VLMU3100



Vishay Semiconductors

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 <u>www.vishay.com/doc?99912</u>

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 | | | | | | | | | | | | | | |
|---------------|-------------|------|--------------------|-------|---------------------------|------|------|---------------------------|------------------------|------|------|---------------------------|------------|-------|
| PART | COLOR | | NT INTE (mW/sr) | NSITY | at I _F (mA) | | | at I _F (mA) | FORWARD VOLTAGE (V) | | | at I _F (mA) | TECHNOLOGY | |
| | | MIN. | TYP. | MAX. | (11)(4) | MIN. | TYP. | MAX. | | MIN. | TYP. | MAX. | (111A) | |
| VLMU3100-GS08 | Ultraviolet | 1.8 | 2.5 | 3 | 20 | 400 | 405 | 410 | 20 | 2.8 | 3.2 | 3.8 | 20 | InGaN |

| ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified) VLMU3100 | | | | | | |
|---|------------------------|------------------|-------------|------|--|--|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT | | |
| Forward current | | I _F | 30 | mA | | |
| Surge forward current | t _p ≤ 10 μs | I _{FSM} | 0.1 | A | | |
| Power dissipation | | P _{tot} | 120 | mW | | |
| Junction temperature | | Tj | +100 | °C | | |
| Operating temperature range | | T _{amb} | -40 to +80 | °C | | |
| Storage temperature range | | T _{stg} | -40 to +100 | °C | | |
| Solder temperature | | T _{sol} | 260/5 | °C/s | | |

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For technical questions, contact: LED@vishay.com

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| OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25 \text{ °C}$, unless otherwise specified) VLMU3100, ULTRAVIOLET | | | | | | |
|---|------------------------|----------------|------|------|------|-------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Radiant intensity | I _F = 20 mA | l _e | 1.8 | 2.5 | 3 | mW/sr |
| Radiant power | I _F = 20 mA | фе | - | 6.8 | - | mW |
| Peak wavelength | I _F = 20 mA | λρ | 400 | 405 | 410 | nm |
| Angle of half intensity | I _F = 20 mA | φ | - | ± 60 | - | deg |
| Forward voltage | I _F = 20 mA | V _F | 2.8 | 3.2 | 3.8 | V |
| Reverse current | V _R = 5 V | I _R | - | - | 10 | μA |

TYPICAL CHARACTERISTICS (Tamb = 25 °C, unless otherwise specified)

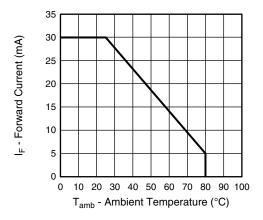


Fig. 1 - Forward Current vs. Ambient Temperature

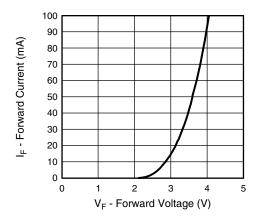
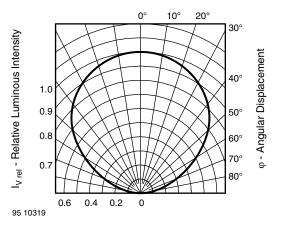


Fig. 2 - Forward Current vs. Forward Voltage





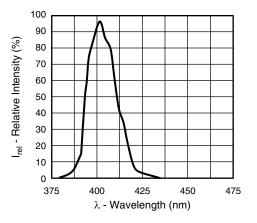


Fig. 4 - Relative Intensity vs. Wavelength

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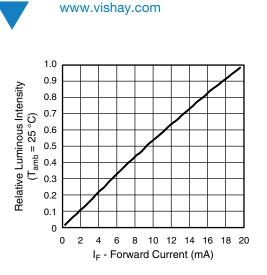


Fig. 5 - Specific Luminous Intensity vs. Forward Current

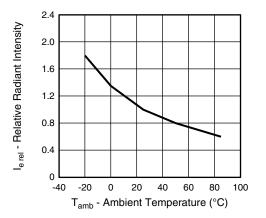
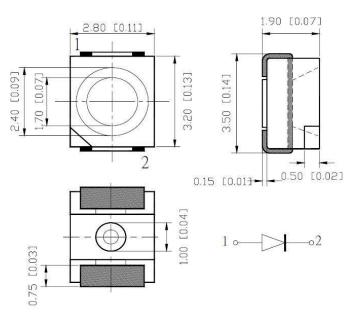


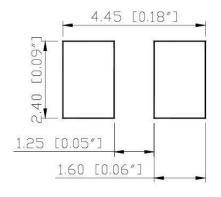
Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature

PACKAGE DIMENSIONS in millimeters

ISHA



SOLDER PAD LAYOUT



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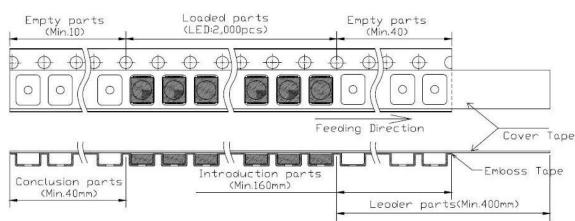
METHOD OF TAPING/POLARITY AND TAPE AND REEL

SMD LED (VLM3 - SERIES)

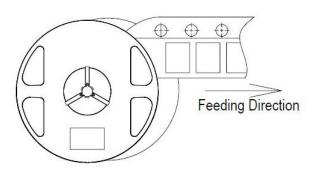
Vishay's LEDs in SMD packages are available in an antistatic 8 mm blister tape (in accordance with DIN IEC 40 (CO 564) for automatic component insertation. The blister

ARRANGEMENT OF TAPE

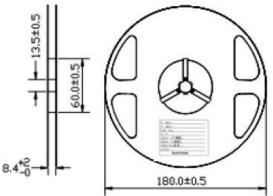
tape is a plastic strip with impressed component cavities, covered by a top tape.



FEEDING DIRECTION



DIMENSIONS OF REEL in millimeters



SOLDERING PROFILE

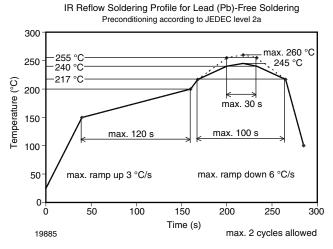
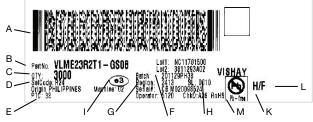


Fig. 7 - Vishay Lead (Pb)-Free Reflow Soldering Profile (according to J-STD-020C)

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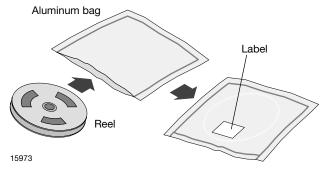
BAR CODE PRODUCT LABEL (example only)



- 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.

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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.

| This ba | Contains SITTVE DEVICES |
|--|---|
| 1. Shelf life in sealed bag 12 months at | <40°C and < 90% relative humidity (RH) |
| After this bag is opened devices that v vapor-phase reflow, or equivalent pro 260°C) must be: Mounted within 672 hours at b) Stored at ≤10% RH. | |
| 3. Devices require baking before mountial Humidity Indicator Card is >1 b) 2a or 2b is not met. | ing if: 0% when read at $23^{\circ}C \pm 5^{\circ}C$ or |
| If baking is required, devices may be 192 hours at 40°C + 5°C/-0°C ar 96 hours at 60±5°Cand <5%RH 24 hours at 100±5°C | nd <5%RH (dry air/nitrogen) or |
| Bag Seal Date:(If blank, see bar | code label) |
| Note: LEVEL defined by EIA | JEDEC Standard JESD22-A113 |

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.

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