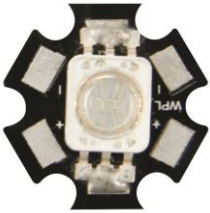


L-H3RGB — DATASHEET

HIGH POWER LED – 3 W – RGB



Note: This power LED is delivered without heat sink. Take care of proper heat dissipation when using this LED.

Technical Datasheet

Features

- super high-flux output and high luminance
- very long operating life (up to 50 000 h)
- low thermal resistance
- SMT solderability.

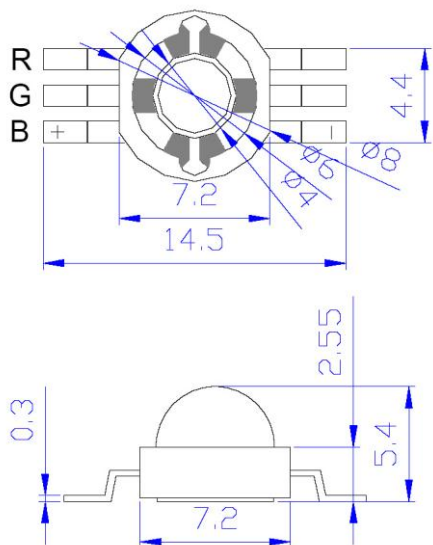
Applications

- general lighting
- indoor and outdoor architectural lighting
- decorative lighting
- portable and reading lighting
- traffic signalling.

Specification Summary

| | L-H3RGB |
|-------------------------------|--|
| colour | red (620–630 nm), green (520–530 nm), blue (460–470 nm) |
| colour temperature | – |
| luminous flux | red (50 lm), green (70 lm), blue (15 lm) |
| colour rendering index | – |
| viewing angle | 120 |
| thermal resistance | 12 °C/W |
| forward current | red (400 mA), green (350 mA), blue (350 mA) |
| forward voltage | red (2 – 2.6 V), green (3.2 – 3.8 V), blue (3.2 – 3.8 V) |
| maximum junction temperature | 115 °C |
| maximum operating temperature | 60 °C |

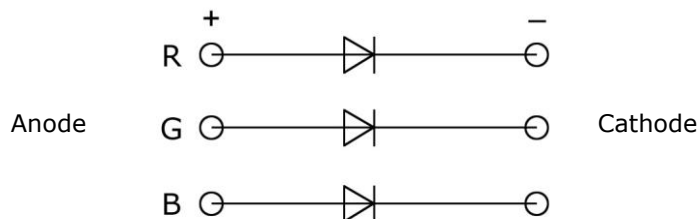
Dimensions



Notes:

- All dimensions are in millimetres (tolerance ± 0.20 mm).
- Drawings are not to scale.
- The appearance and specifications of the product may be changed for improvement without notice.

Circuit Layout



Characteristics

Electro-optical characteristics at $I_F = 350$ mA, $T_a = 25$ °C

| Parameter | Symbol | | Min. | Typ. | Max. | Unit |
|--------------------|------------------|---|------|------|------|------|
| Luminous flux | Φ_V | R | 40 | - | 60 | lm |
| | | G | 60 | - | 80 | |
| | | B | 10 | - | 20 | |
| Wavelength | λ_D | R | 620 | - | 630 | nm |
| | | G | 520 | - | 530 | |
| | | B | 460 | - | 470 | |
| Forward voltage | V_F | R | 2.0 | - | 2.6 | V |
| | | G | 3.2 | - | 3.8 | |
| | | B | 3.2 | - | 3.8 | |
| Power dissipation | P_D | | - | 3 | - | W |
| View angle | $2\theta_{1/2}$ | | - | 120 | - | deg. |
| Thermal resistance | $R_{\theta J-B}$ | | - | 12 | - | °C/W |

Notes

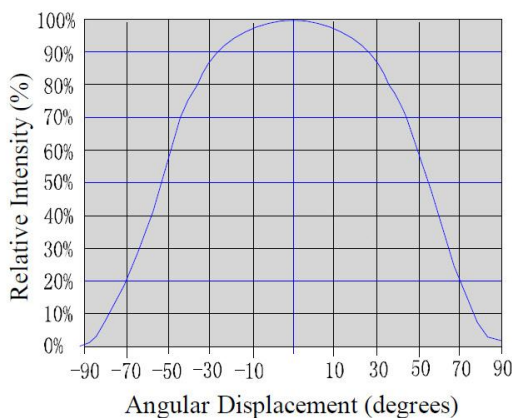
- Tolerance of luminous flux is ± 3 %.
- Tolerance of forward voltage is ± 0.1 V.

Absolute maximum ratings

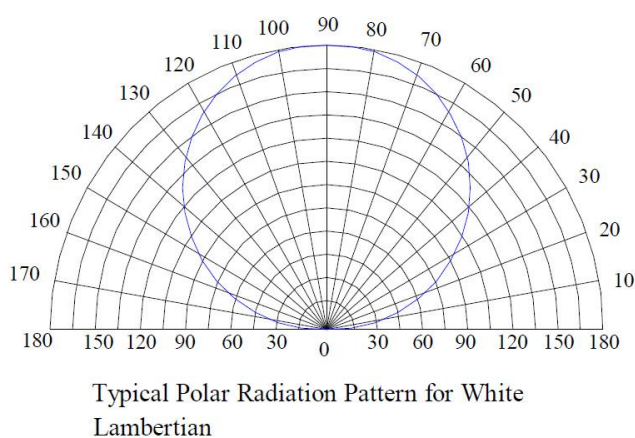
| Parameter | Symbol | | Value | Unit |
|---|-----------|---|------------------------------------|-------|
| Forward current | I_F | R | 400 | mA |
| | | G | 350 | |
| | | B | 350 | |
| Junction temperature | T_j | | 115 | °C |
| Operating temperature | T_{opr} | | -40 to +60 | °C |
| Storage temperature | T_{stg} | | 0-60 | °C |
| ESD sensitivity | - | | ± 2000 V HBM | - |
| Temperature coefficient of voltage | - | | -5 | mV/°C |
| DC pulse current @ 1 kHz, 10 % duty cycle | I_{FP} | | 1000 | mA |
| Reverse voltage | V_R | | Not designed for reverse operation | |

Typical Characteristic Curves

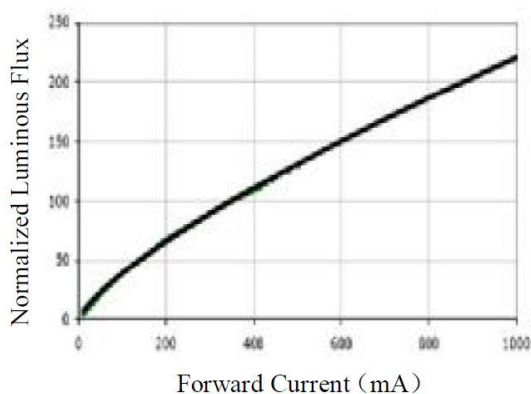
1. Typical Light Distribution Curve



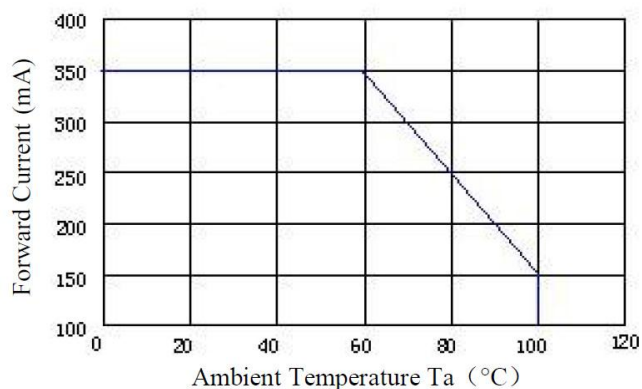
2. Typical Light-Emitting Angle Radiation Pattern



3. Forward Current vs. Relative Luminous Flux Curve

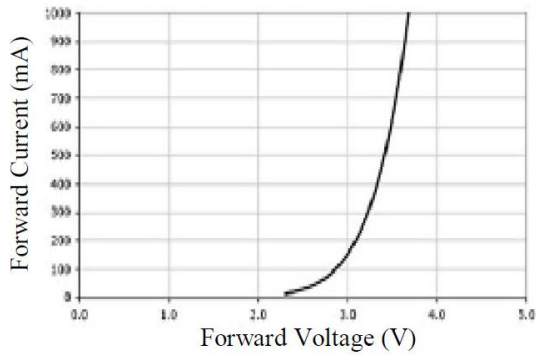


4. Forward Current Derating Curve
Derating based on $T_{imax} = 125\text{ °C}$

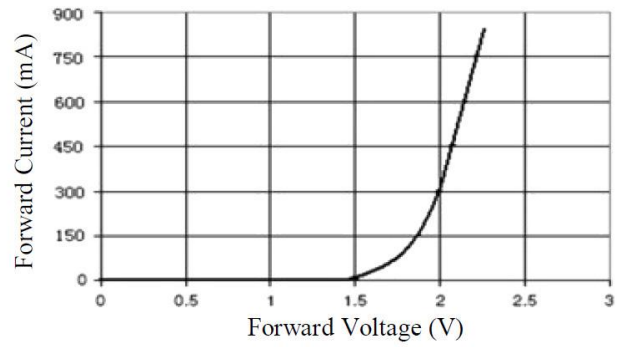


5. Electrical Characteristics Curve ($T_j = 25\text{ °C}$)

5.1 White, Royal Blue, Blue, Green

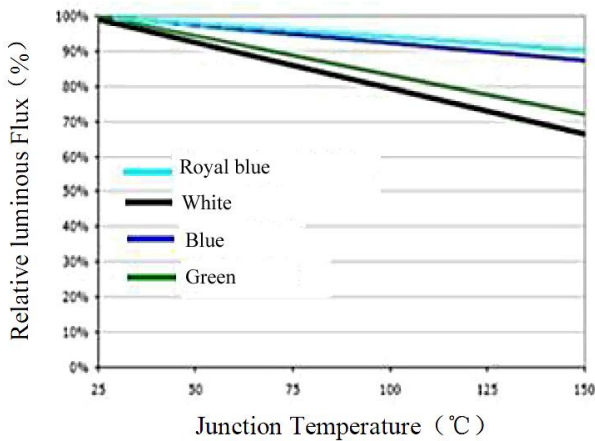


5.2 Amber, Red

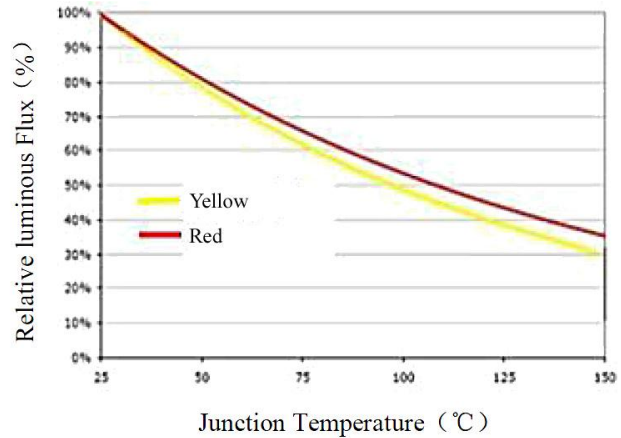


6. Relative Flux vs. Junction Temperature

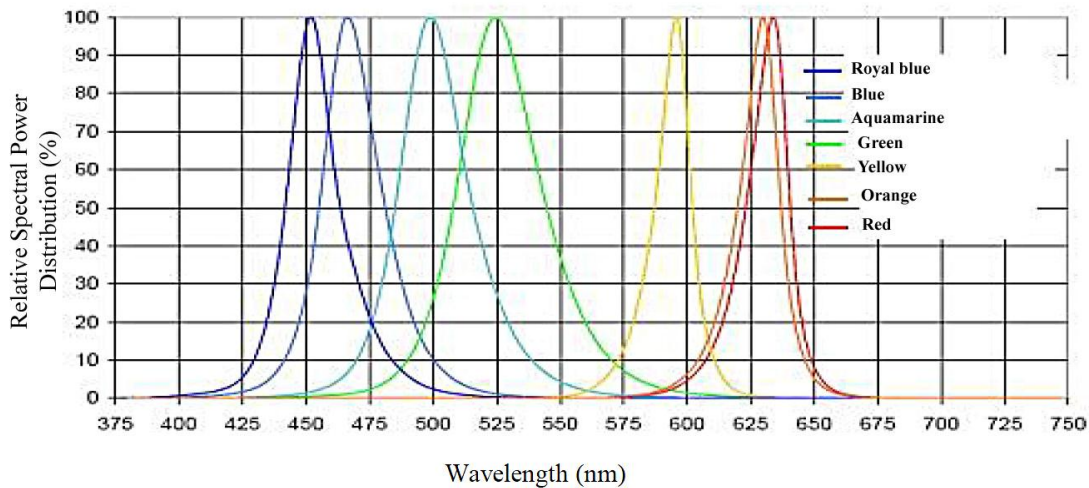
6.1 White, Royal Blue, Blue, Green ($I_f = 350\text{ mA}$)



6.2 Amber, Red ($I_f = 400\text{ mA}$)



7. Relative Spectral Power Distribution



Soldering Condition

| | Reflow soldering | | Manual welding | |
|------------------|--------------------------|-------------------|----------------|----------------|
| | High temperature PC lens | Moulding products | Temperature | Soldering time |
| Preheat | 100–140 °C | 180–200 °C | Highest 350 °C | 3 s once |
| Heat-up time | 120 s max. | 120 s max. | | |
| Peak temperature | 180 °C max. | 260 °C max. | | |
| Soldering time | 50 s max. | 10 s max. | | |

Note: Conventional PC lens products do not use reflow soldering.