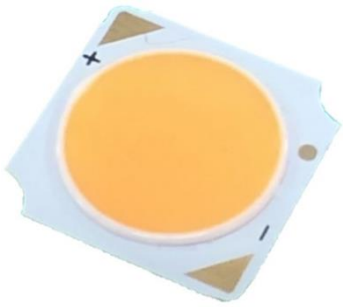
ProLight Opto
Technology Corporation



ProLight PASB-16FxL-EC2NSxx
16W COB Light-Engine LEDs
Technical Datasheet
Version: 1.4

Prolight Opto ® ProEngine Series

Features

·High flux density of lighting source
·Good color uniformity
·RoHS compliant
·More energy efficient than incandescent and most halogen lamps
·No UV
·Long lifetime
·5 year warranty

Main Applications

·Par lighting
·Spot lighting
·Down lighting

Introduction

·The input power is 16 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 Par lighting, typical applications include commercial down lighting, LED bulb, accent lighting, ceiling lighting and spot lighting.

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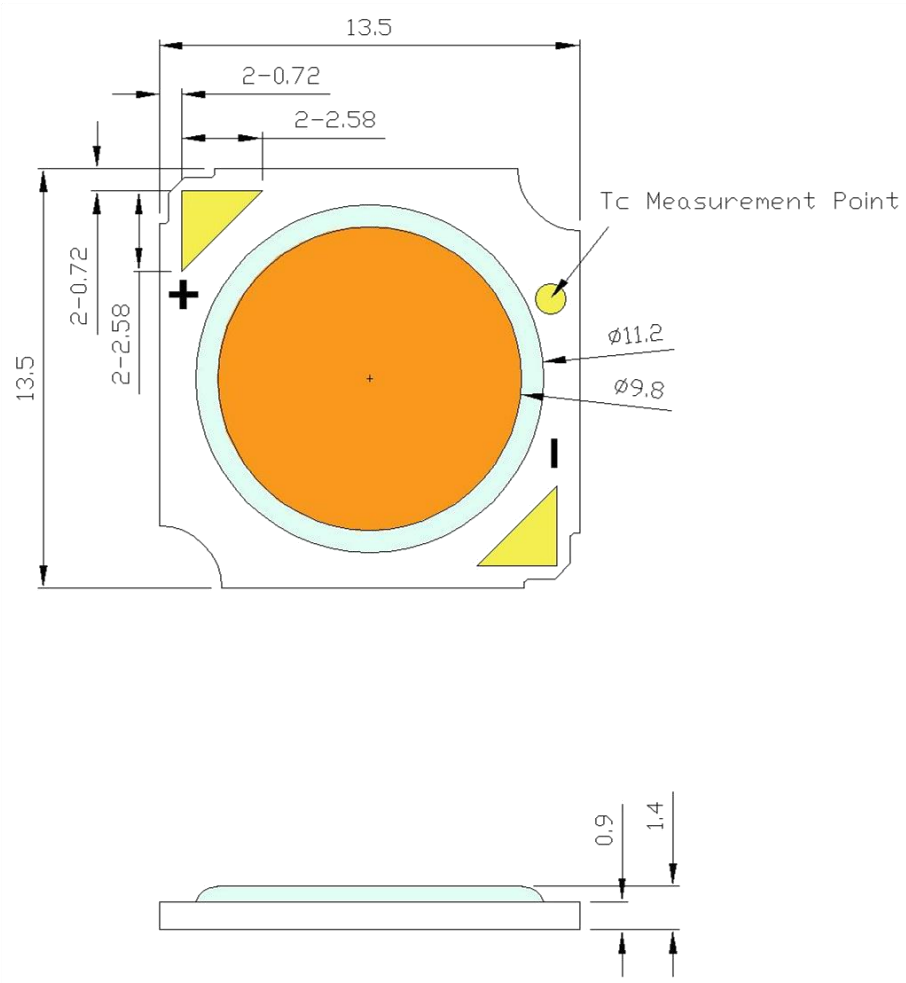
2020/07
DS-1299

Mechanical Dimensions



Notes:
1. Slots in aluminum-core PCB for M3 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 ± 0.2mm.
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 at 200mA, T_C = 65°C

Radiation Pattern	Color	Part Number COB	CCT	Luminous Flux Φ_V (lm) Min.	Typ.	CRI Min.	Typ.
Lambertian	Neutral White	PASB-16FNL-EC2NS40	4000 K	725	875	97	98
	Warm White	PASB-16FVL-EC2NS27	2700 K	680	820	97	98
		PASB-16FVL-EC2NS30	3000 K	700	840	97	98

- ProLight maintains a tolerance of ± 7% 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 200mA, T_C = 65°C

Color	Forward Voltage V_F (V) Min.	Typ.	Max.	Thermal Resistance Junction to Board (℃/W)
Neutral White	31.0	33.5	36.0	1.7
Warm White	31.0	33.5	36.0	1.7

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

Optical Characteristics at 200mA, T_C = 65°C

Color	Bin Code	Color Temperature CCT Min.	Typ.	Max.	Total included Angle (degrees) $\theta_{0.90V}$	Viewing Angle (degrees) $2\theta_{1/2}$
Neutral White	S0S1	3940 K	3985 K	4030 K	160	120
	S0S2	3900 K	3985 K	4070 K	160	120
Warm White	M0S1	2710 K	2725 K	2740 K	160	120
	M0S2	2680 K	2725 K	2770 K	160	120
	N0S1	3020 K	3045 K	3070 K	160	120
	N0S2	2990 K	3040 K	3090 K	160	120

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

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Electro-Optical Characteristics, T_C = 65°C

I_F (mA)	V_F (V)	Power (W)	PASB-16FNL-EC2NS40 (4000 K)		PASB-16FVL-EC2NS27 (2700 K)		PASB-16FVL-EC2NS30 (3000 K)	
			Flux (lm)	lm/W	Flux (lm)	lm/W	Flux (lm)	lm/W
150	32.6	4.9	670	136.7	625	128.4	640	131.5
200*	33.5	6.7	875	130.6	820	123.3	840	126.3
250	34.0	8.5	1070	125.9	1010	118.9	1030	121.2
300	34.7	10.4	1260	121.2	1190	114.6	1210	116.5
350	35.6	12.4	1445	116.5	1365	109.7	1410	113.3
400	36.3	14.5	1610	111.0	1530	105.4	1585	109.2
450	37.0	16.6	1780	107.2	1695	101.8	1750	105.1

- All values are reference only.

Absolute Maximum Ratings

Parameter	Neutral White/Warm White
Max DC Forward Current (mA)	450
Max Voltage at 450mA	39.5
Peak Pulsed Forward Current (mA)	450 (less than 1/10 duty cycle@1KHz)
ESD Sensitivity (HBM per MIL-STD-883E Method 3015.7)	±2000V
LED Junction Temperature	125°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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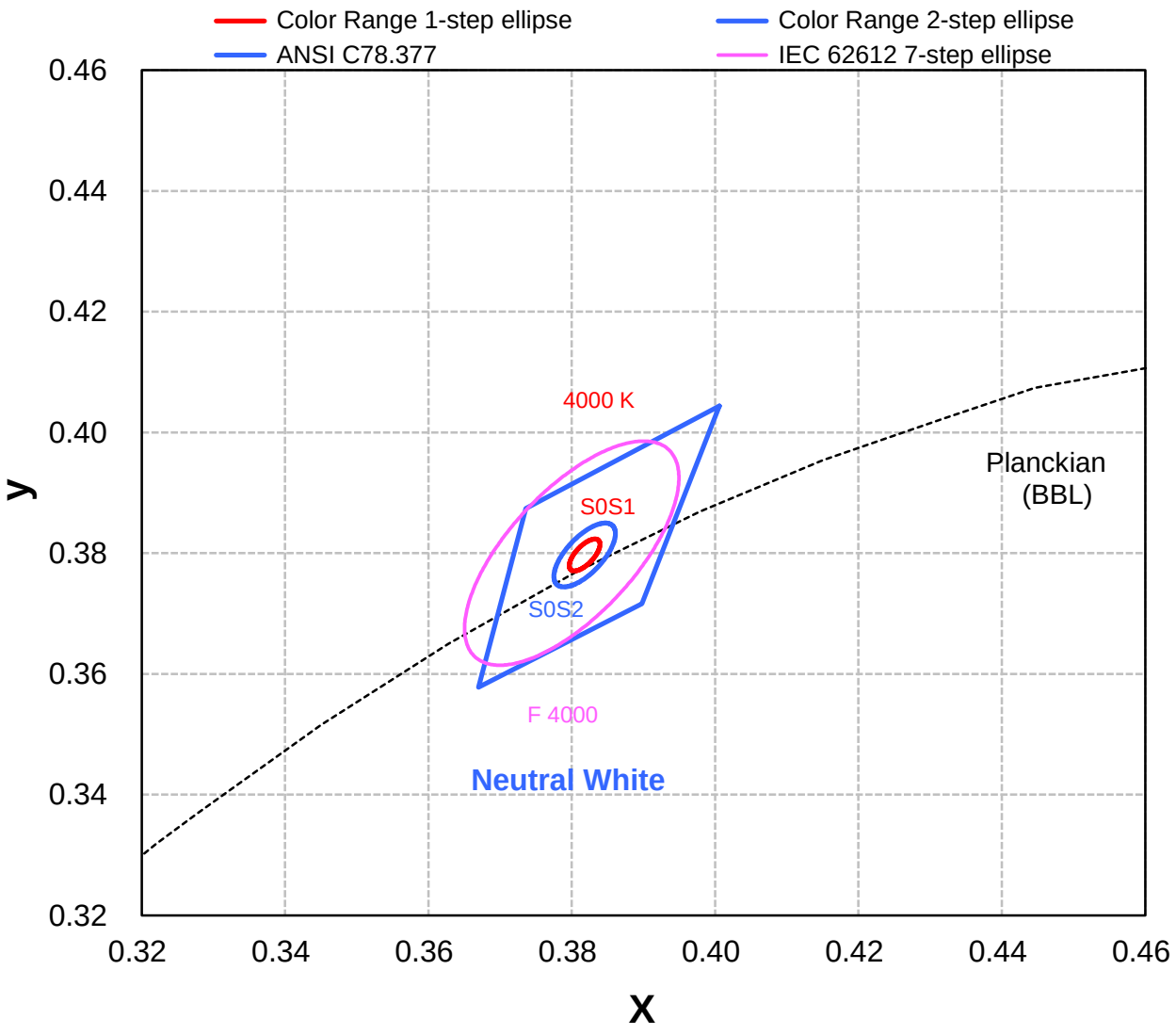
Color Bin, T_C = 65°C

Neutral White Binning Structure Graphical Representation



Neutral White Bin Structure

Bin Code		Center	Oval parameter		Typ. CCT (K)	Bin Code		Center	Oval parameter		Typ. CCT (K)
S0S1	x	0.3818	a	0.00313	4000	S0S2	x	0.3818	a	0.00626	4000
	y	0.3797	b	0.00134			y	0.3797	b	0.00268	
			Θ°	53.72					Θ°	53.72	

- The chromaticity center refers to ANSI C78.377.
- Tolerance on each color bin (x , y) is ± 0.005

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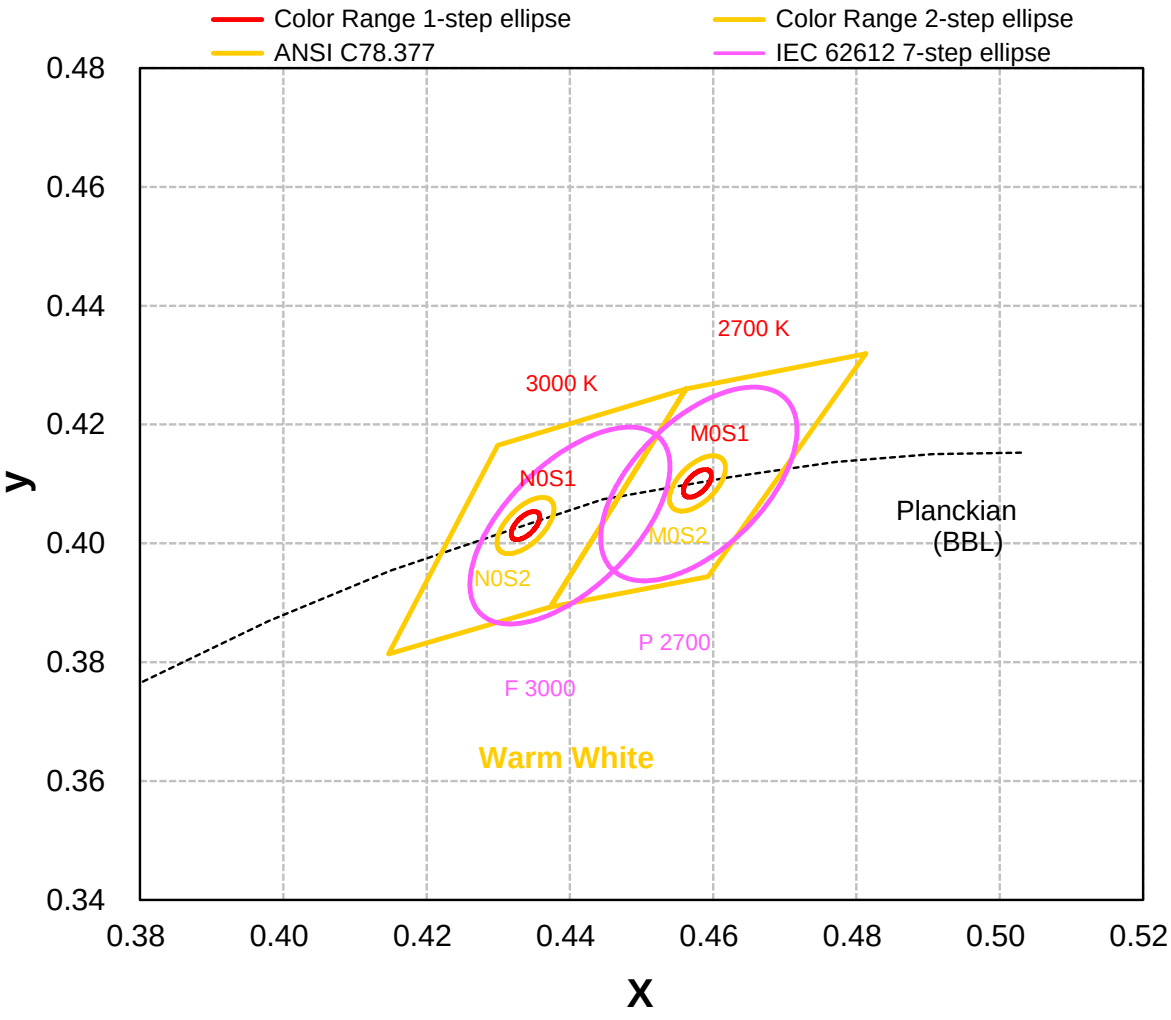
Color Bin, T_C = 65°C

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)
M0S1	x	0.4578	a	0.0027	2700	N0S1	x	0.4338	a	0.00278	3000
	y	0.4101	b	0.0014			y	0.4030	b	0.00136	
			Θ°	53.70					Θ°	53.22	
M0S2	x	0.4578	a	0.0054	2700	N0S2	x	0.4338	a	0.00556	3000
	y	0.4101	b	0.0028			y	0.4030	b	0.00272	
			Θ°	53.70					Θ°	53.22	

- The chromaticity center refers to ANSI C78.377.
- Tolerance on each color bin (x , y) is ± 0.005

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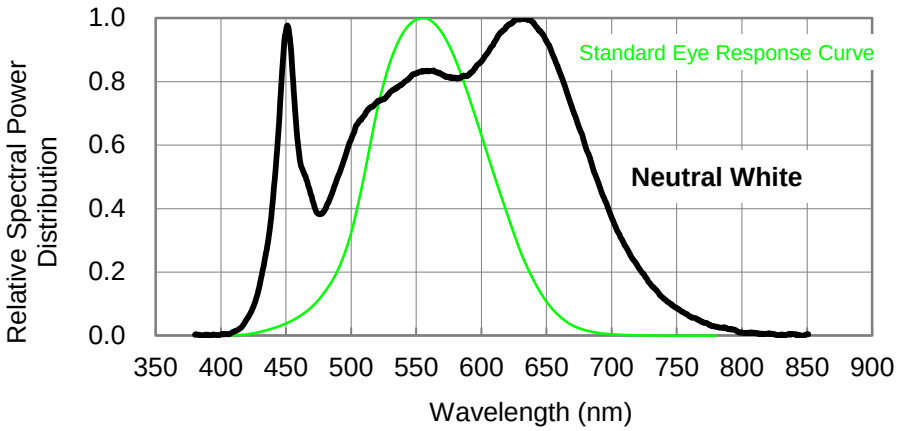
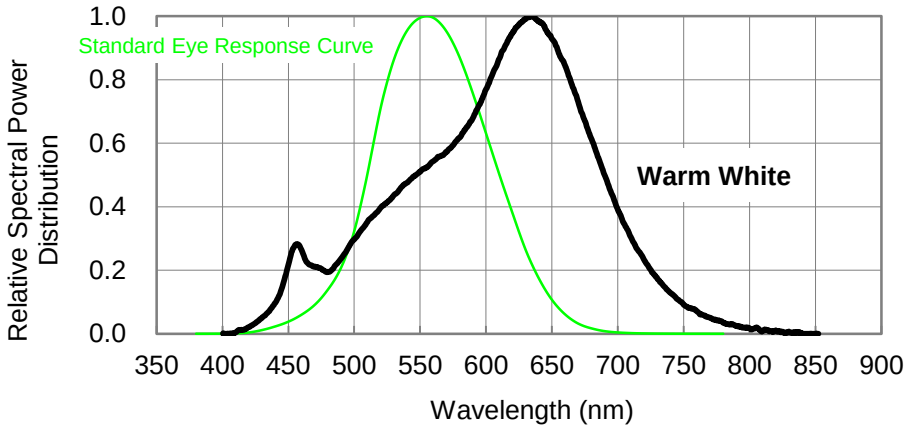
Color Spectrum, T_C = 65°C

1. Neutral White



2. Warm White



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Case Temperature Relative Characteristics

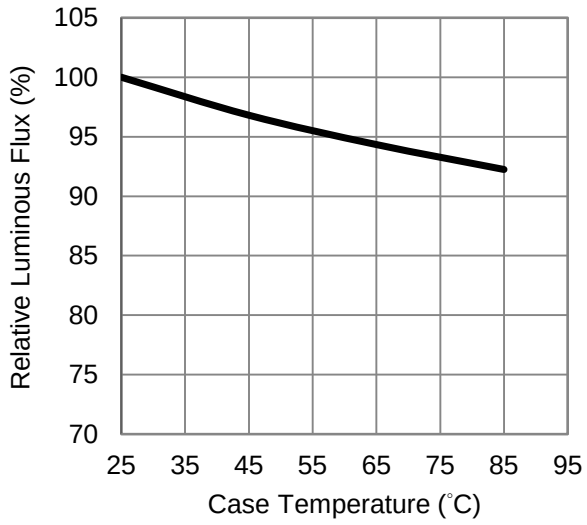

Fig 1. Case Temperature vs. Relative Luminous Flux at 200mA.

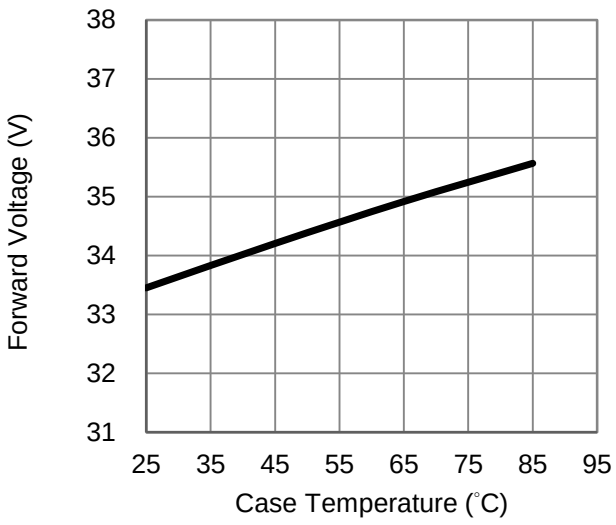

Fig 2. Case Temperature vs. Forward Voltage at 200mA.

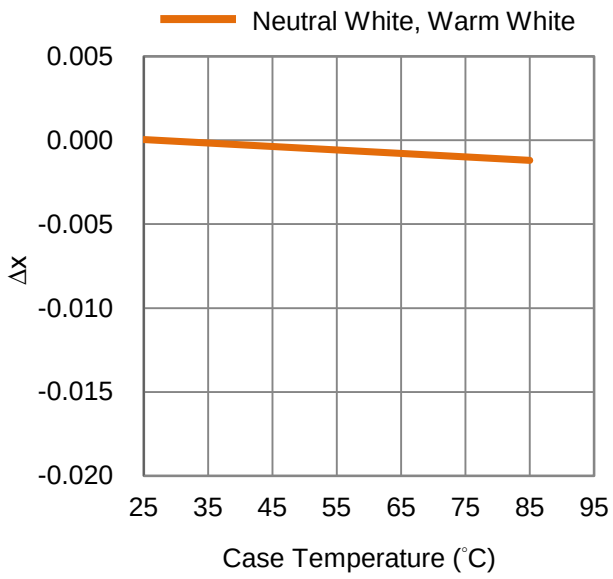

Fig 3. Case Temperature vs. Chromaticity Coordinate Δx at 200mA.

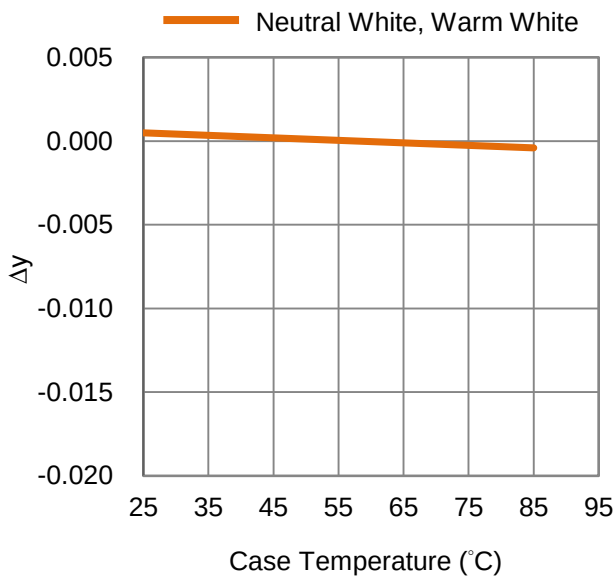

Fig 4. Case Temperature vs. Chromaticity Coordinate Δy at 200mA.

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Forward Current Relative Characteristics

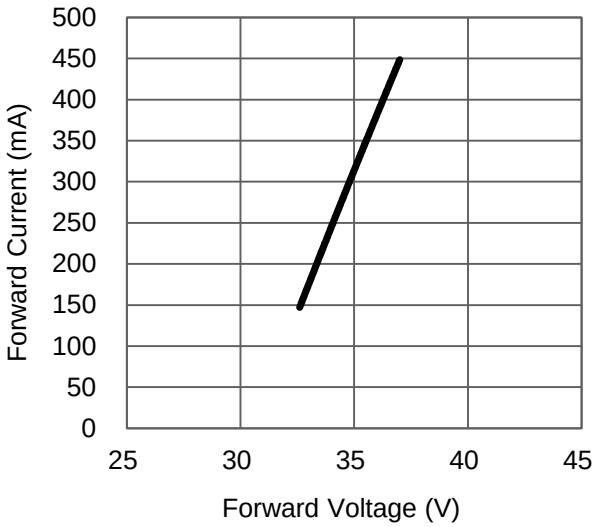

Fig 5. Forward Current vs. Forward Voltage at T_C=65°C.

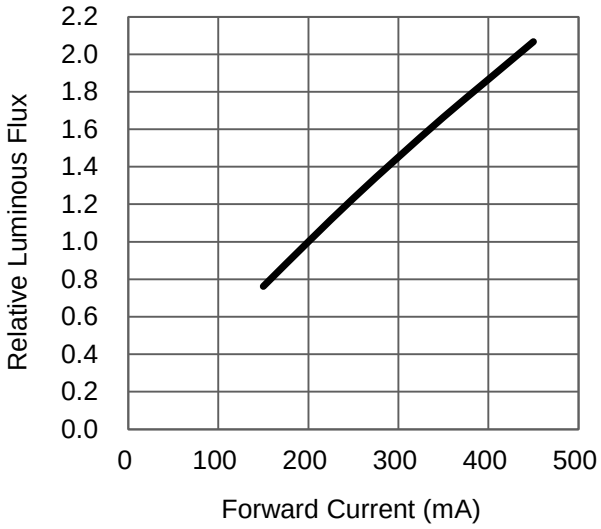

Fig 6. Forward Current vs. Relative Luminous Flux at T_C=65°C.

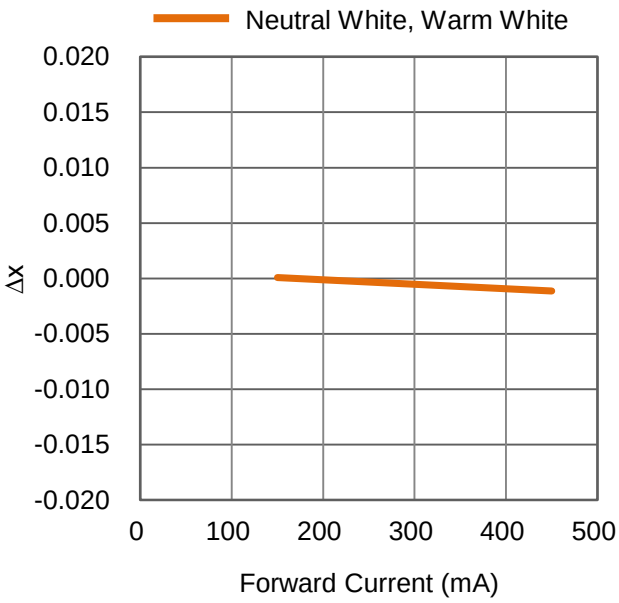

Fig 7. Forward Current vs. Chromaticity Coordinate Δx at T_C=65°C.

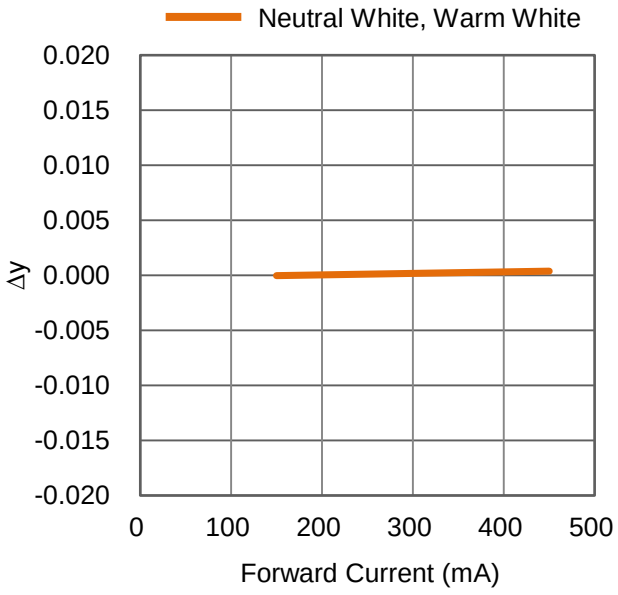

Fig 8. Forward Current vs. Chromaticity Coordinate Δy at T_C=65°C.

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Case Temperature vs. Junction Temperature Characteristics

T_C (°C)	T_J (°C)		
	200 (mA)	300 (mA)	450 (mA)
25	36	43	53
30	41	48	58
35	46	53	63
40	51	58	68
45	56	63	73
50	61	68	78
55	66	73	83
60	71	78	88
65	76	83	93
70	81	88	98
75	86	93	103
80	91	98	108
85	96	103	113
90	101	108	118
95	106	113	123
100	111	118	-
105	116	123	-
110	121	-	-

Fig 9. Case Temperature vs. Junction Temperature at 200、300、450mA.

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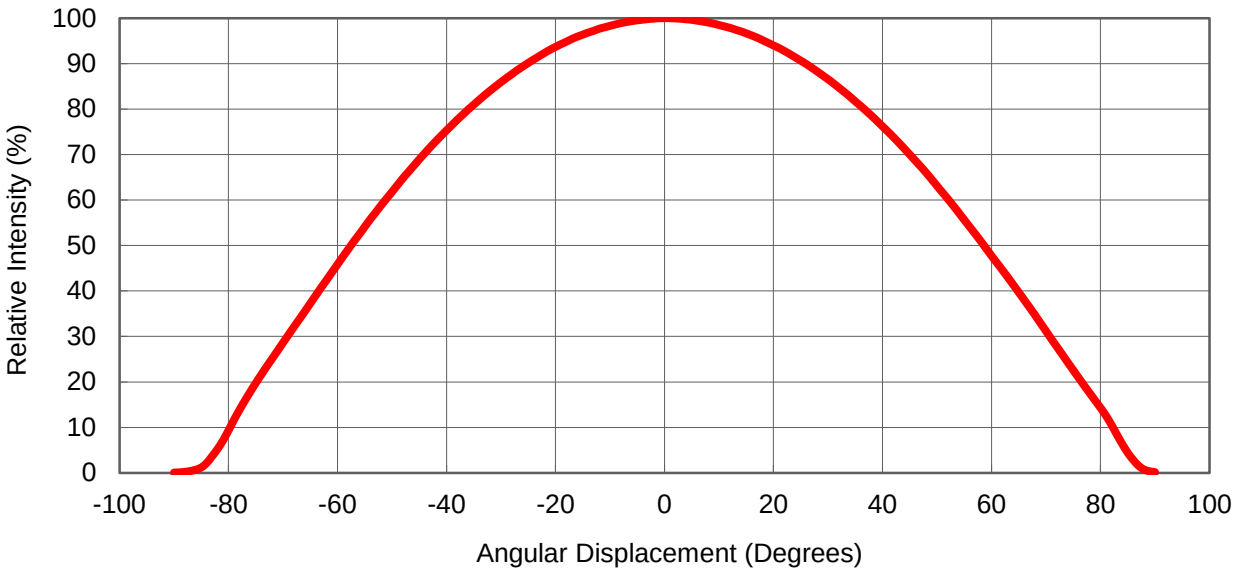
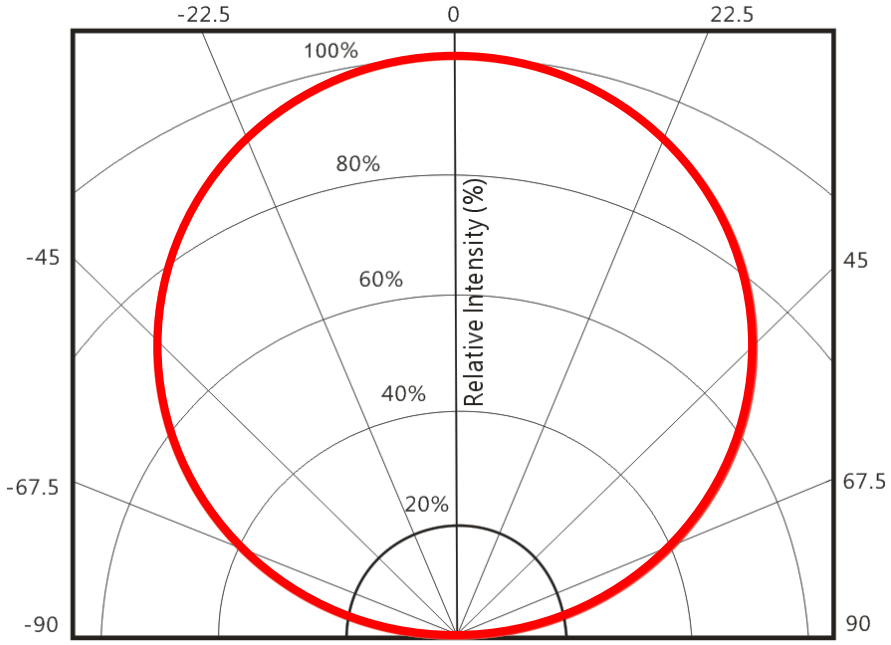
Typical Representative Spatial Radiation Pattern

Lambertian Radiation Pattern



Polar Radiation Pattern



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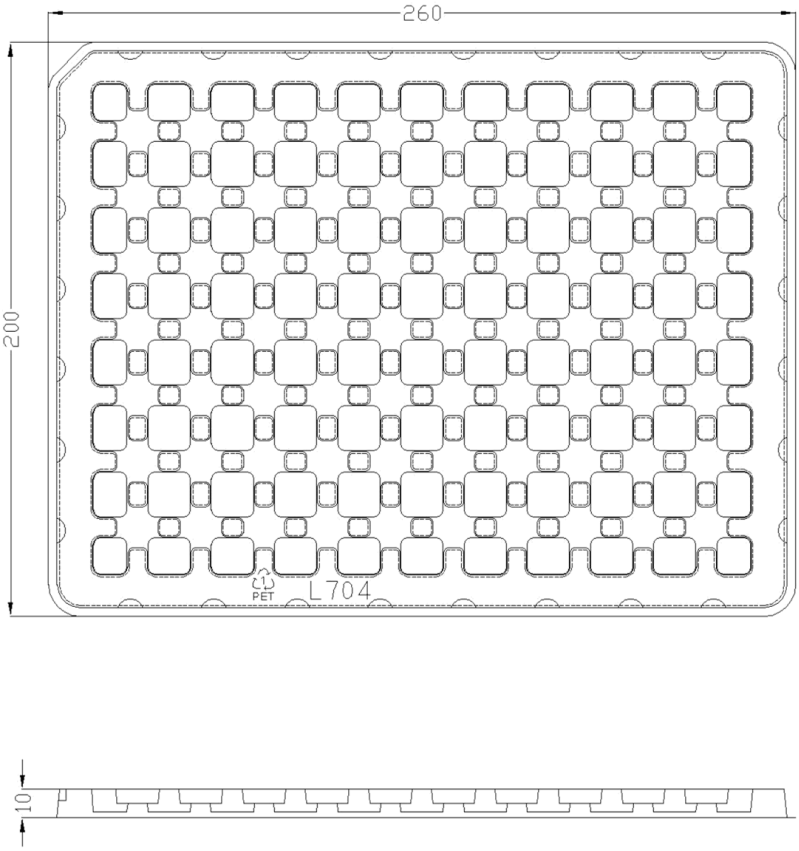
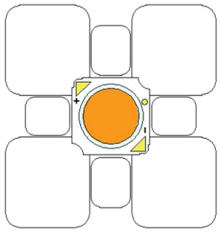
Packing Specifications





Product 70 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.

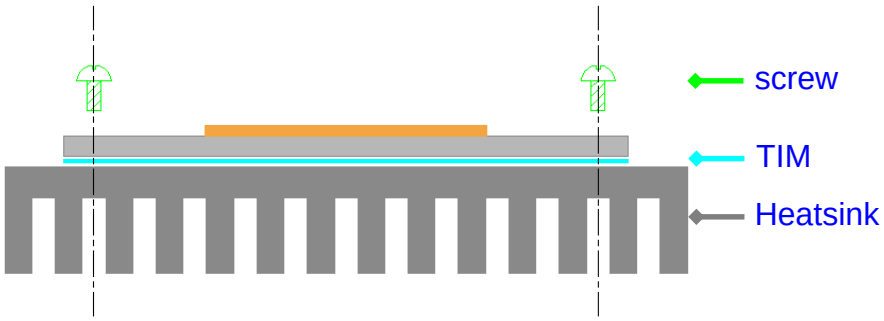

Fig 10. Reference assembly as fixing with screws

Limited Warranty : COB Light Engine Series

This limited warranty is provided by ProLight Opto described below ("Seller") to you as the original purchaser of the LED lighting product that is identified on Seller's invoice reflecting its original purchase (the "Product"). We warrant the identification as such on the invoice, will be free of defects in material and workmanship for a period of five (5) YEARS from the date of original purchase. This limited warranty excludes field labor and service charges related to the repair or replacement of the Product. Seller's aggregate liability with respect to a defective product shall in any event be limited to the monies paid to seller for that defective product. The determination of whether the Product is defective shall be made by Seller in its sole discretion with consideration given to the overall performance of the Product. This limited warranty cannot be transferred to subsequent purchasers of the Product, provided that such Product is resold in new condition and in its original packaging. This limited warranty is void if the product is not used for the purpose for which it is designed.

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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.

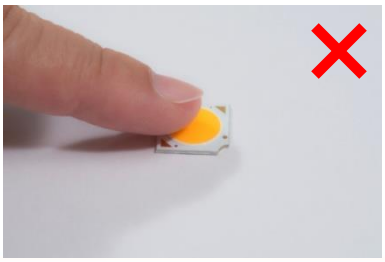
Precaution for Use

- 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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