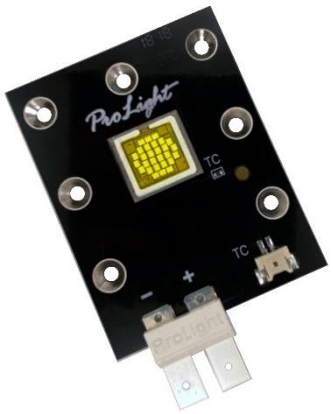

ProLight PBMM-450FWL-N01AK
450W COB Light-Engine LEDs
Technical Datasheet
Version: 1.2

ProLight Opto ProEngine Series

Features

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

Main Applications

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

Introduction

- The input power is 450 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, mergency vehicle lighting and machine vision.

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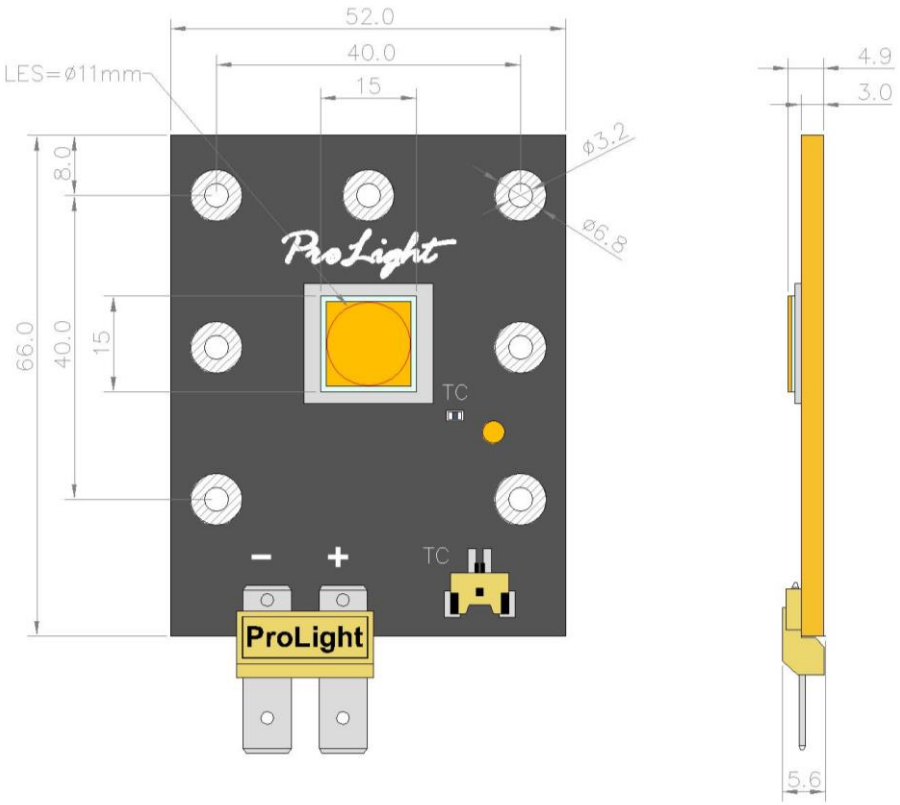
Mechanical Dimensions



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 ± 0.30mm.
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. Recommended connector for Anode and Cathode: Panduit Disco Lok™ Series P/N: DNG14-250FL-C.
8. Recommended connector for Thermistor: MOLEX P/N 51146-0200.

*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	Typical	CRI Minimum
Lambertian	White	PBMM-450FWL-N01AK	2800*	13400	14560	70
			9000	31500	34200	
			10000	33300	37000	

- **Do not use below 400mA.**
- The mark "*" indicated product is tested and binned at the specified drive current.
- 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, T_C = 25˚C

Color	Forward Voltage V_F (V) @2800mA Min.	Typ.	Max.	Forward Voltage V_F (V) Refer @10000mA Typ.	Thermal Resistance Junction to Board (˚C/ W)
White	39.0	42.6	46.4	47.8	0.23

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

Optical Characteristics at 2800mA, T_C = 25˚C

Color	Bin Code	Color Temperature CCT Min.	Typ.	Max.	Total included Angle (degrees) $\theta_{0.90V}$	Viewing Angle (degrees) $2\theta_{1/2}$
White	XB	6800 K	6950 K	7100 K	160	120
	YA	7100 K	7250 K	7400 K	160	120
	YB	7400 K	7550 K	7700 K	160	120
	ZA	7700 K	7900 K	8100 K	160	120

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

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Absolute Maximum Ratings

Parameter	White
DC Forward Current (mA)	400 - 10000
Peak Pulsed Forward Current (mA)	11000 (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 - 80°C
Storage Temperature	-40°C - 120°C
Reverse Voltage	Not designed to be driven in reverse bias

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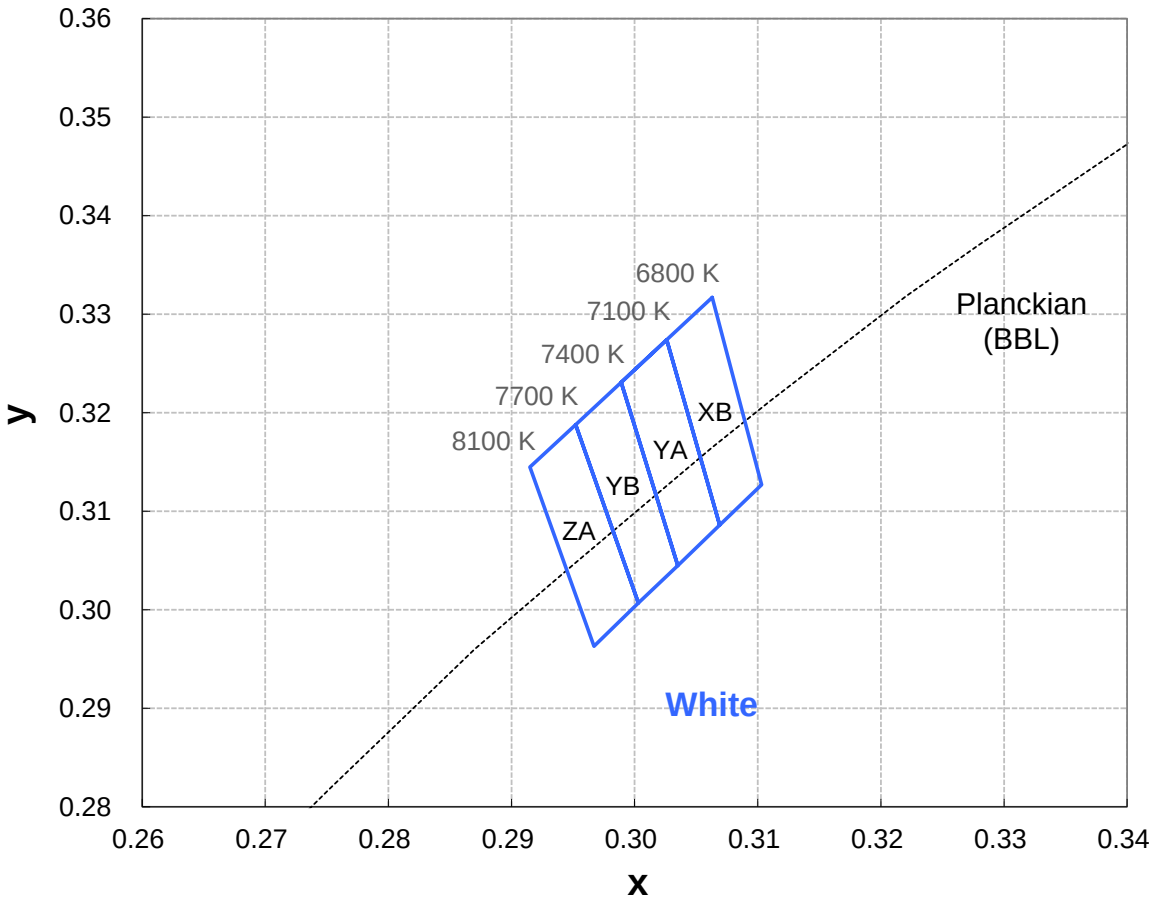
Color Bin

White Binning Structure Graphical Representation



White Bin Structure

Bin Code	x	y	Typ. CCT (K)	Bin Code	x	y	Typ. CCT (K)
XB	0.3063	0.3317	6950	YB	0.2989	0.3231	7550
	0.3103	0.3127			0.3035	0.3045	
	0.3069	0.3086			0.3003	0.3007	
	0.3026	0.3274			0.2952	0.3188	
YA	0.3026	0.3274	7250	ZA	0.2952	0.3188	7900
	0.3069	0.3086			0.3003	0.3007	
	0.3035	0.3045			0.2967	0.2963	
	0.2989	0.3231			0.2915	0.3145	

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

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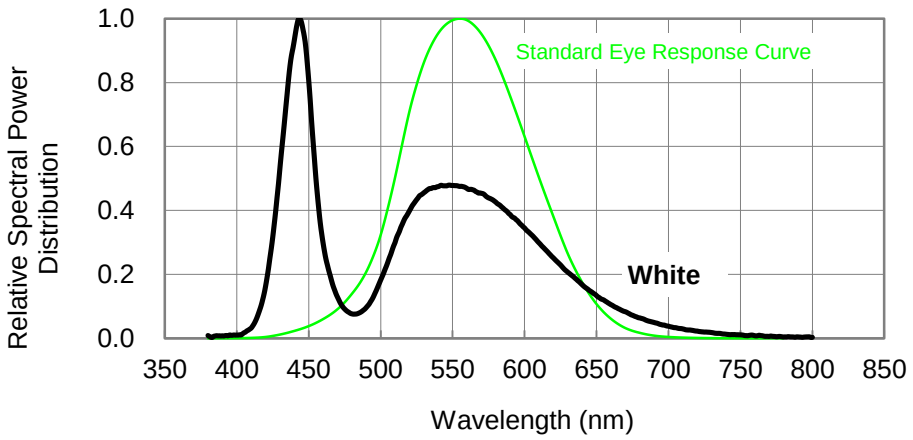
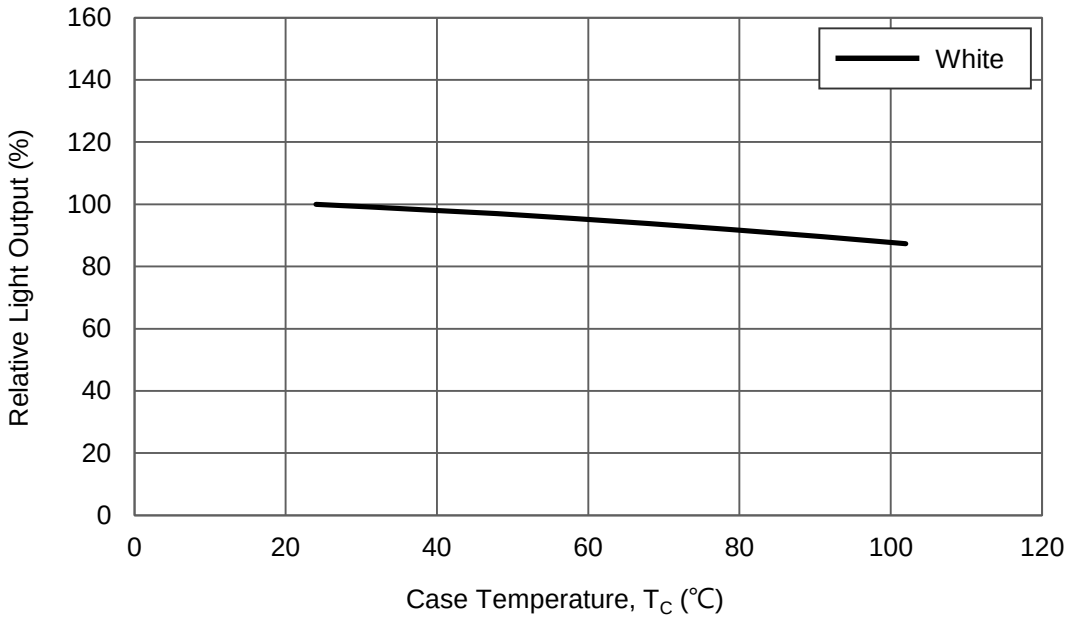
Color Spectrum, T_C = 25˚C

1. White



Light Output Characteristics

Relative Light Output vs. Case Temperature at 2800mA



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Forward Current Characteristics, T_C = 25˚C

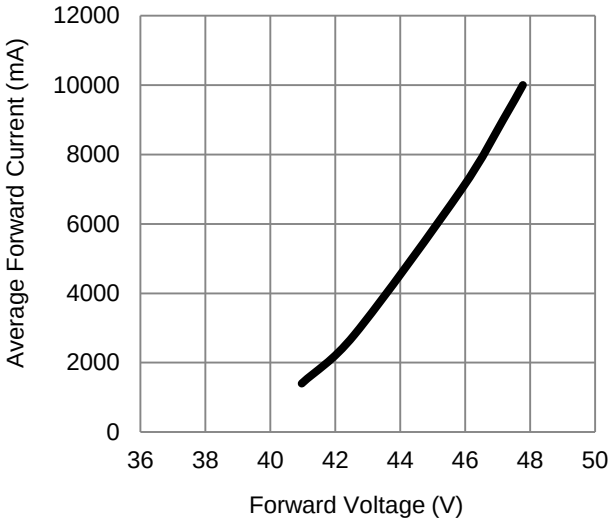


Fig 1. Forward Current vs. Forward Voltage for White.

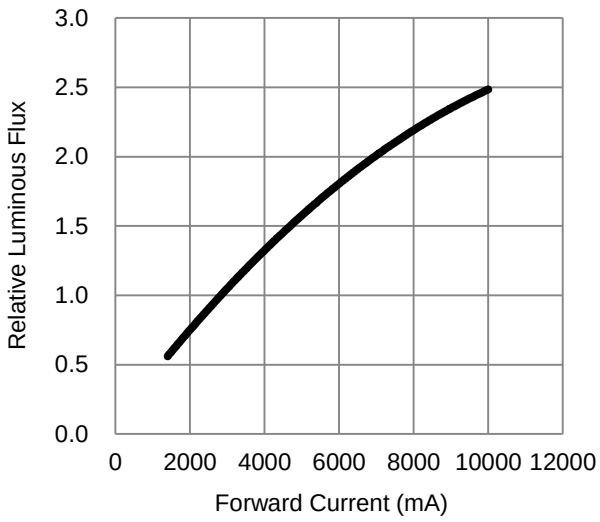
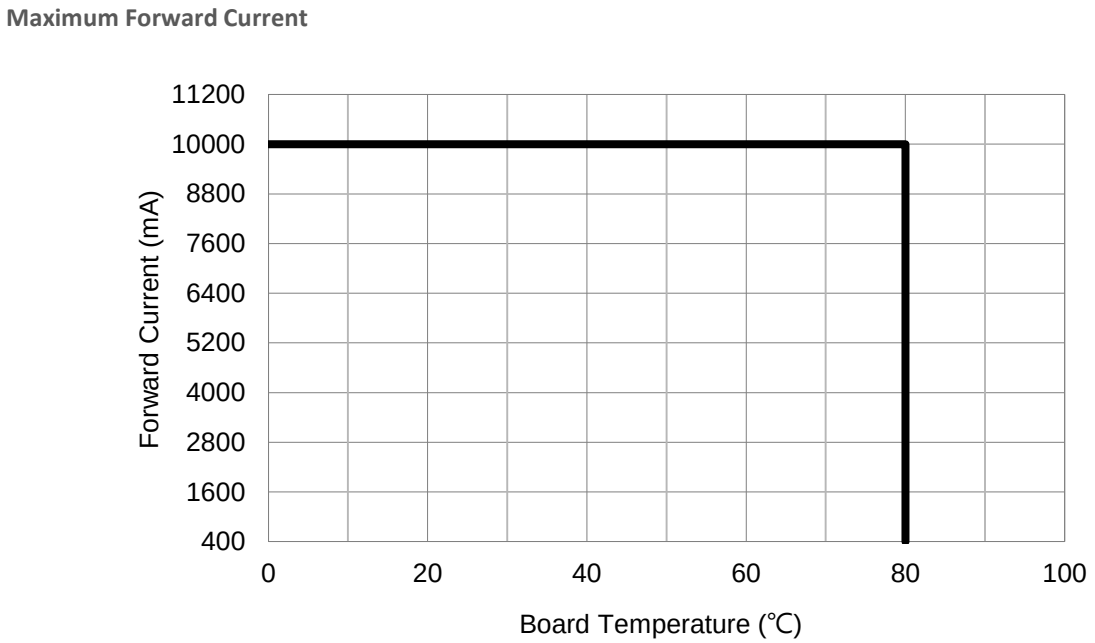


Fig 2. Relative Luminous Flux vs. Forward Current for White at T_C=25 maintained.
Do not use below 400mA.

Board Temperature vs. Maximum Forward Current



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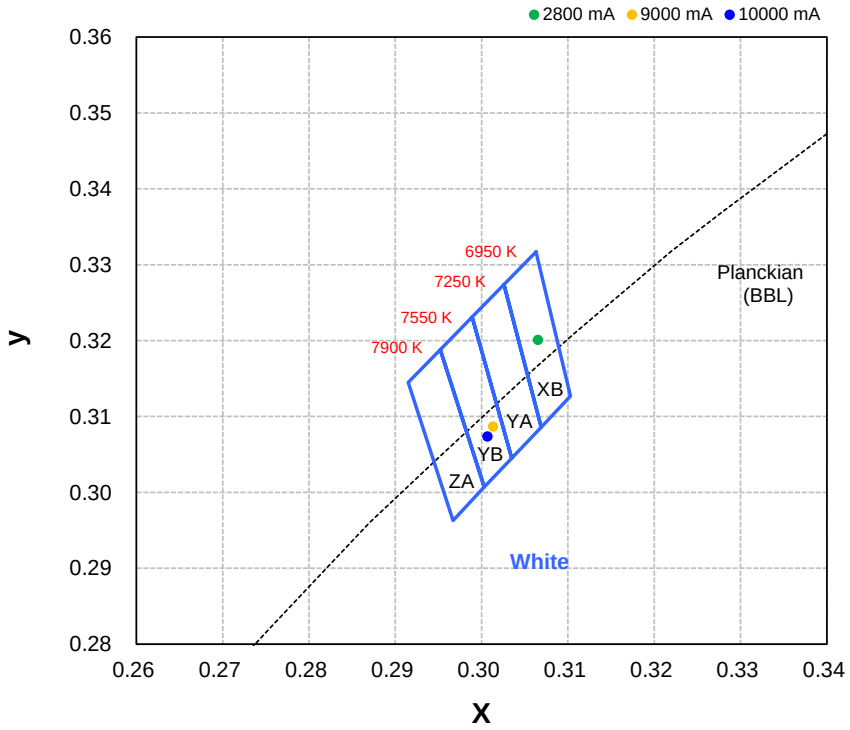
Color Coordinate vs. Forward Current, T_C = 25˚C

White Binning Graphical Representation



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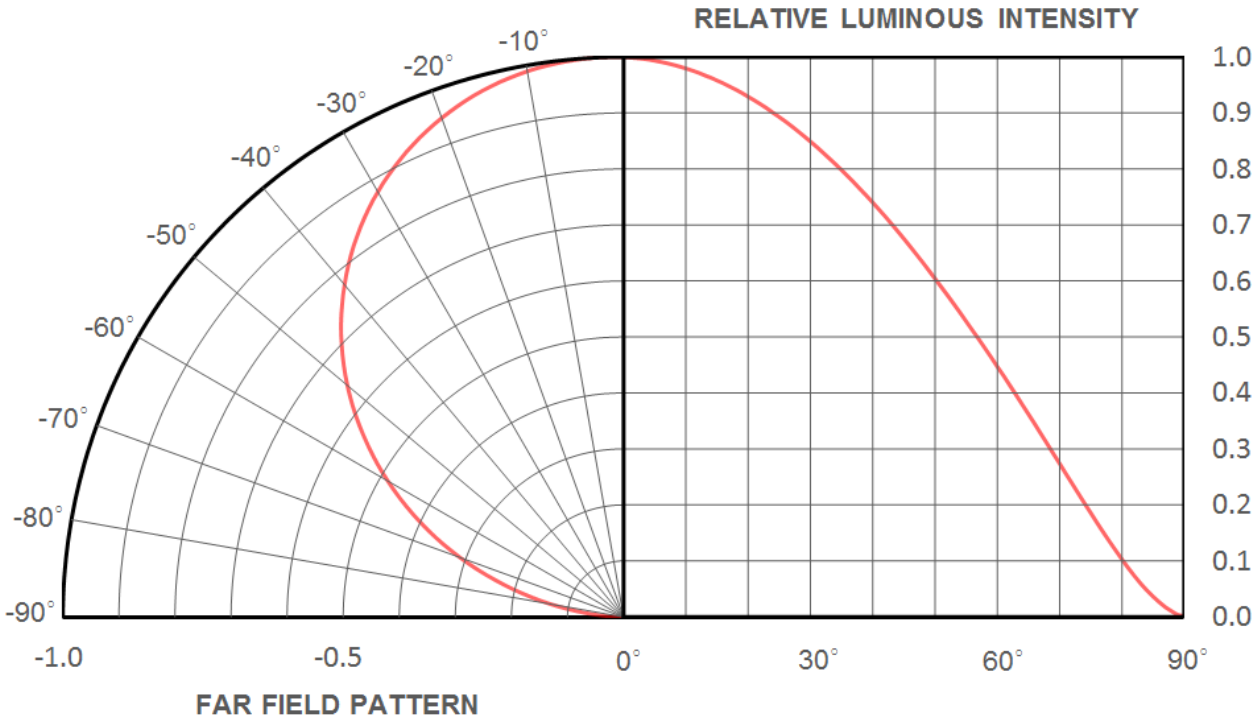
Typical Representative Spatial Radiation Pattern



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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)

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