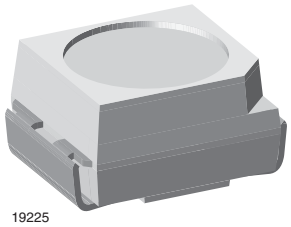
Standard SMD LED PLCC-2


19225

FEATURES

- SMD LED with exceptional brightness
- Luminous intensity categorized
- Compatible with automatic placement equipment
- EIA and ICE standard package
- Compatible with IR reflow, vapor phase and wave solder processes according to CECC 00802 and J-STD-020
- Available in 8 mm tape
- Low profile package
- Non-diffused lens: excellent for coupling to light pipes and backlighting
- Low power consumption
- Luminous intensity ratio in one packaging unit $I_{Vmax.}/I_{Vmin.} \leq 1.6$
- Preconditioning: according to JEDEC level 2a
- ESD-withstand voltage: up to 1 kV according to JESD22-A114-B
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

DESCRIPTION

The package of the VLMB31..-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 epoxy.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: SMD PLCC-2
- Product series: standard
- Angle of half intensity: ± 60°

APPLICATIONS

- Automotive: backlighting in dashboards and switches
- Telecommunication: indicator and backlighting in telephone and fax
- Indicator and backlight for audio and video equipment
- Indicator and backlight in office equipment
- Flat backlight for LCDs, switches and symbols
- General use

PARTS TABLE

PART	COLOR, LUMINOUS INTENSITY	TECHNOLOGY
VLMB31J2L2-GS08	Blue, I_V = (5.6 to 18) mcd	GaN on SiC
VLMB31J2L2-GS18	Blue, I_V = (5.6 to 18) mcd	GaN on SiC
VLMB31K2L2-GS08	Blue, I_V = (9 to 18) mcd	GaN on SiC
VLMB31K2L2-GS18	Blue, I_V = (9 to 18) mcd	GaN on SiC
VLMB31J2K2-GS08	Blue, I_V = (5.6 to 11.2) mcd	GaN on SiC
VLMB31J2K2-GS18	Blue, I_V = (5.6 to 11.2) mcd	GaN on SiC

** Please see document “Vishay Material Category Policy”: www.vishay.com/doc?99902

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)
VLMB31..

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage [1]		V_R	5	V
DC forward current	$T_{amb} \leq 60$ °C	I_F	20	mA
Surge forward current	$t_p \leq 10$ µs	I_{FSM}	0.2	A
Power dissipation		P_V	84	mW
Junction temperature		T_j	100	°C
Operating temperature range		T_{amb}	- 40 to + 100	°C
Storage temperature range		T_{stg}	- 40 to + 100	°C
Thermal resistance junction/ ambient	Mounted on PC board (pad size > 16 mm^2)	R_{thJA}	350	K/W

Note:
[1] Driving LED in reverse direction is suitable for short term application

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
VLMB31.., BLUE

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity [1]	I_F = 10 mA	VLMB31J2L2	I_V	5.6		18	mcd
		VLMB31K2L2	I_V	9		18	mcd
		VLMB31J2K2	I_V	5.6		11.2	mcd
Dominant wavelength	I_F = 10 mA		λ_d	458	466	472	nm
Peak wavelength	I_F = 10 mA		λ_p		428		nm
Angle of half intensity	I_F = 10 mA		φ		± 60		deg
Forward voltage	I_F = 20 mA		V_F		3.9	4.5	V
Reverse voltage	I_R = 10 µA		V_R	5			V
Temperature coefficient of V_F	I_F = 10 mA		TC_V		- 4		mV/K
Temperature coefficient of I_V	I_F = 10 mA		TC_I		- 0.4		%/K

Note:
[1] In one packing unit $I_{Vmax.}/I_{Vmin.} \leq 1.6$

LUMINOUS INTENSITY CLASSIFICATION

GROUP	LIGHT INTENSITY (mcd)		
STANDARD	OPTIONAL	MIN.	MAX.
J	2	5.6	7.1
K	1	7.1	9
	2	9	11.2
L	1	11.2	14
	2	14	18

Note:
Luminous intensity is tested at a current pulse duration of 25 ms and an accuracy of ± 11 %.
The above type numbers represent the order groups which include only a few brightness groups. Only one group will be shipped on each reel (there will be no mixing of two groups on each reel).
In order to ensure availability, single brightness groups will not be orderable.
In a similar manner for colors where wavelength groups are measured and binned, single wavelength groups will be shipped on any one reel.
In order to ensure availability, single wavelength groups will not be orderable.

COLOR CLASSIFICATION

GROUP	BLUE	
	DOM. WAVELENGTH (nm)	
	MIN.	MAX.
2	458	464
3	462	468
4	466	472

Note:
Wavelengths are tested at a current pulse duration of 25 ms.

CROSSING TABLE

VISHAY	OSRAM
VLMB31J2L2	LBT676J2L2
VLMB31K2L2	LBT676K2L2
VLMB31J2K2	LBT676J2K2

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

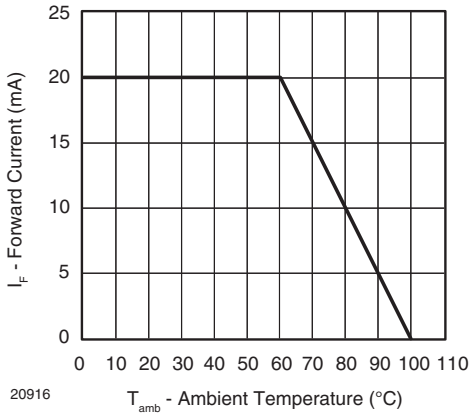


Figure 1. Forward Current vs. Ambient Temperature for GaN

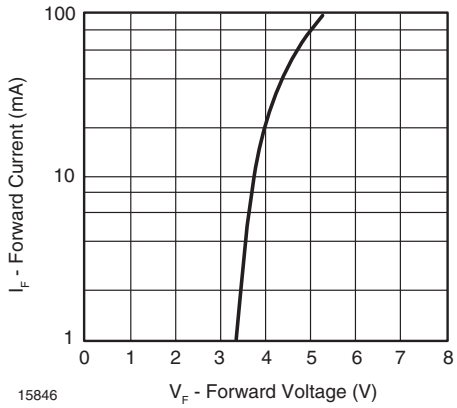


Figure 4. Forward Current vs. Forward Voltage

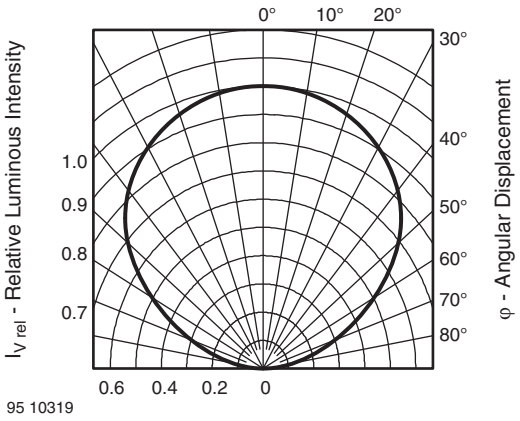


Figure 2. Relative Luminous Intensity

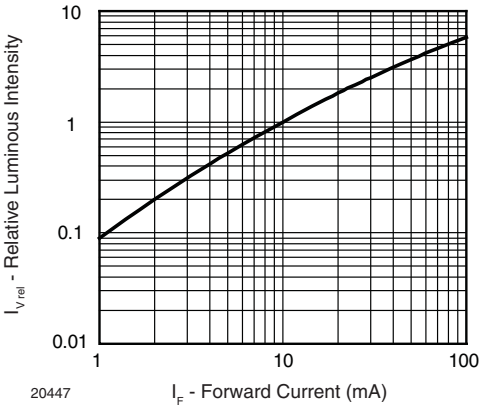


Figure 5. Specific Luminous Flux vs. Forward Current

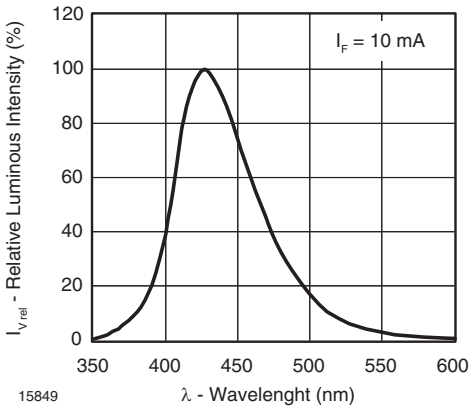


Figure 3. Relative Intensity vs. Wavelength

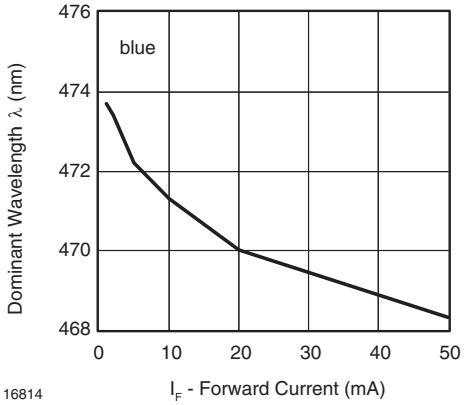
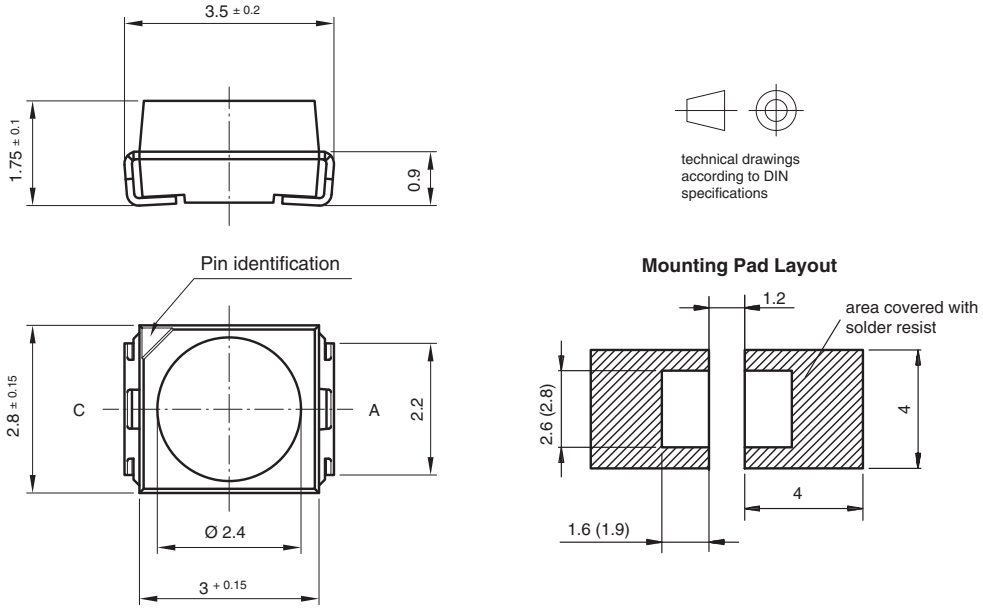


Figure 6. Dominant Wavelength vs. Forward Current

PACKAGE DIMENSIONS in millimeters

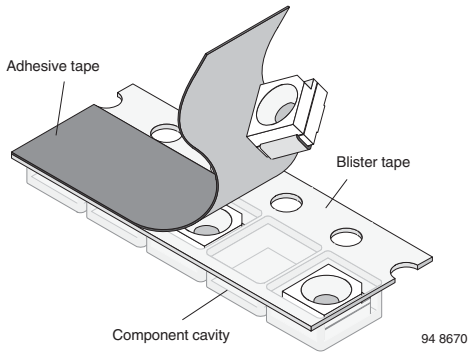


Drawing-No.: 6.541-5067.01-4
Issue: 5; 04.11.08
20541

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



TAPING OF VLM.3..

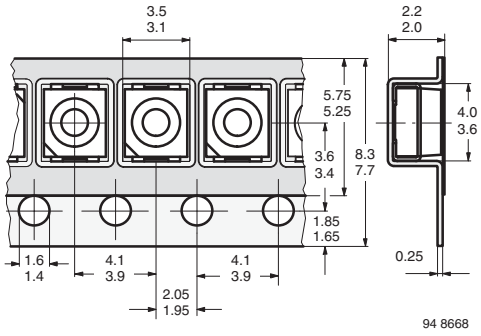


Figure 7. Tape Dimensions in mm for PLCC-2

For technical support, please contact: LED@vishay.com

REEL PACKAGE DIMENSION IN MILLIMETERS FOR SMD LEDS, TAPE OPTION GS08 (= 1500 PCS.)

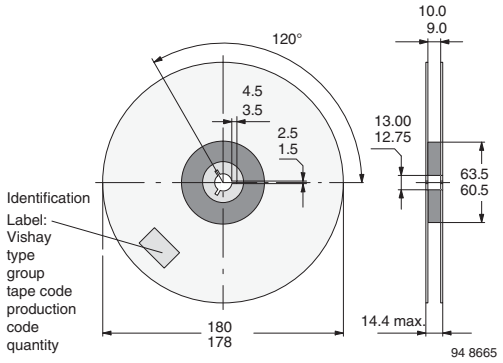


Figure 8. Reel Dimensions - GS08

REEL PACKAGE DIMENSION IN MILLIMETERS FOR SMD LEDS, TAPE OPTION GS18 (= 8000 PCS.) PREFERRED

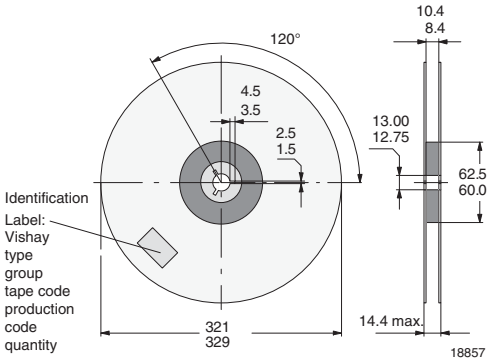


Figure 9. Reel Dimensions - GS18

SOLDERING PROFILE

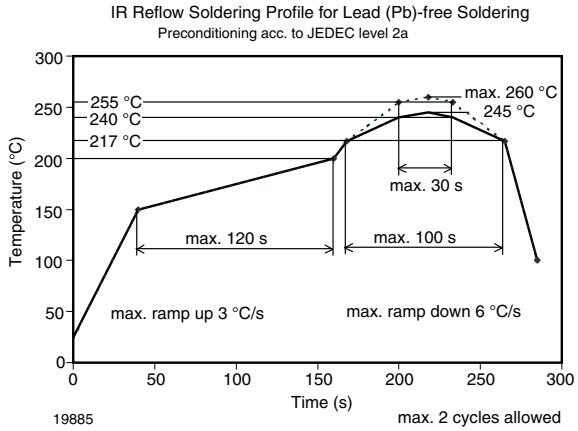


Figure 10. Vishay Lead (Pb)-free Reflow Soldering Profile (acc. to J-STD-020)

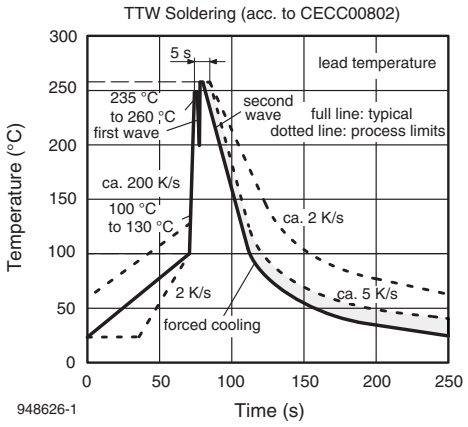
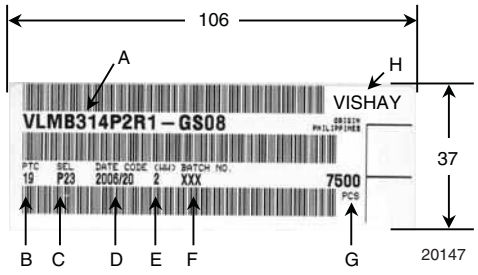


Figure 11. Double Wave Soldering of Opto Devices (all Packages)

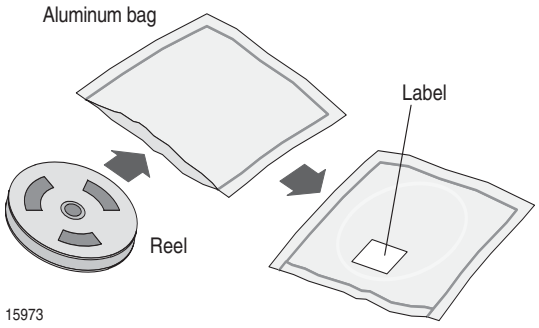
BAR CODE PRODUCT LABEL EXAMPLE:



A) Type of component
B) Manufacturing Plant
C) SEL - selection code (bin):
e.g.: P2 = code for luminous intensity group
3 = code for color group
D) Date code year/week
E) Day code (e.g. 2: Tuesday)
F) Batch no.
G) Total quantity
H) Company code

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.

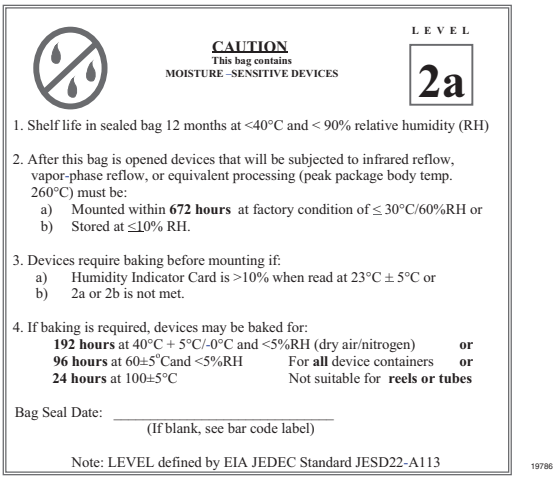
In case of moisture absorption, the devices will recover to the former condition by drying under the following condition:

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.

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