High Efficiency Blue LED, Ø 5 mm Tinted Diffused Package

DESCRIPTION
This device has been redesigned in 1998 replacing SiC by GaN technology to meet the increasing demand for high efficiency blue LEDs.

It is housed in a 5 mm tinted diffused plastic package.

All packing units are categorized in luminous intensity groups. That allows users to assemble LEDs with uniform appearance.

PRODUCT GROUP AND PACKAGE DATA
• Product group: LED
• Package: 5 mm
• Product series: standard
• Angle of half intensity: ± 30°

FEATURES
• GaN on SiC technology
• Standard Ø 5 mm T-1¾ package
• Small mechanical tolerances
• Wide viewing angle
• Very high intensity
• Luminous intensity categorized
• ESD class 1
• Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS
• Status lights
• Off / on indicator
• Background illumination
• Readout lights
• Maintenance lights
• Legend light

PARTS TABLE

<table>
<thead>
<tr>
<th>PART</th>
<th>COLOR</th>
<th>LUMINOUS INTENSITY (mcd)</th>
<th>at I_F (mA)</th>
<th>WAVELENGTH (nm)</th>
<th>at I_F (mA)</th>
<th>FORWARD VOLTAGE (V)</th>
<th>at I_F (mA)</th>
<th>TECHNOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLHB5400</td>
<td>Blue</td>
<td>6.3 15 - 20</td>
<td>- 466</td>
<td>- 10</td>
<td>- 3.9</td>
<td>4.5 20</td>
<td>GaN on SiC</td>
<td></td>
</tr>
</tbody>
</table>

ABSOLUTE MAXIMUM RATINGs (T_amb = 25 °C, unless otherwise specified)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITION</th>
<th>SYMBOL</th>
<th>VALUE</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse voltage</td>
<td></td>
<td>V_R</td>
<td>5</td>
<td>V</td>
</tr>
<tr>
<td>DC forward current</td>
<td>T_amb ≤ 65 °C</td>
<td>I_F</td>
<td>20</td>
<td>mA</td>
</tr>
<tr>
<td>Surge forward current</td>
<td>t_p ≤ 10 μs</td>
<td>I_FSM</td>
<td>0.1</td>
<td>A</td>
</tr>
<tr>
<td>Power dissipation</td>
<td>T_amb ≤ 65 °C</td>
<td>P_V</td>
<td>100</td>
<td>mW</td>
</tr>
<tr>
<td>Junction temperature</td>
<td></td>
<td>T_J</td>
<td>100</td>
<td>°C</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td></td>
<td>T_amb</td>
<td>-40 to +100</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td></td>
<td>T_stg</td>
<td>-40 to +100</td>
<td>°C</td>
</tr>
<tr>
<td>Soldering temperature</td>
<td>t ≤ 5 s, 2 mm from body</td>
<td>T_sd</td>
<td>260</td>
<td>°C</td>
</tr>
<tr>
<td>Thermal resistance junction-to-ambient</td>
<td></td>
<td>R_THJA</td>
<td>350</td>
<td>K/W</td>
</tr>
</tbody>
</table>
OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

TLHB5400, BLUE

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITION</th>
<th>SYMBOL</th>
<th>MIN.</th>
<th>TYP.</th>
<th>MAX.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luminous intensity (^{(1)})</td>
<td>I_F = 20 mA</td>
<td>I_V</td>
<td>6.3</td>
<td>15</td>
<td>-</td>
<td>mcd</td>
</tr>
<tr>
<td>Dominant wavelength</td>
<td>I_F = 10 mA</td>
<td>(\lambda_d)</td>
<td>-</td>
<td>466</td>
<td>-</td>
<td>nm</td>
</tr>
<tr>
<td>Peak wavelength</td>
<td>I_F = 10 mA</td>
<td>(\lambda_p)</td>
<td>-</td>
<td>428</td>
<td>-</td>
<td>nm</td>
</tr>
<tr>
<td>Angle of half intensity</td>
<td>I_F = 10 mA</td>
<td>(\phi)</td>
<td>-</td>
<td>(\pm 30)</td>
<td>-</td>
<td>°</td>
</tr>
<tr>
<td>Forward voltage</td>
<td>I_F = 20 mA</td>
<td>V_F</td>
<td>-</td>
<td>3.9</td>
<td>4.5</td>
<td>V</td>
</tr>
<tr>
<td>Reverse voltage</td>
<td>I_R = 10 (\mu)A</td>
<td>V_R</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
</tbody>
</table>

Note
\(^{(1)}\) In one packing unit l_{min.}/l_{max.} \leq 0.5

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

![Fig. 1 - Forward Current vs. Ambient Temperature](image1)

![Fig. 3 - Forward Current vs. Forward Voltage](image3)

![Fig. 2 - Relative Luminous Intensity vs. Angular Displacement](image2)

![Fig. 4 - Relative Luminous Flux vs. Ambient Temperature](image4)
**PACKAGE DIMENSIONS** in millimeters

- Area not plane
- R 2.49 (sphere)
- Ø 5 ± 0.15
- Ø 5.8 ± 0.15
- 2.54 nom.
- 35.5 ± 0.55
- 12.5 ± 0.3
- 8.7 ± 0.3
- 7.7 ± 0.15
- 1.1 ± 0.25
- 0.5 ± 0.15 - 0.05
- 0.5 + 0.15 - 0.05
- 1 mm

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6.544-5258.02-4
Issue: 7; 23.07.10
9510916
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