ProLight PBMM-180FTL-N01CA
180W COB Light-Engine LEDs
Technical Datasheet
Version: 1.8

ProLight Opto ProEngine Series

Features

- High flux density of lighting source
- Good color uniformity
- R, G, B, W four color in one package
- RoHS compliant
- Long lifetime

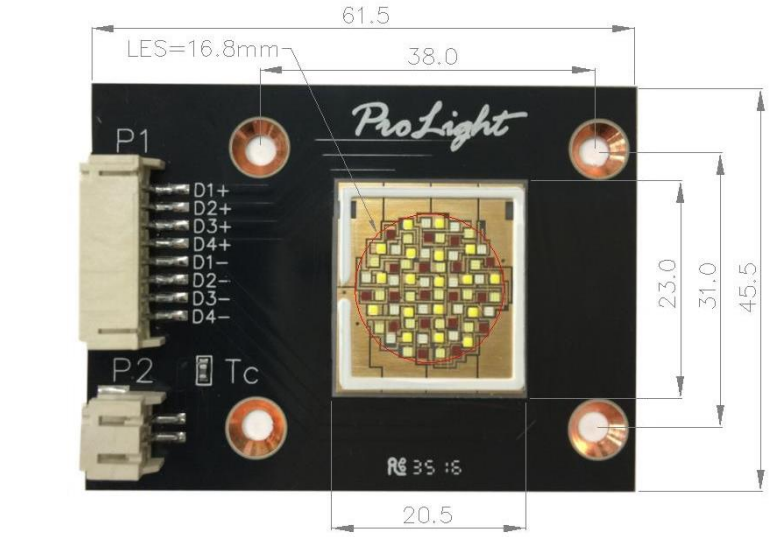
Main Applications

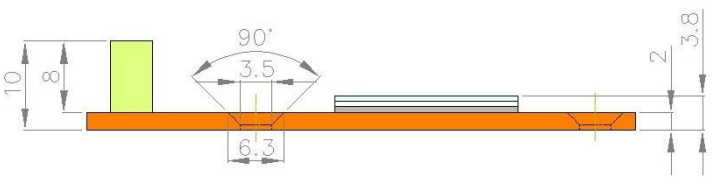
- Architectural and Entertainment Lighting
- Medical Lighting
- Transportation
- Spot Lighting
- Emergency Vehicle Lighting
- Machine Vision

Introduction

- The input power is 180 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 spot lighting, typical applications include architectural and entertainment lighting, medical lighting, transportation, emergency vehicle lighting and machine vision.

Mechanical Dimensions





Color

D1 : Red
D2 : Green
D3 : Blue
D4 : White

Notes:
1. The cathode side of the device is denoted by the " + / - " mark on the part body.
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.**
6. NCP18XH103E03RB. Please see http://www.murata.com/ for details on calculating thermistor temperature.
7. Selected JST Connector P/N. PHR-2 and PHR-8. Please see http://www.jst-mfg.com/product/pdf/chn/cPH.pdf for details.

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

Flux Characteristics at 1600mA, T_J = 25˚C

	Color	Part Number COB	Luminous Flux Minimum	Luminous Flux Typical
D1	Red	PBMM-180FTL-N01CA	1300	1500
D2	Green		2850	3300
D3	Blue		470	550
D4	White		3450	4000

- **Do not use below 30mA.**
- ProLight maintains a tolerance of ± 7% on flux and power measurements.
- Please do not drive at rated current more than 1 second without proper heat sink.

Electrical Characteristics at 1600mA, T_J = 25˚C

	Color	Forward Voltage V_F (V) Min.	Typ.	Max.	Thermal Resistance Junction to Board (˚C/ W)
D1	Red	18.5	21.5	24.5	0.15
D2	Green	26.5	30.0	33.5	
D3	Blue	26.5	29.0	33.0	
D4	White	26.5	29.0	33.0	

- ProLight maintains a tolerance of ± 0.5V for Voltage measurements.

Optical Characteristics at 1600mA, T_J = 25˚C

Radiation Pattern	Color	Dominant Wavelength λ_D, or Color Temperature CCT Min.	Typ.	Max.	Total included Angle (degrees) $\theta_{0.90V}$	Viewing Angle (degrees) $2\theta_{1/2}$
Flat	Red	620 nm	623 nm	630 nm	160	120
	Green	518 nm	522 nm	526 nm	160	120
	Blue	453 nm	455 nm	458 nm	160	120
	White	5750 K	6500 K	7250 K	160	120

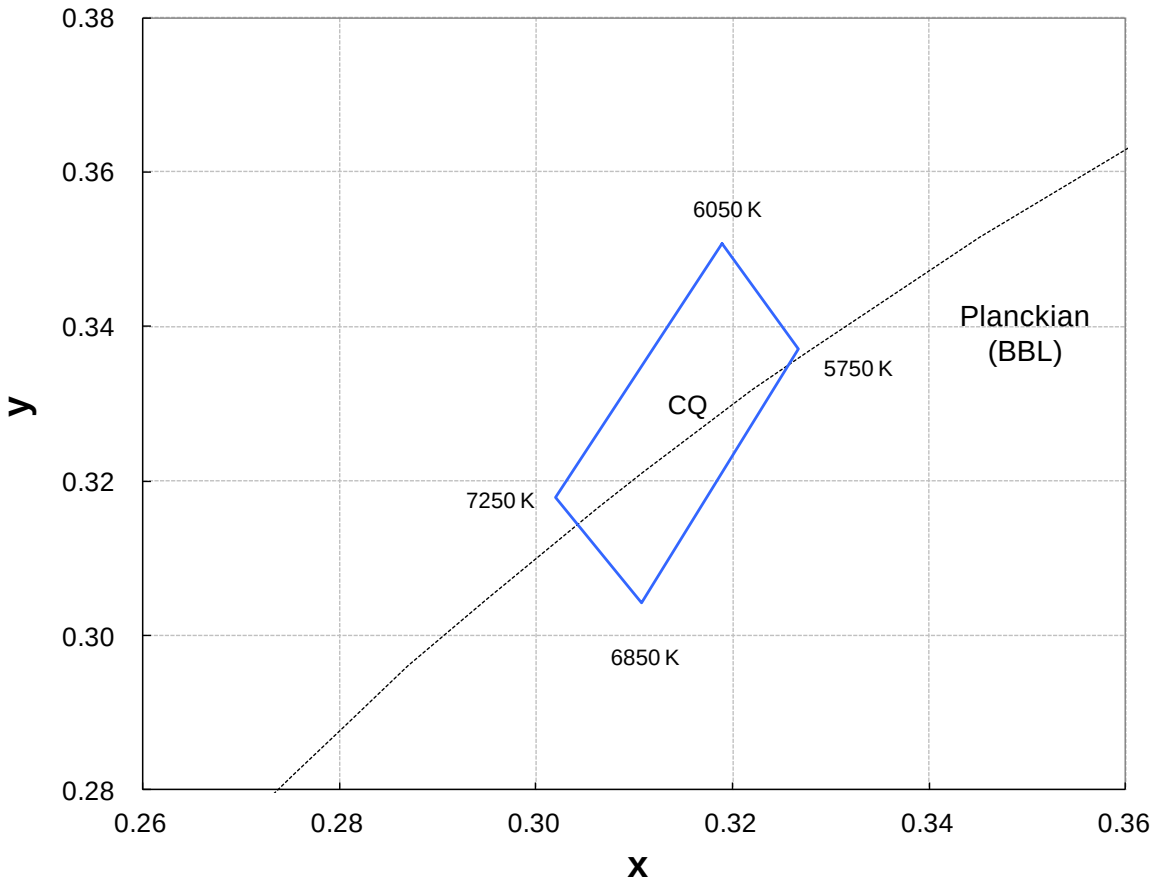
- ProLight maintains a tolerance of ± 1nm for dominant wavelength measurements.
- ProLight maintains a tolerance of ± 5% for CCT measurements.

Absolute Maximum Ratings

Parameter	Red/Green/Blue/White
DC Forward Current (mA)	30-1600
Peak Pulsed Forward Current (mA)	2400 (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 - 85°C
Storage Temperature	-40°C - 120°C
Reverse Voltage	Not designed to be driven in reverse bias

Color Bin

White Binning Structure Graphical Representation



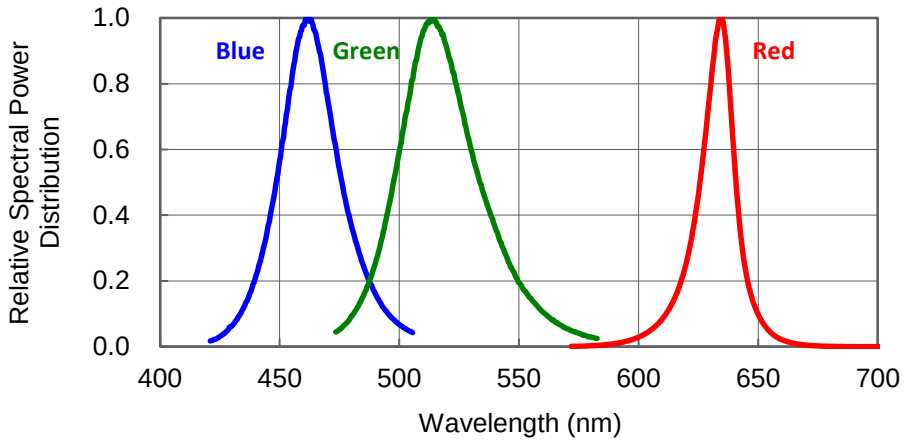
White Bin Structure

Bin Code	x	y	Typ. CCT (K)
CQ	0.3190	0.3507	6500
	0.3267	0.3370	
	0.3107	0.3043	
	0.3020	0.3178	

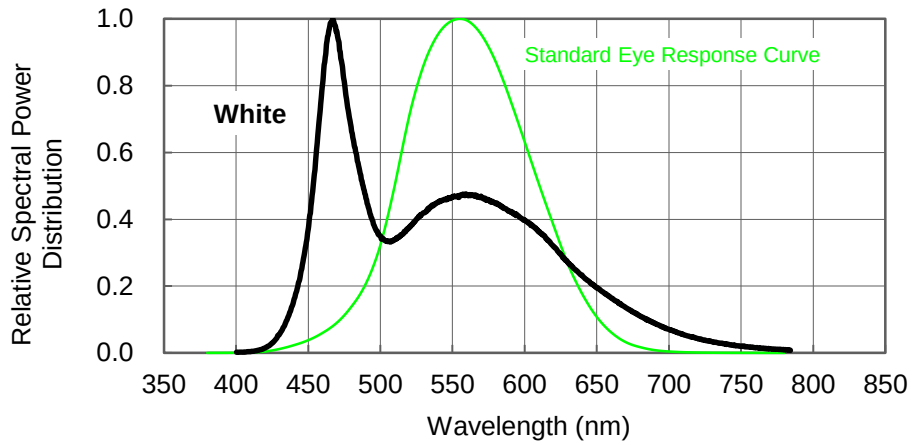
- Tolerance on each color bin (x , y) is ± 0.005

Color Spectrum, T_J = 25˚C

1. Blue、Green、Red

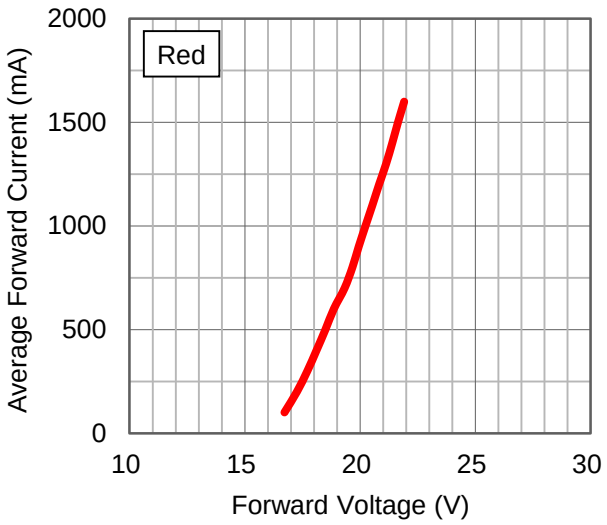


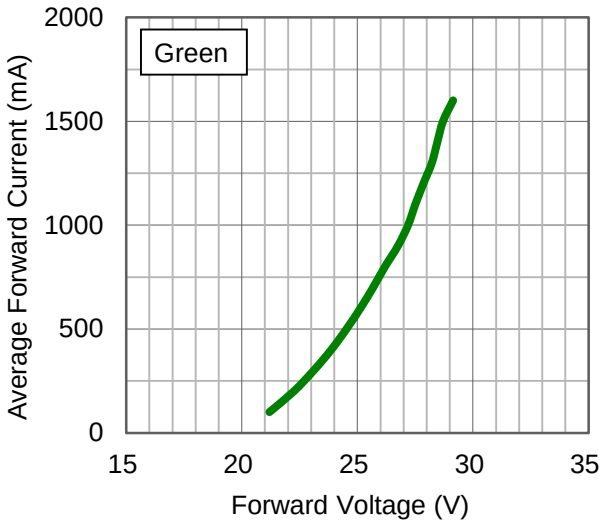
2. White

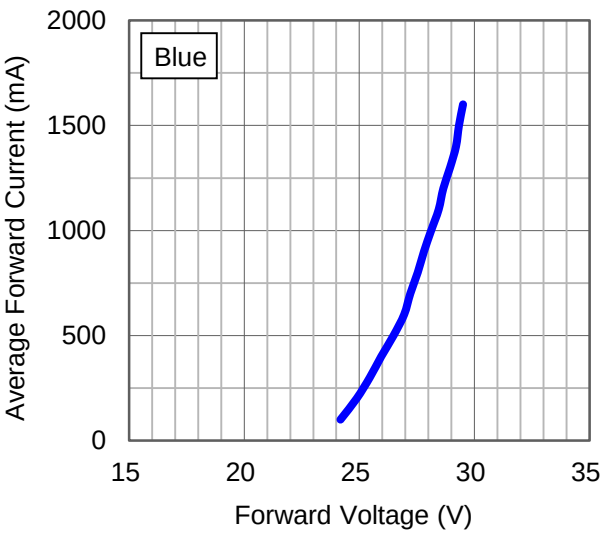


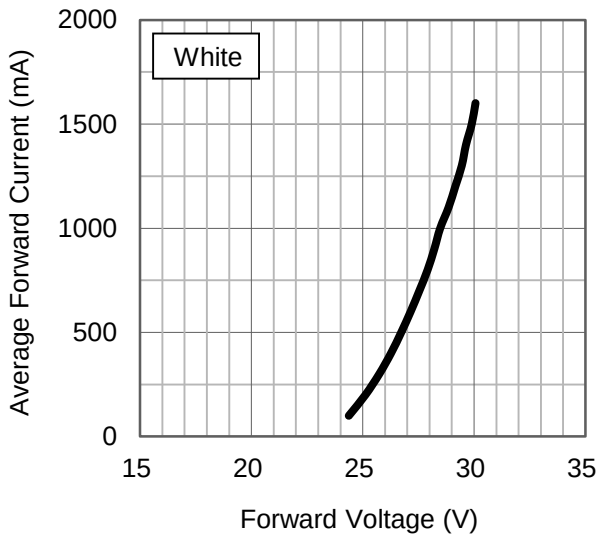
Forward Current Characteristics, T_J = 25˚C

1. Forward Voltage vs. Forward Current



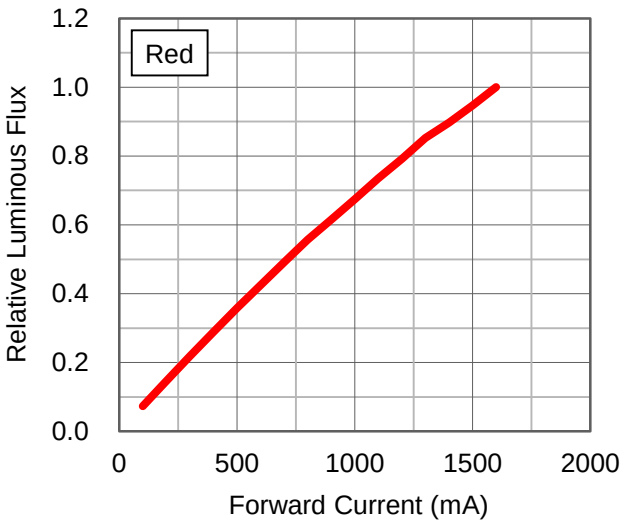




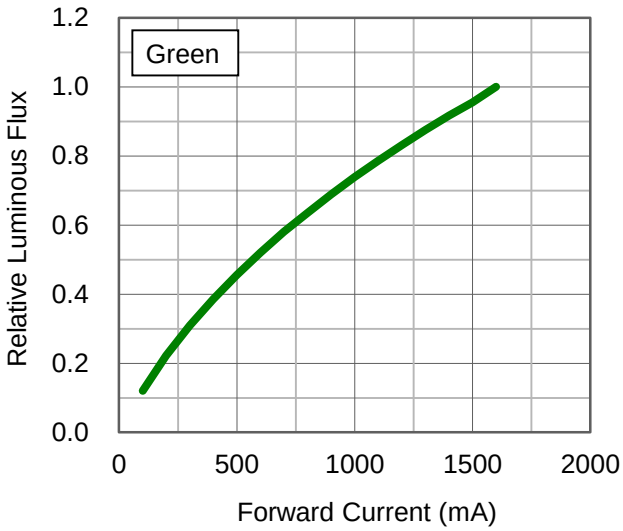


Forward Current Characteristics, T_J = 25˚C

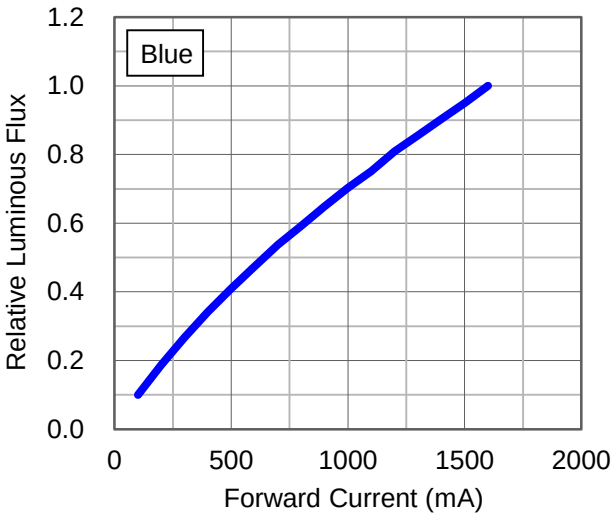
2. Forward Current vs. Normalized Relative Luminous Flux



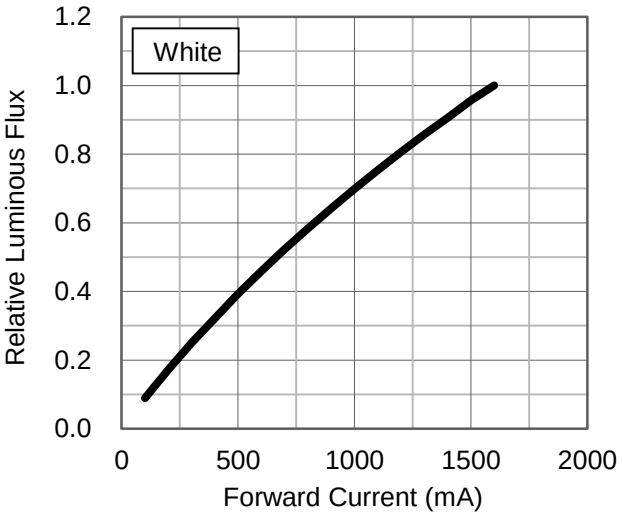
Do not use below 30mA.



Do not use below 30mA.



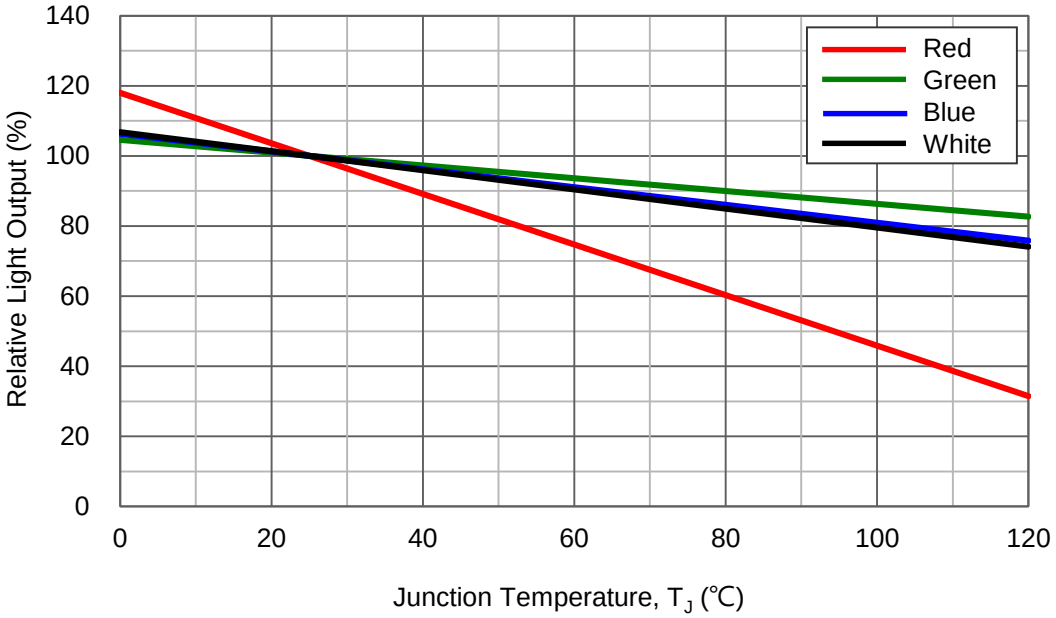
Do not use below 30mA.



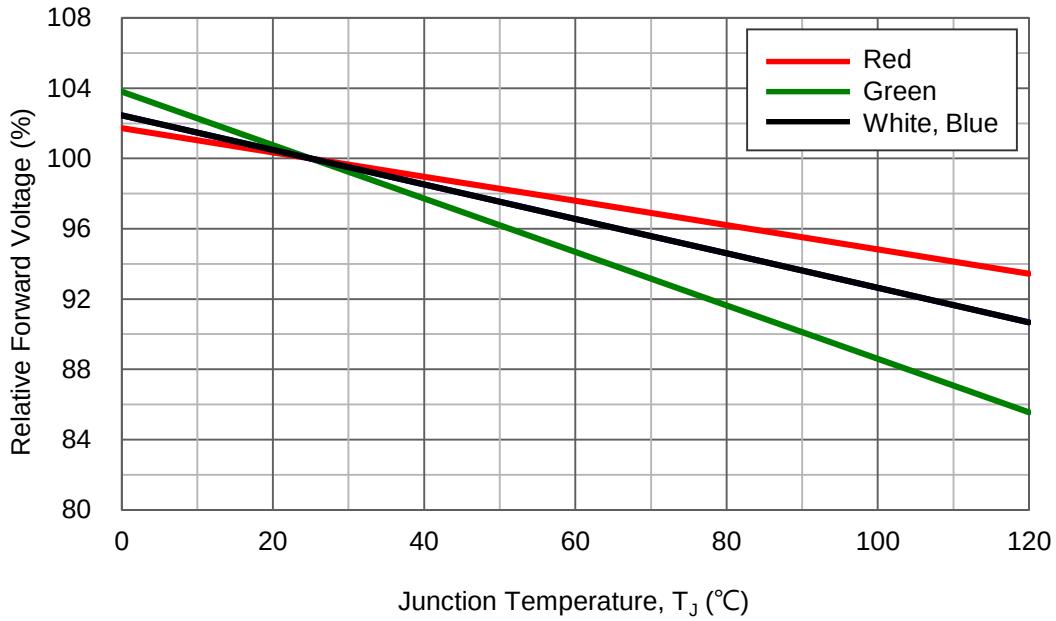
Do not use below 30mA.

Junction Temperature Relative Characteristics

1. Junction Temperature vs. Relative Light Output at 1600mA

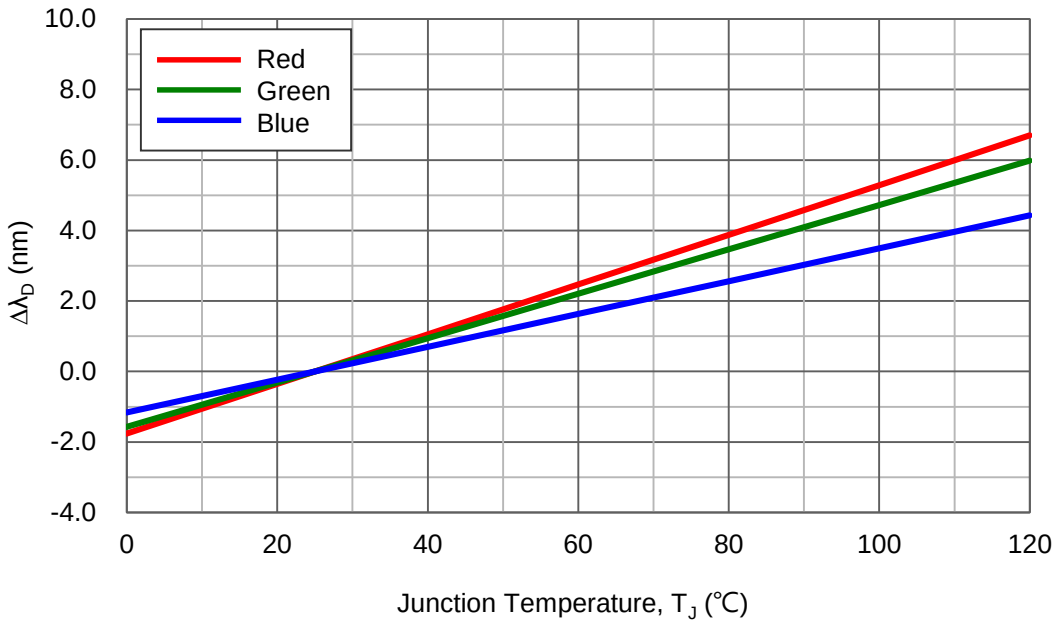


2. Junction Temperature vs. Relative Forward Voltage at 1600mA

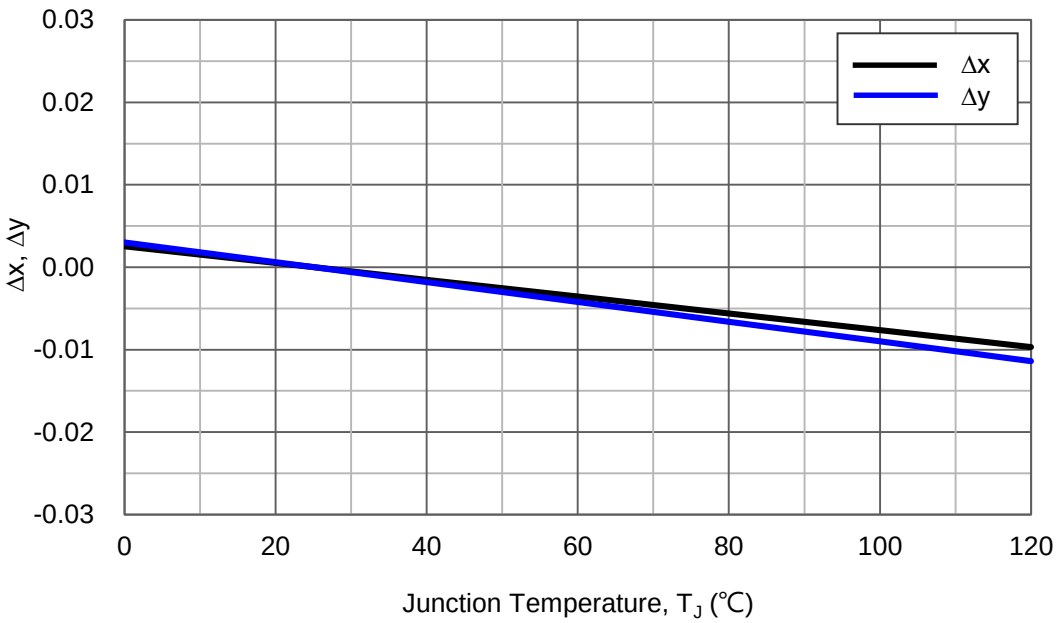


Junction Temperature Relative Characteristics

3. Junction Temperature vs. Dominant Wavelength Shift at 1600mA

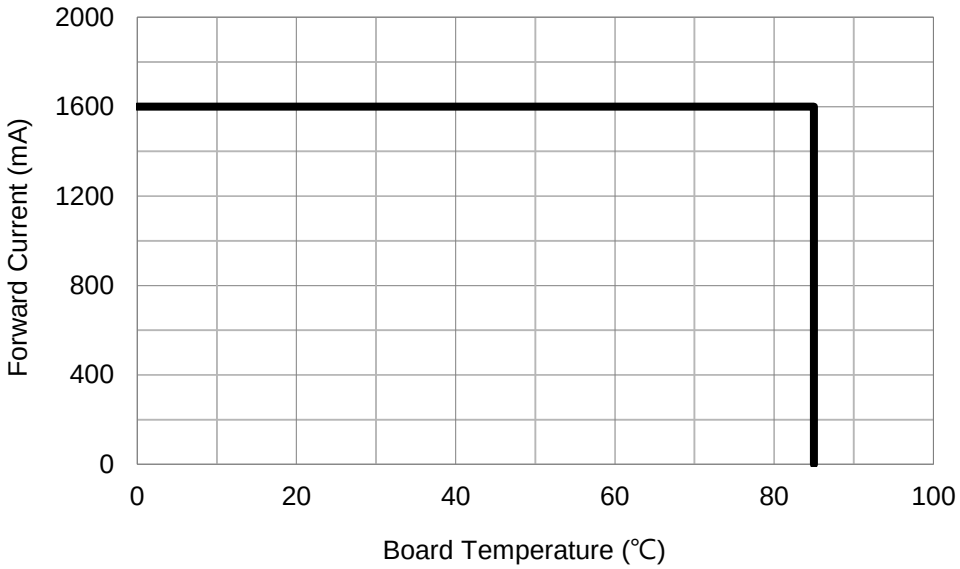


4. Junction Temperature vs. Chromaticity Coordinate Shift at 1600mA

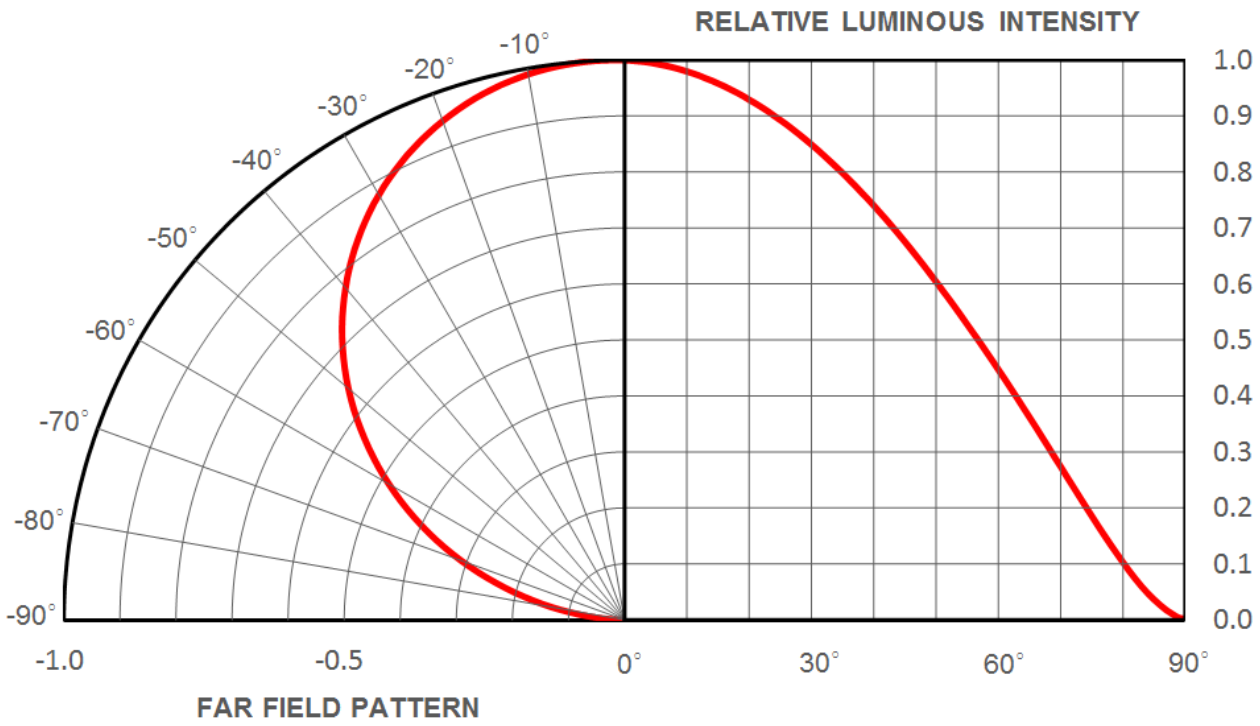


Board Temperature vs. Maximum Forward Current

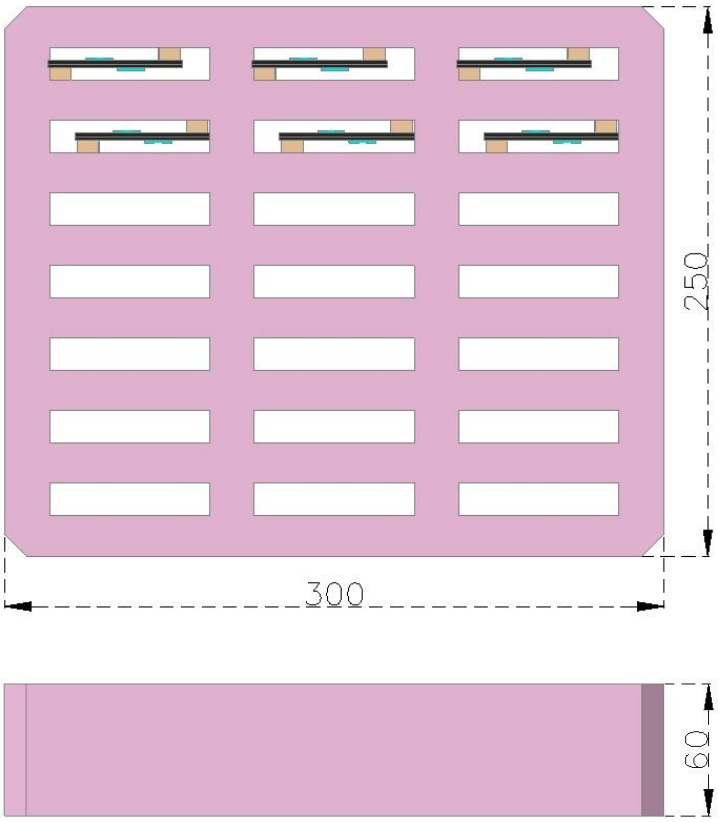
Maximum Forward Current for 4 colors operated

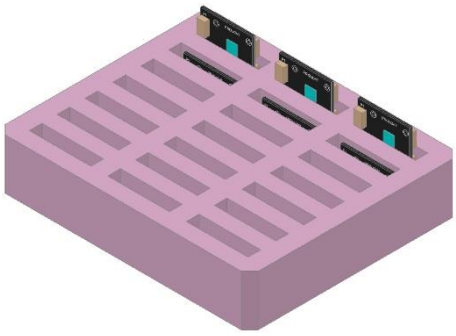


Typical Representative Spatial Radiation Pattern



Packing Specifications





Product 42 pcs / EPE Foam
2 pcs / Fillister

Notes:
1. Drawing not to scale.
2. All dimensions are in millimeters.

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 glass lens with the soldering iron.
- Please prevent flux from touching to the glass 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 Glass Lens LEDs

Notes for handling of glass lens LEDs

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