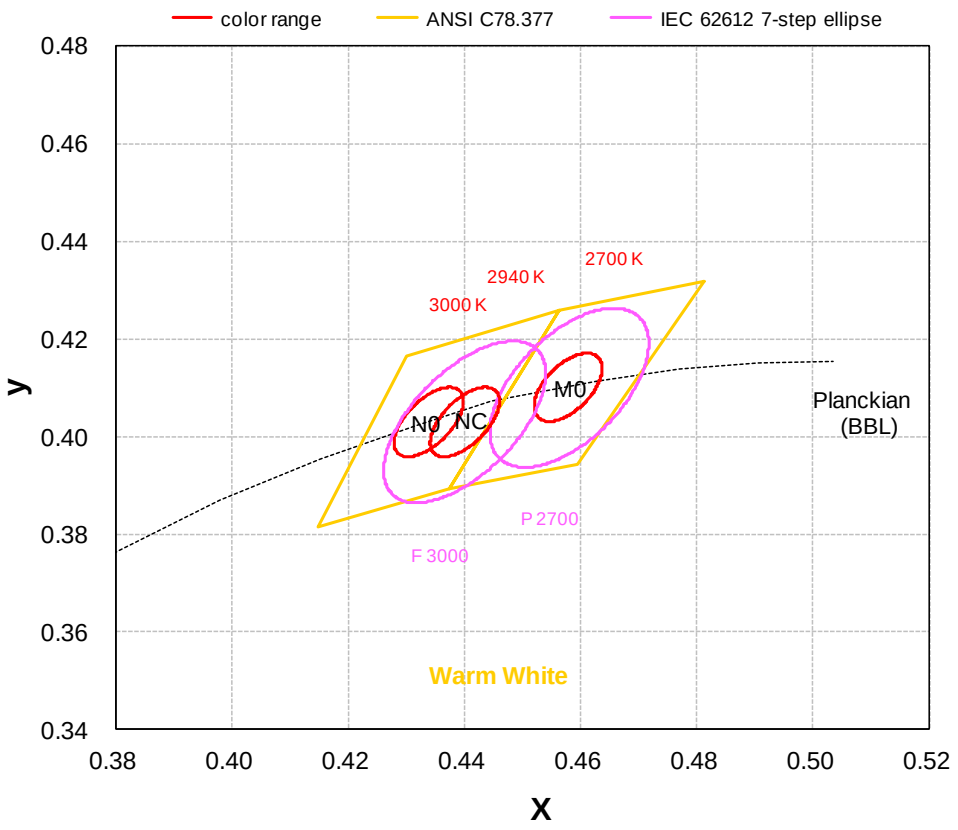
Color Bin

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	0.00810	2700	N0	x	0.4338	a	0.00834	3000
	y	0.4101	b	0.00420			y	0.4030	b	0.00408	
			θ°	53.70					θ°	53.22	

- 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

Bin Code		Center	Oval parameter		Typ. CCT (K)
NC	x	0.4400	a	0.00834	2940
	y	0.4030	b	0.00408	
			θ°	53.02	

- Color range stay within MacAdam “3-step” ellipse from the chromaticity center.
- The chromaticity center refers to IEC 62612.
- Tolerance on each color bin (x , y) is ± 0.01

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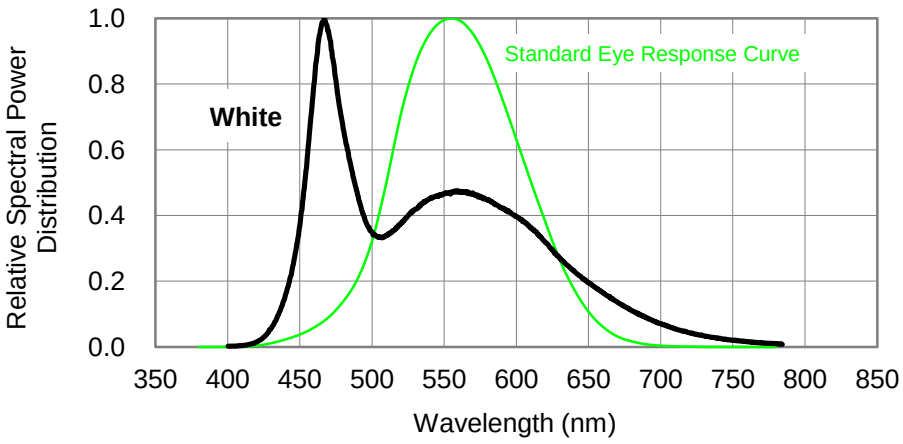
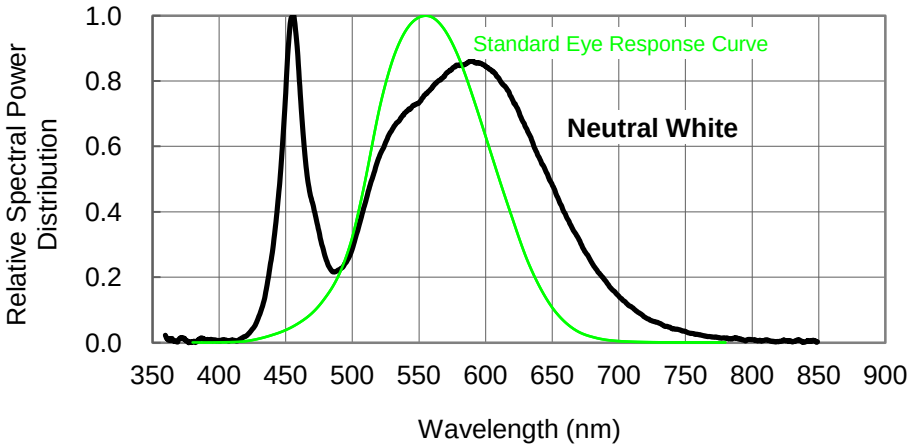
Color Spectrum, T_C = 25°C

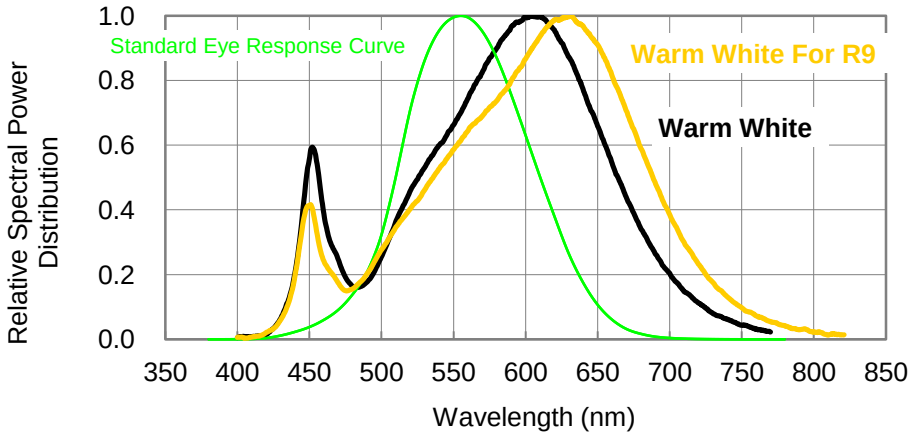
1. White



2. Neutral White



3. Warm White



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Case Temperature Relative Characteristics

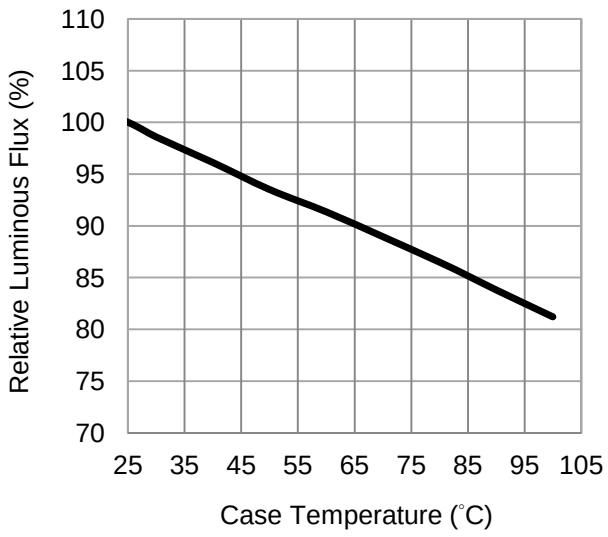

Fig 1. Case Temperature vs. Relative Luminous Flux at 4500mA.

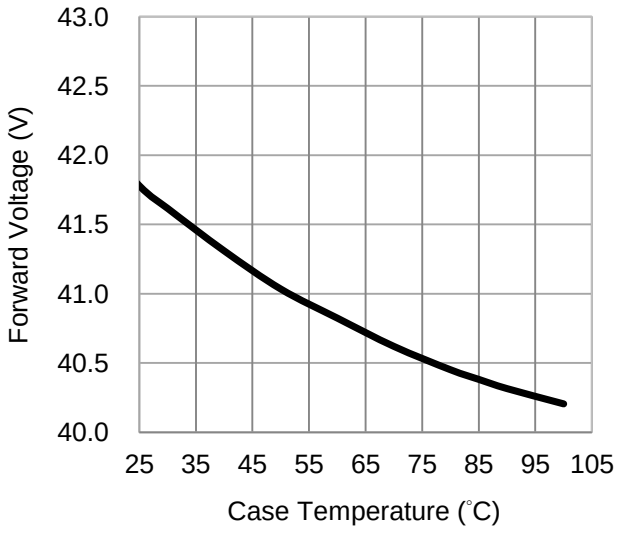

Fig 2. Case Temperature vs. Forward Voltage at 4500mA.

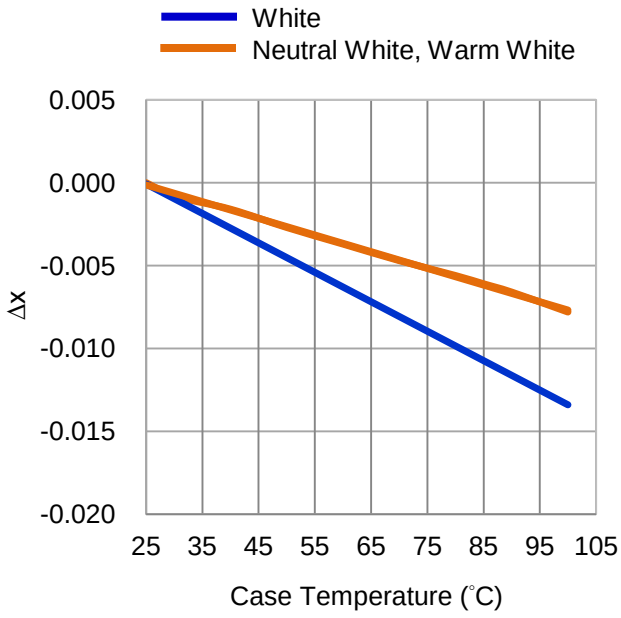

Fig 3. Case Temperature vs. Chromaticity Coordinate Δx at 4500mA.

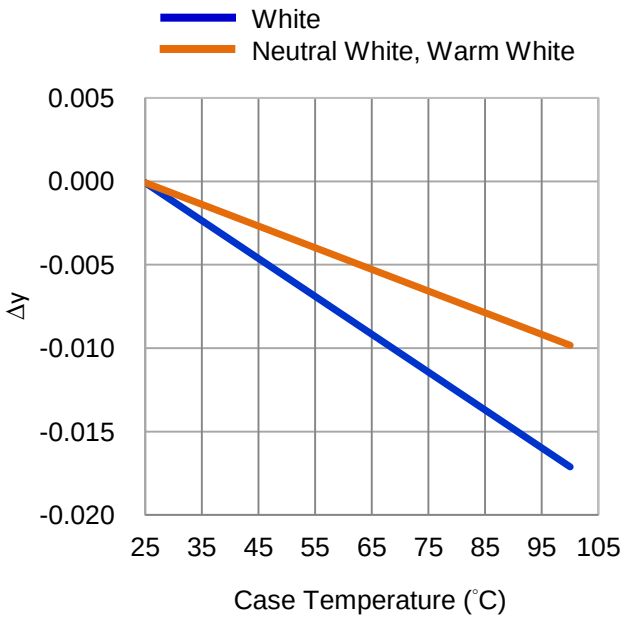

Fig 4. Case Temperature vs. Chromaticity Coordinate Δy at 4500mA.

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Forward Current Relative Characteristics

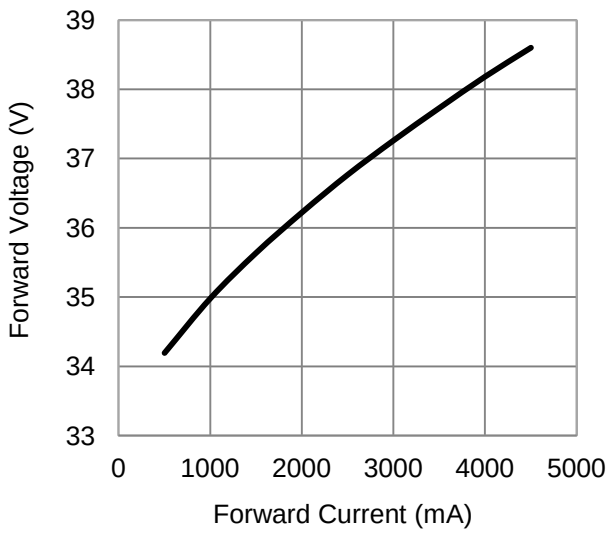

Fig 5. Forward Current vs. Forward Voltage at T_C=25°C.

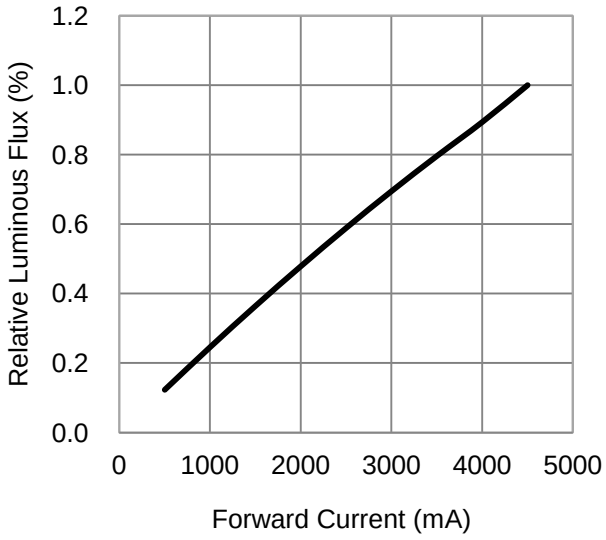

Fig 6. Forward Current vs. Relative Luminous Flux at T_C=25°C.

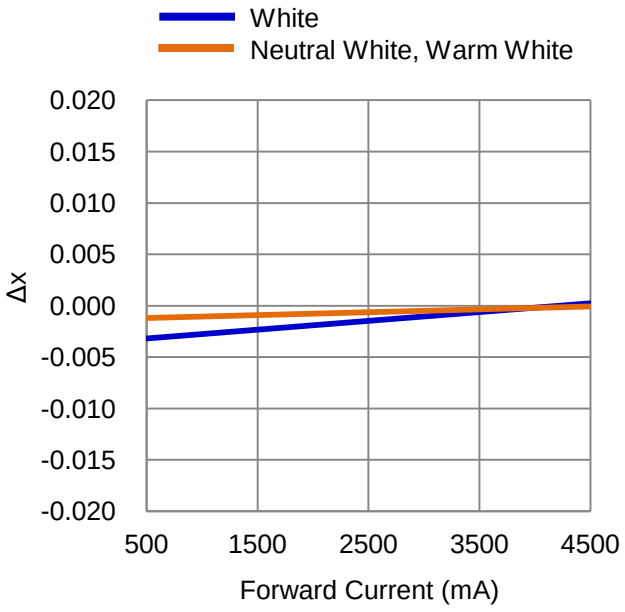

Fig 7. Forward Current vs. Chromaticity Coordinate Δx at T_C=25°C.

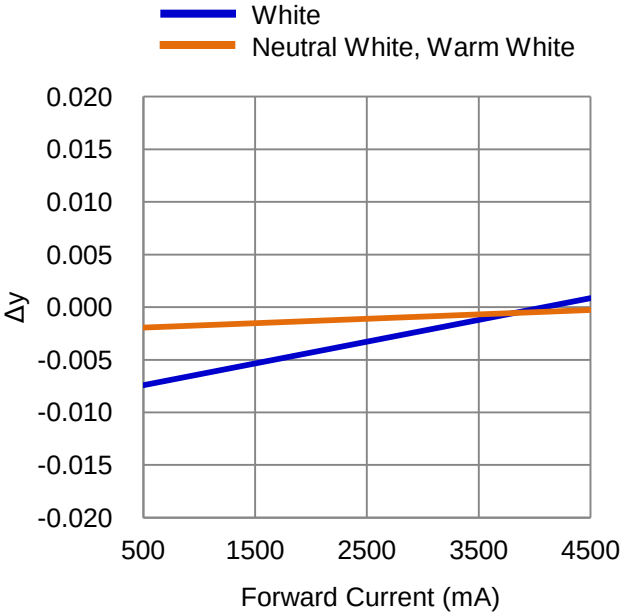

Fig 8. Forward Current vs. Chromaticity Coordinate Δy at T_C=25°C.

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Case Temperature vs. Junction Temperature Characteristics

T_C (°C)	T_J (°C)		
	3500 (mA)	4000 (mA)	4500 (mA)
0	14	16	18
5	19	21	23
10	24	26	28
15	29	31	33
20	34	36	38
25	39	41	43
30	44	46	48
35	49	51	53
40	54	56	58
45	59	61	63
50	64	66	68
55	69	71	73
60	74	76	78
65	79	81	83
70	84	86	88
75	89	91	93
80	94	96	98
85	99	101	103
90	104	106	108
95	109	111	113
100	114	116	118

Fig 9. Case Temperature vs. Junction Temperature at 3500、4000、4500mA.

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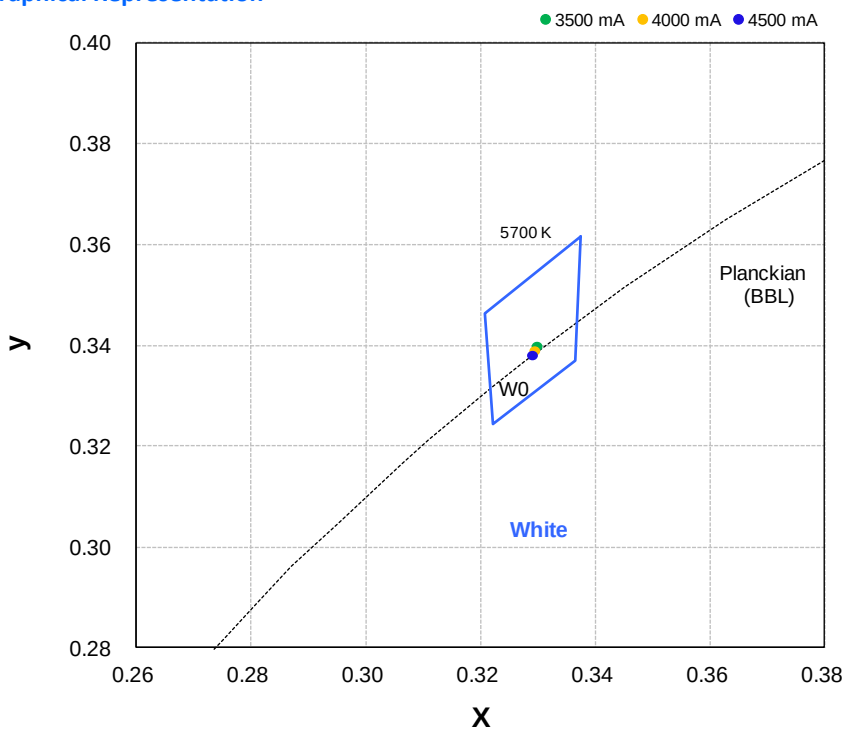
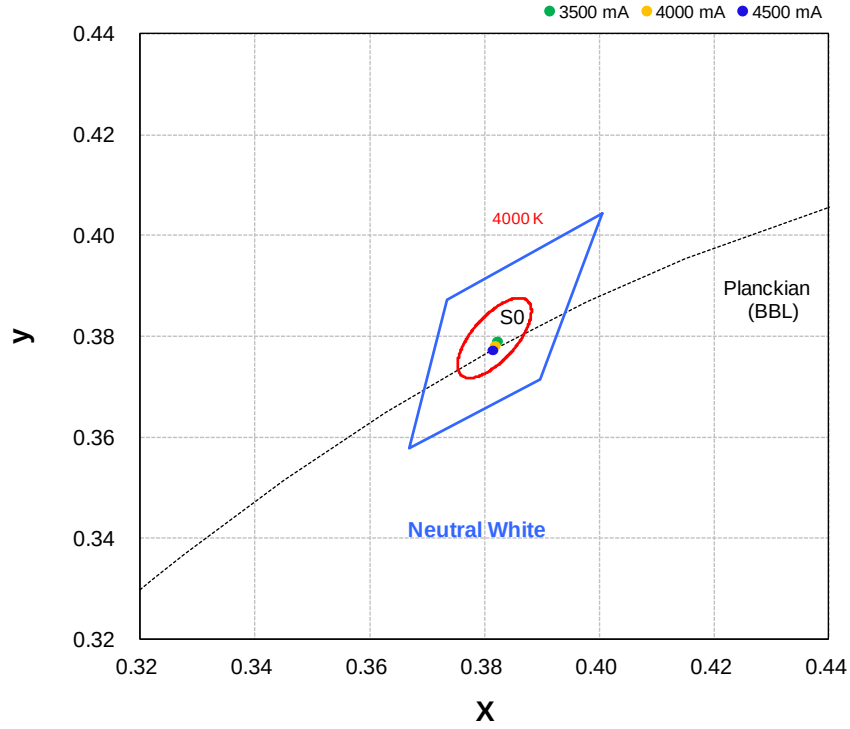
Color Coordinate vs. Forward Current, T_C = 25°C

White Binning Graphical Representation



Neutral White Binning Graphical Representation



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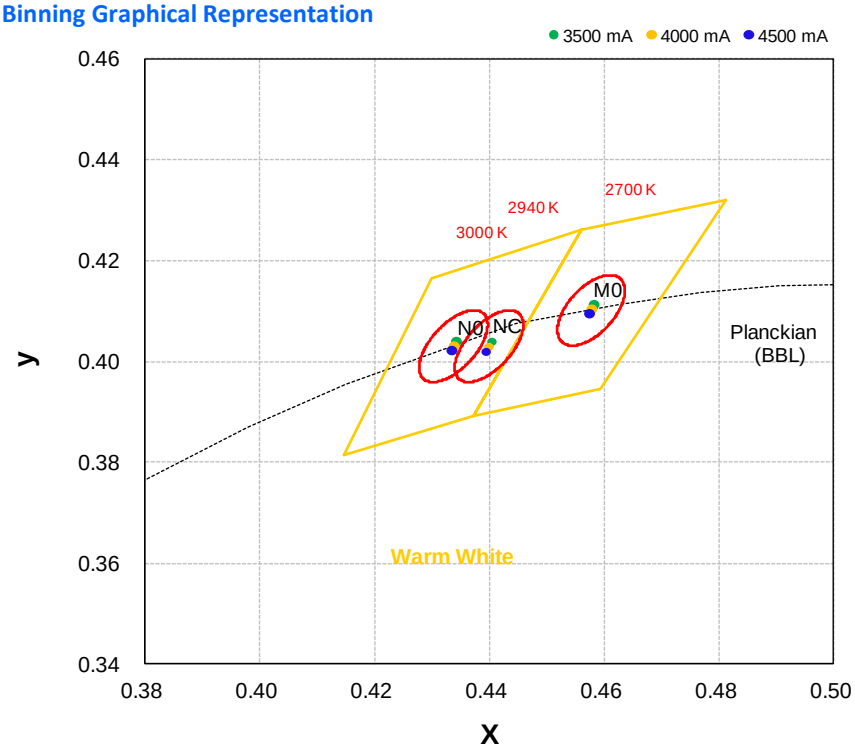
Color Coordinate vs. Forward Current, T_C = 25°C

Warm White Binning Graphical Representation



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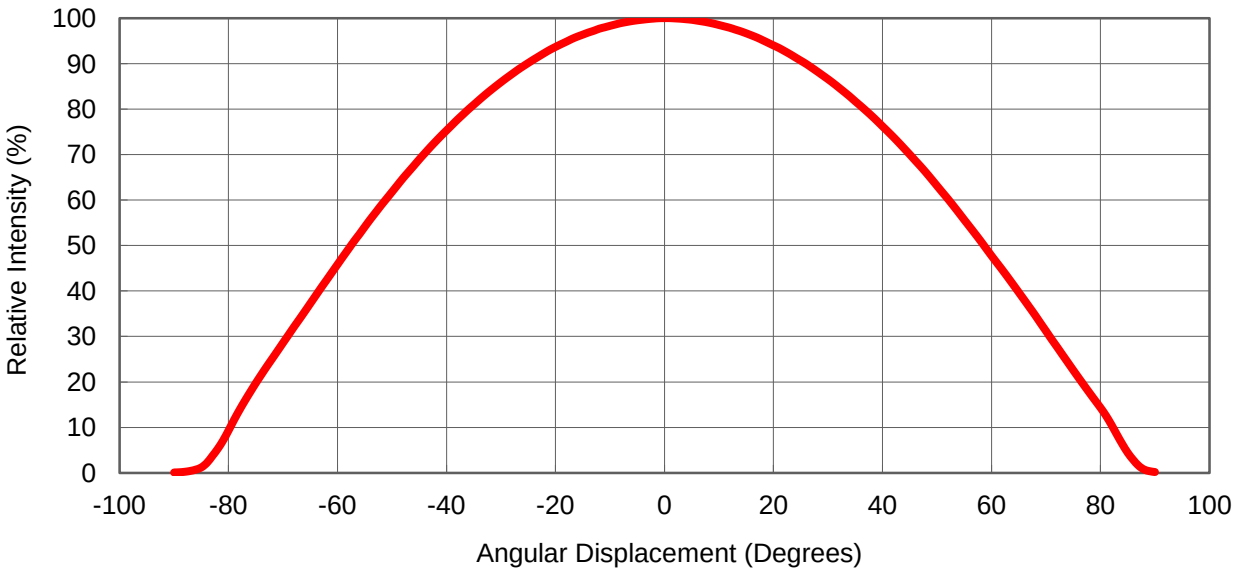
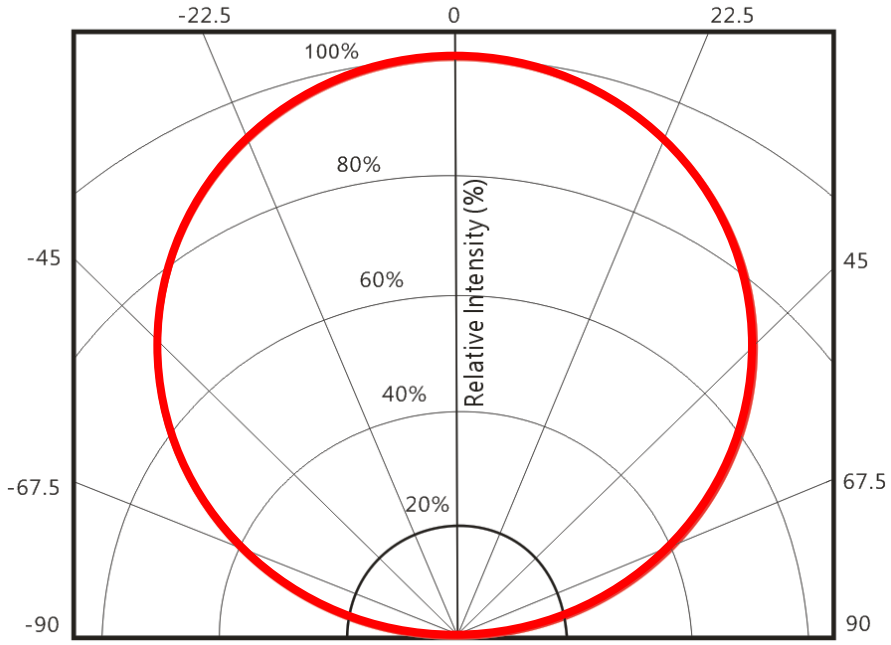
Typical Representative Spatial Radiation Pattern

Lambertian Radiation Pattern



Polar Radiation Pattern



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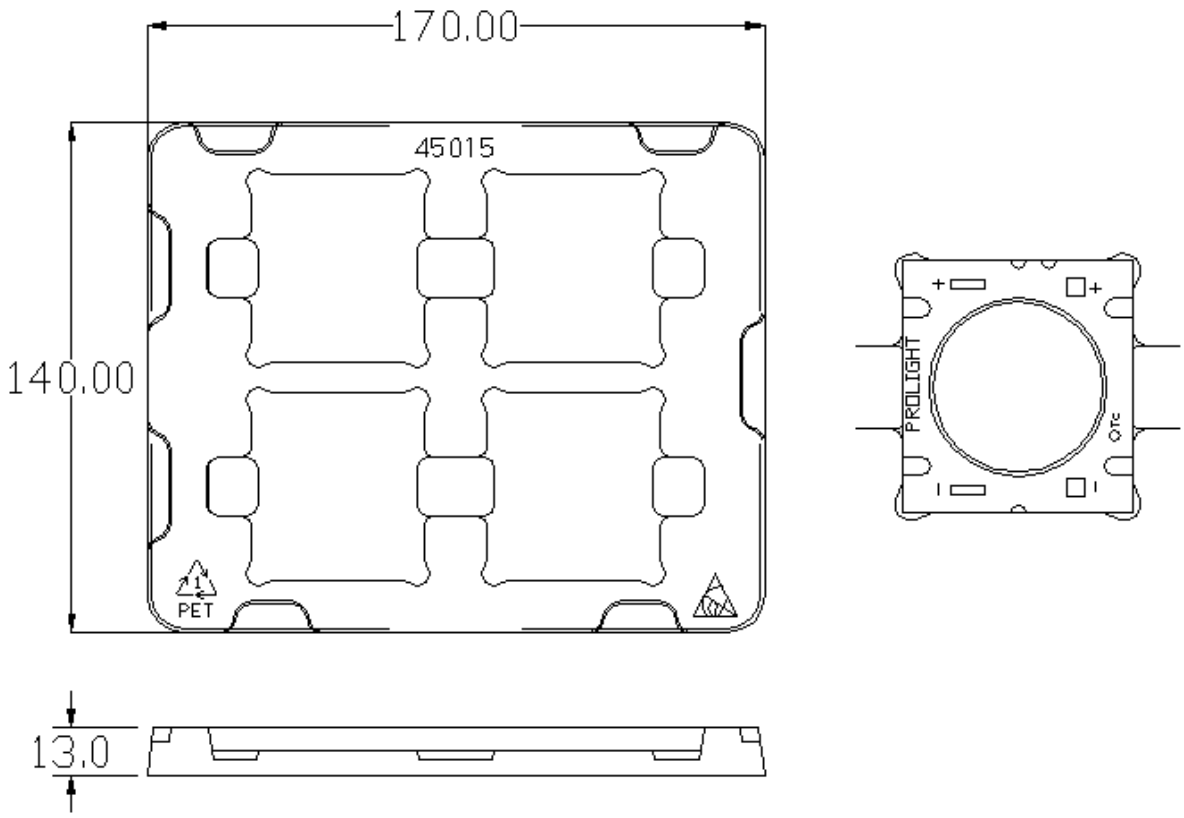
Packing Specifications



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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Assembly note

Regarding the high power density of LED Array, it is strongly recommend to use thermal grease and screws.

In order to reduce thermal resistance at assembly, it is necessary to use TIM (thermal interface Material) uniformly and tighten screws on heatsink, otherwise the bad thermal resistance may cause the packages burned out.

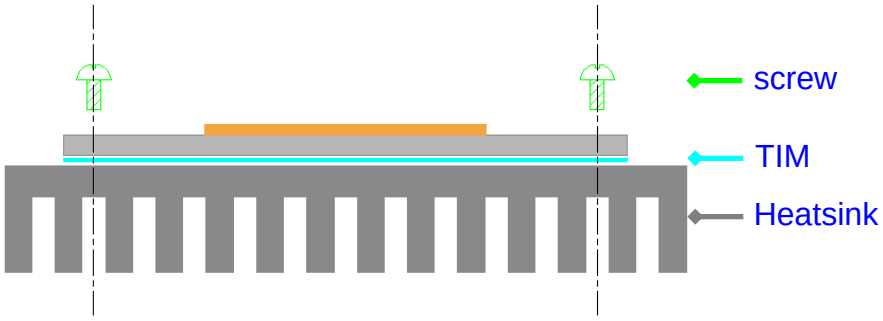

Fig 10. Reference assembly as fixing with screws

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Recommended Soldering Condition

- Please use lead free and “no clean ” solders.
- Soldering shall be implemented using a soldering tip at a temperature lower than 350 ℃, and shall be finished within 3.5 seconds for each pad.
- During the soldering process, put the LEDs on materials whose conductivity is poor enough not to radiate heat of soldering.
- Properly solder tin wires before soldering them to LEDs.
- Avoid touching the silicone lens with the soldering iron.
- Please prevent flux from touching to the silicone lens.
- Please solder evenly on each pad.
- Contacts number of a soldering tip should be within twice for each pad.
- Next process of soldering should be carried out after the LEDs have return to ambient temperature.

*ProLight cannot guarantee if usage exceeds these recommended conditions.
Please use it after sufficient verification is carried out on your own risk if absolutely necessary.

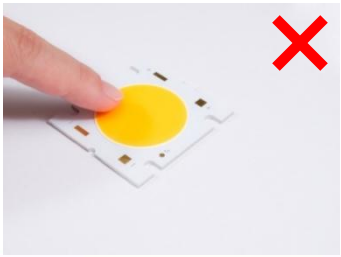
Precaution for Use

- 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 and the optical area of the COB Array especially by sharp tools such as Tweezers
- 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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