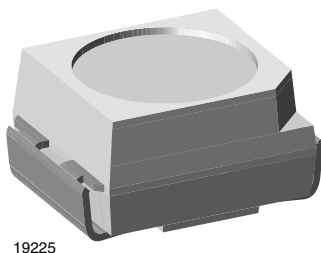


## UV SMD LED PLCC-2



19225

### 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:  $\pm 60^\circ$
- 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](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

### 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> (mA)	WAVELENGTH (nm)			at I <sub>F</sub> (mA)	FORWARD VOLTAGE (V)			at I <sub>F</sub> (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
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	A
Power dissipation		P <sub>tot</sub>	120	mW
Junction temperature		T <sub>j</sub>	+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** ( $T_{amb} = 25^{\circ}\text{C}$ , unless otherwise specified)  
**VLMU3100, ULTRAVIOLET**

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Radiant intensity	$I_F = 20\text{ mA}$	$I_e$	1.8	2.5	3	mW/sr
Radiant power	$I_F = 20\text{ mA}$	$\phi_e$	-	6.8	-	mW
Peak wavelength	$I_F = 20\text{ mA}$	$\lambda_p$	400	405	410	nm
Angle of half intensity	$I_F = 20\text{ mA}$	$\varphi$	-	$\pm 60$	-	deg
Forward voltage	$I_F = 20\text{ mA}$	$V_F$	2.8	3.2	3.8	V
Reverse current	$V_R = 5\text{ V}$	$I_R$	-	-	10	$\mu\text{A}$

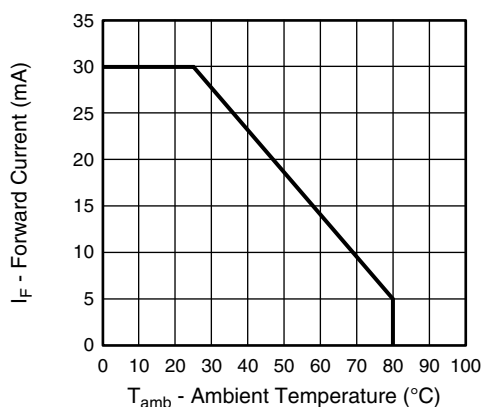
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Forward Current vs. Ambient Temperature

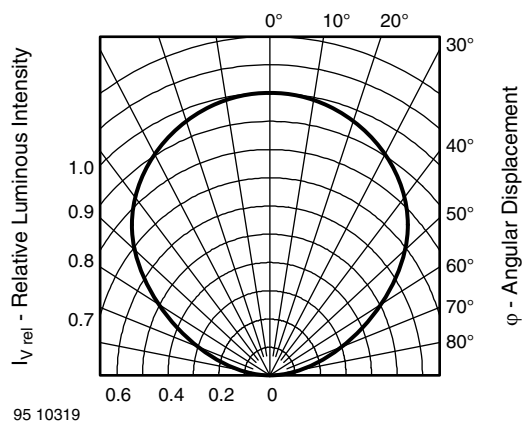


Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

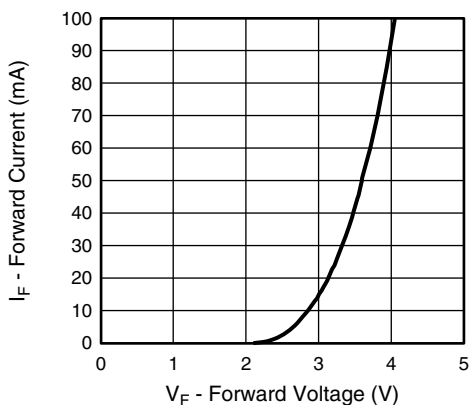


Fig. 2 - Forward Current vs. Forward Voltage

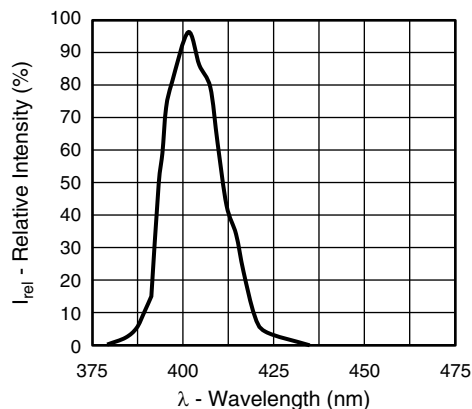


Fig. 4 - Relative Intensity vs. Wavelength

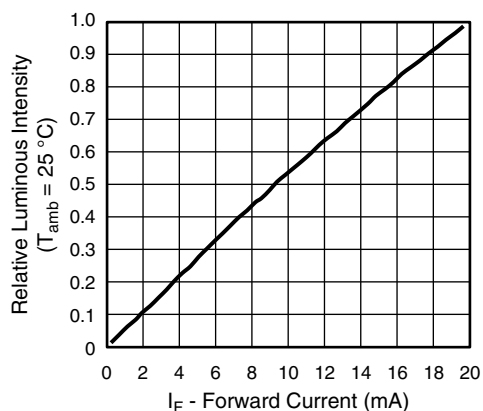


Fig. 5 - Specific Luminous Intensity vs. Forward Current

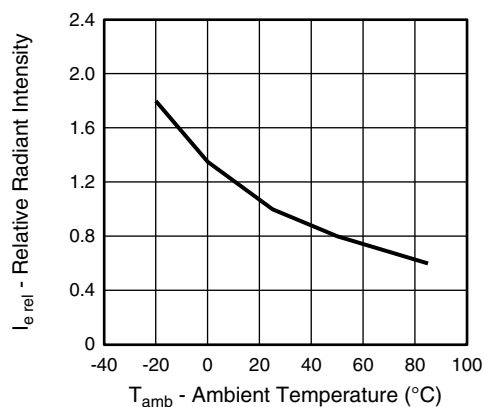
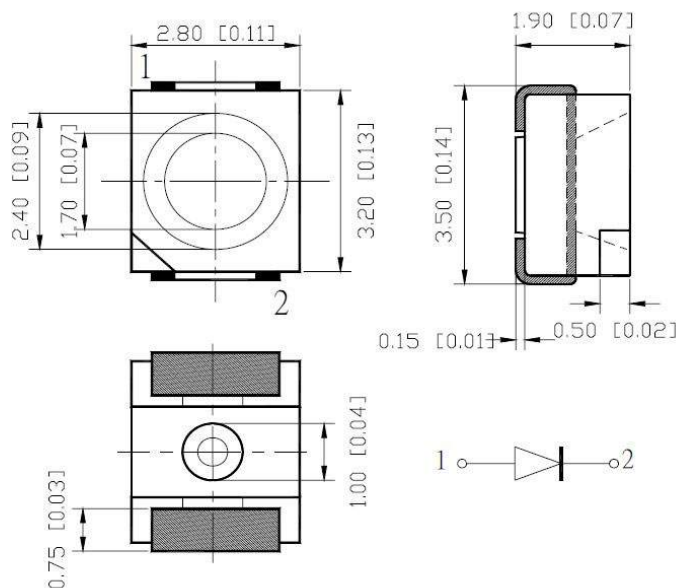
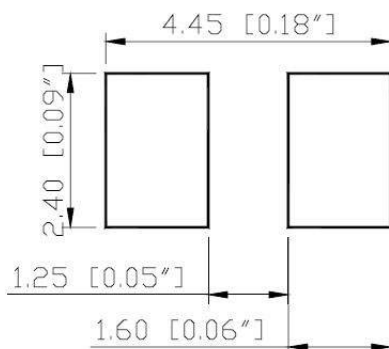


Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature

### PACKAGE DIMENSIONS in millimeters



### SOLDER PAD LAYOUT



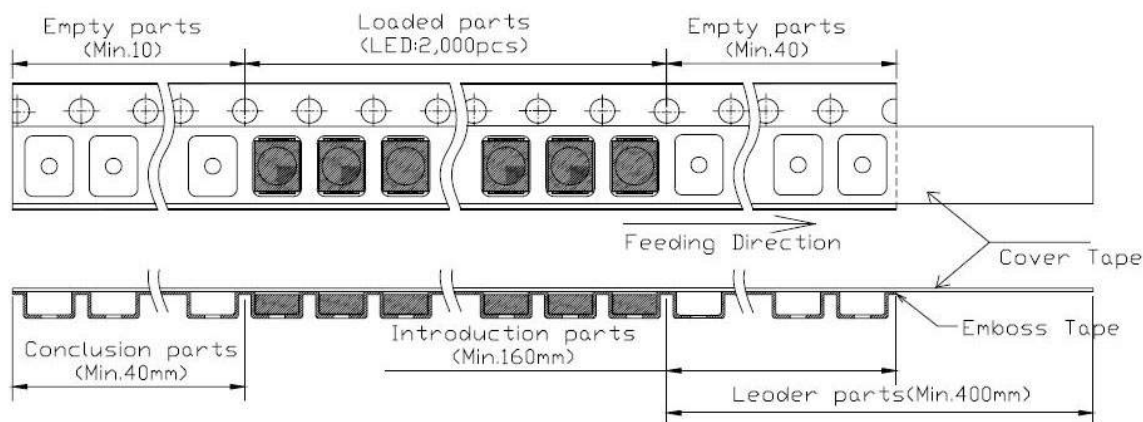
## METHOD OF TAPING/POLARITY AND TAPE AND REEL

### SMD LED (VLM3 - SERIES)

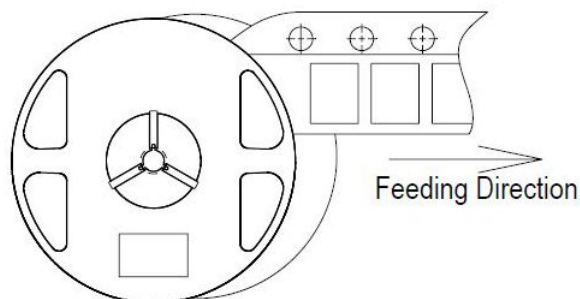
Vishay's LEDs in SMD packages are available in an antistatic 8 mm blister tape (in accordance with DIN IEC 40 (CO 564) for automatic component insertation. The blister

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

### ARRANGEMENT OF TAPE

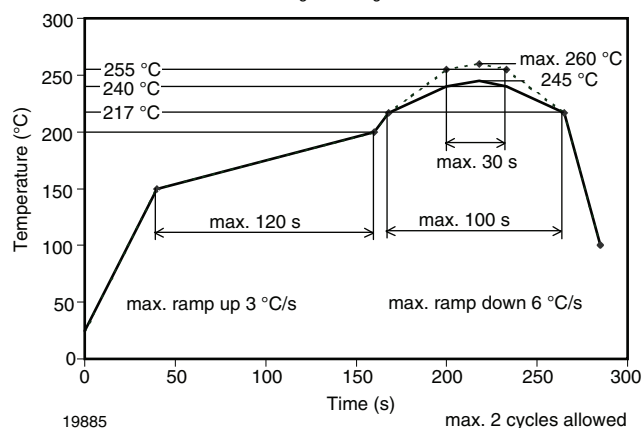


### FEEDING DIRECTION



### SOLDERING PROFILE

IR Reflow Soldering Profile for Lead (Pb)-Free Soldering  
Preconditioning according to JEDEC level 2a



### DIMENSIONS OF REEL in millimeters

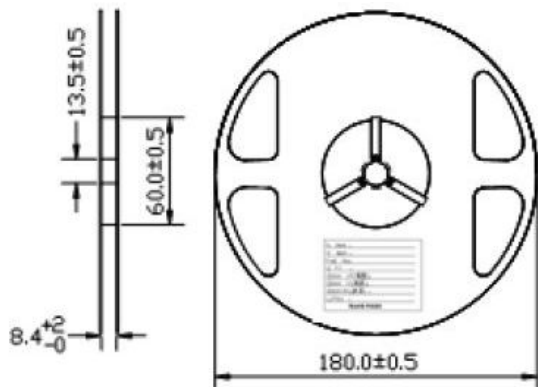


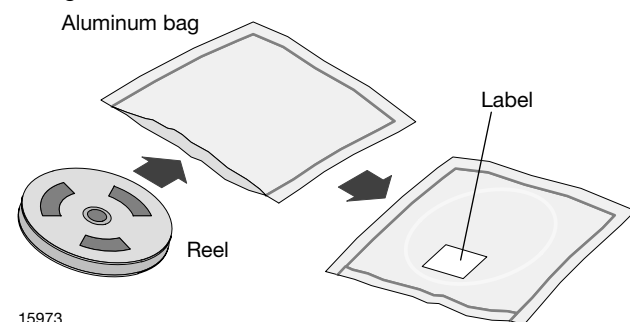
Fig. 7 - Vishay Lead (Pb)-Free Reflow Soldering Profile  
(according to J-STD-020C)

**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.



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**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.

CAUTION		LEVEL
This bag contains		
MOISTURE-SENSITIVE DEVICES		
		<b>2a</b>
1. Shelf life in sealed bag 12 months at <40°C and < 90% relative humidity (RH)		
2. After this bag is opened devices that will be subjected to infrared reflow, vapor-phase reflow, or equivalent processing (peak package body temp. 260°C) must be:		
a) Mounted within <b>672 hours</b> at factory condition of ≤ 30°C/60%RH or		
b) Stored at ≤ 10% RH.		
3. Devices require baking before mounting if:		
a) Humidity Indicator Card is >10% when read at 23°C ± 5°C or		
b) 2a or 2b is not met.		
4. If baking is required, devices may be baked for:		
<b>192 hours</b> at 40°C + 5°C/-0°C and <5%RH (dry air/nitrogen)		or
<b>96 hours</b> at 60±5°C and <5%RH		For all device containers
<b>24 hours</b> at 100±5°C		Not suitable for <b>reels or tubes</b>
Bag Seal Date: _____		
(If blank, see bar code label)		
Note: LEVEL defined by EIA JEDEC Standard JESD22-A113		

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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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