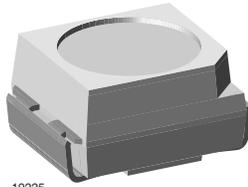


## Standard SMD LED PLCC-2



19225

### DESCRIPTION

This device has been designed to meet the increasing demand for AlInGaP technology.

The package of the VLMK310. is the PLCC-2 (equivalent to a size B tantalum capacitor).

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:  $\pm 60^\circ$

### 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-020B
- 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  $I_{Vmax}/I_{Vmin} \leq 1.6$
- Lead (Pb)-free device
- Preconditioning acc. to JEDEC level 2a
- ESD-withstand voltage: up to 2 kV according to JESD22-A114-B
- Automotive qualified AEC-Q101



### 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
VLMK3100-GS08	Red, $I_V > 11.2$ mcd	AllnGaP on GaAs
VLMK3100-GS18	Red, $I_V > 11.2$ mcd	AllnGaP on GaAs
VLMK3102-GS08	Red, $I_V = (22.4 \text{ to } 56)$ mcd	AllnGaP on GaAs
VLMK3102-GS18	Red, $I_V = (22.4 \text{ to } 56)$ mcd	AllnGaP on GaAs
VLMK3105-GS08	Red, $I_V = (35.5 \text{ to } 90)$ mcd	AllnGaP on GaAs
VLMK3105-GS18	Red, $I_V = (35.5 \text{ to } 90)$ mcd	AllnGaP on GaAs

ABSOLUTE MAXIMUM RATINGS <sup>1)</sup> VLMK310.				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage <sup>2)</sup>		$V_R$	5	V
DC Forward current	$T_{amb} \leq 85\text{ }^\circ\text{C}$	$I_F$	30	mA
Surge forward current	$t_p \leq 10\text{ }\mu\text{s}$	$I_{FSM}$	0.1	A
Power dissipation		$P_V$	80	mW
Junction temperature		$T_j$	125	$^\circ\text{C}$
Operating temperature range		$T_{amb}$	- 40 to + 100	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	- 40 to + 100	$^\circ\text{C}$
Thermal resistance junction/ambient	mounted on PC board (pad size > 16 mm <sup>2</sup> )	$R_{thJA}$	400	K/W

Note:

<sup>1)</sup>  $T_{amb} = 25\text{ }^\circ\text{C}$ , unless otherwise specified

<sup>2)</sup> Driving LED in reverse direction is suitable for short term application

OPTICAL AND ELECTRICAL CHARACTERISTICS <sup>1)</sup> VLMK310., RED							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>2)</sup>	$I_F = 10\text{ mA}$	VLMK3100	$I_V$	11.2	50		mcd
		VLMK3102	$I_V$	22.4		56	mcd
		VLMK3105	$I_V$	35.5		90	mcd
Dominant wavelength	$I_F = 10\text{ mA}$		$\lambda_d$		630		nm
Peak wavelength	$I_F = 10\text{ mA}$		$\lambda_p$		643		nm
Angle of half intensity	$I_F = 10\text{ mA}$		$\varphi$		$\pm 60$		deg
Forward voltage	$I_F = 20\text{ mA}$		$V_F$		1.9	2.6	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$		$V_R$	5			V
Junction capacitance	$V_R = 0, f = 1\text{ MHz}$		$C_j$		15		pF

Note:

<sup>1)</sup>  $T_{amb} = 25\text{ }^\circ\text{C}$ , unless otherwise specified

<sup>2)</sup> In one packing unit  $I_{Vmax}/I_{Vmin} \leq 2.0$

LUMINOUS INTENSITY CLASSIFICATION				
GROUP	LIGHT INTENSITY (mcd)			
	STANDARD	OPTIONAL	MIN.	MAX.
L	1		11.2	14.0
	2		14.0	18.0
M	1		18.0	22.4
	2		22.4	28.0
N	1		28.0	35.5
	2		35.5	45.0
P	1		45.0	56.0
	2		56.0	71.0
Q	1		71.0	90.0
	2		90.0	112.0
R	1		112.0	140.0
	2		140.0	180.0

Note:

Luminous intensity is tested at a current pulse duration of 25 ms and an accuracy of  $\pm 11\%$ .

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.

CROSSING TABLE	
VISHAY	OSRAM
VLMK3100	LST676
VLMK3102	LST676
VLMK3105	LST676

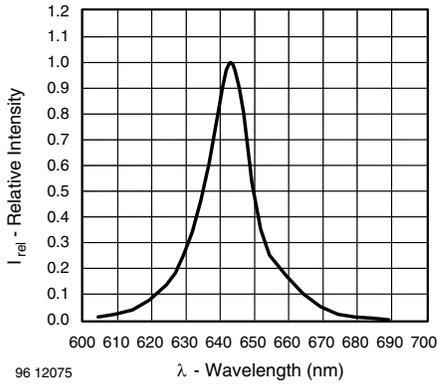


Figure 7. Relative Intensity vs. Wavelength

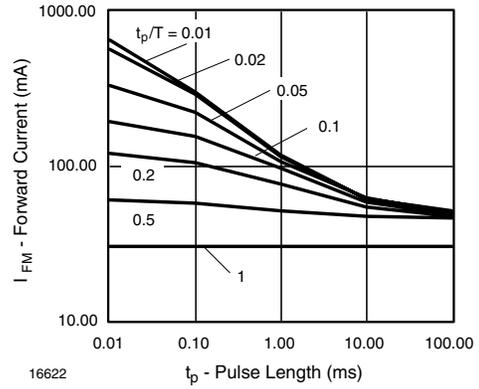


Figure 9. Permissible Forward Current vs. Pulse Length

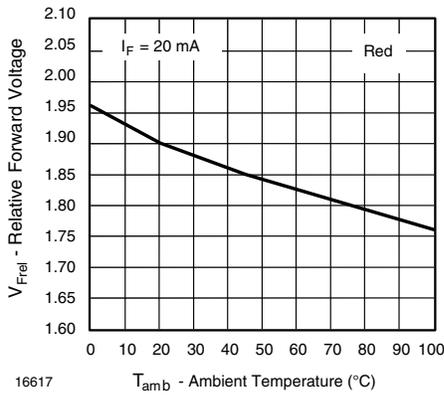
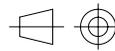
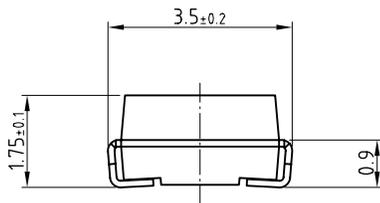
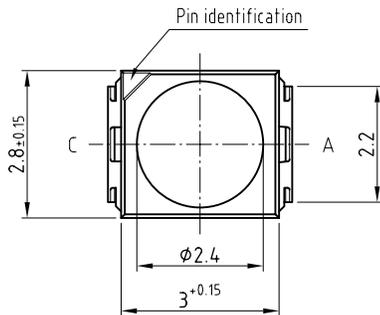


Figure 8. Forward Voltage vs. Ambient Temperature

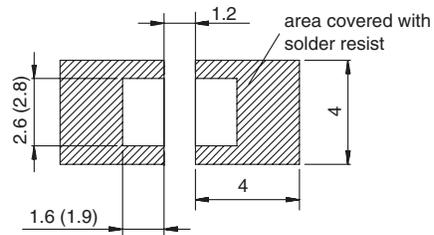
**PACKAGE DIMENSIONS** in millimeters



Technical drawings according to DIN specifications



**Mounting Pad Layout**



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 20541