

**ProLight PM2B-1LPE-M
1W Magenta Power LED
Technical Datasheet
Version: 1.0**

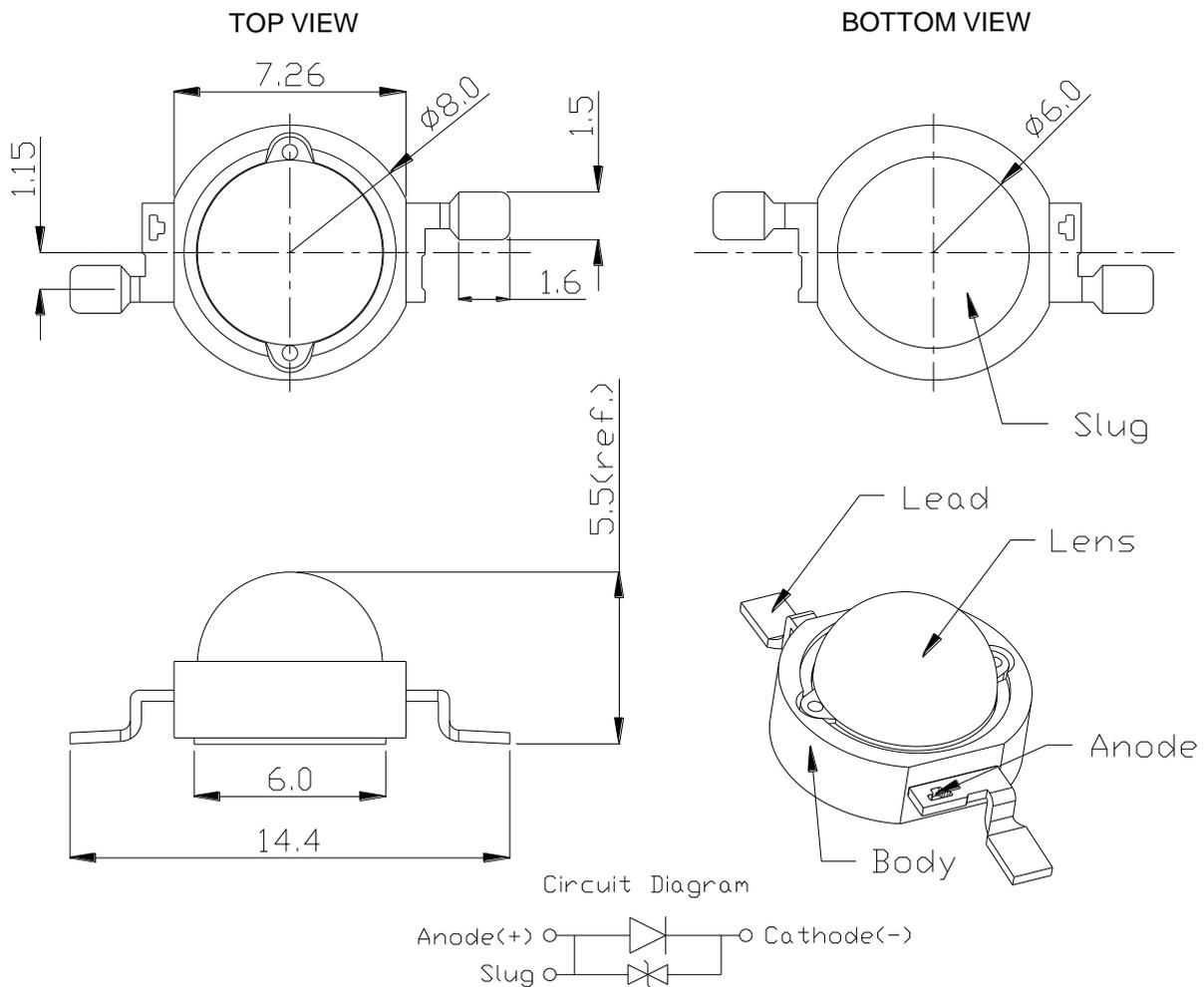
Features

- **Magenta color high flux LED**
- Good color uniformity
- RoHS compliant
- 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

- 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

Emitter Mechanical Dimensions



Notes:

1. The Anode side of the device is denoted by a hole in the lead frame.
2. Electrical insulation between the case and the board is required --- slug of device is not electrically neutral. Do not electrically connect either the anode or cathode to the slug.
3. Drawing not to scale.
4. All dimensions are in millimeters.
5. All dimensions without tolerances are for reference only.
6. Please do not bend the leads of the LED, otherwise it will damage the LED.
7. **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.

ProLight

Flux Characteristics at 350mA, T_J = 25°C

| Radiation Pattern | Color | Part Number Emitter | Lumious Flux Φ_V (lm) | |
|-------------------|---------|---------------------|----------------------------|---------|
| | | | Minimum | Typical |
| Lambertian | Magenta | PM2B-1LPE-M | 23.5 | 30 |

- 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.

Electrical Characteristics at 350mA, T_J = 25°C

| Color | Forward Voltage V _F (V) | | | Thermal Resistance Junction to Slug (°C/ W) |
|---------|------------------------------------|------|------|---|
| | Min. | Typ. | Max. | |
| Magenta | 2.85 | 3.5 | 4.1 | 10 |

Optical Characteristics at 350mA, T_J = 25°C

| Color | Dominant Wavelength λ_D | | | Total included Angle (degrees) $\theta_{0.90V}$ | Viewing Angle (degrees) $2 \theta_{1/2}$ |
|---------|---------------------------------|------|------|---|--|
| | Min. | Typ. | Max. | | |
| Magenta | -- | -- | -- | 180 | 130 |

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

Absolute Maximum Ratings

| Parameter | Magenta |
|---|--------------------|
| DC Forward Current (mA) | 350 |
| Peak Pulsed Forward Current (mA) | 500 |
| Average Forward Current (mA) | 350 |
| ESD Sensitivity (HBM per MIL-STD-883E Method 3015.7) | ±4000V (Class III) |
| LED Junction Temperature (°C) | 120 |
| Aluminum-core PCB Temperature (°C) | 105 |
| Storage & Operating Temperature (°C) | -40 to +105 |
| Soldering Temperature(°C) | 235°C |

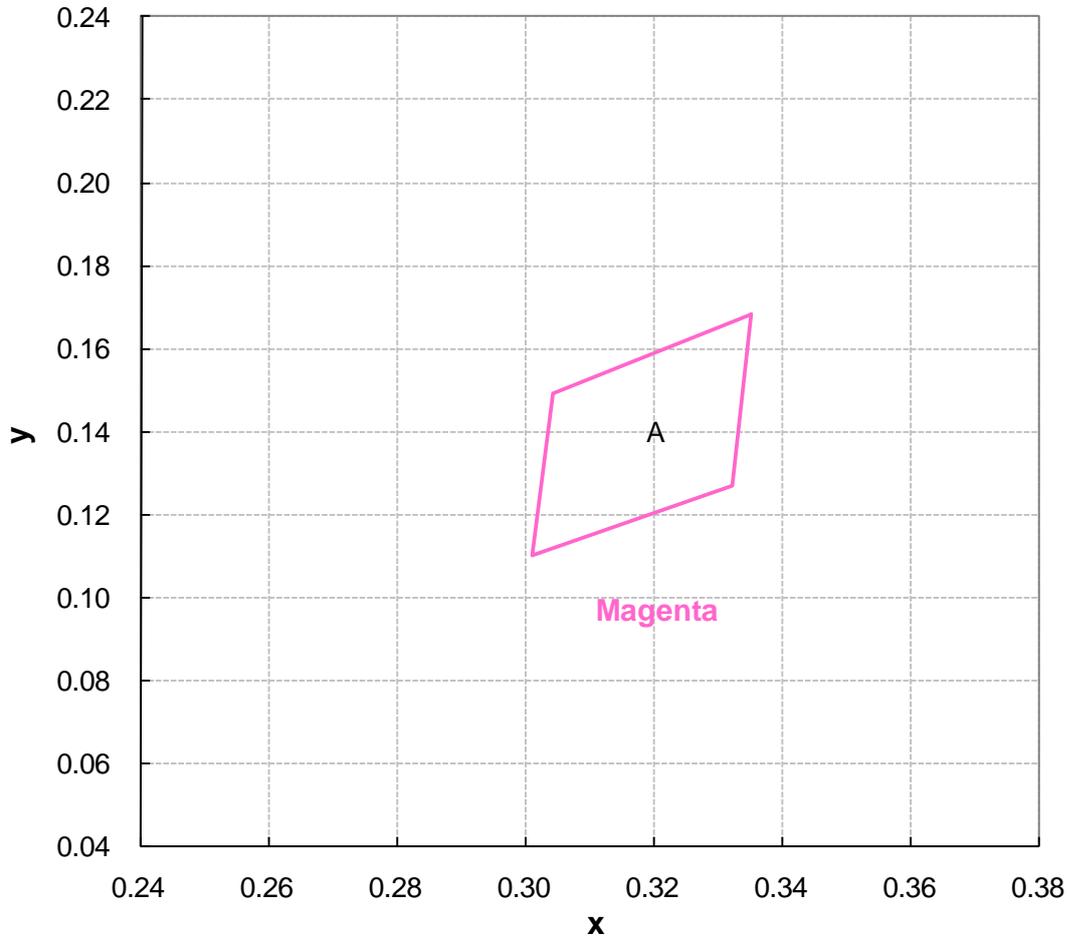
Radiometric Power Bin Structure

| Color | Bin Code | Minimum Photometric Flux (lm) | Maximum Photometric Flux (lm) | Available Color Bins |
|---------|----------|-------------------------------|-------------------------------|----------------------|
| Magenta | P | 23.5 | 30.6 | All |
| | Q | 30.6 | 39.8 | [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.
- ^[1] The rest of color bins are not 100% ready for order currently. Please ask for quote and order possibility.

Color Bins

Magenta Binning Structure Graphical Representation



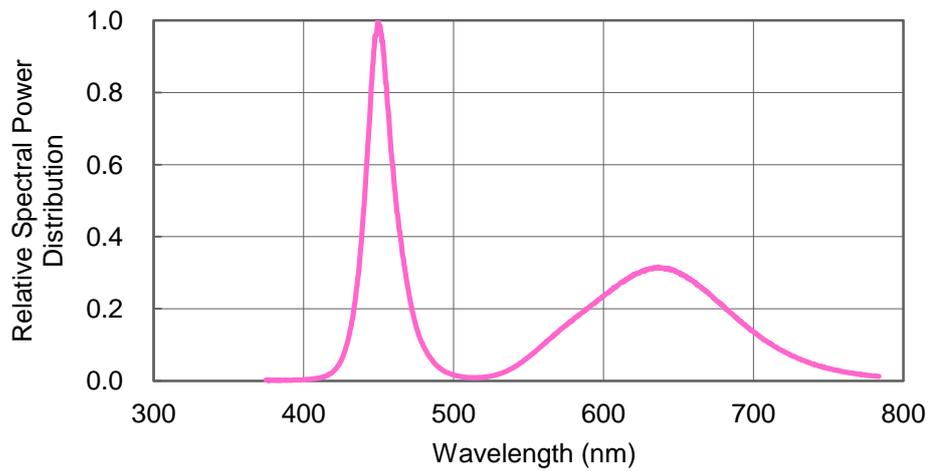
Color Bins

Magenta Bin Structure

| Bin Code | x | y |
|----------|-------|-------|
| A | 0.335 | 0.168 |
| | 0.304 | 0.149 |
| | 0.301 | 0.110 |
| | 0.332 | 0.127 |

Magenta Color Spectrum

1. Magenta



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

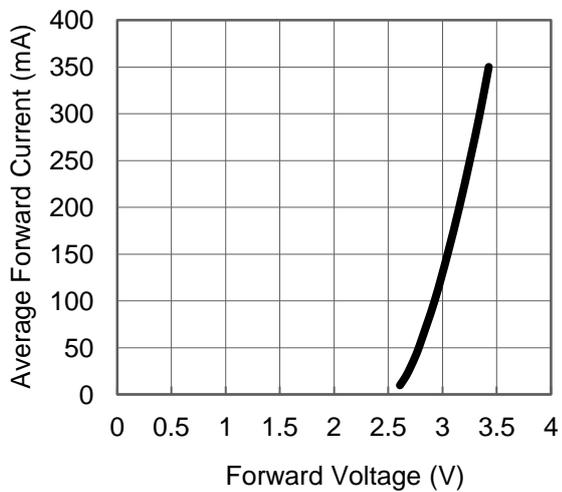


Fig 1. Forward Current vs. Forward Voltage

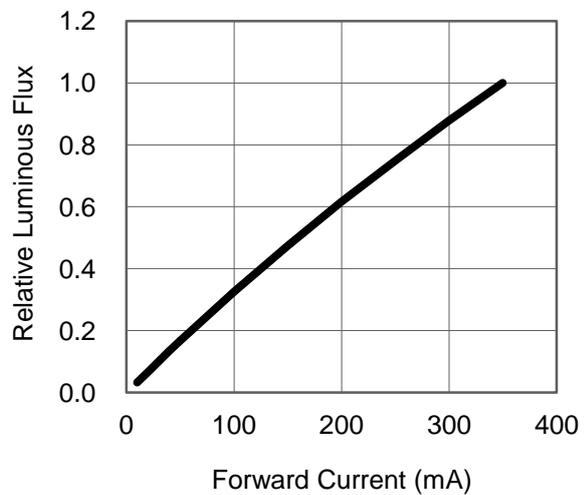
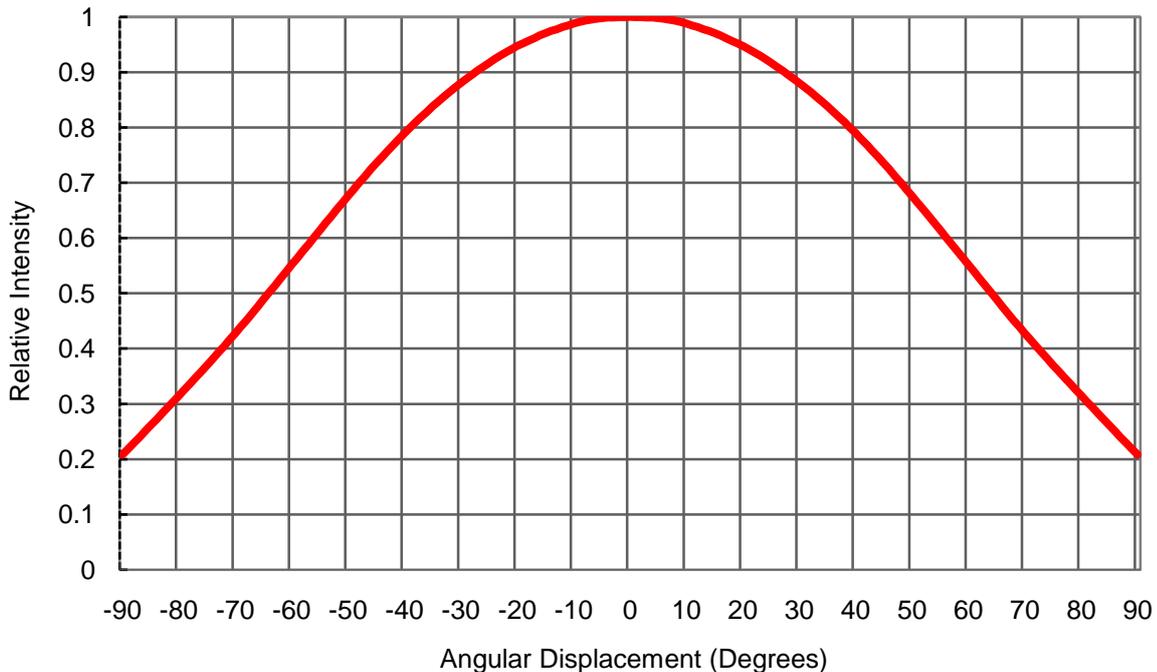


Fig 2. Relative Luminous Flux vs. Forward Current at $T_J=25^\circ\text{C}$ maintained.

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 |
| Mechanical Shock | 1500 G, 0.5 msec. pulse, 5 shocks each 6 axis | | Note 3 |
| Natural Drop | On concrete from 1.2 m, 3X | | Note 3 |
| Variable Vibration Frequency | 10-2000-10 Hz, log or linear sweep rate, 20 G about 1 min., 1.5 mm, 3X/axis | | Note 3 |

Notes:

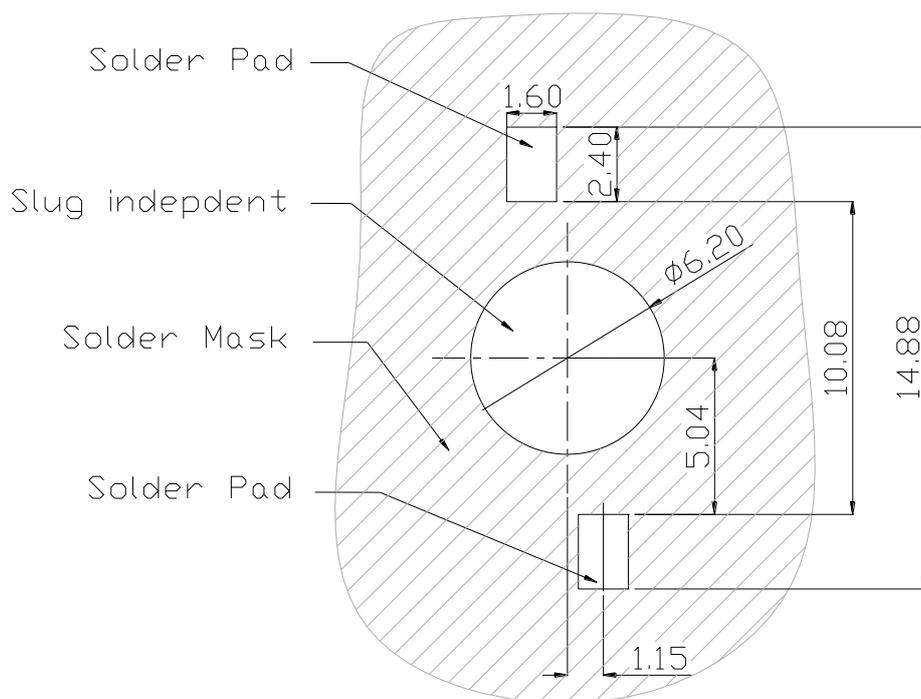
1. Depending on the maximum derating curve.
2. Criteria for judging failure

| 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 (Φ_V) | $I_F = \text{max DC}$ | Initial Level x 0.7 | -- |
| Reverse Current (I_R) | $V_R = 5V$ | -- | 50 μA |

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

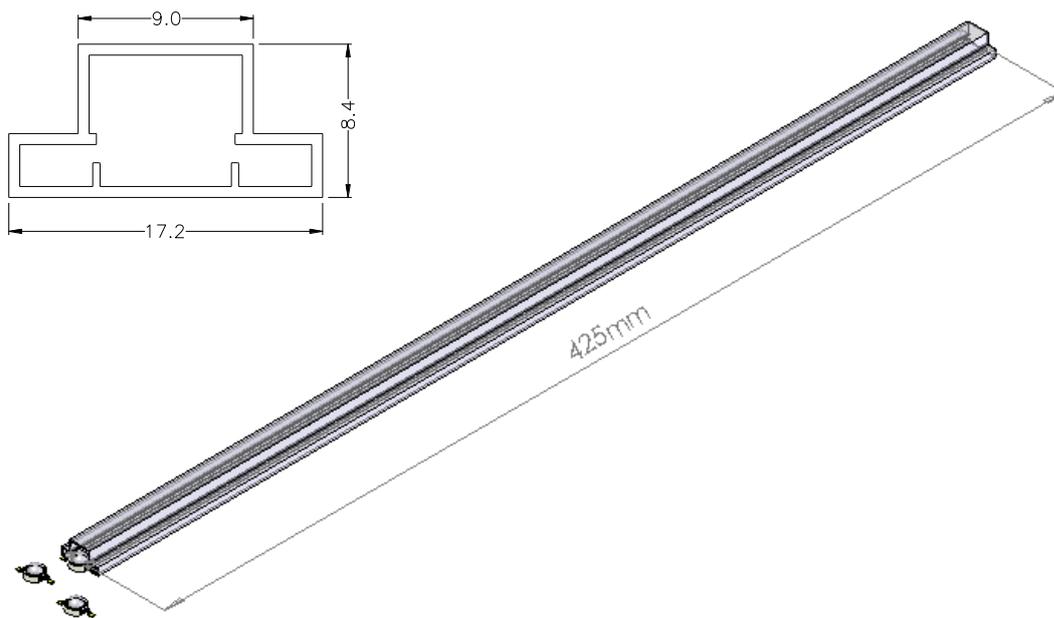
3. A failure is an LED that is open or shorted.

Recommended Solder Pad Design



- All dimensions are in millimeters.
- Electrical isolation is required between Slug and Solder Pad.

Emitter Tube Packaging



Notes:

1. 50 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.

Precaution for Use

- Storage
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. It is also recommended to return the LEDs to the MBB and to reseal the MBB.
- The slug is not electrically neutral. Therefore, we recommend to isolate the heat sink.
- The slug is to be soldered. If not, please use the heat conductive adhesive.
- Any mechanical force or any excess vibration shall not be accepted to apply during cooling process to normal temperature after soldering.
- Please avoid rapid cooling after soldering.
- Components should not be mounted on warped direction of PCB.
- Repairing should not be done after the LEDs have been soldered. When repairing is unavoidable, a heat plate should be used. It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.
- This device should not be used in any type of fluid such as water, oil, organic solvent and etc. When cleaning is required, isopropyl alcohol should be used.
- When the LEDs are illuminating, operating current should be decided after considering the package maximum temperature.
- 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/>