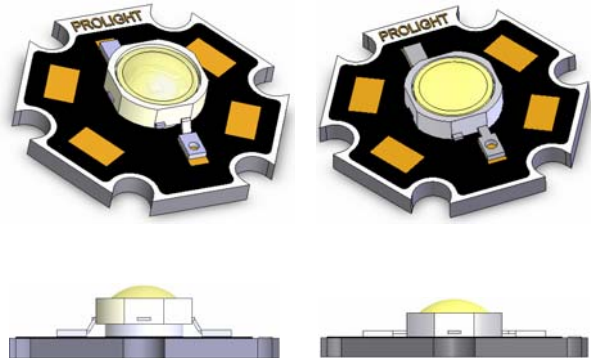




*ProLight Opto*  
Technology Corporation



**ProLight PG1X-5LDS**  
**5W Royal Blue Power LED**  
**Technical Datasheet**  
**Version: 2.5**

## Features

- High radiometric power per LED
- Very long operating life(up to 100k hours)
- Various colors
- Good color uniformity
- More energy efficient than incandescent and most halogen lamps
- Low Voltage DC operated
- Instant light (less than 100ns)
- No UV
- Superior ESD protection

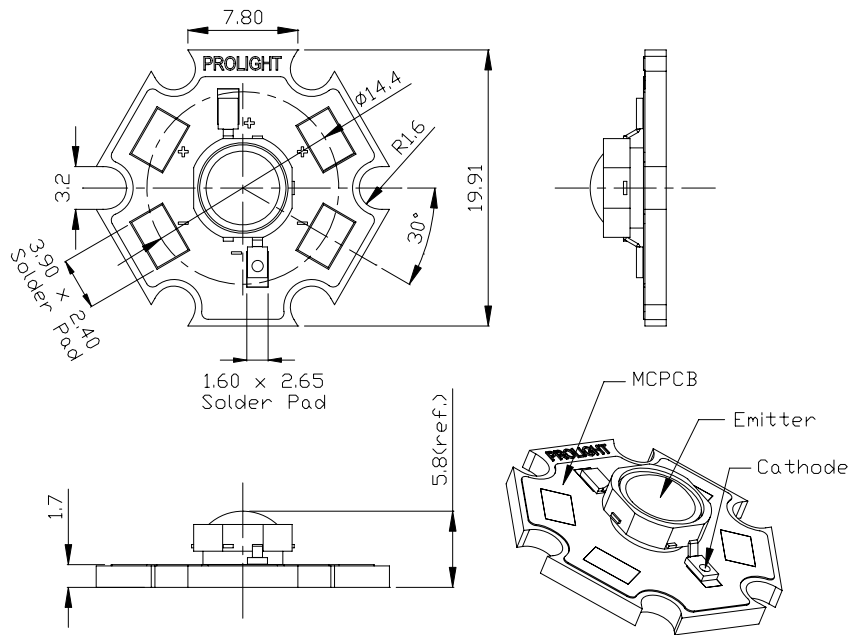
## Typical Applications

- Dental curing lights
- Reading lights (car, bus, aircraft)
- Portable (flashlight, bicycle)
- Uplighters/Downlighters
- Decorative/Entertainment
- Bollards/Security/Garden
- Cove/Undershelf/Task
- Indoor/Outdoor Commercial and Residential Architectural
- Automotive Ext (Stop-Tail-Turn, CHMSL, Mirror Side Repeat)
- LCD backlights

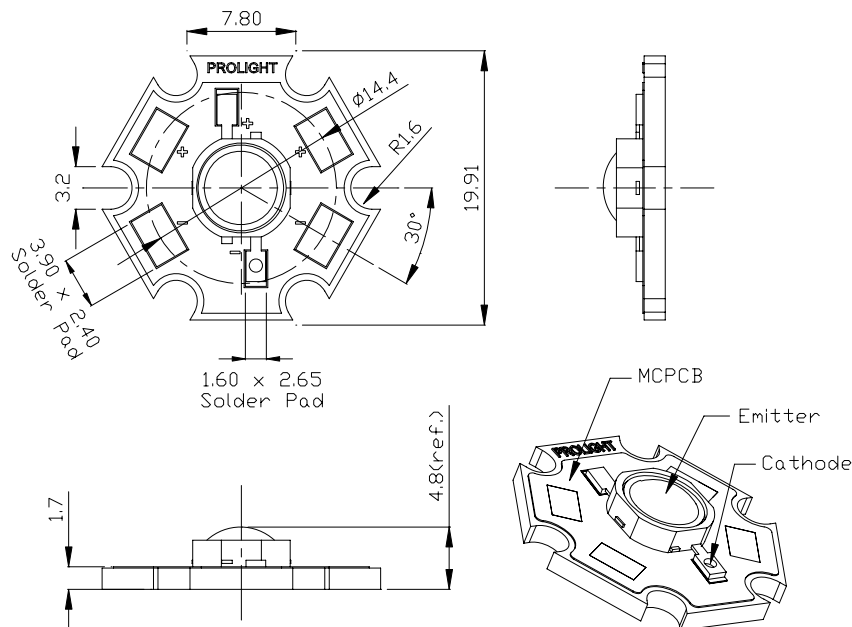
ProLight

# Mechanical Dimensions

## Lambertian - Standard Star



## Lambertian - Low Profile Star



**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. All positive pads are interconnected, as are all negative pads, allowing for flexibility in array interconnection.
3. Drawing not to scale.
4. All dimensions are in millimeters.
5. All dimensions without tolerances are for reference only.

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

**ProLight**

## Part Number

Color	Standard Star	Low Profile Star	Radiation Pattern
Royal Blue	PG1A-5LDS	PG1N-5LDS	Lambertian

## Flux Characteristics at 700mA, T<sub>J</sub> = 25°C

Color	Radiometric Power (mW)		Radiation Pattern
	Minimum	Typical	
Royal Blue	515	750	Lambertian

- 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 700mA, T<sub>J</sub> = 25°C

Color	Dominant Wavelength $\lambda_D$			Spectral Half-width (nm) $\Delta\lambda_{1/2}$	Temperature Coefficient or Dominant Wavelength $\Delta\lambda_D / \Delta T_J$ (nm/ °C)
	Min.	Typ.	Max.		
Royal Blue	445 nm	455 nm	460 nm	20	0.04

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

## Optical Characteristics at 700mA, T<sub>J</sub> = 25°C ( Continued)

Color	Radiation Pattern	Total Included Angle $\theta_{0.90V}$ (degrees)	Viewing Angle $2 \theta_{1/2}$ (degrees)	Typical Candela on Axis (cd)
Royal Blue	Lambertian	160	140	-

## Electrical Characteristics at 700mA, T<sub>J</sub> = 25°C

Color	Forward Voltage V <sub>F</sub> (V)			Dynamic Resistance (Ω)	Temperature Coefficient of V <sub>F</sub> (mV/ °C) $\Delta V_F / \Delta T_J$	Thermal Resistance Junction to Board (°C/ W)
	Min.	Typ.	Max.			
Royal Blue	5.6	7.0	8.0	1.0	-4	6

## Absolute Maximum Ratings

### Parameter


DC Forward Current (mA)	700
Peak Pulsed Forward Current (mA)	1000
Average Forward Current (mA)	700
ESD Sensitivity	±16000V HBM
LED Junction Temperature (°C)	135
Aluminum-core PCB Temperature (°C)	105
Storage & Operating Temperature (°C)	-40 to +105
Soldering Temperature (°C)	260 for 5 seconds Max.

## Radiometric Power Bin Structure

Bin Code	Minimum Radiometric Power (mW)	Maximum Radiometric Power (mW)
R	515	635
S	635	755
T	755	875
U	875	1050

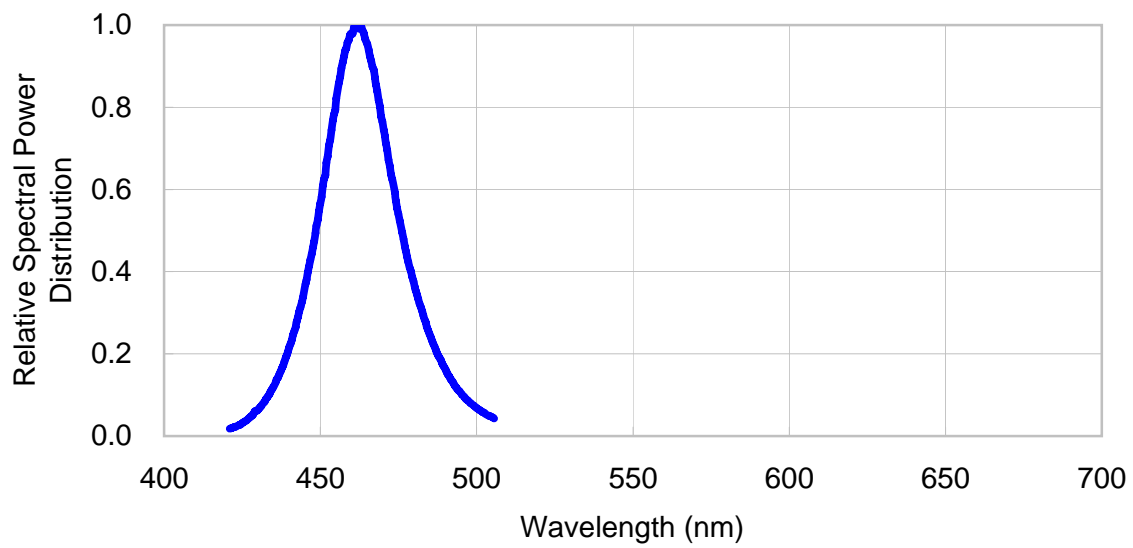
- ProLight maintains a tolerance of ± 10% on flux and power measurements.

## Dominant Wavelength Bin Structure

Color	Bin Code	Minimum Dominant Wavelength (nm)	Maximum Dominant Wavelength (nm)
	4	445	450
	5	450	455
	6	455	460

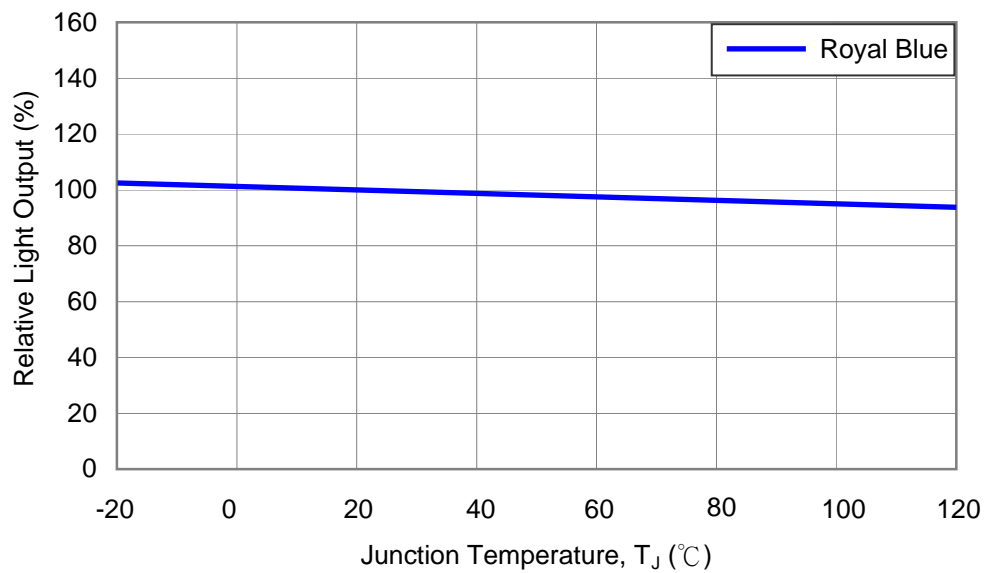
- ProLight maintains a tolerance of ± 1nm for dominant wavelength measurements.

## Royal Blue Color Spectrum



## Light Output Characteristics

### Relative Light Output vs. Junction Temperature at 700mA



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

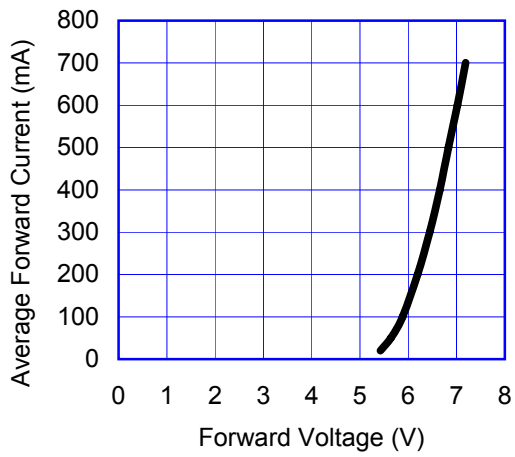


Fig 1. Forward Current vs. Forward Voltage

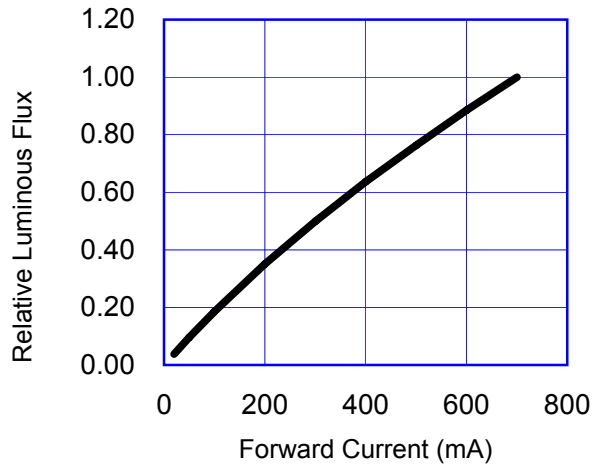
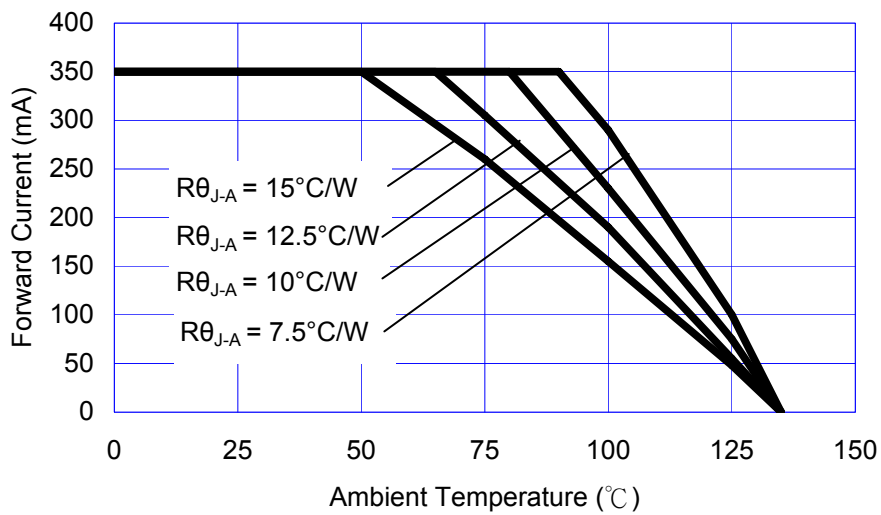


Fig 2. Relative Luminous Flux vs. Forward Current at  $T_j=25^\circ\text{C}$  maintained.

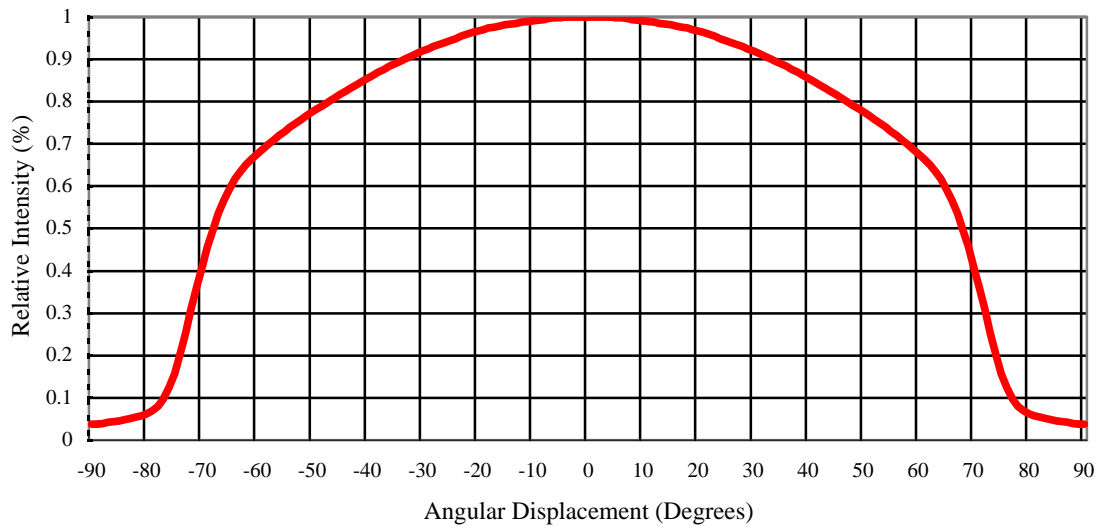
## Ambient Temperature vs. Maximum Forward Current

### Royal Blue ( $T_{j\text{MAX}} = 135^\circ\text{C}$ )

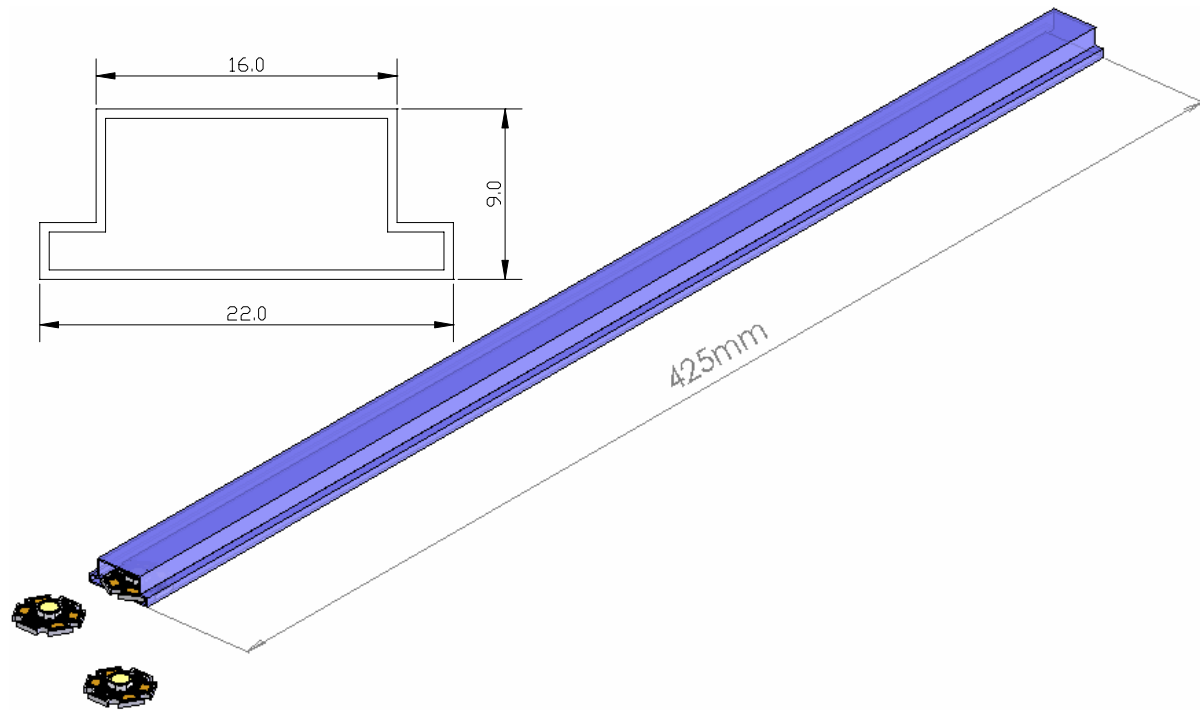


# Typical Representative Spatial Radiation Pattern

## Lambertian Radiation Pattern



## Star Tube Packaging



### Notes:

1. 20 pieces per tube.
2. Drawing not to scale.
3. All dimensions are in millimeters.
4. All dimensions without tolerances are for reference only.

\*\*Please do not open the moisture barrier bag (MBB) more than one week. This may cause the leads of LED discoloration. We recommend storing ProLight's LEDs in a dry box after opening the MBB. The recommended storage conditions are temperature 5 to 30°C and humidity less than 40% RH.