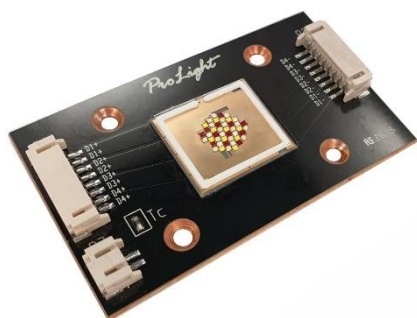




**ProLight PBMM-230F4L-N01AQ**  
**230W Power LED**  
**Technical Datasheet**  
**Version: 1.5**

# ProLight Opto ProEngine Series

## Features

- High power density of lighting source
- Good color uniformity
- Compact light source
- R, G, B, PC Green four color in one package
- RoHS compliant

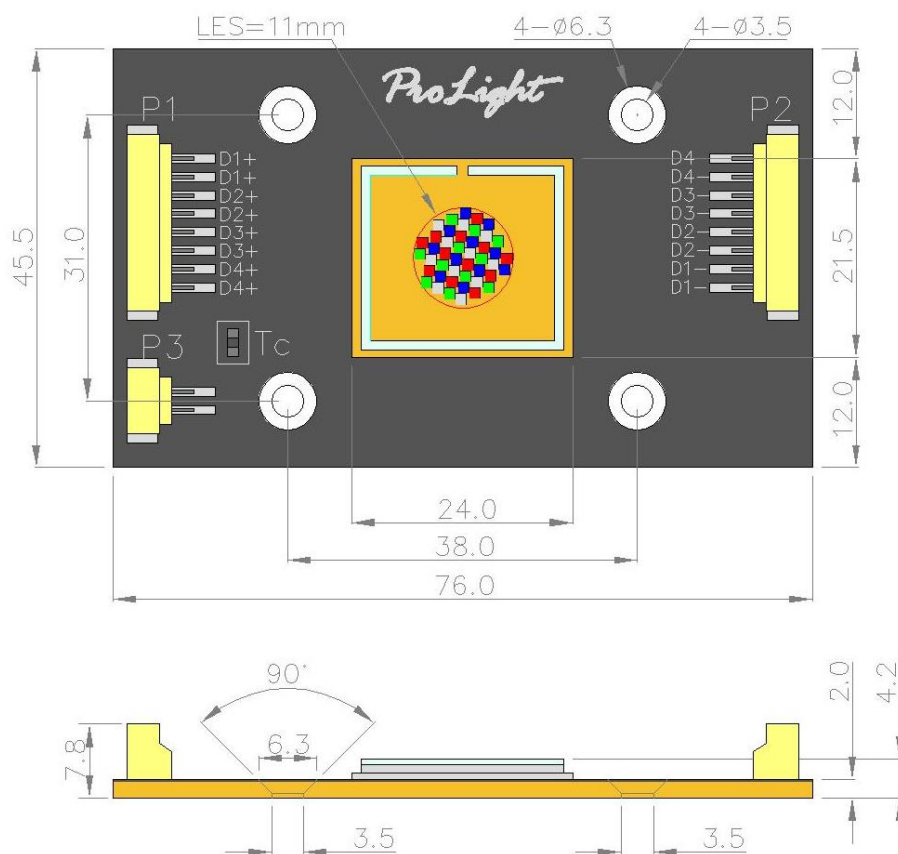
## Main Applications

- Entertainment lighting (Stage lighting)
- Architectural lighting
- Mood lighting
- Outdoor lighting
- Indoor lighting

## Introduction

- The input power is 230 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 : PC Green

### Notes:

1. Drawing not to scale.
2. All dimensions are in millimeters.
3. Unless otherwise indicated, tolerances are  $\pm 0.3$ mm.
4. Please do not solder the emitter by manual hand soldering, otherwise it will damage the emitter.
5. **Please do not use a force of over 1kgf 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, $T_j = 25^{\circ}\text{C}$

| Channel | Color    | Part Number<br>COB | Luminous Flux |                    |                          |
|---------|----------|--------------------|---------------|--------------------|--------------------------|
|         |          |                    | Minimum       | @1000mA<br>Typical | Refer @1500mA<br>Typical |
| D1      | Red      | PBMM-230F4L-N01AQ  | 1200          | 1600               | 2000                     |
| D2      | Green    |                    | 2100          | 2900               | 3600                     |
| D3      | Blue     |                    | 400           | 500                | 700                      |
| D4      | PC Green |                    | 3235          | 3640               | 4950                     |

- **Do not use below 100mA.**
- ProLight maintains a tolerance of  $\pm 7\%$  on flux and power measurements.
- Please do not drive at rated current more than 1 second without proper heat sink.

## Electrical Characteristics, $T_j = 25^{\circ}\text{C}$

| Channel | Color    | Min. | Forward Voltage $V_F$ (V) |      | Refer @1500mA<br>Typ. | Thermal<br>Resistance<br>Junction to<br>Board ( $^{\circ}\text{C}/\text{W}$ ) |
|---------|----------|------|---------------------------|------|-----------------------|-------------------------------------------------------------------------------|
|         |          |      | @1000mA<br>Typ.           | Max. |                       |                                                                               |
| D1      | Red      | 25.5 | 29.5                      | 35.5 | 33.0                  | 0.15                                                                          |
| D2      | Green    | 30.5 | 33.5                      | 38.0 | 35.5                  |                                                                               |
| D3      | Blue     | 32.0 | 34.5                      | 38.5 | 36.0                  |                                                                               |
| D4      | PC Green | 32.0 | 34.5                      | 38.5 | 36.0                  |                                                                               |

- ProLight maintains a tolerance of  $\pm 0.5\text{V}$  for Voltage measurements.

## Optical Characteristics at 1000mA, $T_j = 25^{\circ}\text{C}$

| Radiation<br>Pattern | Color    | Dominant Wavelength $\lambda_D$ |        |        | Total<br>included<br>Angle<br>(degrees)<br>$\theta_{0.90V}$ | Viewing<br>Angle<br>(degrees)<br>$2\theta_{1/2}$ |
|----------------------|----------|---------------------------------|--------|--------|-------------------------------------------------------------|--------------------------------------------------|
|                      |          | Min.                            | Typ.   | Max.   |                                                             |                                                  |
| Flat                 | Red      | 620 nm                          | 623 nm | 630 nm | 160                                                         | 120                                              |
|                      | Green    | 520 nm                          | 525 nm | 530 nm |                                                             |                                                  |
|                      | Blue     | 452 nm                          | 454 nm | 457 nm |                                                             |                                                  |
|                      | PC Green | 566 nm                          | 568 nm | 570 nm |                                                             |                                                  |

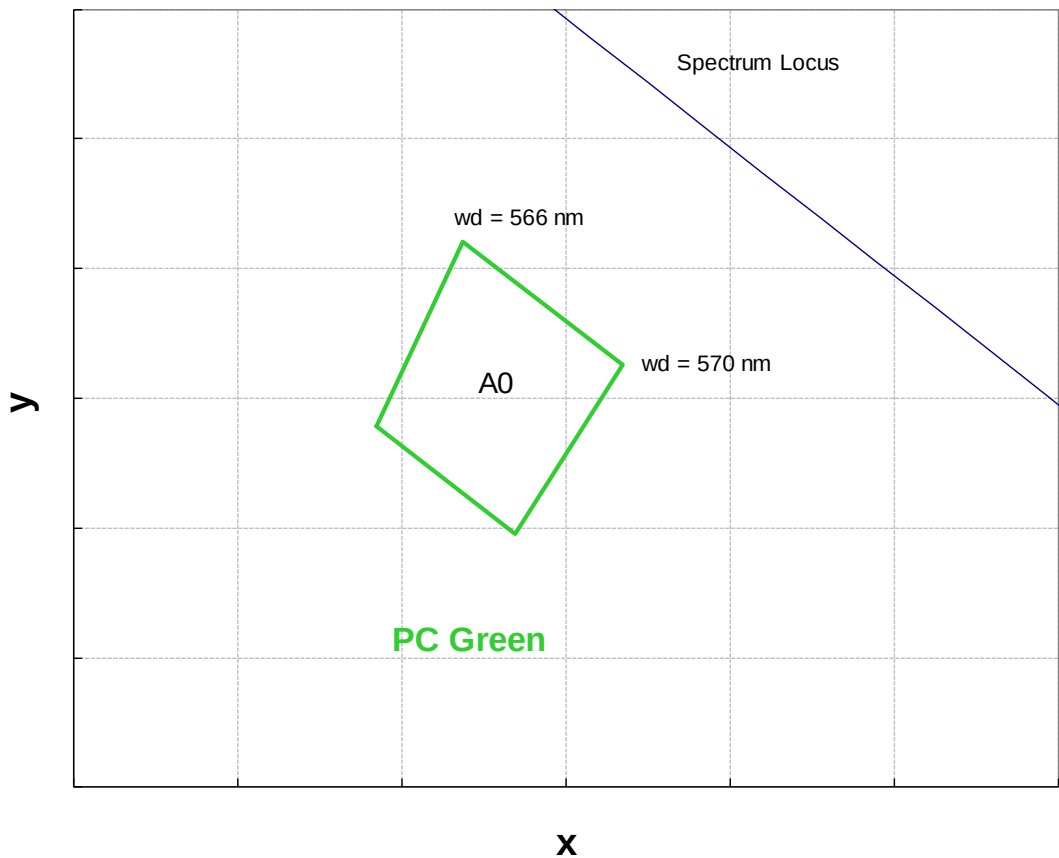
- ProLight maintains a tolerance of  $\pm 1\text{nm}$  for dominant wavelength measurements.

# Absolute Maximum Ratings

| Parameter                                                    | Red/Green/Blue/PC Green                   |
|--------------------------------------------------------------|-------------------------------------------|
| DC Forward Current (mA)                                      | 100-1500                                  |
| Peak Pulsed Forward Current (mA)                             | 1650 (less than 1/10 duty cycle@1KHz)     |
| ESD Sensitivity<br>(HBM per MIL-STD-883E Method 3015.7)      | ±2000V                                    |
| LED Junction Temperature                                     | 135°C                                     |
| Operating Board Temperature<br>at Maximum DC Forward Current | -40°C - 80°C                              |
| Storage Temperature                                          | -40°C - 120°C                             |
| Reverse Voltage                                              | Not designed to be driven in reverse bias |

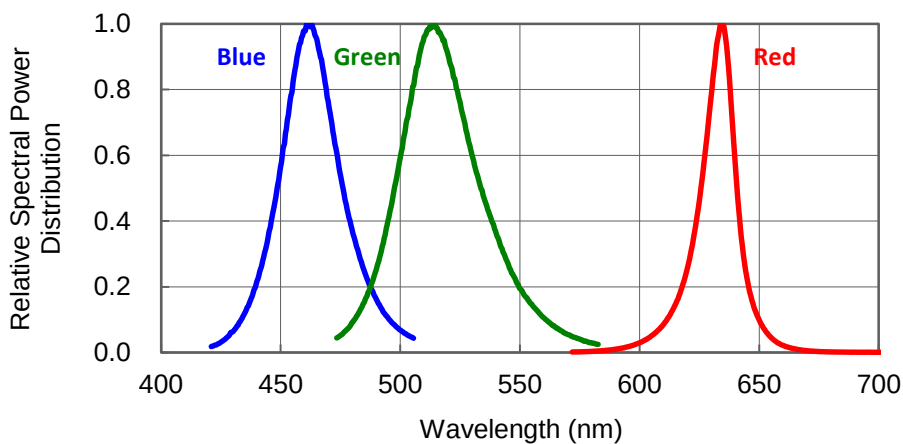
# Color Bin

PC Green Binning Structure Graphical Representation

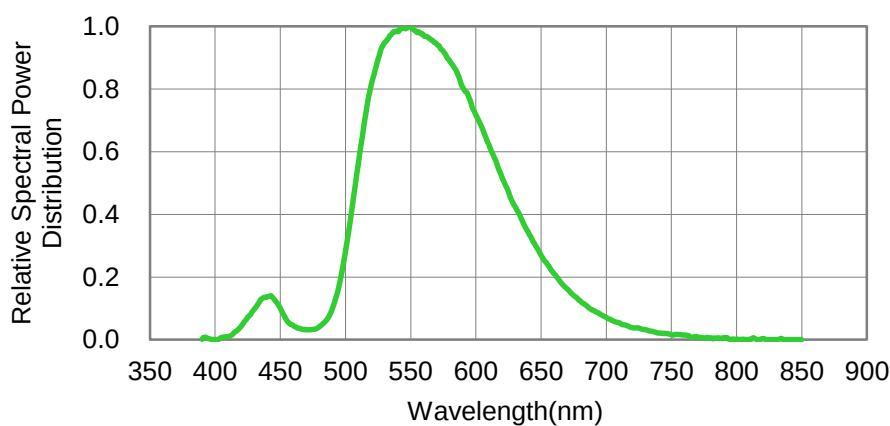


## Color Spectrum, $T_j = 25^{\circ}\text{C}$

### 1. Blue 、 Green 、 Red

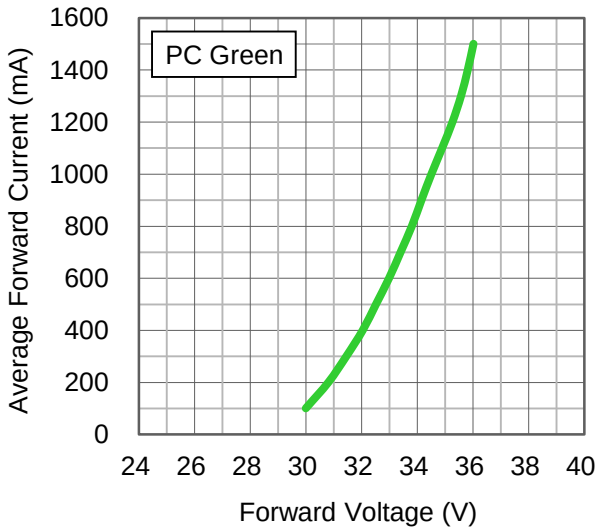
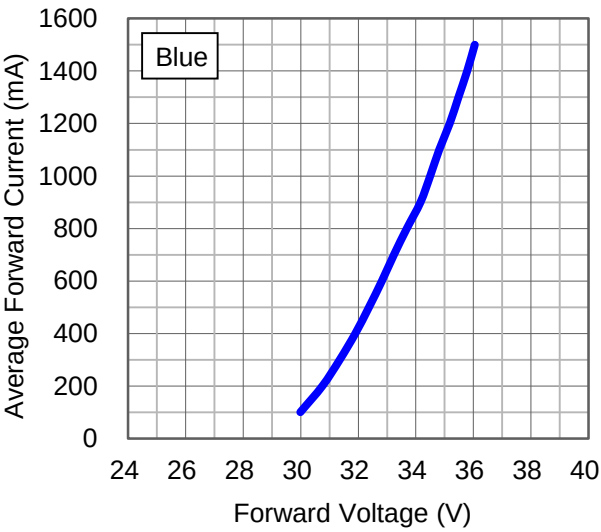
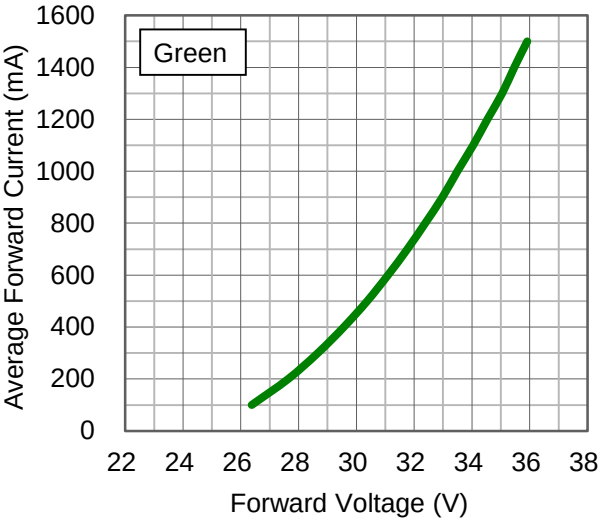
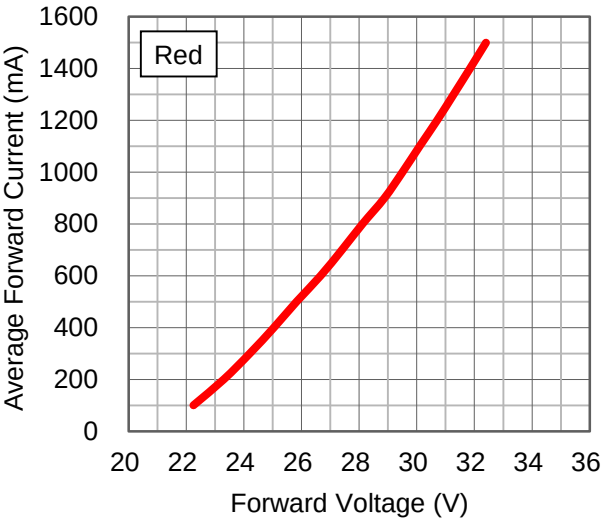


### 2. PC Green



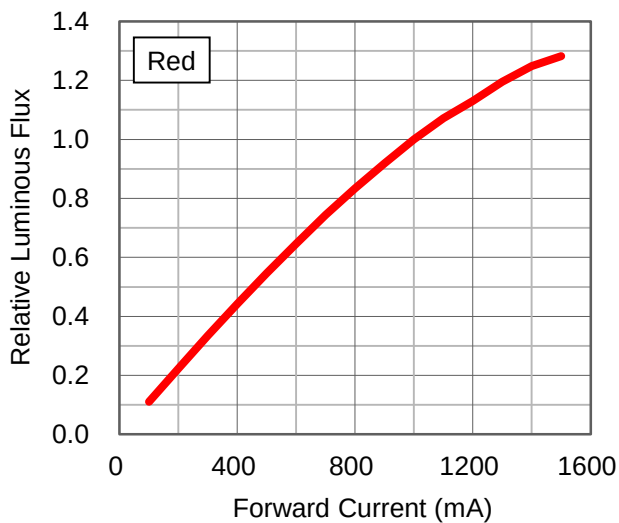
# Forward Current Characteristics, $T_j = 25^{\circ}\text{C}$

## 1. Forward Voltage vs. Forward Current

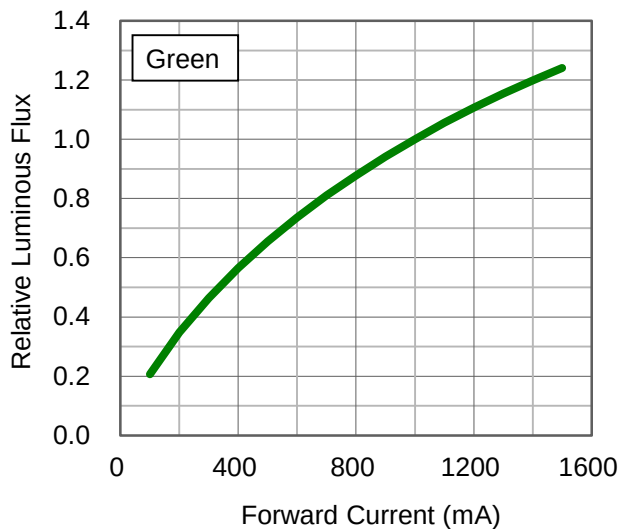


## Forward Current Characteristics, $T_j = 25^\circ\text{C}$

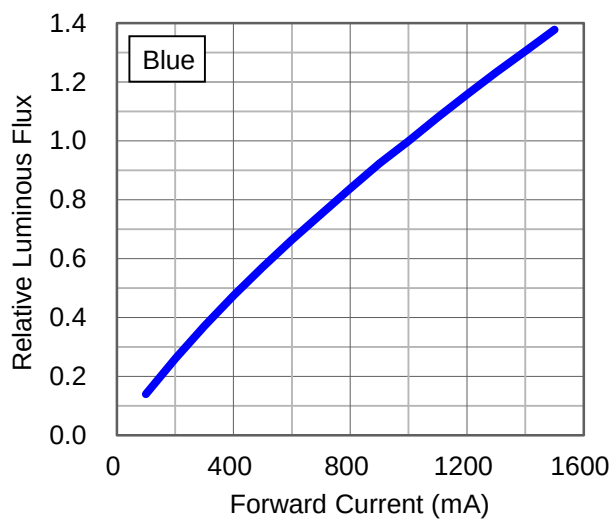
### 2. Forward Current vs. Normalized Relative Luminous Flux



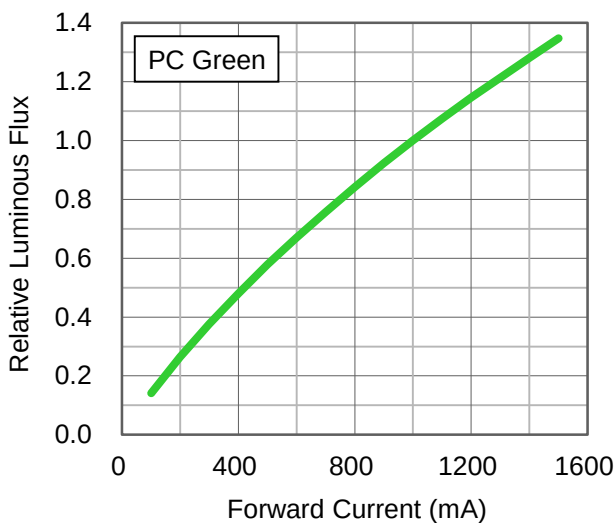
Do not use below 100mA.



Do not use below 100mA.



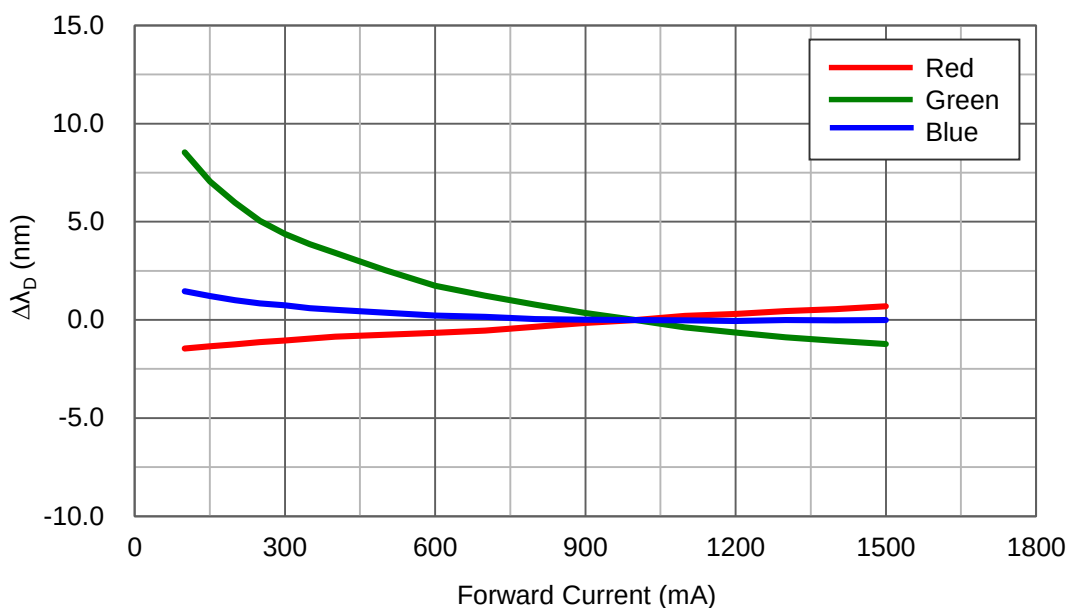
Do not use below 100mA.



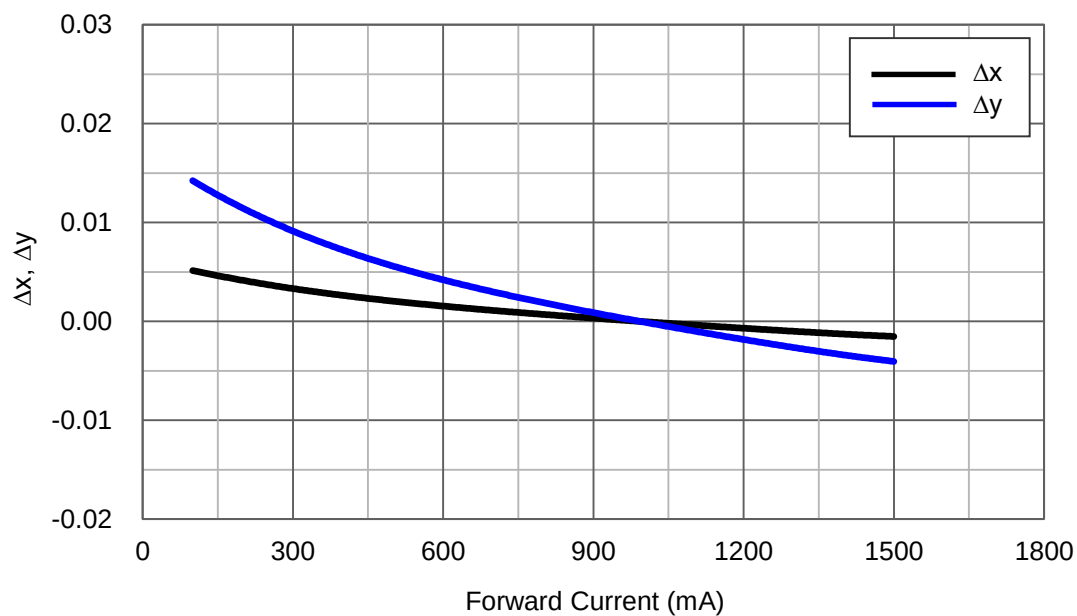
Do not use below 100mA.

## Forward Current Characteristics, $T_j = 25^\circ\text{C}$

### 3. Forward Current vs. Dominant Wavelength Shift

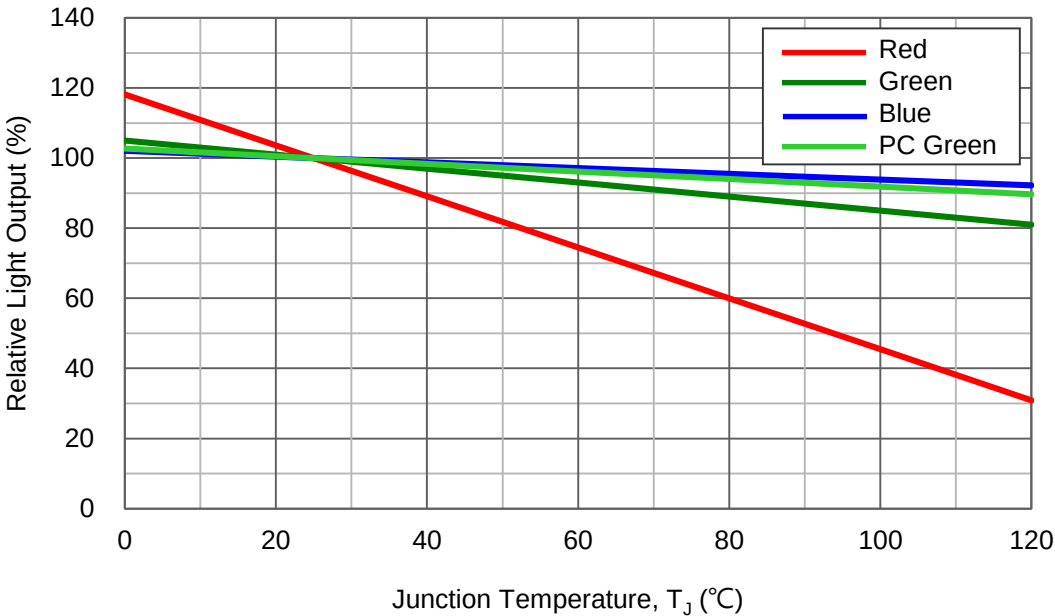


### 4. Forward Current vs. Chromaticity Coordinate Shift

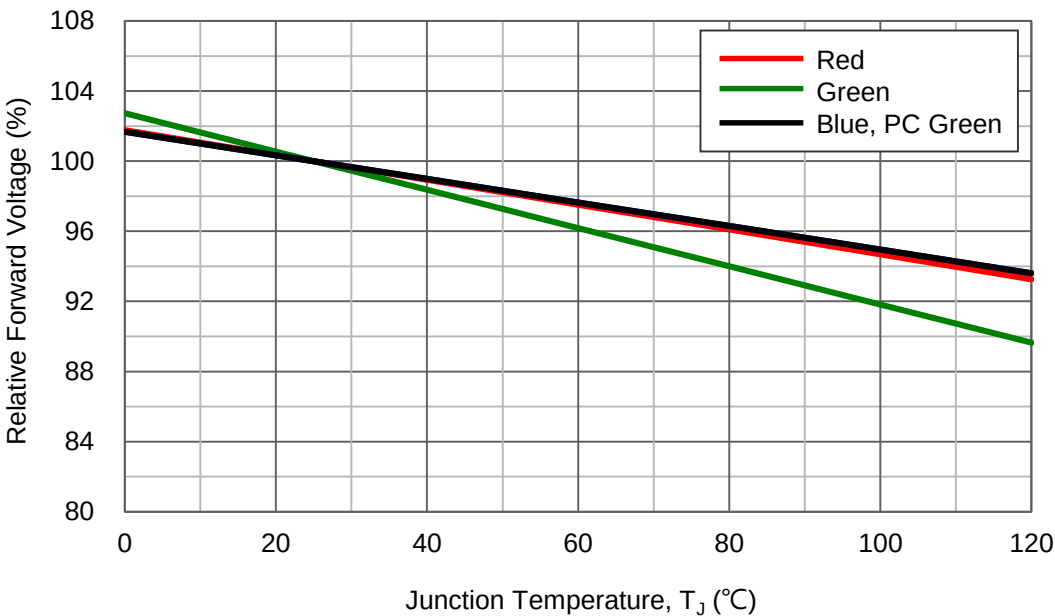


# Junction Temperature Relative Characteristics

1. Junction Temperature vs. Relative Light Output at 1000mA

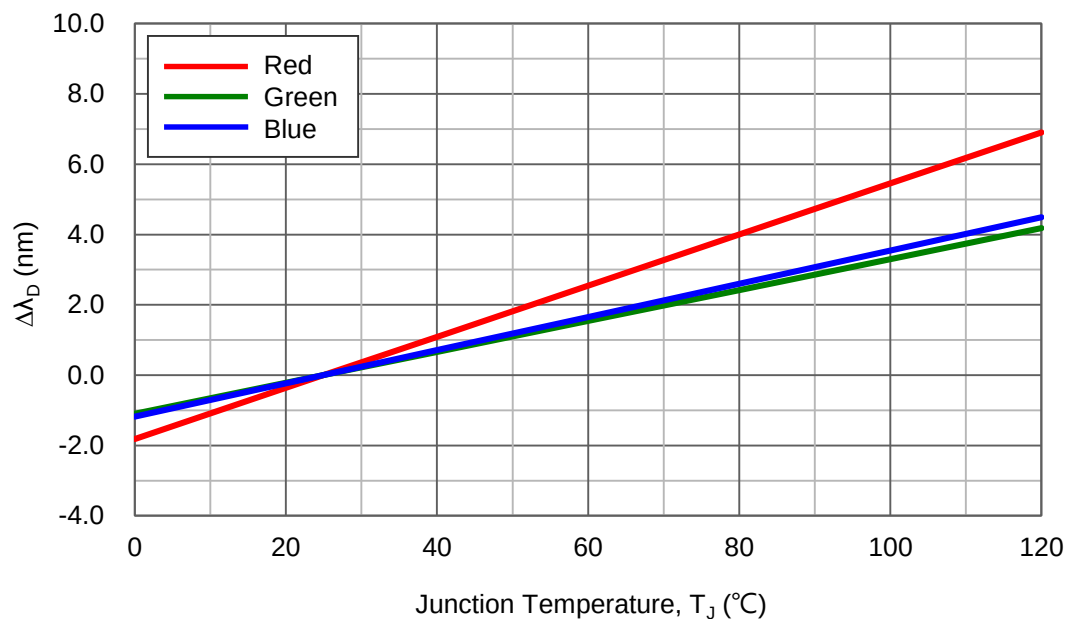


2. Junction Temperature vs. Relative Forward Voltage at 1000mA

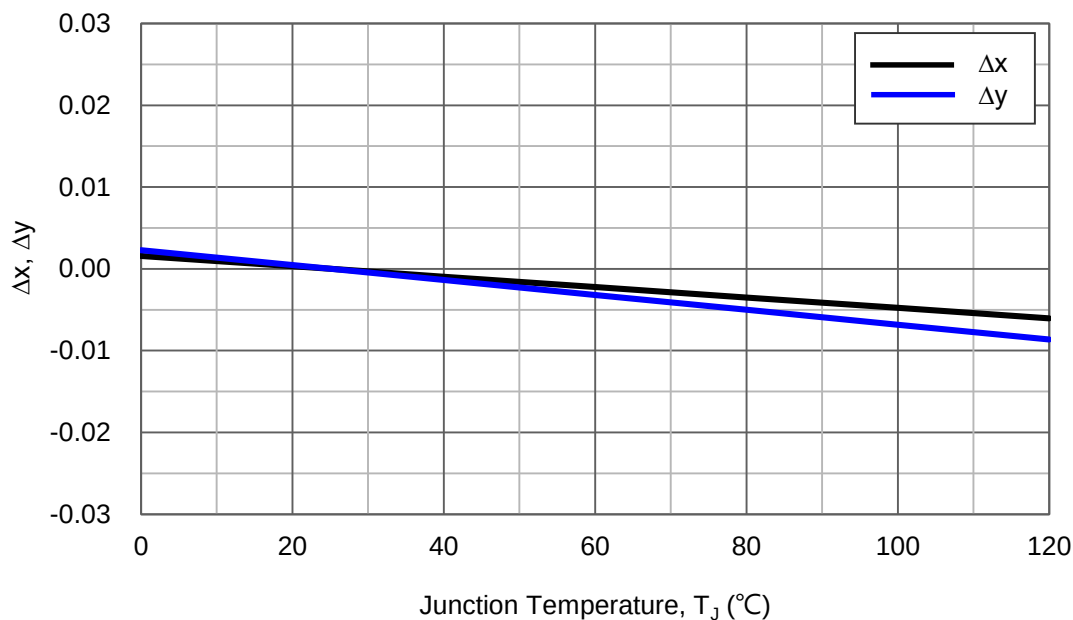


## Junction Temperature Relative Characteristics

### 3. Junction Temperature vs. Dominant Wavelength Shift at 1000mA

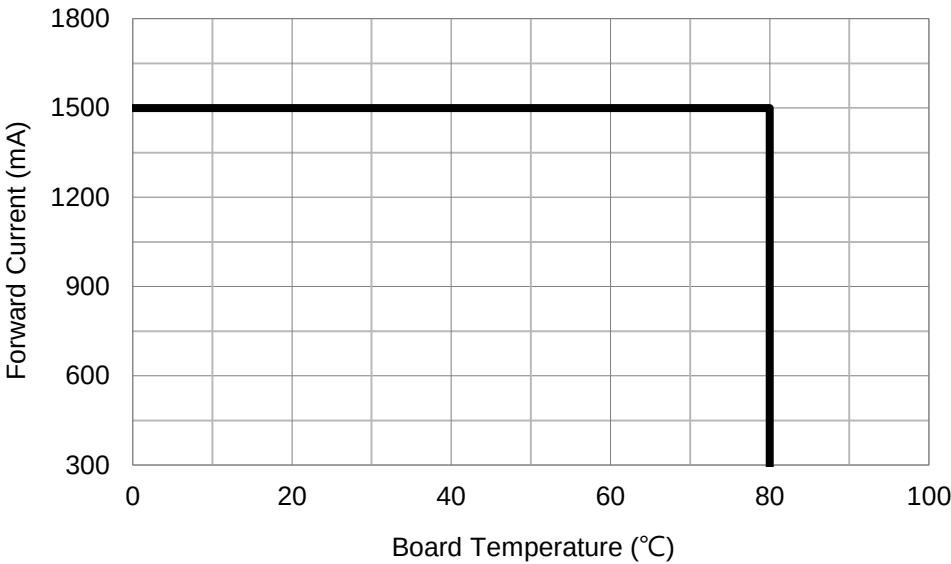


### 4. Junction Temperature vs. Chromaticity Coordinate Shift at 1000mA

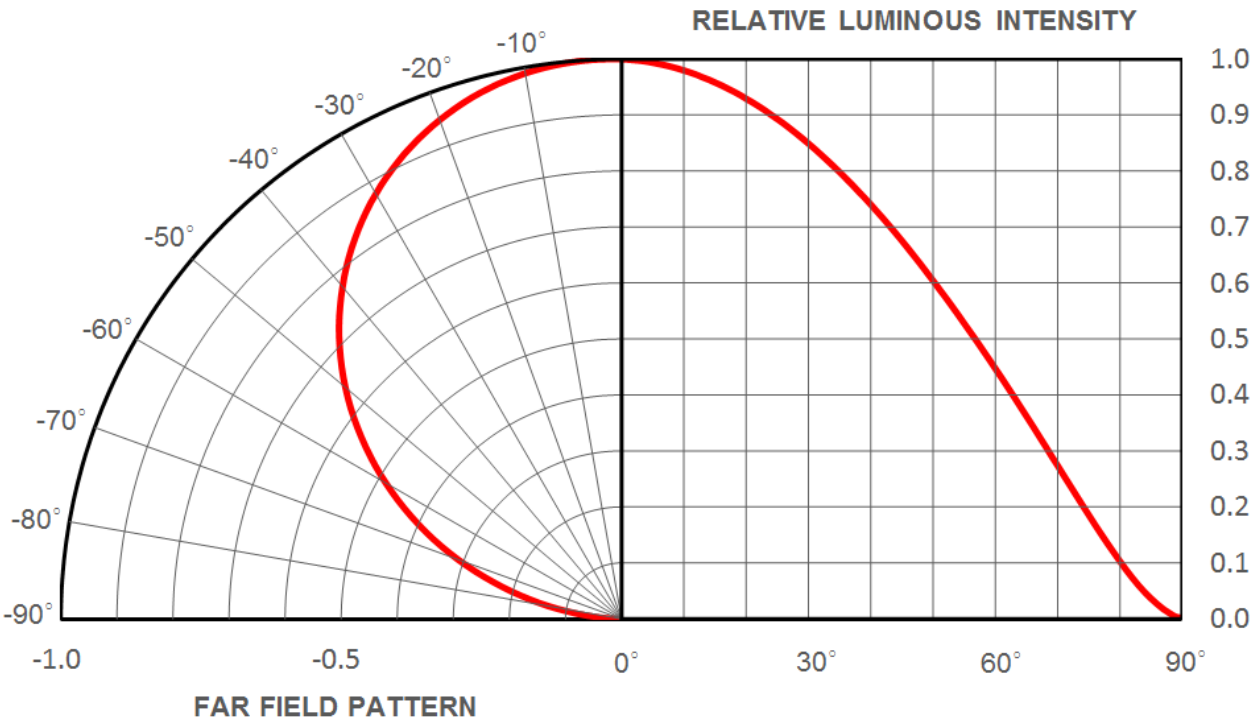


# Board Temperature vs. Maximum Forward Current

Maximum Forward Current for 4 colors operated



# Typical Representative Spatial Radiation Pattern



## 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 3kgf impact or pressure on the glass lens, otherwise it will cause a catastrophic failure.
- The LEDs should only be picked up by making contact with the sides of the LED body.
- 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)