ProLight PAPB-12FQL-D2765
12W Dual Color COB
Technical Datasheet
Version: 1.4

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
- 5 year warranty

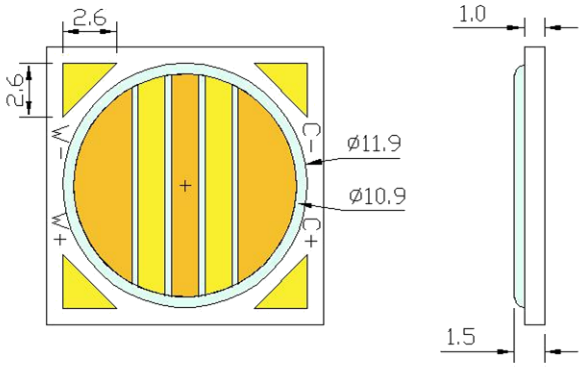
Main Applications

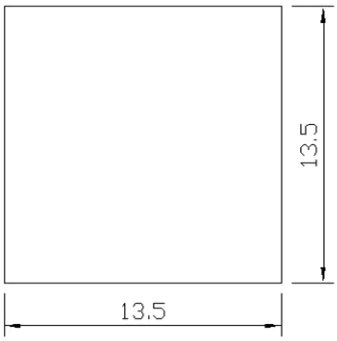
- Spot lighting
- Down lighting

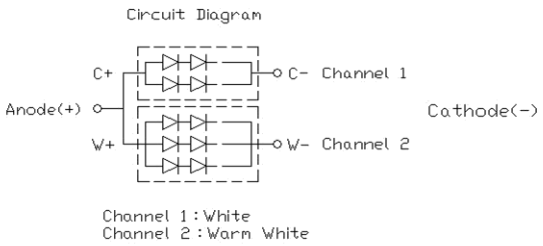
Introduction

- The 12W multi-chip power ProEngine Series is designed with 2 channels, providing color temperature changes from 6500K to 2700K remaining similar flux.
- The superficial illuminating nature makes it the preference in applications including downlighting, spot lighting and accent lighting at restaurant, hotel, studio, historical spot and home.

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 ± 0.3mm.
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.

Flux Characteristics at 250mA, T_C = 25°C

Radiation Pattern	Color	Part Number COB	Luminous Flux Φ_V (lm) Minimum	Typical	CRI Min.
Flat	Channel 1	PAPB-12FQL-D2765	935	1040	90
	Channel 2		910	1010	90

- 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 250mA, T_C = 25°C

Color	Forward Voltage V_F (V) Min.	Typ.	Max.	Thermal Resistance Junction to Board (℃/W)
Channel 1	34.0	37.0	40.0	0.86
Channel 2	33.0	36.0	39.0	

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

Optical Characteristics at 250mA, T_C = 25°C

Color	Bin Code	Color Temperature CCT Min.	Typ.	Max.	Total included Angle (degrees) $\theta_{0.90V}$	Viewing Angle (degrees) $2\theta_{1/2}$
Channel 1	X0	6300 K	6500 K	7010 K	160	120
Channel 2	M1	2670 K	2700 K	2840 K	160	120

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

Electro-Optical Characteristics, T_J = 25°C

I_F (mA)	V_F (V)	Power (W)	Channel 1 Flux (lm)	Channel 1 lm/W
70	33.40	2.34	329.6	141.0
140	35.15	4.92	624.8	127.0
200	36.49	7.30	859.3	117.8
250*	37.50	9.37	1040.0	110.9
315	38.76	12.21	1261.0	103.3
I_F (mA)	**V_F (V)**	**Power (W)**	**Channel 2 Flux (lm)**	**Channel 2 lm/W**
70	32.79	2.30	307.2	133.9
140	34.15	4.78	594.0	124.2
200	35.17	7.03	827.0	117.6
250*	35.94	8.98	1010.0	112.4
315	36.90	11.62	1239.9	106.7

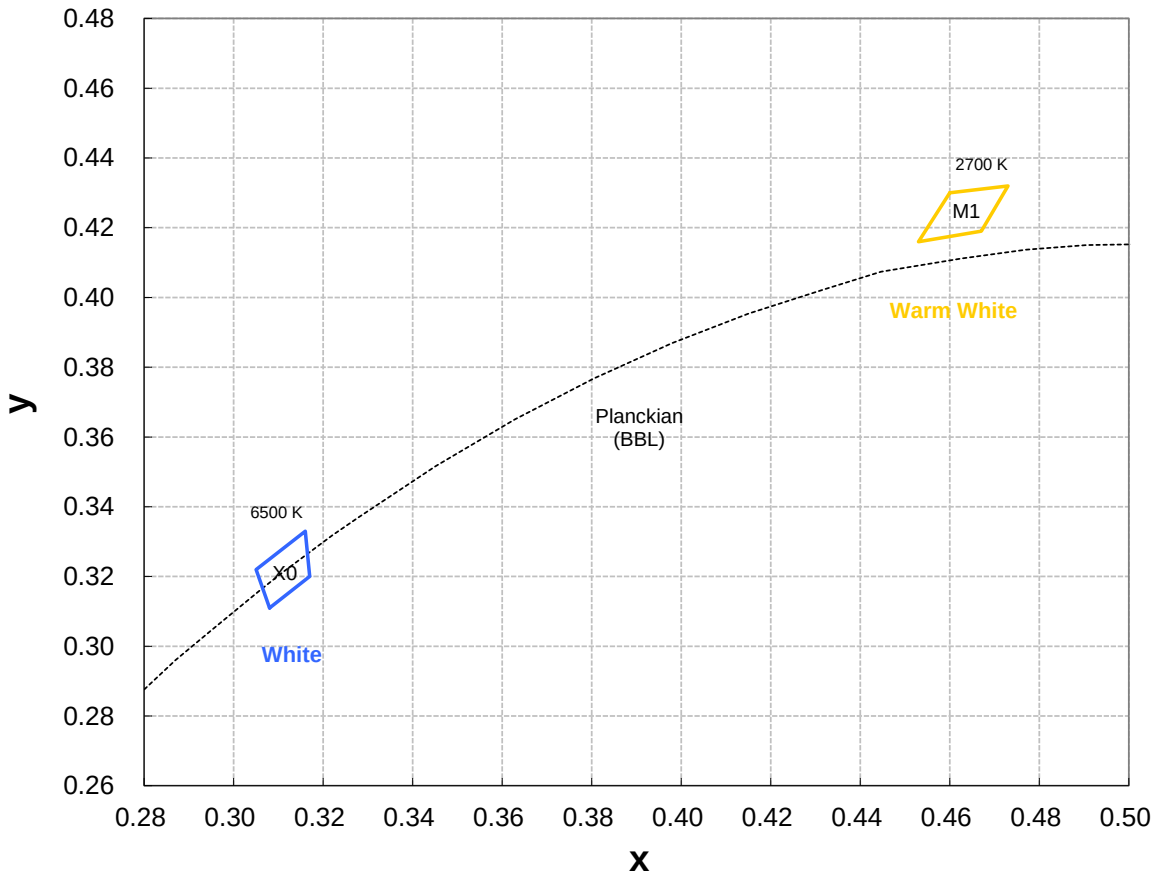
- All values are reference only.

Absolute Maximum Ratings

Parameter	Channel 1/Channel 2
Max DC Forward Current (mA)	315
Peak Pulsed Forward Current (mA)	350 (less than 1/10 duty cycle@1KHz)
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

Color Bin

Channel 1 and Channel 2 Binning Structure Graphical Representation



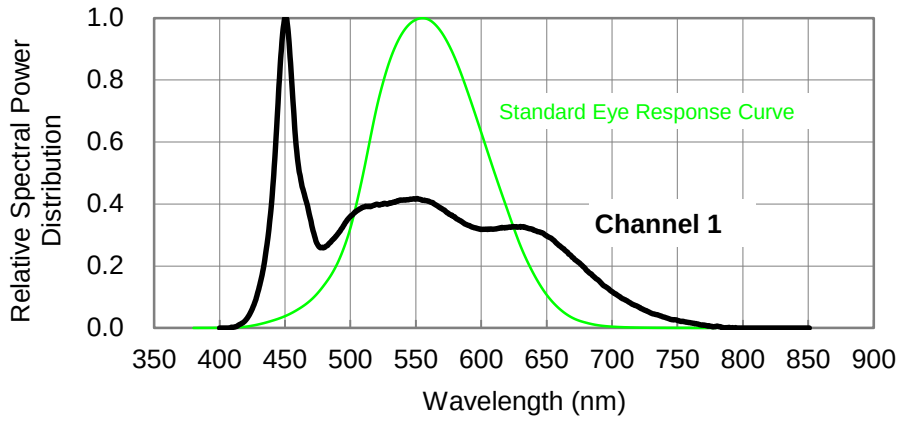
Channel 1 and Channel 2 Bin Structure

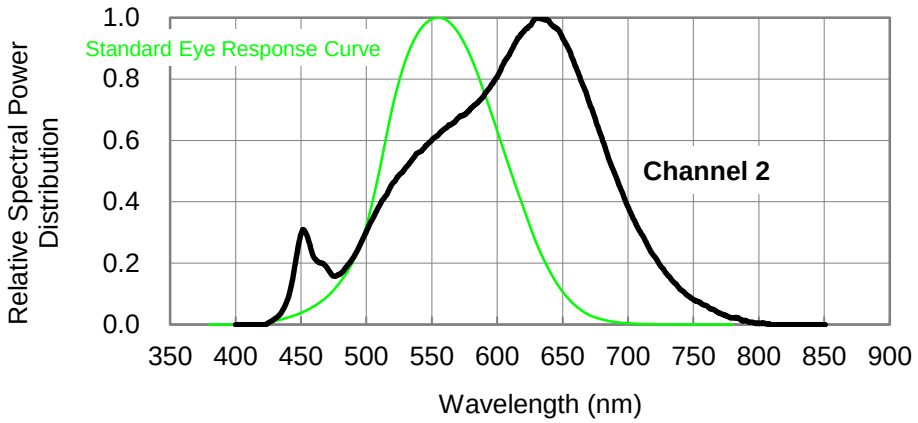
Bin Code	x	y	Typ. CCT (K)	Bin Code	x	y	Typ. CCT (K)
M1	0.4600	0.4300	2700	X0	0.3080	0.3110	6500
	0.4530	0.4160			0.3050	0.3220	
	0.4670	0.4190			0.3160	0.3330	
	0.4730	0.4320			0.3170	0.3200	

- Tolerance on each color bin (x , y) is ± 0.005

Color Spectrum, T_J = 25˚C

1. Dual Color : 2700K~6500K





Forward Current Relative Characteristics

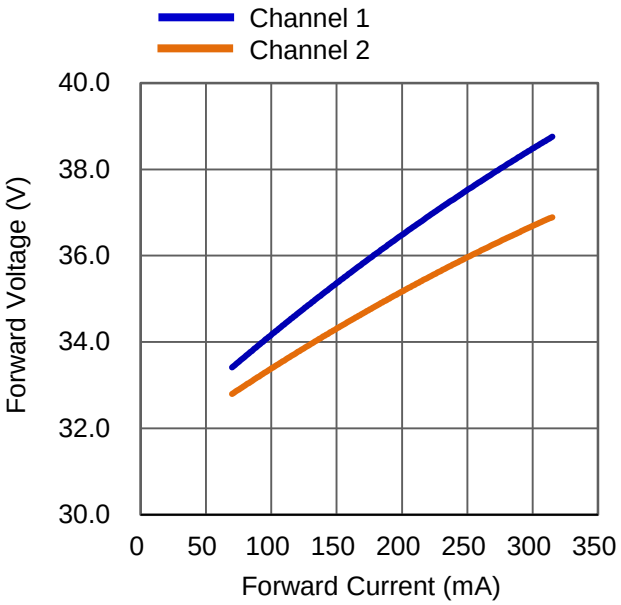


Fig 1. Forward Current vs. Forward Voltage at T_C=25°C.

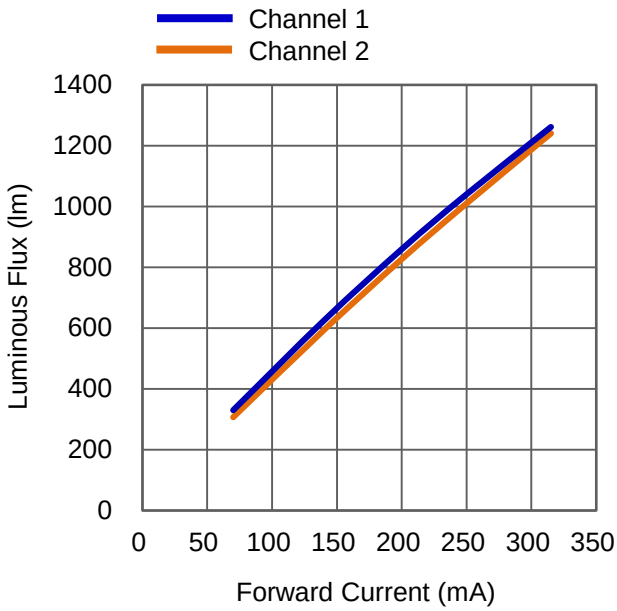


Fig 2. Forward Current vs. Relative Luminous Flux at T_C=25°C.

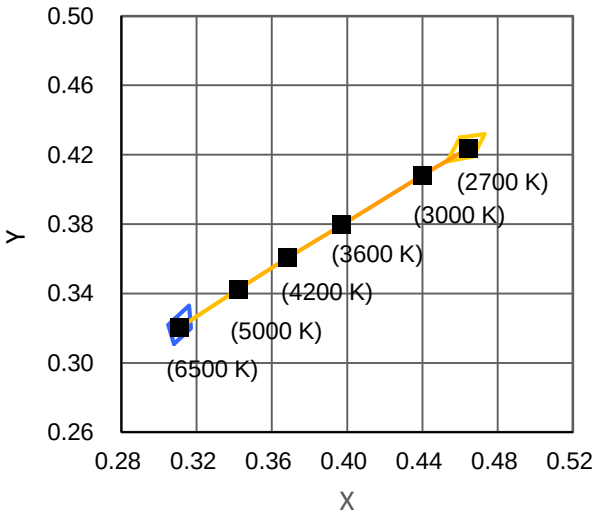
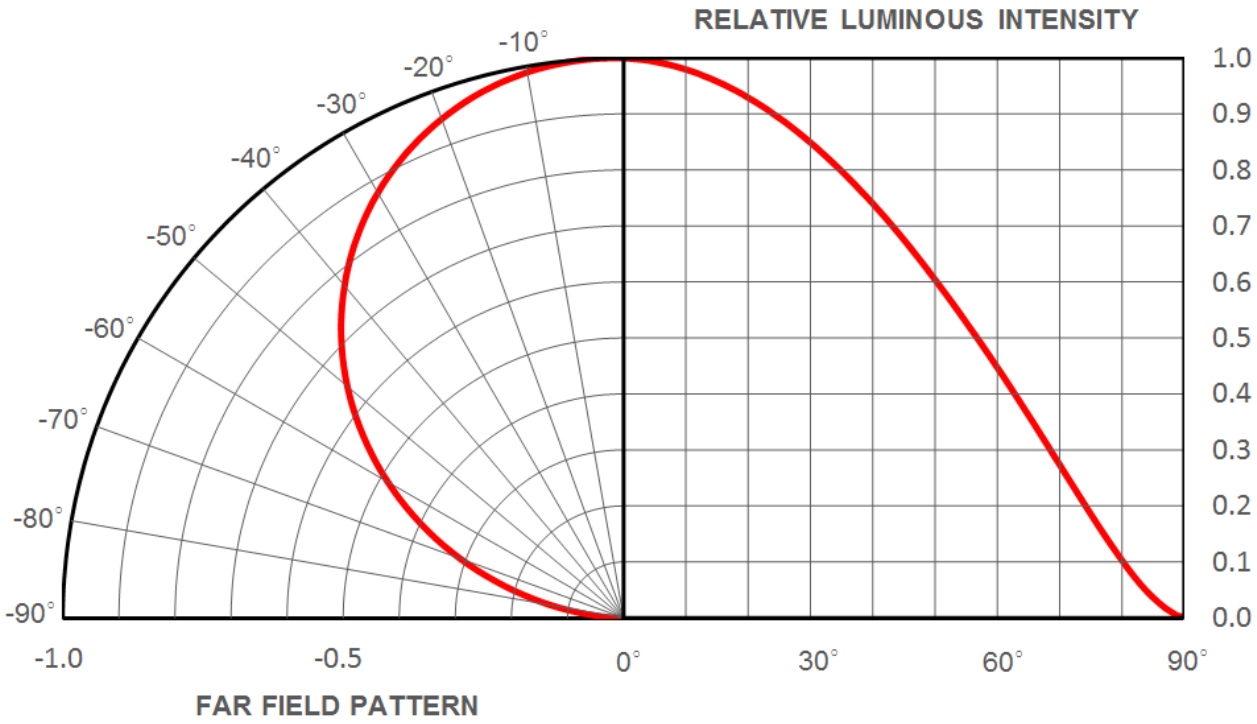


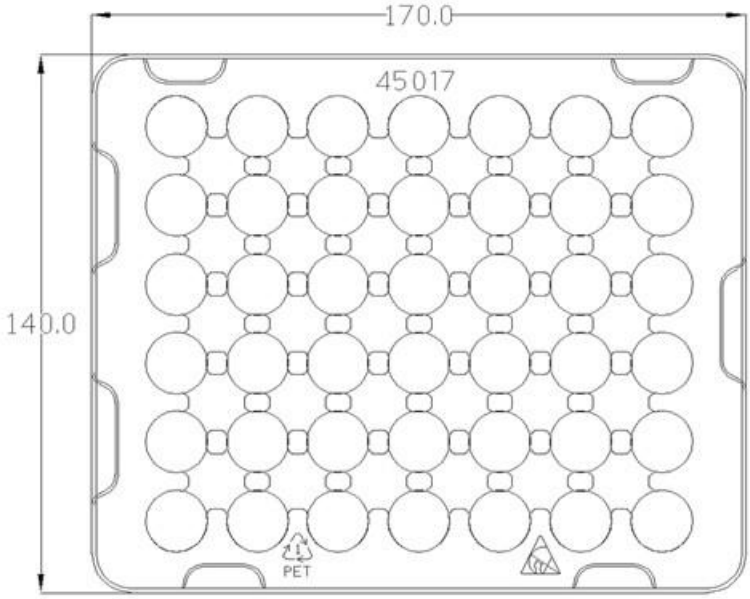
Fig 3. Chromaticity Coordinate Profile at T_C=25°C.

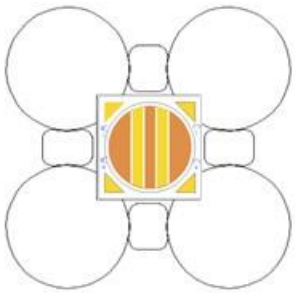
2700 K：Channel 1 250mA Channel 2 0mA
3000 K：Channel 1 210mA Channel 2 40mA
3600 K：Channel 1 150mA Channel 2 100mA
4200 K：Channel 1 100mA Channel 2 150mA
5000 K：Channel 1 50mA Channel 2 200mA
6500 K：Channel 1 0mA Channel 2 250mA

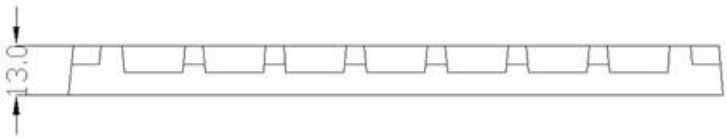
Typical Representative Spatial Radiation Pattern



Packing Specifications







Product 30 pcs/tray

Notes:
1. Drawing not to scale.
2. All dimensions are in millimeters.
3. Unless otherwise indicated, tolerances are ± 0.2mm.

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)