L-H30RGB — DATASHEET

HIGH POWER LED — 30 W — RGB

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

Technical Datasheet

Applications
- general lighting
- architectural lighting
- decorative lighting
- landscape lighting
- traffic signalling.

Specification Summary

<table>
<thead>
<tr>
<th></th>
<th>L-H30RGB</th>
</tr>
</thead>
<tbody>
<tr>
<td>colour</td>
<td>red (620–630 nm), green (520–530 nm), blue (460–470 nm)</td>
</tr>
<tr>
<td>colour temperature</td>
<td>–</td>
</tr>
<tr>
<td>luminous flux</td>
<td>red (450 lm), green (650 lm), blue (150 lm)</td>
</tr>
<tr>
<td>colour rendering index</td>
<td>–</td>
</tr>
<tr>
<td>viewing angle</td>
<td>120</td>
</tr>
<tr>
<td>thermal resistance</td>
<td>12 °C/W</td>
</tr>
<tr>
<td>forward current</td>
<td>red (400 mA), green (350 mA), blue (350 mA)</td>
</tr>
<tr>
<td>forward voltage</td>
<td>red (20–25 V), green (30–36 V), blue (30–36 V)</td>
</tr>
<tr>
<td>maximum junction temperature</td>
<td>120 °C</td>
</tr>
<tr>
<td>maximum operating temperature</td>
<td>60 °C</td>
</tr>
</tbody>
</table>
Dimensions

![Diagram of dimensions](image)

**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

![Circuit layout diagram](image)

Characteristics

**Electro-optical characteristics at T_a = 25 °C**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luminous flux</td>
<td>Φ_V</td>
<td>R</td>
<td>400</td>
<td>–</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G</td>
<td>600</td>
<td>–</td>
<td>700</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>100</td>
<td>–</td>
<td>200</td>
</tr>
<tr>
<td>Wavelength</td>
<td>λ_D</td>
<td>R</td>
<td>620</td>
<td>–</td>
<td>630</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G</td>
<td>520</td>
<td>–</td>
<td>530</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>460</td>
<td>–</td>
<td>470</td>
</tr>
<tr>
<td>Forward voltage</td>
<td>V_F</td>
<td>R</td>
<td>20</td>
<td>–</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G</td>
<td>30</td>
<td>–</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>30</td>
<td>–</td>
<td>36</td>
</tr>
<tr>
<td>Power dissipation</td>
<td>P_D</td>
<td>–</td>
<td>30</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>View angle</td>
<td>2θ½</td>
<td>–</td>
<td>120</td>
<td>–</td>
<td>deg.</td>
</tr>
<tr>
<td>Thermal resistance</td>
<td>R_J–B</td>
<td>–</td>
<td>12</td>
<td>–</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

**Notes**
- Tolerance of luminous flux is ± 3 %.
- Tolerance of forward voltage is ± 0.1 V.
Absolute maximum ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward current</td>
<td>IF</td>
<td>R</td>
<td>400  mA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G</td>
<td>350  mA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>350  mA</td>
</tr>
<tr>
<td>Junction temperature</td>
<td>Tj</td>
<td></td>
<td>115  °C</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>Topr</td>
<td></td>
<td>-40 to +60 °C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>Tstg</td>
<td></td>
<td>0–60 °C</td>
</tr>
<tr>
<td>ESD sensitivity</td>
<td></td>
<td></td>
<td>± 2000 V HBM</td>
</tr>
<tr>
<td>Reverse voltage</td>
<td>VR</td>
<td>Not designed for reverse operation</td>
<td></td>
</tr>
</tbody>
</table>

Typical Characteristic Curves

1. Typical Light Distribution Curve

2. Typical Light-Emitting Angle Radiation Pattern

3. Forward Current Derating Curve Derating based on $T_{\text{max}} = 115 ^\circ \text{C}$

3.1 White, Royal Blue, Blue, Green

3.2 Amber, Red
4. Relative Flux vs. Junction Temperature
4.1 White, Royal Blue, Blue, Green

4.2 Amber, Red

5. Relative Spectral Power Distribution

Reliability Test Items and Conditions

<table>
<thead>
<tr>
<th>Test items</th>
<th>Test condition</th>
<th>Test hours / cycles</th>
<th>Sample size</th>
<th>Ac/Re</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC ageing</td>
<td>$T_a = 25 , ^\circ C$ $I_F = \text{normal}$</td>
<td>1000 h</td>
<td>22</td>
<td>0/1</td>
</tr>
<tr>
<td>Hot and cold shock</td>
<td>$-40 , ^\circ C$, 30 min $+100 , ^\circ C$, 30 min</td>
<td>100 cycles</td>
<td>22</td>
<td>0/1</td>
</tr>
<tr>
<td>High temperature storage</td>
<td>$T_a = 100 , ^\circ C$</td>
<td>1000 h</td>
<td>22</td>
<td>0/1</td>
</tr>
<tr>
<td>High temperature high humidity</td>
<td>$85 , ^\circ C$, 85 % RH</td>
<td>1000 h</td>
<td>22</td>
<td>0/1</td>
</tr>
<tr>
<td>Low temperature storage</td>
<td>$T_a = -40 , ^\circ C$</td>
<td>1000 h</td>
<td>22</td>
<td>0/1</td>
</tr>
<tr>
<td>ESD (HBM)</td>
<td>$2000 , V , HBM$</td>
<td>1 time</td>
<td>10</td>
<td>0/1</td>
</tr>
</tbody>
</table>

Criteria for Judging Damage

<table>
<thead>
<tr>
<th>Items</th>
<th>Symbol</th>
<th>Test condition</th>
<th>Criteria for judging damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward voltage</td>
<td>$V_F$</td>
<td>$I_F = \text{normal}$</td>
<td>Initial data $\pm 10 %$</td>
</tr>
<tr>
<td>Reverse current</td>
<td>$I_R$</td>
<td>$V_R = 50 , V$</td>
<td>$I_R \leq 30 , \mu A$</td>
</tr>
<tr>
<td>Luminous flux</td>
<td>$\Phi_V$</td>
<td>$I_F = \text{normal}$</td>
<td>Average $\Phi_V$ degradation $\leq 30 %$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Single LED $\Phi_V$ degradation $\leq 50 %$</td>
</tr>
</tbody>
</table>
Soldering Condition
Only by manual welding.

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Soldering time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest 350 °C</td>
<td>3 s once</td>
</tr>
</tbody>
</table>

Note: Module holder products do not use reflow soldering.