UV SMD LED PLCC-2

DESCRIPTION
The package of the VLMU3100 series is the PLCC-2. It consists of a lead frame which is embedded in a white thermoplast. The reflector inside this package is filled up with clear silicone which guarantees long life time. The viewing angle is 120°, package dimensions are 3.2 mm x 2.8 mm x 1.9 mm.

PRODUCT GROUP AND PACKAGE DATA
• Product group: LED
• Package: SMD PLCC-2
• Product series: standard
• Angle of half intensity: ± 60°
• Lead-finishing: Ag

FEATURES
• UV SMD LED with exceptional brightness
• High efficient InGaN technology
• Long life time due to silicone casting
• Compatible with automatic placement equipment
• EIA and ICE standard package
• Compatible with IR reflow and vapor phase
• Available in 8 mm tape
• Low profile package
• Non-diffused lens: excellent for coupling to light pipes and backlighting
• Low power consumption
• Preconditioning according to JEDEC® level 2a
• ESD-withstand voltage: up to 1 kV according to JESD22-A114-B
• Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS
• Curing of glue and laquer
• Recognition of safety features of money bills

SAFETY ADVICES
Depending on the mode of operation, these devices emit highly concentrated non visible ultraviolet light which can be hazardous to the human eye. Products which incorporate these devices have to follow the safety precautions given in IEC 60825-1 “Safety of Laser Products”.

PARTS TABLE

<table>
<thead>
<tr>
<th>PART</th>
<th>COLOR</th>
<th>RADIANT INTENSITY (mW/sr) at I_F (mA)</th>
<th>WAVELENGTH (nm) at I_F (mA)</th>
<th>FORWARD VOLTAGE (V) at I_F (mA)</th>
<th>TECHNOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLMU3100-GS08</td>
<td>Ultraviolet</td>
<td>1.8 2.5 3 20</td>
<td>400 405 410 20</td>
<td>2.8 3.2 3.8 20</td>
<td>InGaN</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>Forward current</td>
<td></td>
<td>I_F</td>
<td>30</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></td>
<td>P_tot</td>
<td>120</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>T_amb</td>
<td>-40 to +80</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>T_stg</td>
<td>-40 to +100</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>Solder temperature</td>
<td></td>
<td>T_sodl</td>
<td>260/5</td>
<td>°C/s</td>
</tr>
</tbody>
</table>
**OPTICAL AND ELECTRICAL CHARACTERISTICS** *(T_{amb} = 25 \, ^\circ \text{C}, \text{unless otherwise specified})*

<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>Radiant intensity</td>
<td>( I_F = 20 , \text{mA} )</td>
<td>( I_r )</td>
<td>1.8</td>
<td>2.5</td>
<td>3</td>
<td>mW/sr</td>
</tr>
<tr>
<td>Radiant power</td>
<td>( I_F = 20 , \text{mA} )</td>
<td>( \phi_e )</td>
<td>-</td>
<td>6.8</td>
<td>-</td>
<td>mW</td>
</tr>
<tr>
<td>Peak wavelength</td>
<td>( I_F = 20 , \text{mA} )</td>
<td>( \lambda_p )</td>
<td>400</td>
<td>405</td>
<td>410</td>
<td>nm</td>
</tr>
<tr>
<td>Angle of half intensity</td>
<td>( I_F = 20 , \text{mA} )</td>
<td>( \phi )</td>
<td>-</td>
<td>±60</td>
<td>-</td>
<td>deg</td>
</tr>
<tr>
<td>Forward voltage</td>
<td>( I_F = 20 , \text{mA} )</td>
<td>( V_F )</td>
<td>2.8</td>
<td>3.2</td>
<td>3.8</td>
<td>V</td>
</tr>
<tr>
<td>Reverse current</td>
<td>( V_R = 5 , \text{V} )</td>
<td>( I_R )</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>( \mu \text{A} )</td>
</tr>
</tbody>
</table>

**TYPICAL CHARACTERISTICS** *(T_{amb} = 25 \, ^\circ \text{C}, \text{unless otherwise specified})*

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

![Fig. 2 - Forward Current vs. Forward Voltage](image2)

![Fig. 3 - Relative Luminous Intensity vs. Angular Displacement](image3)

![Fig. 4 - Relative Intensity vs. Wavelength](image4)
Fig. 5 - Specific Luminous Intensity vs. Forward Current

Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature

PACKAGE DIMENSIONS in millimeters

SOLDER PAD LAYOUT
METHOD OF TAPE/POLARITY AND TAPE AND REEL

SMD LED (VLM3 - SERIES)

Vishay’s LEDs in SMD packages are available in an antistatic 8 mm blister tape (in accordance with DIN IEC 40 (CO 564) for automatic component insertion. The blister tape is a plastic strip with impressed component cavities, covered by a top tape.

ARRANGEMENT OF TAPE

DIMENSIONS OF REEL in millimeters

SOLDERING PROFILE
BAR CODE PRODUCT LABEL (example only)

A. 2D barcode
B. Vishay part number
C. Quantity
D. SEL = selection code (binning)
E. Code of manufacturing plant
F. Batch = date code: year / week / plant code
G. Region code
H. SL = sales location
I. Terminations finishing
K. Lead (Pb)-free symbol
L. Halogen-free symbol
M. RoHS symbol

DRY PACKING
The reel is packed in an anti-humidity bag to protect the devices from absorbing moisture during transportation and storage.

FINAL PACKING
The sealed reel is packed into a cardboard box. A secondary cardboard box is used for shipping purposes.

RECOMMENDED METHOD OF STORAGE
Dry box storage is recommended as soon as the aluminum bag has been opened to prevent moisture absorption. The following conditions should be observed, if dry boxes are not available:

- Storage temperature 10 °C to 30 °C
- Storage humidity ≤ 60 % RH max.

After more than 672 h under these conditions moisture content will be too high for reflow soldering.

In case of moisture absorption, the devices will recover to the former condition by drying under the following condition:
- 192 h at 40 °C + 5 °C / - 0 °C and < 5 % RH (dry air / nitrogen) or
- 96 h at 60 °C + 5 °C and < 5 % RH for all device containers or
- 24 h at 100 °C + 5 °C not suitable for reel or tubes.

An EIA JEDEC standard JESD22-A112 level 2a label is included on all dry bags.

Example of JESD22-A112 level 2a label

ESD PRECAUTION
Proper storage and handling procedures should be followed to prevent ESD damage to the devices especially when they are removed from the antistatic shielding bag. Electro-static sensitive devices warning labels are on the packaging.

VISHAY SEMICONDUCTORS STANDARD BAR CODE LABELS
The Vishay Semiconductors standard bar code labels are printed at final packing areas. The labels are on each packing unit and contain Vishay Semiconductors specific data.
Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay’s knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer’s responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer’s technical experts. Product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

© 2021 VISHAY INTERTECHNOLOGY, INC. ALL RIGHTS RESERVED