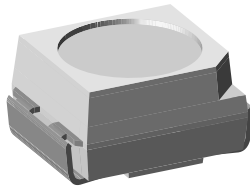


Standard SMD LED PLCC-2



94 8553

DESCRIPTION

This device has been designed for applications requiring narrow brightness and color selection.

The package of this device 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: $\pm 60^\circ$

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-020C
- Available in 8 mm tape
- Low profile package
- Non-diffused lens: excellent for coupling to light pipes and backlighting
- Low power consumption
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC
- 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



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
VLMD3100-GS08	Red, $I_V > 11.2$ mcd	GaAlAs on GaAs
VLMD3100-GS18	Red, $I_V > 11.2$ mcd	GaAlAs on GaAs
VLMD3101-GS08	Red, $I_V = (18 \text{ to } 45)$ mcd	GaAlAs on GaAs
VLMD3101-GS18	Red, $I_V = (18 \text{ to } 45)$ mcd	GaAlAs on GaAs
VLMD3105-GS08	Red, $I_V = (11.2 \text{ to } 28)$ mcd	GaAlAs on GaAs
VLMD3105-GS18	Red, $I_V = (11.2 \text{ to } 28)$ mcd	GaAlAs on GaAs
VLMD31L2N1-GS08	Red, $I_V = (14 \text{ to } 35.5)$ mcd	GaAlAs on GaAs
VLMD31L2N1-GS18	Red, $I_V = (14 \text{ to } 35.5)$ mcd	GaAlAs on GaAs
VLMD31L2P1-GS08	Red, $I_V = (14 \text{ to } 56)$ mcd	GaAlAs on GaAs
VLMD31L2P1-GS18	Red, $I_V = (14 \text{ to } 56)$ mcd	GaAlAs on GaAs
VLMD31M2P1-GS08	Red, $I_V = (22.4 \text{ to } 56)$ mcd	GaAlAs on GaAs
VLMD31M2P1-GS18	Red, $I_V = (22.4 \text{ to } 56)$ mcd	GaAlAs on GaAs

ABSOLUTE MAXIMUM RATINGS ¹⁾ VLMD31..				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage ²⁾		V_R	6	V
DC Forward current	$T_{amb} \leq 60\text{ }^\circ\text{C}$	I_F	30	mA
Surge forward current	$t_p \leq 10\text{ }\mu\text{s}$	I_{FSM}	0.5	A
Power dissipation		P_V	100	mW
Junction temperature		T_j	100	$^\circ\text{C}$
Operating temperature range		T_{amb}	- 40 to + 100	$^\circ\text{C}$
Storage temperature range		T_{stg}	- 40 to + 100	$^\circ\text{C}$
Soldering temperature	$t \leq 5\text{ s}$	T_{sd}	260	$^\circ\text{C}$
Thermal resistance junction/ambient	mounted on PC board (pad size > 16 mm ²)	R_{thJA}	400	K/W

Note:

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

²⁾ Driving LED in reverse direction is suitable for short term application

OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ VLMD31.., RED							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity ²⁾	$I_F = 10\text{ mA}$	VLMD3100	I_V	11.2			mcd
		VLMD3101	I_V	18		45	mcd
		VLMD3105	I_V	11.2		28	mcd
		VLMD31L2N1	I_V	14		35.5	mcd
		VLMD31L2P1	I_V	14		56	mcd
		VLMD31M2P1	I_V	22.4		56	mcd
Dominant wavelength	$I_F = 10\text{ mA}$		λ_d		648		nm
Peak wavelength	$I_F = 10\text{ mA}$		λ_p		650		nm
Angle of half intensity	$I_F = 10\text{ mA}$		φ		± 60		deg
Forward voltage	$I_F = 20\text{ mA}$		V_F		1.8	2.2	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$		V_R	6			V
Junction capacitance	$V_R = 0, f = 1\text{ MHz}$		C_j		7		pF
Temperature coefficient of V_F	$I_F = 20\text{ mA}$		TC_{V_F}		- 1.8		mV/K
Temperature coefficient of λ_d	$I_F = 10\text{ mA}$		TC_{λ_d}		0.05		nm/K

Note:

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

²⁾ In one packing unit $I_{Vmax}/I_{Vmin} \leq 1.6$

LUMINOUS INTENSITY CLASSIFICATION			
GROUP	LIGHT INTENSITY (mcd)		
STANDARD	OPTIONAL	MIN.	MAX.
J	1	4.5	5.6
	2	5.6	7.1
K	1	7.1	9
	2	9	11.2
L	1	11.2	14
	2	14	18
M	1	18	22.4
	2	22.4	28
N	1	28	35.5
	2	35.5	45
P	1	45	56

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
VLMD31L2N1	LHT674-L2N1
VLMD31L2P1	LHT674-L2P1
VLMD31M2P1	LHT674-M2P1

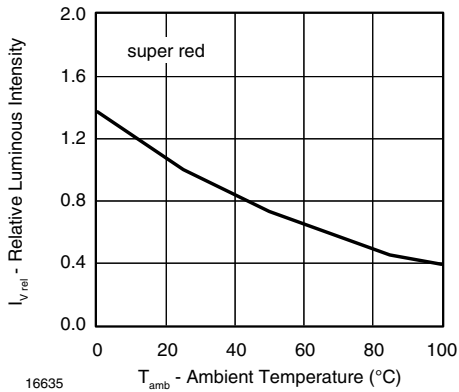


Figure 7. Rel. Luminous Intensity vs. Ambient Temperature

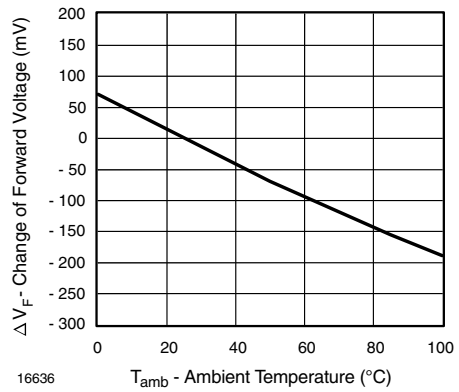


Figure 9. Change of Forward Voltage vs. Ambient Temperature

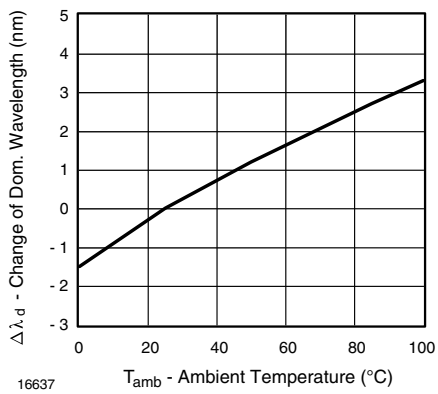
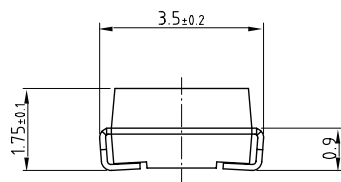
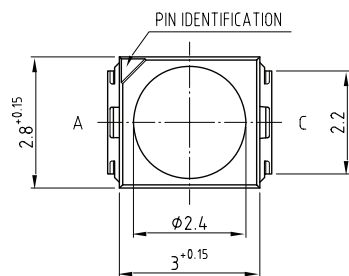


Figure 8. Change of Dominant Wavelength vs. Ambient Temperature

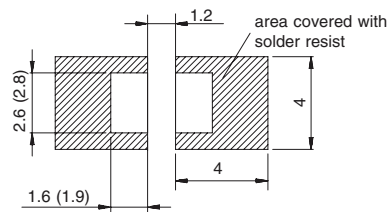
PACKAGE DIMENSIONS in millimeters



Technical drawings according to DIN specifications



Mounting Pad Layout



Drawing-No.: 6.541-5025.02-4
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