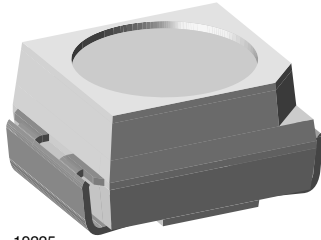


Power SMD LED PLCC-2



19225

DESCRIPTION

The VLMK33.. series is an advanced modification of the Vishay VLMK31.. series. It is designed to incorporate larger chips, therefore, capable of withstanding a 50 mA drive current.

The package of the VLMK33.. 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: power
- Angle of half intensity: $\pm 60^\circ$

FEATURES

- Available in 8 mm tape
- ESD-withstand voltage: up to 2 kV according to JESD22-A114-B
- Compatible with IR reflow, vapor phase and wave solder processes according to CECC 00802 and J-STD-020
- Preconditioning according to JEDEC® level 2a
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



APPLICATIONS

- Interior and exterior lighting
- Indicator and backlighting purposes for audio, video, LCDs, switches, symbols, illuminated advertising etc.
- Illumination purpose, alternative to incandescent lamps
- General use

PARTS TABLE

PART	COLOR	LUMINOUS INTENSITY (mcd)			at I _F (mA)	WAVELENGTH (nm)			at I _F (mA)	FORWARD VOLTAGE (V)			at I _F (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
VLMK33Q2T1-GS08	Amber	90	275	355	20	611	617	622	20	-	1.9	2.5	20	AllnGaP on GaAs
VLMK33Q2T1-GS18	Amber	90	275	355	20	611	617	622	20	-	1.9	2.5	20	AllnGaP on GaAs
VLMK33S1T1-GS08	Amber	180	275	355	20	611	617	622	20	-	1.9	2.5	20	AllnGaP on GaAs
VLMK33S1T1-GS18	Amber	180	275	355	20	611	617	622	20	-	1.9	2.5	20	AllnGaP on GaAs

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C unless otherwise specified) VLMK33..

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage ⁽¹⁾		V _R	5	V
DC forward current		I _F	50	mA
Power dissipation		P _V	130	mW
Junction temperature		T _j	125	°C
Operating temperature range		T _{amb}	-40 to +100	°C
Storage temperature range		T _{stg}	-40 to +100	°C
Soldering temperature	t ≤ 5 s	T _{sd}	260	°C
Thermal resistance junction-to-ambient	Mounted on PC board (pad size > 16 mm ²)	R _{thJA}	400	K/W

Note

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



OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)							
VLMK33.., AMBER							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity	$I_F = 20\text{ mA}$	VLMK33Q2T1	I_V	90	275	355	mcd
		VLMK33S1T1	I_V	180	275	355	mcd
Luminous flux/luminous intensity			ϕ_V/I_V	-	3.14	-	lm/mcd
Dominant wavelength	$I_F = 20\text{ mA}$	VLMK33Q2T1	λ_d	611	617	622	nm
		VLMK33S1T1	λ_d	611	617	622	nm
Peak wavelength	$I_F = 20\text{ mA}$		λ_p	-	624	-	nm
Spectral bandwidth at 50 % $I_{rel\ max.}$	$I_F = 20\text{ mA}$		$\Delta\lambda$	-	18	-	nm
Angle of half intensity	$I_F = 20\text{ mA}$		φ	-	± 60		$^{\circ}$
Forward voltage	$I_F = 20\text{ mA}$		V_F	-	1.9	2.5	V
Reverse current	$V_R = 5\text{ V}$		V_R	-	0.01	10	μA

LUMINOUS INTENSITY CLASSIFICATION		
GROUP	LUMINOUS INTENSITY (mcd)	
	MIN.	MAX.
Q2	90	112
R1	112	140
R2	140	180
S1	180	224
S2	224	280
T1	280	355

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 be not 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 be not orderable

COLOR CLASSIFICATION		
GROUP	DOMINANT WAVELENGTH (nm)	
	AMBER	
	MIN.	MAX.
1	611	618
2	614	622

Note

- Wavelength are tested at a current pulse duration of 25 ms

CROSSING TABLE	
VISHAY	OSRAM
VLMK33Q2T1	LAT676-Q2T1
VLMK33S1T1	LAT676-S1T1

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

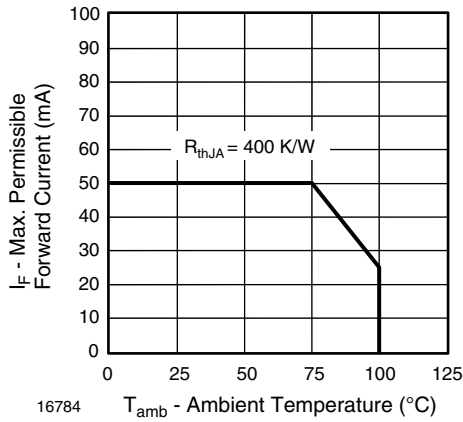


Fig. 1 - Forward Current vs. Ambient Temperature

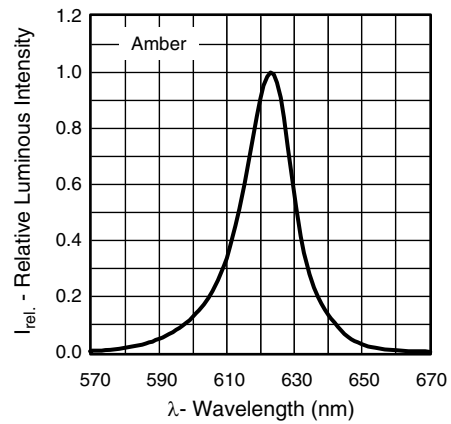


Fig. 4 - Relative Luminous Intensity vs. Angular Displacement

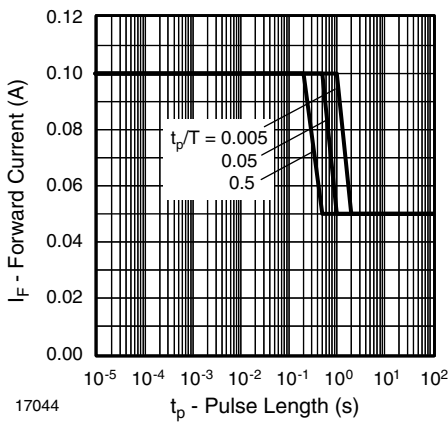


Fig. 2 - Forward Current vs. Pulse Length

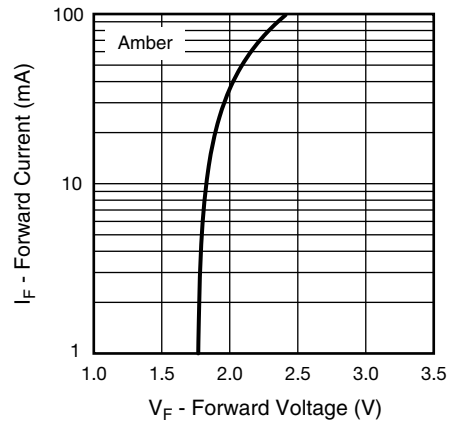


Fig. 5 - Forward Current vs. Forward Voltage

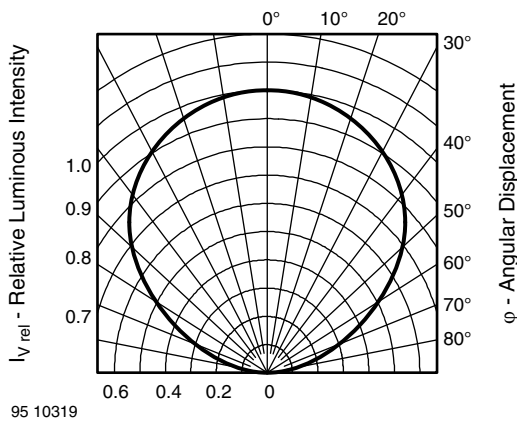


Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

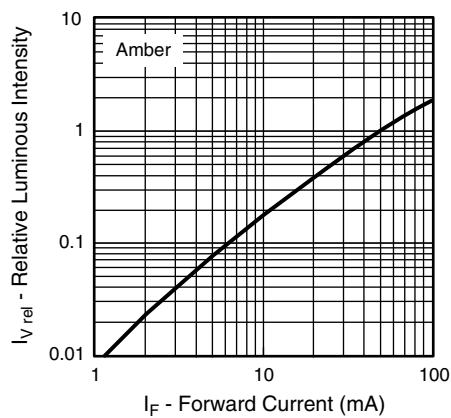


Fig. 6 - Change of Dominant Wavelength vs. Forward Current

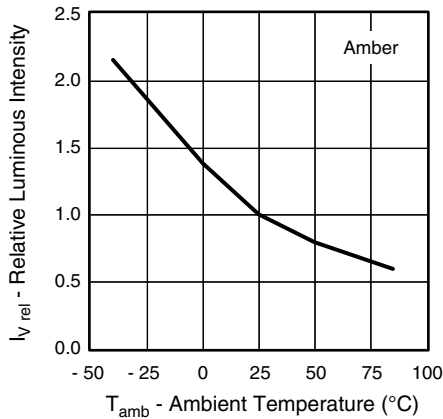


Fig. 7 - Relative Luminous Intensity vs. Ambient Temperature

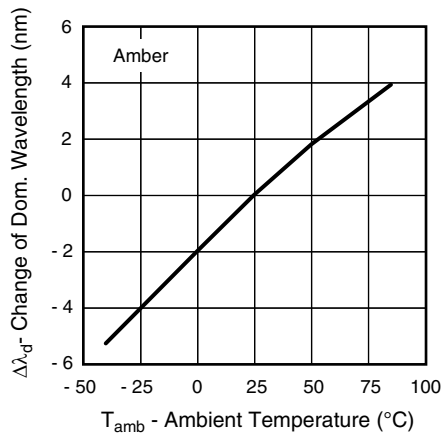


Fig. 8 - Change of Dominant Wavelength vs. Ambient Temperature

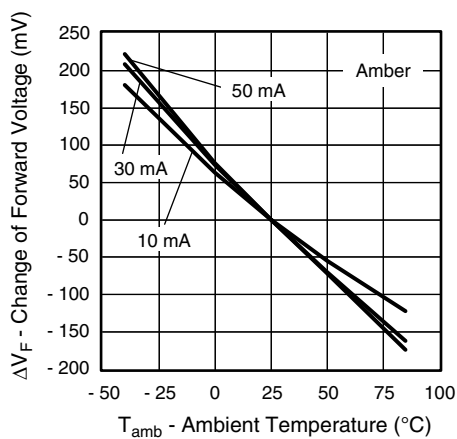
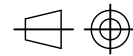
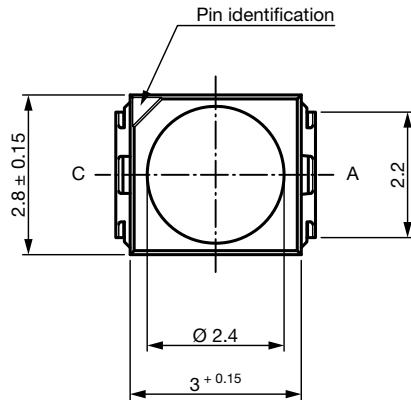
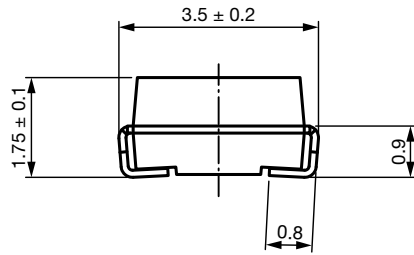


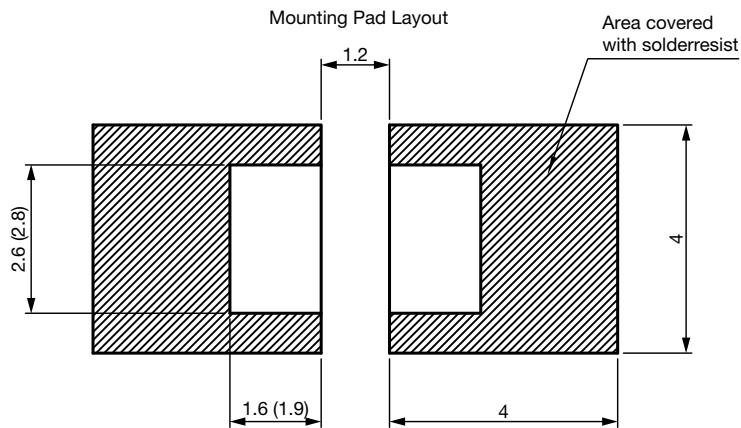
Fig. 9 - Change of Forward Voltage vs. Ambient Temperature

PACKAGE DIMENSIONS in millimeters



technical drawings according to DIN specifications

Drawing-No.: 6.541-5067.01-4
Issue: 7; 12.03.14

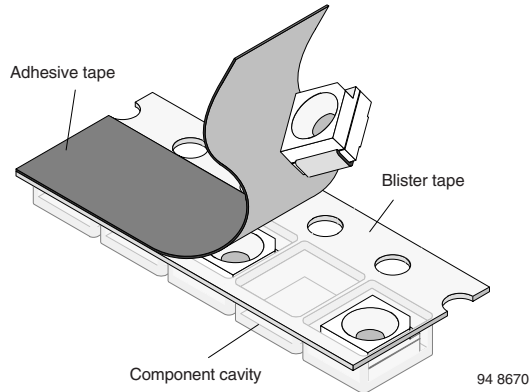


Dimensions: reflow and vapor phase (wave soldering)

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.



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

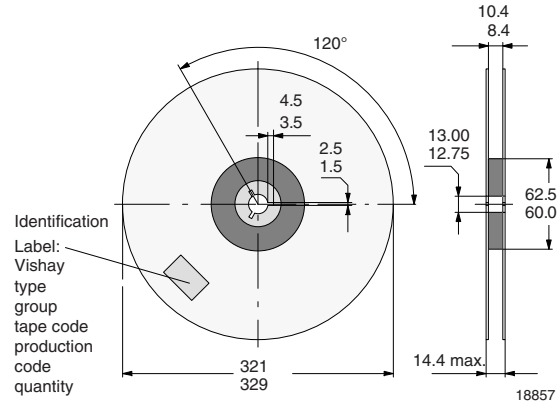


Fig. 12 - Reel Dimensions - GS18

TAPING OF VLM.3..

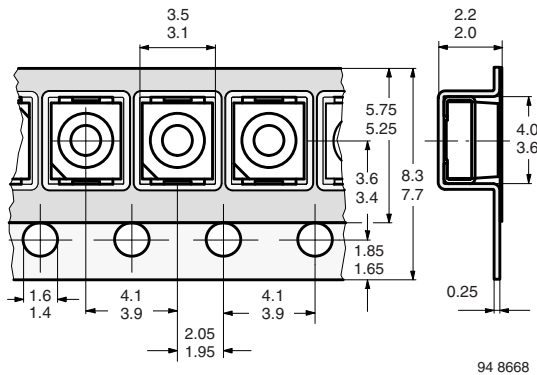


Fig. 10 - Tape Dimensions in mm for PLCC-2

SOLDERING PROFILE

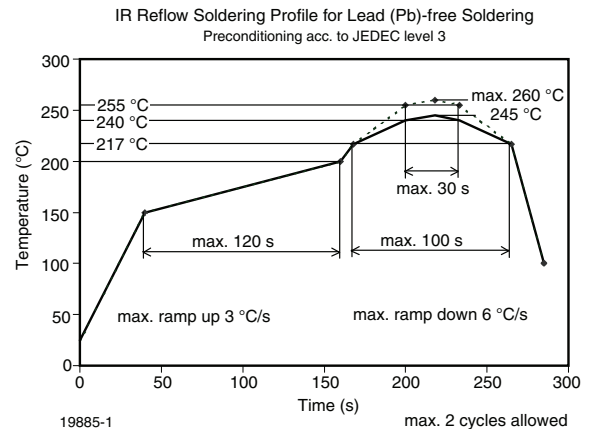


Fig. 13 - Vishay Lead (Pb)-free Reflow Soldering Profile (according to J-STD-020)

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

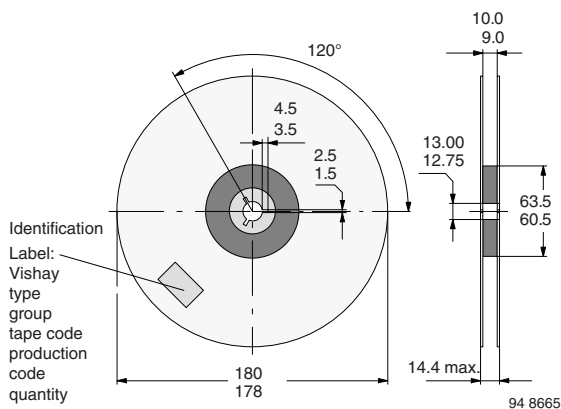


Fig. 11 - Reel Dimensions - GS08

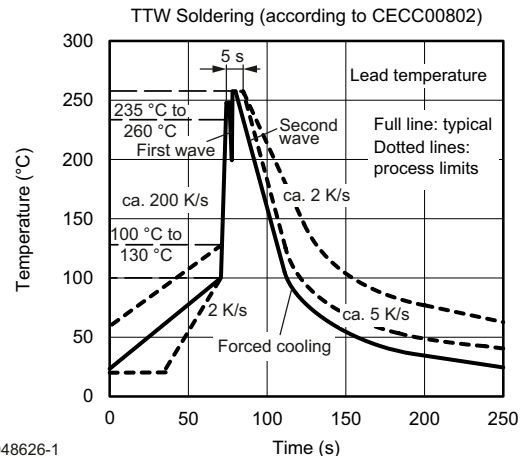


Fig. 14 - Double Wave Soldering of Opto Devices (all packages)



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.