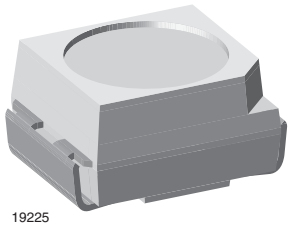
Standard SMD LED PLCC-2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FEATURES

- High efficient InGaN technology
- EIA and ICE standard package
- Compatible with IR reflow, vapor phase and wave solder processes acc. to CECC 00802 and J-STD-020
- Available in 8 mm tape reel
- Preconditioning: according to JEDEC level 2a
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- ESD-withstand voltage: up to 2 kV HBM according to JESD22-A114-B
- AEC-Q101 qualified

DESCRIPTION

This device has been designed to meet the increasing demand for blue SMD LED.

The package of the VLMB41.. is the PLCC-2.

It consists of a lead frame which is embedded in a white thermoplast. The reflector inside this package is filled 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
- Backlighting for audio and video equipment
- Backlighting in office equipment
- Indoor and outdoor message boards
- Flat backlight for LCDs, switches and symbols
- Illumination purposes, alternative to incandescent lamps
- General use

PARTS TABLE

PART	COLOR, LUMINOUS INTENSITY	TECHNOLOGY
VLMB41P1Q2-GS08	Blue, I_V = (45 to 112) mcd	InGaN on Sapphire
VLMB41P1Q2-GS18	Blue, I_V = (45 to 112) mcd	InGaN on Sapphire
VLMB41P2Q2-GS08	Blue, I_V = (56 to 112) mcd	InGaN on Sapphire
VLMB41P2Q2-GS18	Blue, I_V = (56 to 112) mcd	InGaN on Sapphire

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

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)
VLMB41..

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
DC forward current	$T_{amb} \leq 80$ °C	I_F	20	mA
Surge forward current	$t_p \leq 10$ µs	I_{FSM}	0.1	A
Power dissipation		P_V	84	mW
Junction temperature		T_j	110	°C
Storage temperature range		T_{stg}	- 40 to + 100	°C
Operating temperature range		T_{amb}	- 40 to + 100	°C
Thermal resistance junction/ ambient	Mounted on PC board (pad size > 16 mm^2)	R_{thJA}	360	K/W

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
VLMB41.., BLUE

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity	I_F = 10 mA	VLMB41P1Q2	I_V	45		112	mcd
		VLMB41P2Q2	I_V	56		112	mcd
Dominant wavelength	I_F = 10 mA		λ_d	462		476	nm
Peak wavelength	I_F = 10 mA		λ_p		464		nm
Angle of half intensity	I_F = 10 mA		φ		± 60		deg
Forward voltage	I_F = 20 mA		V_F		3.2	4.2	V
Temperature coefficient of V_F	I_F = 10 mA		TC_{VF}		- 3		mV/K
Temperature coefficient of I_V	I_F = 10 mA		TC_{IV}		- 0.4		%/K

Note:
Not designed for reverse operation

LUMINOUS INTENSITY CLASSIFICATION

GROUP	LIGHT INTENSITY (mcd)		
STANDARD	OPTIONAL	MIN.	MAX.
P	1	45	56
	2	56	71
Q	1	71	90
	2	90	112

Note:
Luminous intensity is tested at a current pulse duration of 25 ms and an accuracy of ± 11 %.
These 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 are 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 are not be orderable.

COLOR CLASSIFICATION

GROUP	BLUE	
	DOM. WAVELENGTH (nm)	
	MIN.	MAX.
3	462	468
4	466	472
5	470	476

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

CROSSING TABLE

VISHAY	OSRAM
VLMB41..	LBT67C

For technical support, please contact: LED@vishay.com
Document Number 81641
Rev. 1.5, 08-Jun-11

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

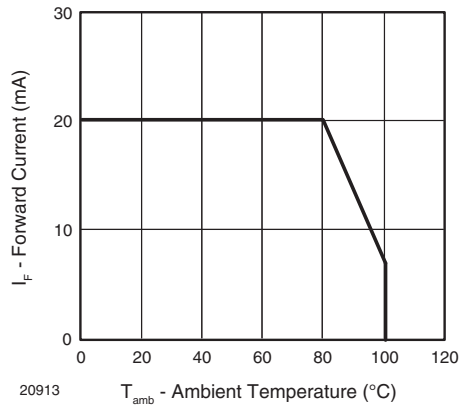


Figure 1. Forward Current vs. Ambient Temperature

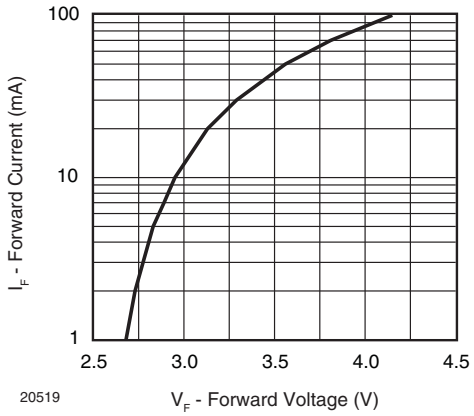


Figure 4. Forward Current vs. Forward Voltage

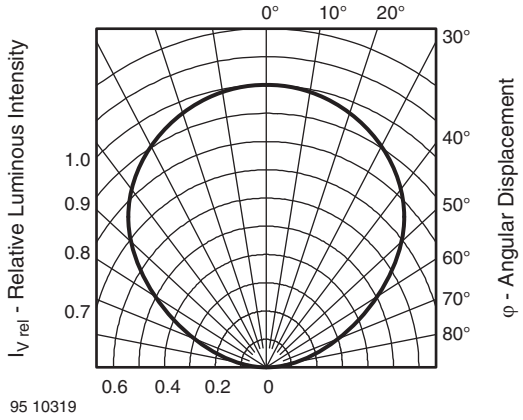


Figure 2. Rel. Luminous Intensity vs. Angular Displacement

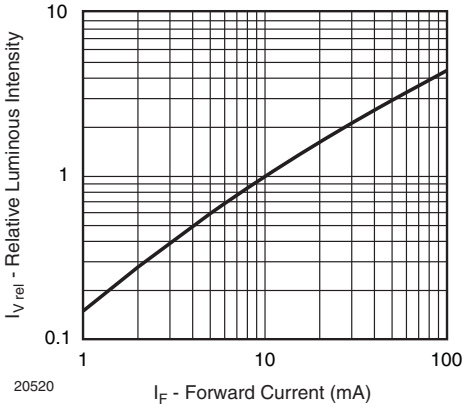


Figure 5. Relative Luminous Intensity vs. Forward Current

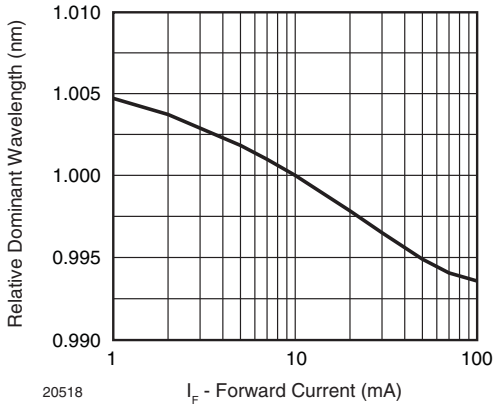


Figure 3. Relative Dominant Wavelength vs. Forward Current

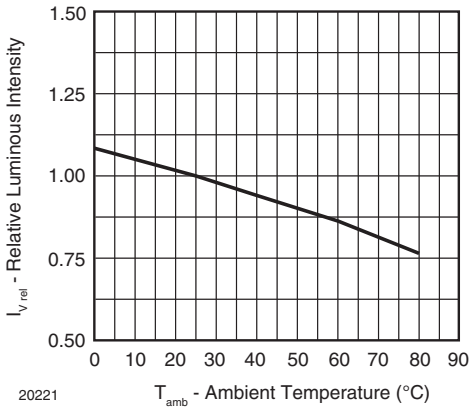


Figure 6. Rel. Luminous Intensity vs. Ambient Temperature

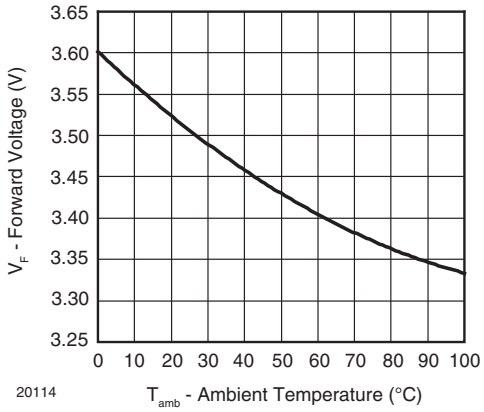
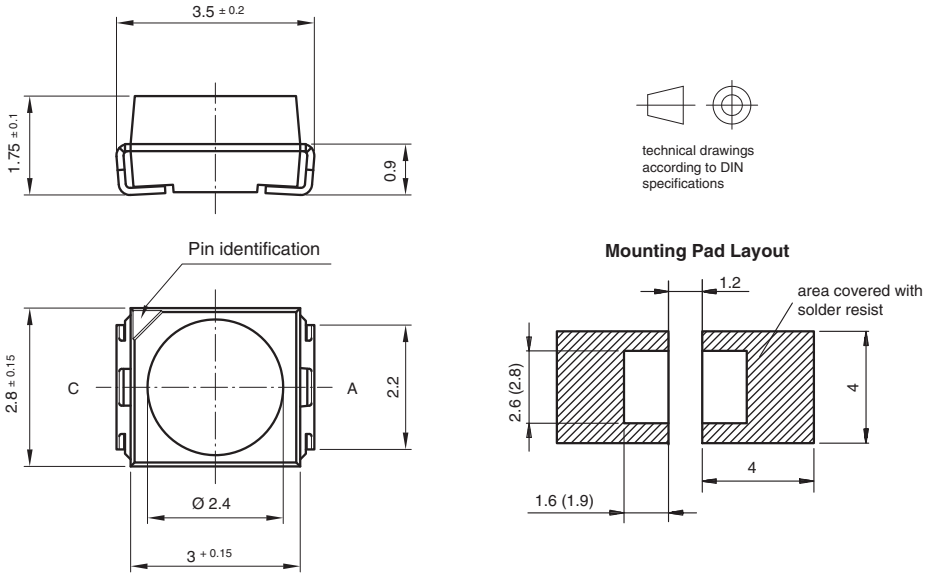


Figure 7. Forward Voltage vs. Ambient Temperature

PACKAGE DIMENSIONS in millimeters



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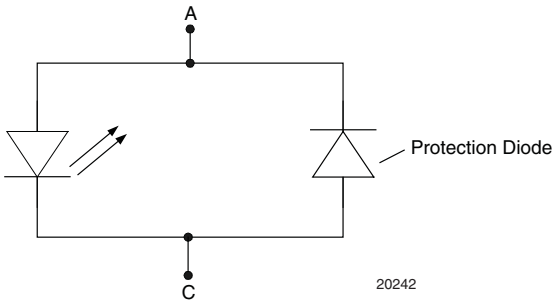

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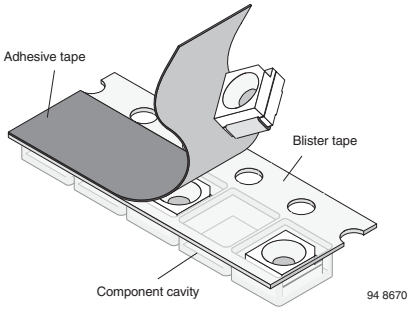
METHOD OF TAPING/POLARITY AND TAPE AND REEL

SMD LED (VLM.3.../.4... - 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.../.4...

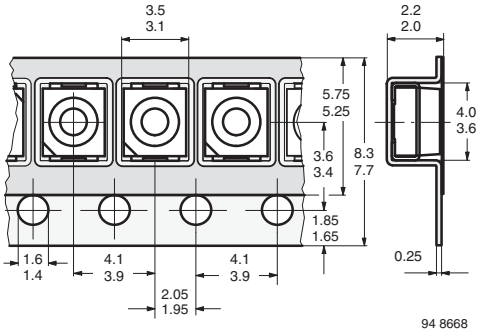


Figure 8. Tape Dimensions in mm for PLCC-2

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

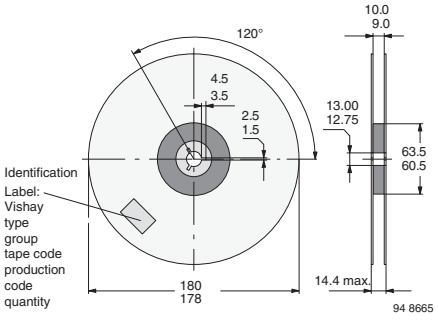


Figure 9. Reel Dimensions - GS08

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

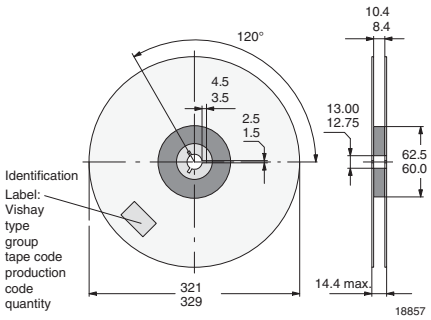


Figure 10. Reel Dimensions - GS18

SOLDERING PROFILE

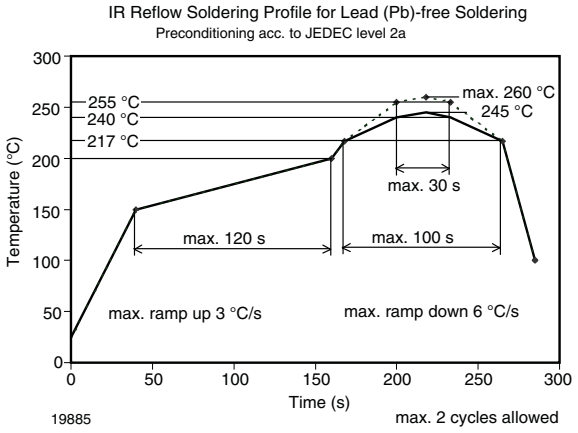


Figure 11. Vishay Lead (Pb)-free Reflow Soldering Profile (acc. to J-STD-020)

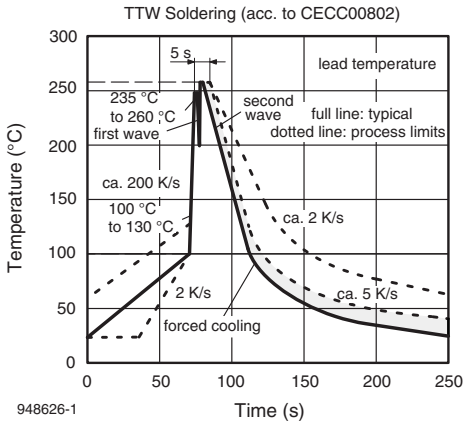
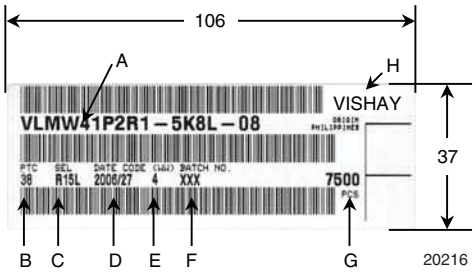


Figure 12. Double Wave Soldering of Opto Devices (all Packages)

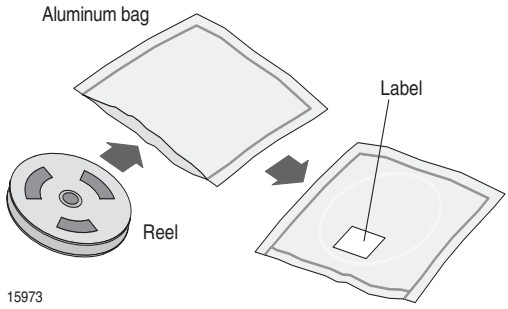
BAR CODE PRODUCT LABEL EXAMPLE:



A) Type of component
B) Manufacturing plant
C) SEL - selection code (bin):
e.g.: R1 = code for luminous intensity group
5L = code for chrom. coordinate group
D) Date code year/week
E) Day code (e.g. 4: Thursday)
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.

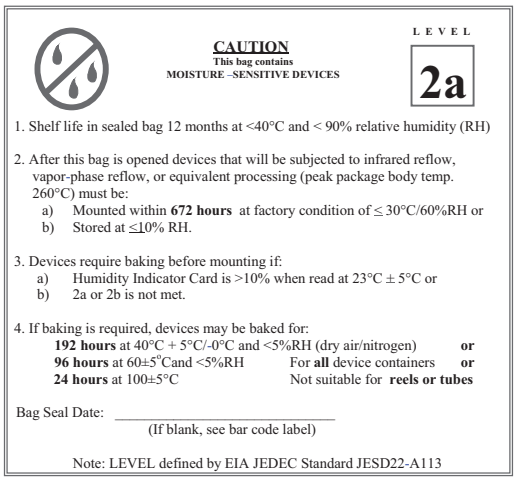
In case of moisture absorption, the devices will recover to the former condition by drying under the following condition:

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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