5.0mm x 6.0mm SURFACE MOUNT LED LAMP

ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

Part Number: AAAF5060QBFSURZGS
Blue
Hyper Red
Green

Features
- Chips can be controlled separately.
- Suitable for all SMT assembly and solder process.
- Available on tape and reel.
- Package: 500pcs / reel.
- Moisture sensitivity level : level 3.
- RoHS compliant.

Description
The Blue source color devices are made with InGaN Light Emitting Diode.
The Hyper Red source color devices are made with Al-GaInP on GaAs substrate Light Emitting Diode.
The Green source color devices are made with InGaN on Sapphire Light Emitting Diode.
Static electricity and surge damage the LEDS.
It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs.
All devices, equipment and machinery must be electrically grounded.

Package Dimensions

Notes:
1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25(0.01”) unless otherwise noted.
3. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.
4. The device has a single mounting surface. The device must be mounted according to the specifications.
Handling Precautions

Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force. As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might lead to damage and premature failure of the LED.

1. Handle the component along the side surfaces by using forceps or appropriate tools.

2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.

3. Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.

4. The outer diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks. The inner diameter of the nozzle should be as large as possible.

5. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup.

6. The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production.
Selection Guide

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Dice</th>
<th>Lens Type</th>
<th>Iv (mcd) [2] @ 30mA *50mA</th>
<th>Viewing Angle [1]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Min.</td>
<td>Typ.</td>
</tr>
<tr>
<td>AAAF5060QBFSURZGS</td>
<td>Blue (InGaN)</td>
<td>Water Clear</td>
<td>280</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>Hyper Red (AlGaInP)</td>
<td></td>
<td>*500</td>
<td>*800</td>
</tr>
<tr>
<td></td>
<td>Green (InGaN)</td>
<td></td>
<td>500</td>
<td>1000</td>
</tr>
</tbody>
</table>

Notes:
1. θ<sub>1/2</sub> is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
2. *Luminous intensity with asterisk is measured at 50mA; Luminous intensity/ luminous Flux: +/-15%.

Electrical / Optical Characteristics at TA=25°C

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Device</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
<th>Test Conditions</th>
</tr>
</thead>
</table>
| λ<sub>peak</sub> | Peak Wavelength        | Blue
|           |                         | Hyper Red
|           |                         | Green       | 461 515 | nm | If=20mA |
| λ<sub>D</sub> [1] | Dominant Wavelength   | Blue
|           |                         | Hyper Red
|           |                         | Green       | 465 525 | nm | If=20mA |
| Δλ1/2    | Spectral Line Half-width| Blue
|           |                         | Hyper Red
|           |                         | Green       | 25 30  | nm | If=20mA |
| C        | Capacitance            | Blue
|           |                         | Hyper Red
|           |                         | Green       | 100 45 | pF | V=0V;f=1MHz |
| V<sub>F</sub> [2] | Forward Voltage    | Blue
|           |                         | Hyper Red
|           |                         | Green       | 3.3 1.9 4.1 | 4.5 V | If=20mA |
| I<sub>r</sub> | Reverse Current    | Blue
|           |                         | Hyper Red
|           |                         | Green       | 50 10 50 | uA | V=5V |

Notes:
1. Wavelength: +/-1nm.
2. Forward Voltage: +/-0.1V.

Absolute Maximum Ratings at TA=25°C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Blue</th>
<th>Hyper Red</th>
<th>Green</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power dissipation[2]</td>
<td>350</td>
<td></td>
<td></td>
<td>mW</td>
</tr>
<tr>
<td>DC Forward Current</td>
<td>30</td>
<td>50</td>
<td>30</td>
<td>mA</td>
</tr>
<tr>
<td>Peak Forward Current [1]</td>
<td>150</td>
<td>185</td>
<td>150</td>
<td>mA</td>
</tr>
<tr>
<td>Reverse Voltage</td>
<td>5</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40°C To +85°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°C To +85°C</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. Within 350mW at all chips are lightened.
Kingbright

**AAAF5060QBFSURZGS**

**Blue**

**Relative Intensity vs. Wavelength**

![Graph showing relative intensity vs. wavelength for blue, green, and red light sources at Ta=25°C.](image)

**Forward Current (mA)**

- **Forward Voltage (V)**
  - **Forward Current vs. Forward Voltage**

**Luminous Intensity**

- **Relative Value of V=30mA**
  - **Luminous Intensity vs. Forward Current**

**Ambient Temperature (°C)**

- **Forward Current vs. Derating Curve**

**Spatial Distribution**

![Graph showing spatial distribution of light intensity.](image)
Hyper Red

Forward Current (mA) vs. Forward Voltage

Luminous Intensity (Relative Value) vs. Forward Current

Forward Current (mA) vs. Ambient Temperature (°C)

Luminous Intensity (Relative Value) vs. Ambient Temperature (°C)

Spatial Distribution
Green

- Forward Current vs Forward Voltage
- Luminous Intensity vs Forward Current
- Forward Current vs Ambient Temperature
- Luminous Intensity vs Ambient Temperature
- Spatial Distribution
Reflow soldering is recommended and the soldering profile is shown below.
Other soldering methods are not recommended as they might cause damage to the product.

Recommended Soldering Pattern
(Units : mm; Tolerance: ± 0.1)

Reel Dimension

Tape Dimensions
(Units : mm)