RoHS

HALOGEN FREE

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(5-2008)



## 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 3
- ESD-withstand voltage: Up to 1 kV according to JESD22-A114-B
- Material categorization: For definitions of compliance please see <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

#### **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	RADIANT INTENSITY (mW/sr)		at I <sub>F</sub>	WAVELENGTH (nm)		at I <sub>F</sub> (mA)	FORWARD VOLTAGE (V)		at I <sub>F</sub>	TECHNOLOGY			
		MIN.	TYP.	MAX.	(IIIA)	MIN.	TYP.	MAX.	(IIIA)	MIN.	TYP.	MAX.	(IIIA)	1
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 <sub>amb</sub> = 25 °C, unless otherwise specified) VLMU3100									
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT					
Forward current		I <sub>F</sub>	30	mA					
Surge forward current	t <sub>p</sub> ≤ 10 μs	I <sub>FSM</sub>	0.1	А					
Power dissipation		P <sub>tot</sub>	120	mW					
Junction temperature		Tj	+100	°C					
Operating temperature range		T <sub>amb</sub>	-40 to +80	°C					
Storage temperature range		T <sub>stg</sub>	-40 to +100	°C					
Solder temperature		T <sub>sol</sub>	260/5	°C/s					

OPTICAL AND ELECTRICAL CHARACTERISTICS (T <sub>amb</sub> = 25 °C, unless otherwise specified) VLMU3100, ULTRAVIOLET								
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT		
Radiant intensity	I <sub>F</sub> = 20 mA	l <sub>e</sub>	1.8	2.5	3	mW/sr		
Radiant power	I <sub>F</sub> = 20 mA	φ <sub>e</sub>	-	6.8	-	mW		
Peak wavelength	I <sub>F</sub> = 20 mA	$\lambda_{p}$	400	405	410	nm		
Angle of half intensity	I <sub>F</sub> = 20 mA	φ	-	± 60	-	deg		
Forward voltage	I <sub>F</sub> = 20 mA	V <sub>F</sub>	2.8	3.2	3.8	V		
Reverse current	V <sub>R</sub> = 5 V	I <sub>R</sub>	-	-	10	μΑ		

### TYPICAL CHARACTERISTICS (T<sub>amb</sub> = 25 °C, unless otherwise specified)

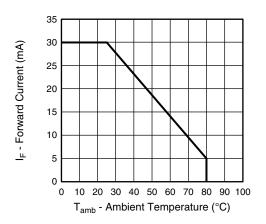


Fig. 1 - Forward Current vs. Ambient Temperature

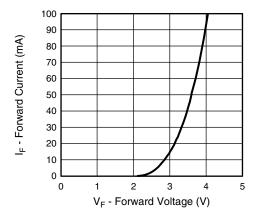


Fig. 2 - Forward Current vs. Forward Voltage

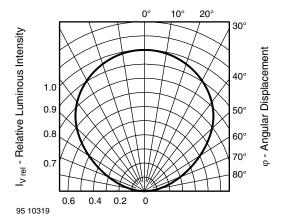


Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

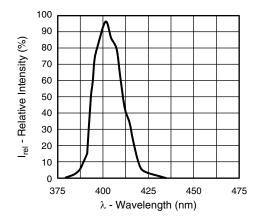
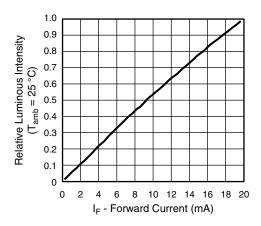


Fig. 4 - Relative Intensity vs. Wavelength





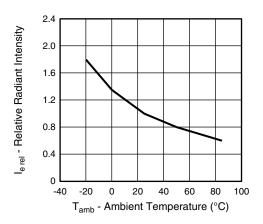
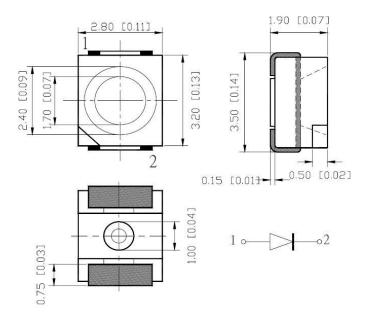
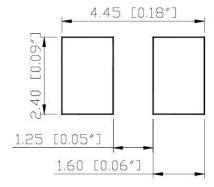


Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature

#### **PACKAGE DIMENSIONS** in millimeters



## **SOLDER PAD LAYOUT**



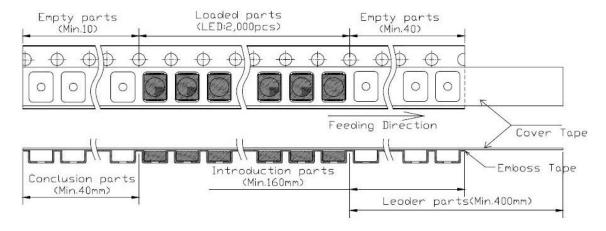
#### **METHOD OF TAPING/POLARITY AND TAPE AND REEL**

#### SMD LED (VLM3 - SERIES)

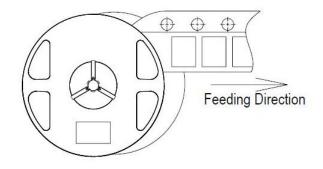
Vishay's LEDs in SMD packages are available in an antistatic 8 mm blister tape (in accordance with DIN IEC 40 (CO 564) for automatic component insertation. The blister

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

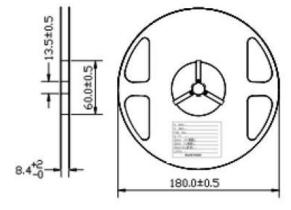
#### ARRANGEMENT OF TAPE



#### **FEEDING DIRECTION**



#### **DIMENSIONS OF REEL** in millimeters



#### **SOLDERING PROFILE**

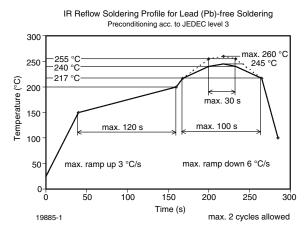
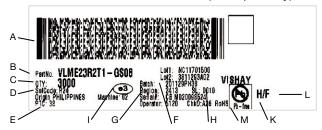


Fig. 7 - Vishay Lead (Pb)-free Reflow Soldering Profile (acc. to J-STD-020C)



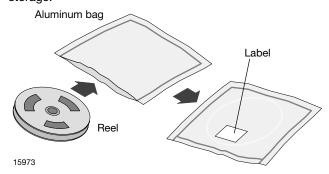
#### BAR CODE PRODUCT LABEL (example only)



- 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.

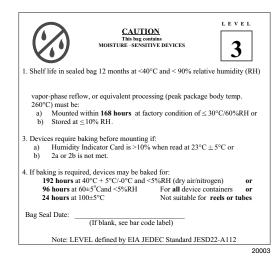
After more than 168 h under these conditions moisture content will be too high for reflow soldering.

In case of moisture absorption, the devices will recover to the former condition by drying under the following condition: 192 h at  $40 \,^{\circ}\text{C} + 5 \,^{\circ}\text{C} / - 0 \,^{\circ}\text{C}$  and  $< 5 \,^{\circ}\text{RH}$  (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 3 label is included on all dry bags.



Example of JESD22-A112 level 3 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.



## **Legal Disclaimer Notice**

Vishay

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Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

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