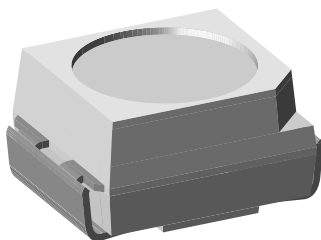


Power SMD LED PLCC-2



19225

DESCRIPTION

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

The package of the VLMW33.. 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 a mixture of epoxy and TAG phosphor.

The TAG phosphor converts the blue emission partially to yellow, which mixes with the remaining blue to give white.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: SMD PLCC-2
- Product series: power
- Angle of half intensity: $\pm 60^\circ$

FEATURES

- High efficient InGaN technology
- Chromaticity coordinate categorized according to CIE1931 per packing unit
- Typical color temperature 5500 K
- ESD-withstand voltage: Up to 1 kV according to JESD22-A114-B
- 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 reel
- Preconditioning according to JEDEC® level 2a
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



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 (mcd)			at I _F (mA)	COORDINATE (x, y)			at I _F (mA)	FORWARD VOLTAGE (V)			at I _F (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
VLMW33S2V1-5K8L-08	White	224	-	900	20	-	0.33, 0.33	-	20	-	3.7	4.2	20	InGaN/TAG on SiC
VLMW33S2V1-5K8L-18	White	224	-	900	20	-	0.33, 0.33	-	20	-	3.7	4.2	20	InGaN/TAG on SiC
VLMW33T2U2-5K8L-08	White	355	-	710	20	-	0.33, 0.33	-	20	-	3.7	4.2	20	InGaN/TAG on SiC
VLMW33T2U2-5K8L-18	White	355	-	710	20	-	0.33, 0.33	-	20	-	3.7	4.2	20	InGaN/TAG on SiC
VLMW33U2AA-5K8L-08	White	560	-	1400	20	-	0.33, 0.33	-	20	-	3.7	4.2	20	InGaN/TAG on SiC
VLMW33U2AA-5K8L-18	White	560	-	1400	20	-	0.33, 0.33	-	20	-	3.7	4.2	20	InGaN/TAG on SiC
VLMW33T2AA-5K8L-08	White	355	-	1400	20	-	0.33, 0.33	-	20	-	3.7	4.2	20	InGaN/TAG on SiC
VLMW33T2AA-5K8L-18	White	355	-	1400	20	-	0.33, 0.33	-	20	-	3.7	4.2	20	InGaN/TAG on SiC

**ABSOLUTE MAXIMUM RATINGS** ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)**VLMW33..**

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage ⁽¹⁾		V_R	5	V
DC forward current	$T_{amb} \leq 70\text{ }^{\circ}\text{C}$	I_F	30	mA
Surge forward current	$t_p \leq 10\text{ }\mu\text{s}$	I_{FSM}	0.1	A
Power dissipation		P_V	127	mW
Junction temperature		T_j	110	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	-40 to +100	$^{\circ}\text{C}$
Operating temperature range		T_{amb}	-40 to +100	$^{\circ}\text{C}$
Thermal resistance junction/ambient	Mounted on PC board (pad size > 16 mm ²)	R_{thJA}	400	K/W

Note

⁽¹⁾ Driving the LED in reverse direction is suitable for short term application

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)**VLMW33.., WHITE**

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN	TYP.	MAX	UNIT
Luminous intensity	$I_F = 20\text{ mA}$	VLMW33S2V1	I_V	224	-	900	mcd
		VLMW33T2U2	I_V	355	-	710	mcd
		VLMW33U2AA	I_V	560	-	1400	mcd
		VLMW33T2AA	I_V	355	-	1400	mcd
Chromaticity coordinate x acc. to CIE 1931	$I_F = 20\text{ mA}$	VLMW33..	x	-	0.33	-	
Chromaticity coordinate y acc. to CIE 1931	$I_F = 20\text{ mA}$	VLMW33..	y	-	0.33	-	
Angle of half intensity	$I_F = 20\text{ mA}$		φ	-	± 60	-	deg
Forward voltage	$I_F = 20\text{ mA}$		V_F	-	3.7	4.2	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$		V_R	5	-	-	V
Temperature coefficient of V_F	$I_F = 20\text{ mA}$		TC_{VF}	-	-4	-	mV/K
Temperature coefficient of I_V	$I_F = 20\text{ mA}$		TC_{IV}	-	-0.5	-	%/K

LUMINOUS INTENSITY CLASSIFICATION

GROUP	LIGHT INTENSITY (mcd)		
	OPTIONAL	MIN.	MAX.
S	1	180	224
	2	224	280
T	1	280	355
	2	355	450
U	1	450	560
	2	560	710
V	1	710	900
	2	900	1120
AA	1	1120	1400

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
VLMW33S2V1	LWT67C-S2V1
VLMW33T2U2	LWT67C-T2U2

CHROMATICITY COORDINATED GROUPS FOR WHITE SMD LED					
	X	Y		X	Y
5L	0.291	0.268	7L	0.330	0.330
	0.285	0.279		0.330	0.347
	0.307	0.312		0.347	0.371
	0.310	0.297		0.345	0.352
5K	0.296	0.259	7K	0.330	0.310
	0.291	0.268		0.330	0.330
	0.310	0.297		0.338	0.342
	0.313	0.284		0.352	0.344
6L	0.310	0.297	8L	0.345	0.352
	0.307	0.312		0.347	0.371
	0.330	0.347		0.367	0.401
	0.330	0.330		0.364	0.380
6K	0.313	0.284	8K	0.352	0.344
	0.310	0.297		0.338	0.342
	0.330	0.330		0.364	0.380
	0.330	0.310		0.360	0.357

Note

- Chromaticity coordinate groups are tested at a current pulse duration of 25 ms and a tolerance of ± 0.01

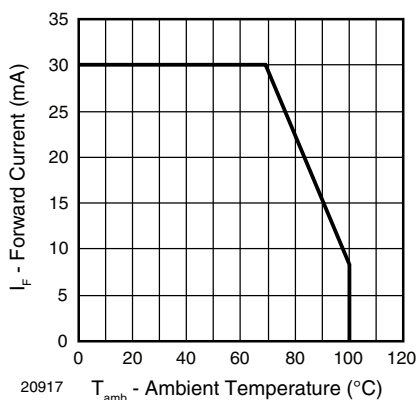
TYPICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Forward Current vs. Ambient Temperature

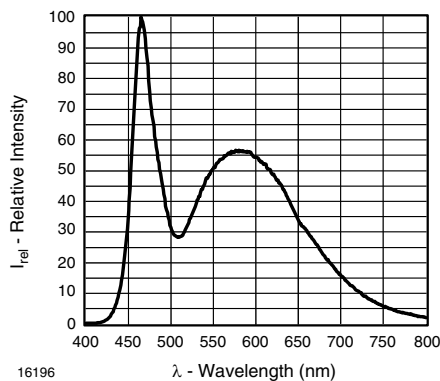


Fig. 3 - Relative Intensity vs. Wavelength

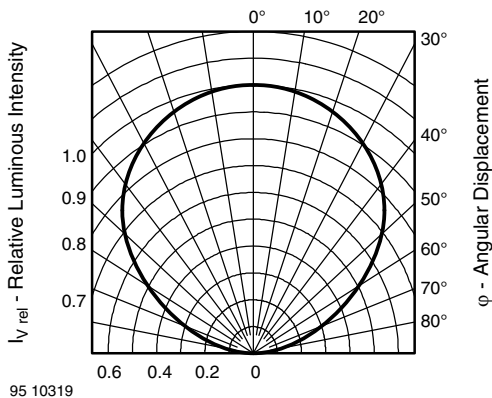


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

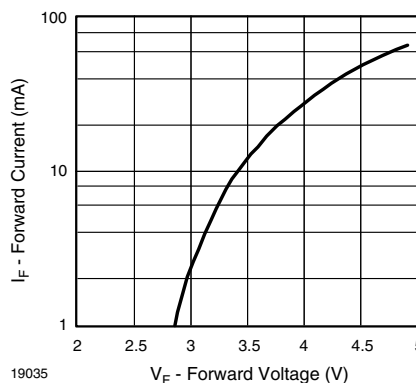


Fig. 4 - Forward Current vs. Forward Voltage

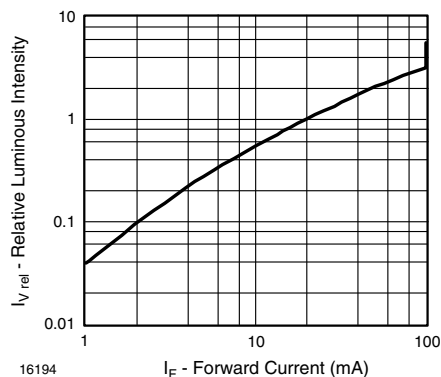


Fig. 5 - Relative Luminous Intensity vs. Forward Current

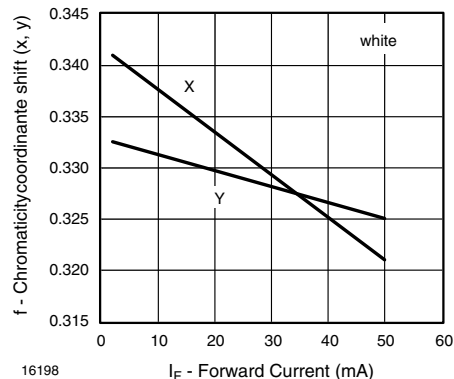


Fig. 8 - Chromaticity Coordinate Shift vs. Forward Current

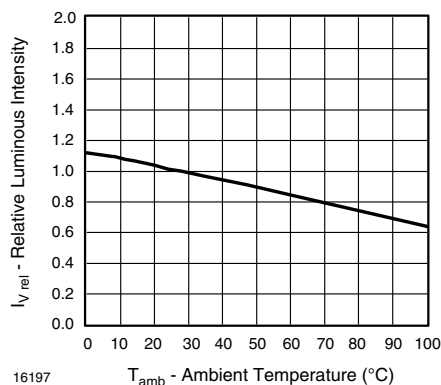


Fig. 6 - Relative Luminous Intensity vs. Ambient Temperature

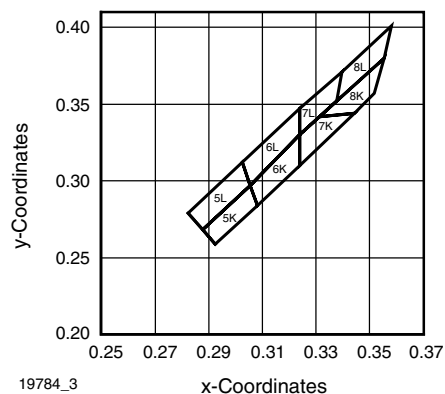


Fig. 9 - Coordinates of Colorgroups

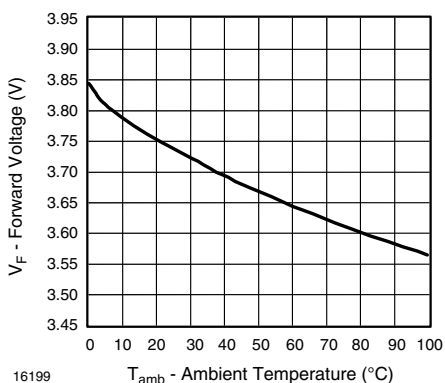
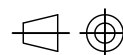
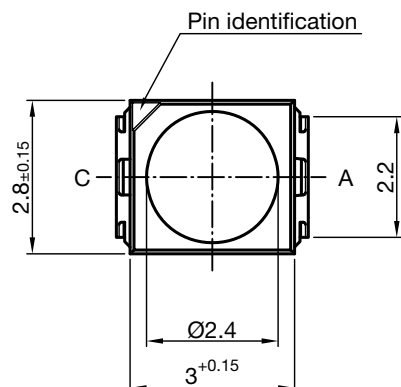
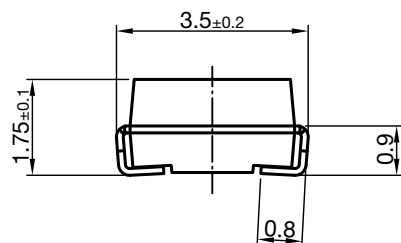


Fig. 7 - Forward Voltage vs. Ambient Temperature

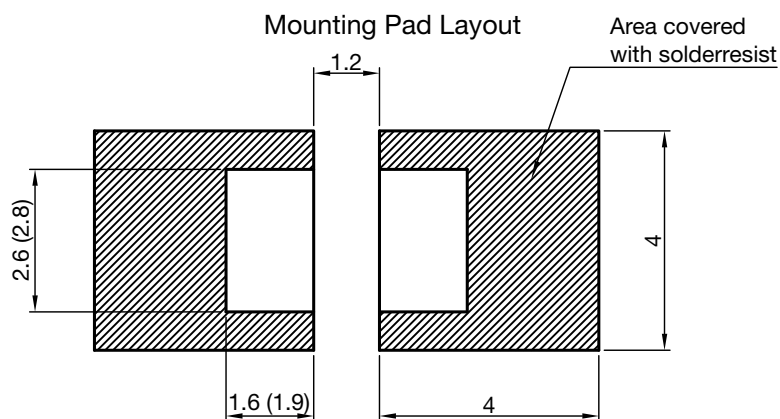
PACKAGE DIMENSIONS in millimeters


Technical drawings
according to DIN
specifications

Dimensions in mm

Drawing-No.: 6.541-5067.01-4

Issue: 6; 23.09.13

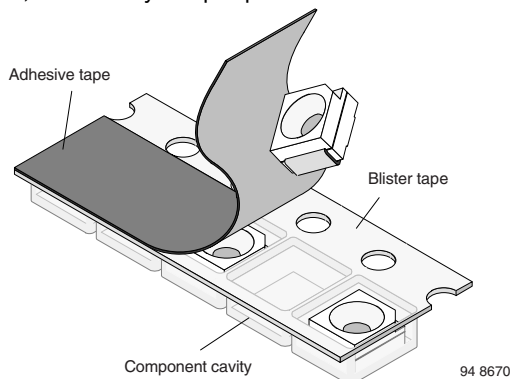


Dimensions: Reflow and vapor phase (wave soldering)

METHOD OF TAPING/POLARITY AND TAPE AND REEL

SMD LED (VLM.3-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.



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

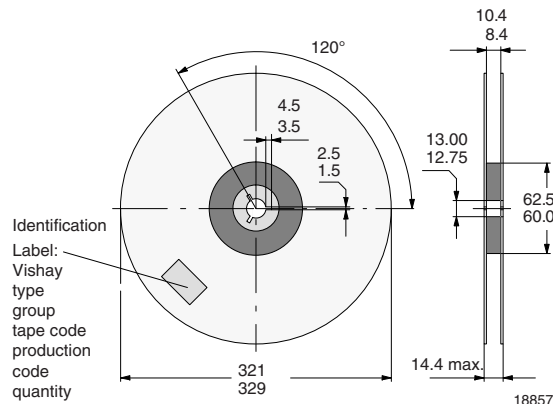


Fig. 12 - Reel Dimensions - GS18

TAPING OF VLM.3...

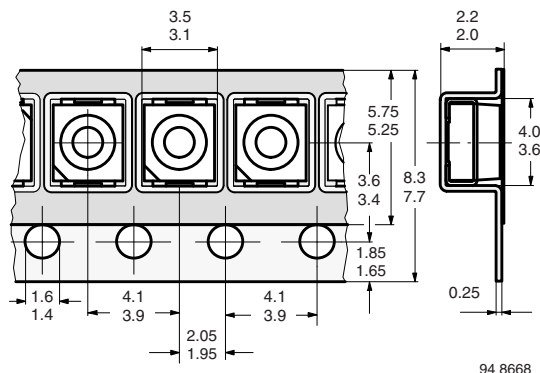


Fig. 10 - Tape Dimensions in mm for PLCC-2

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

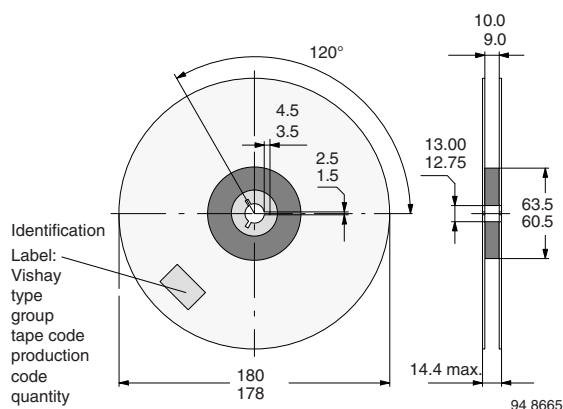


Fig. 11 - Reel Dimensions - GS08

SOLDERING PROFILE

IR Reflow Soldering Profile for Lead (Pb)-free Soldering
Preconditioning acc. to JEDEC level 2a

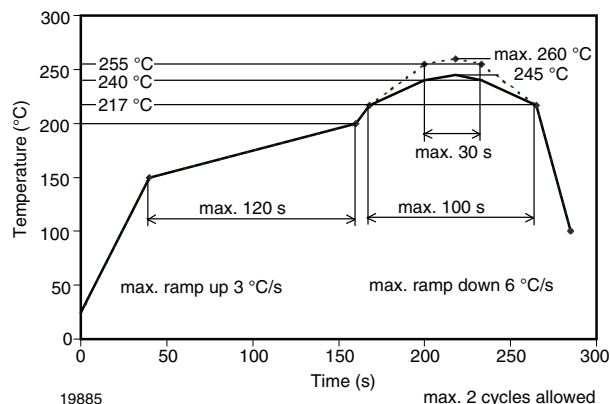


Fig. 13 - Vishay Lead (Pb)-free Reflow Soldering Profile (acc. to J-STD-020)

TTW Soldering (acc. to CECC00802)

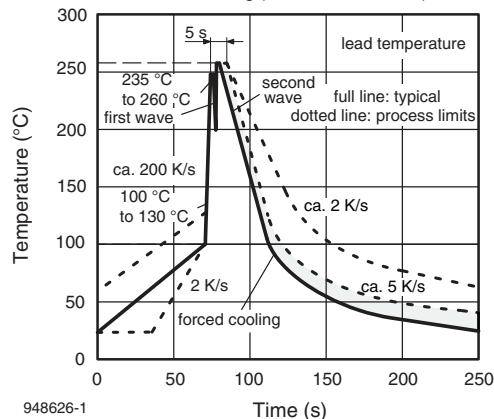


Fig. 14 - Double Wave Soldering of Opto Devices (all Packages)



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