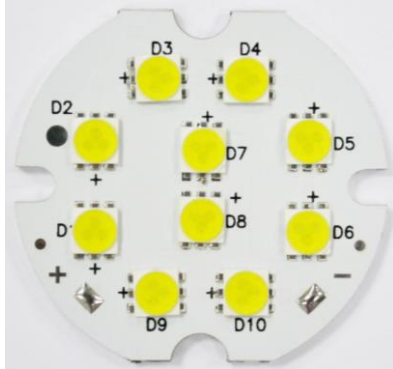




*ProLight Opto*  
Technology Corporation



**ProLight PP2M-1LWP-010BN**  
**10W White Power LED Module**  
**Technical Datasheet**  
**Version: 1.3**

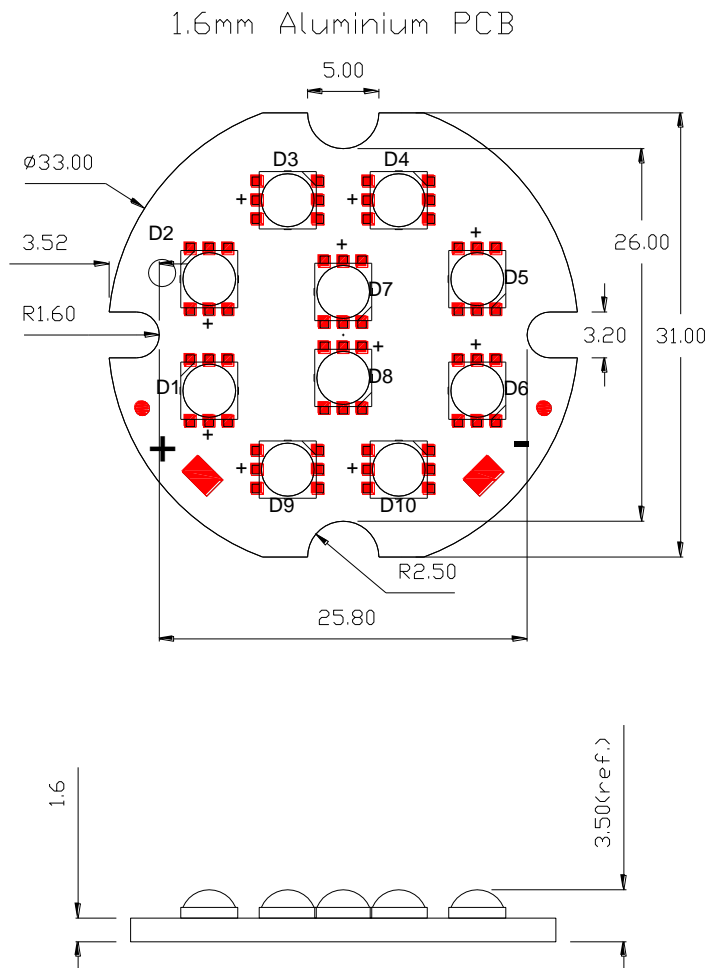
## Features

- High flux per LED Module
- Good color uniformity
- More energy efficient than incandescent and most halogen lamps
- Low Voltage DC operated
- Instant light (less than 100ns)
- No UV

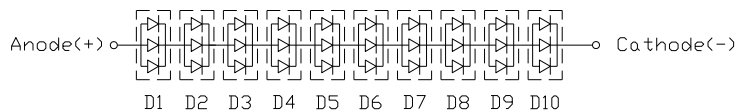
## Typical Applications

- LED bulb
- Indoor/Outdoor Commercial and Residential Architectural

# Module Mechanical Dimensions



Circuit Diagram



**Notes:**

1. Slots in aluminum-core PCB for M3 or #4 mounting screw.
2. Electrical interconnection pads labeled on the aluminum-core PCB with "+" and "-" to denote positive and negative, respectively.
3. Drawing not to scale.
4. All dimensions are in millimeters.
5. All dimensions without tolerances are for reference only.
6. **Please do not use a force of over 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 350mA, T<sub>J</sub> = 25°C

Radiation Pattern	Color	Part Number Emitter	Lumious Flux $\Phi_v$ (lm)		CRI Typical
			Minimum	Typical	
Lambertian	White	PP2M-1LWP-010BN	900	1000	73

- ProLight maintains a tolerance of  $\pm 10\%$  on flux and power measurements.
- Please do not drive at rated current more than 1 second without proper heat sink.

## Optical Characteristics at 350mA, T<sub>J</sub> = 25°C

Color	Color Temperature CCT			Total included Angle (degrees) $\theta_{0.90V}$	Viewing Angle (degrees) $2\theta_{1/2}$
	Min.	Typ.	Max.		
White	4745 K	5400 K	6020 K	160	140

- ProLight maintains a tolerance of  $\pm 5\%$  for CCT measurements.

## Electrical Characteristics at 350mA, T<sub>J</sub> = 25°C

Color	Forward Voltage V <sub>F</sub> (V)		
	Min.	Typ.	Max.
White	28.0	32.0	36.0

## Absolute Maximum Ratings

Parameter	White
DC Forward Current (mA)	350
Peak Pulsed Forward Current (mA)	450
Average Forward Current (mA)	350
ESD Sensitivity (HBM per MIL-STD-883E Method 3015.7)	> ±500V
LED Junction Temperature (°C)	120
Aluminum-core PCB Temperature (°C)	90
Storage & Operating Temperature (°C)	-40 to + 90

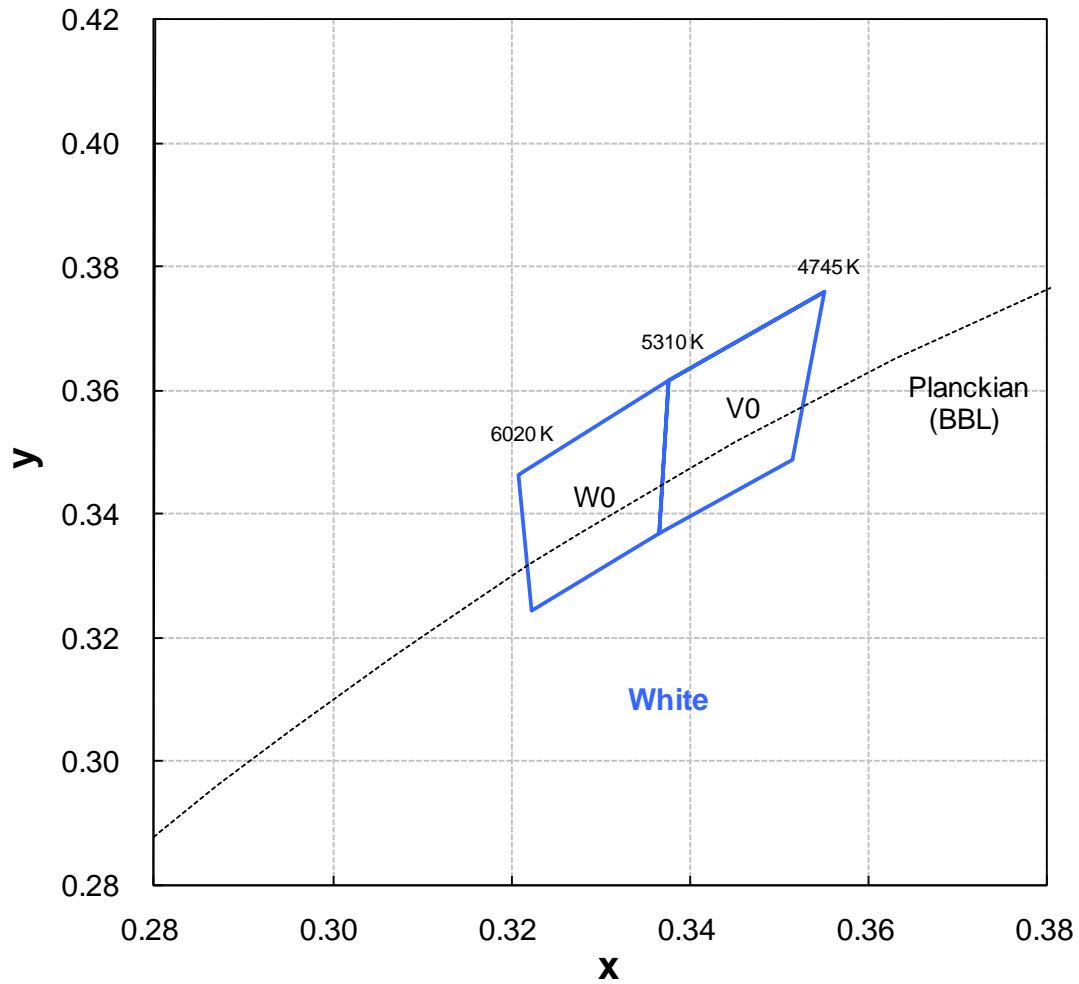
## Photometric Luminous Flux Bin Structure of Each LED

Part Number	Bin Code	Minimum Photometric Flux (lm)	Maximum Photometric Flux (lm)	Available Color Bins
White	U1	90	100	All
	U2	100	110	[1]

- ProLight maintains a tolerance of  $\pm 10\%$  on flux and power measurements.
- The flux bin of the product may be modified for improvement without notice.
- <sup>[1]</sup> The rest of color bins are not 100% ready for order currently. Please ask for quote and order possibility.

# Color Bins

## White Binning Structure Graphical Representation



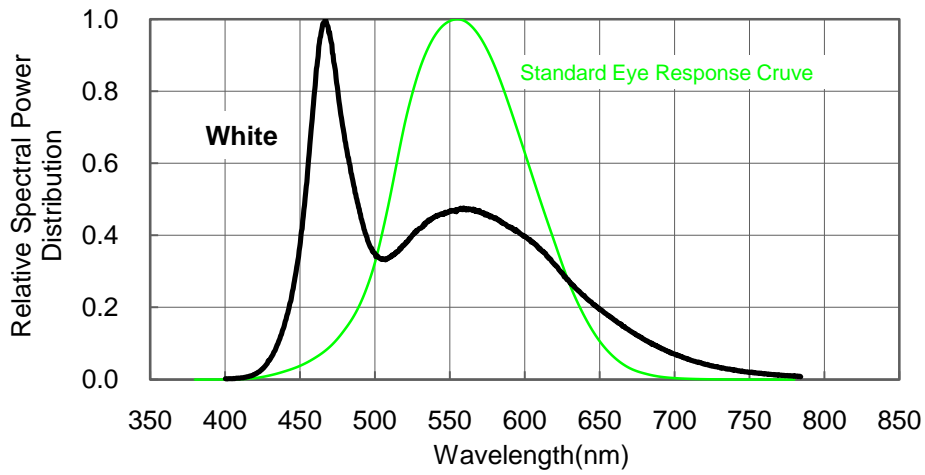
### White Bin Structure

Bin Code	x	y	Typ. CCT (K)	Bin Code	x	y	Typ. CCT (K)
V0	0.355	0.376	5000	W0	0.338	0.362	5700
	0.338	0.362			0.321	0.346	
	0.337	0.337			0.322	0.324	
	0.352	0.349			0.337	0.337	

● Tolerance on each color bin (x , v) is ± 0.01

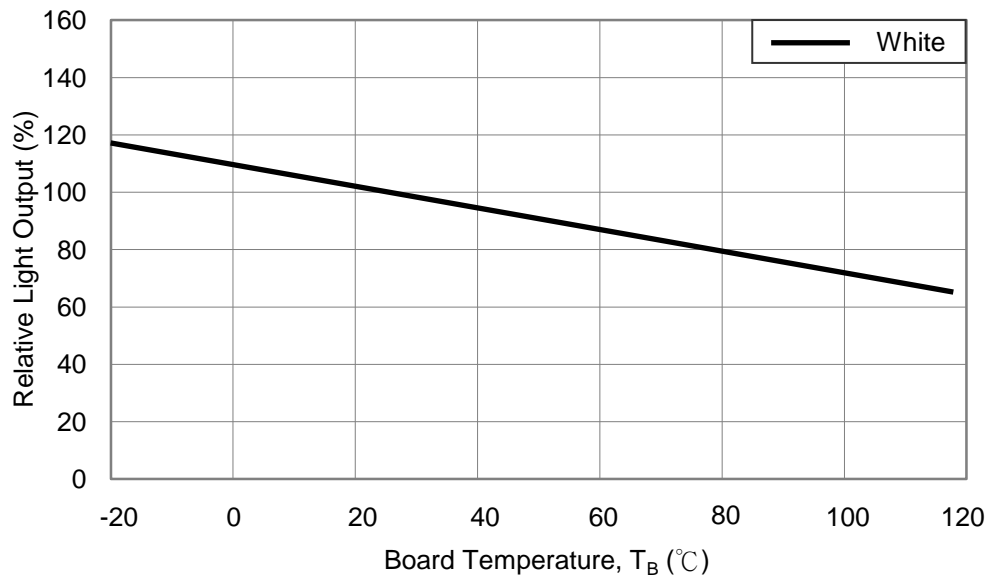
# Color Spectrum, $T_J = 25^\circ\text{C}$

## 1. White



## Light Output Characteristics

### Board Temperature vs. Relative Light Output at 350mA



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

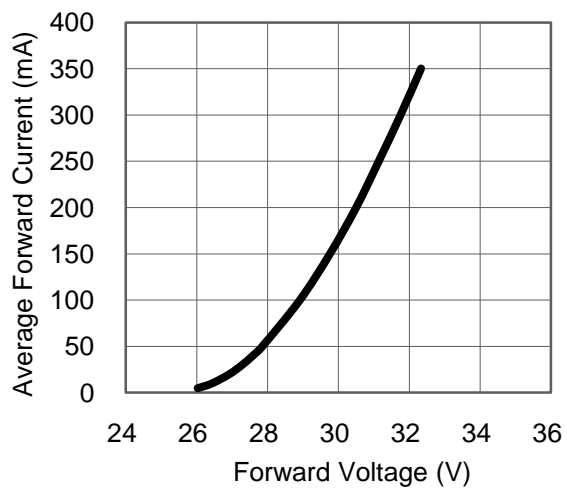


Fig 1. Forward Current vs. Forward Voltage for White.

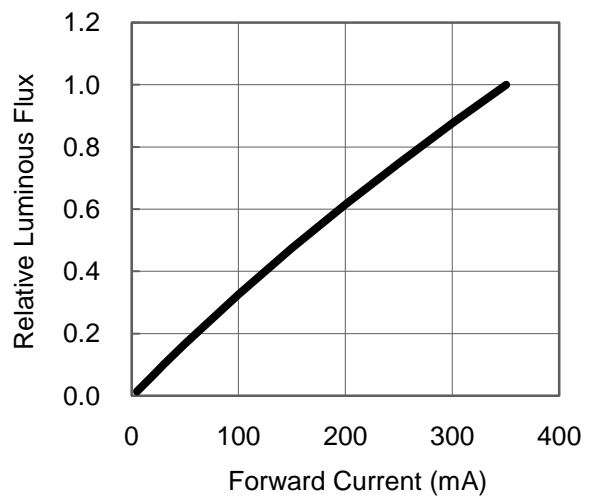
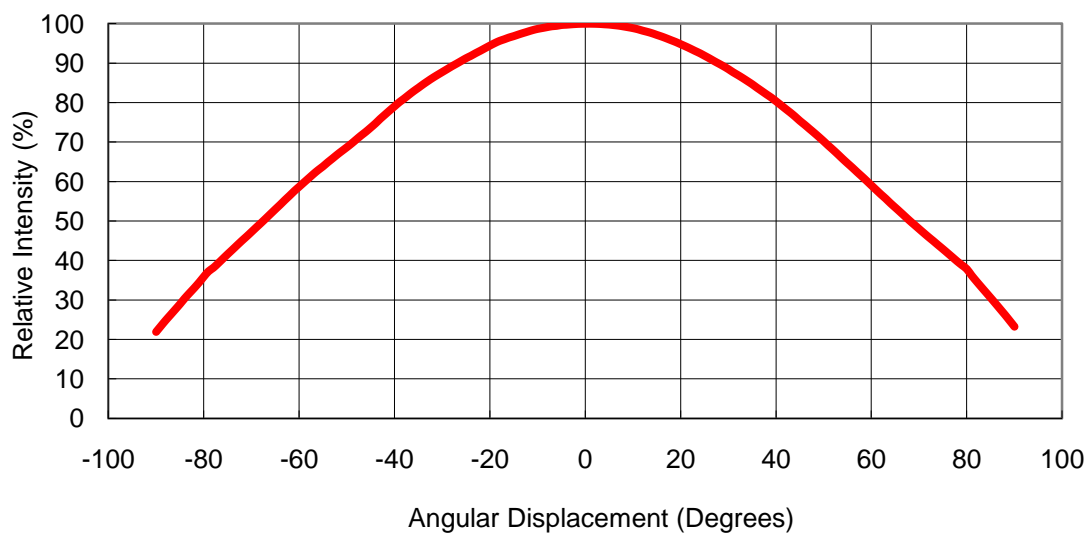


Fig 2. Relative Luminous Flux vs. Forward Current for White at  $T_j=25^\circ\text{C}$  maintained.

## Typical Representative Spatial Radiation Pattern

### Lambertian Radiation Pattern



## Qualification Reliability Testing

Stress Test	Stress Conditions	Stress Duration	Failure Criteria
Room Temperature Operating Life (RTOL)	25°C, $I_F = \text{max DC}$ (Note 1)	1000 hours	Note 2
Wet High Temperature Operating Life (WHTOL)	85°C/60%RH, $I_F = \text{max DC}$ (Note 1)	1000 hours	Note 2
Wet High Temperature Storage Life (WHTSL)	85°C/85%RH, non-operating	1000 hours	Note 2
High Temperature Storage Life (HTSL)	110°C, non-operating	1000 hours	Note 2
Low Temperature Storage Life (LTSL)	-40°C, non-operating	1000 hours	Note 2
Non-operating Temperature Cycle (TMCL)	-40°C to 120°C, 30 min. dwell, <5 min. transfer	200 cycles	Note 2
Non-operating Thermal Shock (TMSK)	-40°C to 120°C, 20 min. dwell, <20 sec. transfer	200 cycles	Note 2

Notes:

1. Depending on the maximum derating curve.
2. Criteria for judging failure

Item	Test Condition	Criteria for Judgement	
		Min.	Max.
Forward Voltage ( $V_F$ )	$I_F = \text{max DC}$	-	Initial Level x 1.1
Luminous Flux or Radiometric Power ( $\Phi_V$ )	$I_F = \text{max DC}$	Initial Level x 0.7	-

\* The test is performed after the LED is cooled down to the room temperature.

3. A failure is an LED that is open or shorted.

## Precaution in Handling

- 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 3kgf impact or pressure on the silicone lens, otherwise it will cause a catastrophic failure.
- 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)

