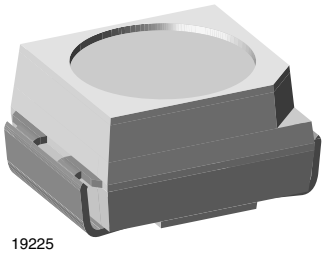
Power SMD LED PLCC-2



19225

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

AUTOMOTIVE GRADE

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

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.

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

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: SMD PLCC-2
- Product series: power
- Angle of half intensity: ± 60°

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	-	355	20	611	617	622	20	-	1.9	2.5	20	AlInGaP on GaAs
VLMK33Q2T1-GS18	Amber	90	-	355	20	611	617	622	20	-	1.9	2.5	20	AlInGaP on GaAs
VLMK33R1S2-GS08	Amber	112	-	280	20	611	617	622	20	-	1.9	2.5	20	AlInGaP on GaAs
VLMK33R1S2-GS18	Amber	112	-	280	20	611	617	622	20	-	1.9	2.5	20	AlInGaP on GaAs
VLMK33R2T2-2-GS08	Amber	140	-	450	20	614	-	622	20	-	1.9	2.5	20	AlInGaP on GaAs
VLMK33S1T1-GS08	Amber	180	-	355	20	611	617	622	20	-	1.9	2.5	20	AlInGaP on GaAs
VLMK33S1T1-GS18	Amber	180	-	355	20	611	617	622	20	-	1.9	2.5	20	AlInGaP 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/ambient	Mounted on PC board (pad size > 16 mm²)	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 °C unless otherwise specified)
VLMK33.., AMBER

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity	I_F = 20 mA	VLMK33Q2T1	I_V	90	-	355	mcd
		VLMK33R1S2	I_V	112	-	280	mcd
		VLMK33R2T2-2	I_V	140	-	450	mcd
		VLMK33S1T1	I_V	180	-	355	mcd
Luminous flux/luminous intensity			ϕ_V/I_V	-	3.14	-	mlm/mcd
Dominant wavelength	I_F = 20 mA	VLMK33Q2T1	λ_d	611	617	622	nm
		VLMK33R1S2	λ_d	611	617	622	nm
		VLMK33S1T1	λ_d	611	617	622	nm
		VLMK33R2T2-2	λ_d	614	-	622	nm
Peak wavelength	I_F = 20 mA		λ_p	-	624	-	nm
Spectral bandwidth at 50 % $I_{rel\ max.}$	I_F = 20 mA		$\Delta\lambda$	-	18	-	nm
Angle of half intensity	I_F = 20 mA		φ	-	± 60		deg
Forward voltage	I_F = 20 mA		V_F	-	1.9	2.5	V
Reverse current	V_R = 5 V		V_R	-	0.01	10	µA

LUMINOUS INTENSITY CLASSIFICATION

GROUP	LUMINOUS INTENSITY (mcd)	
	MIN.	MAX.
Q1	71	90
Q2	90	112
R1	112	140
R2	140	180
S1	180	224
S2	224	280
T1	280	355
T2	355	450

Note

- Luminous intensity is tested at a current pulse duration of 25 ms and an accuracy of ± 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
VLMK33R1S2	LAT676-R1S2
VLMK33S1T1	LAT676-S1T1

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

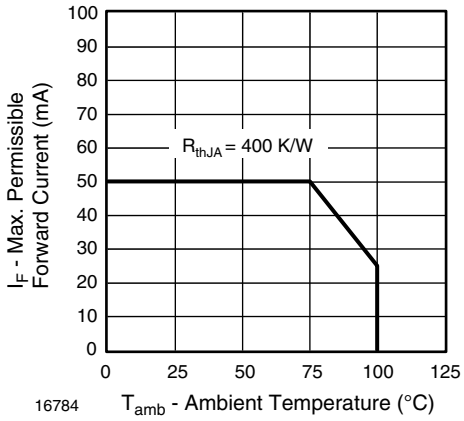


Fig. 1 - Forward Current vs. Ambient Temperature

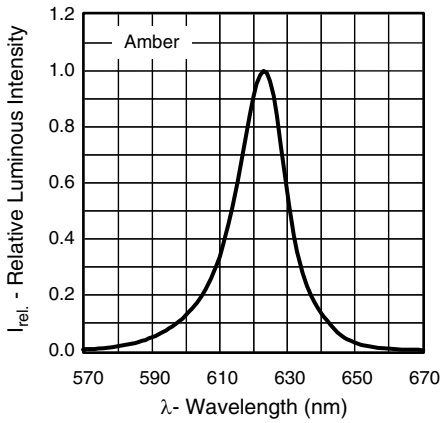


Fig. 4 - Relative Luminous Intensity vs. Angular Displacement

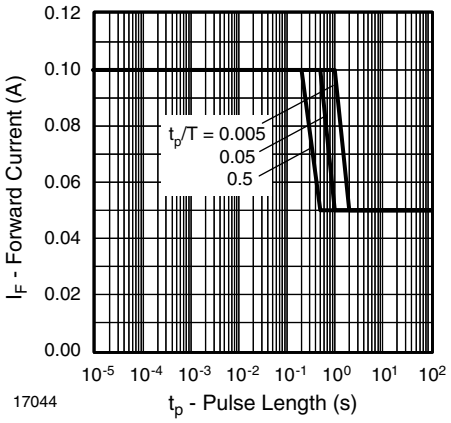


Fig. 2 - Forward Current vs. Pulse Length

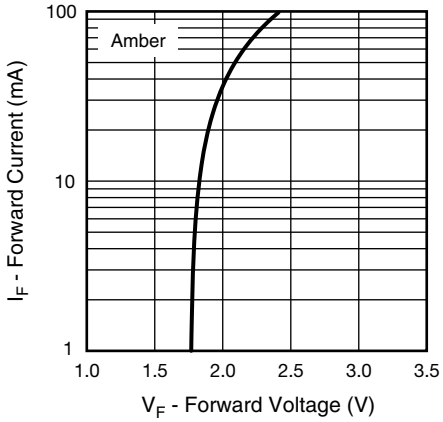


Fig. 5 - Forward Current vs. Forward Voltage

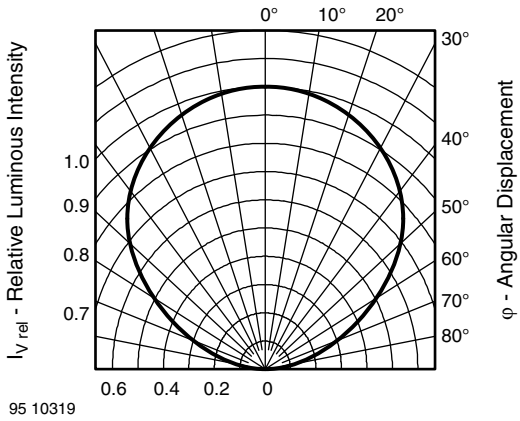


Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

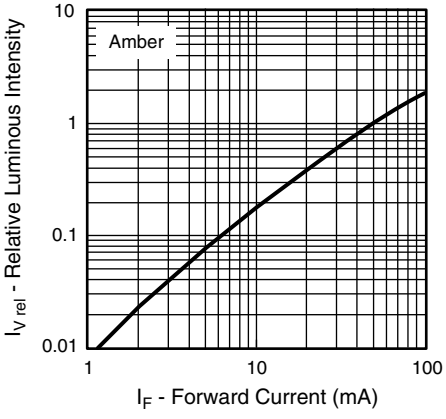


Fig. 6 - Change of Dominant Wavelength vs. Forward Current

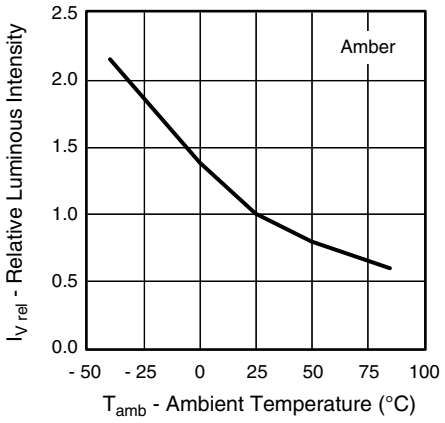


Fig. 7 - Relative Luminous Intensity vs. Ambient Temperature

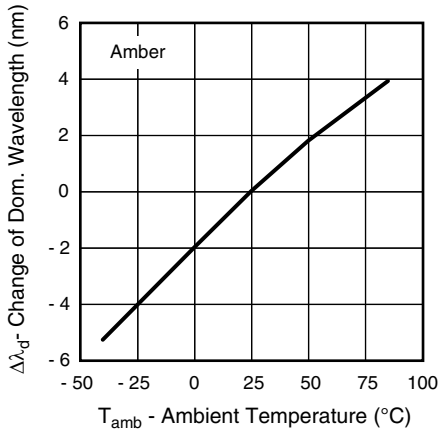


Fig. 8 - Change of Dominant Wavelength vs. Ambient Temperature

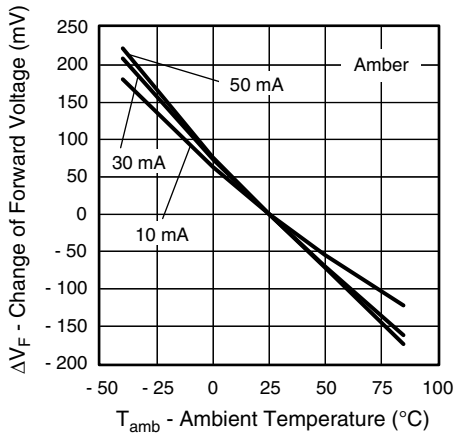
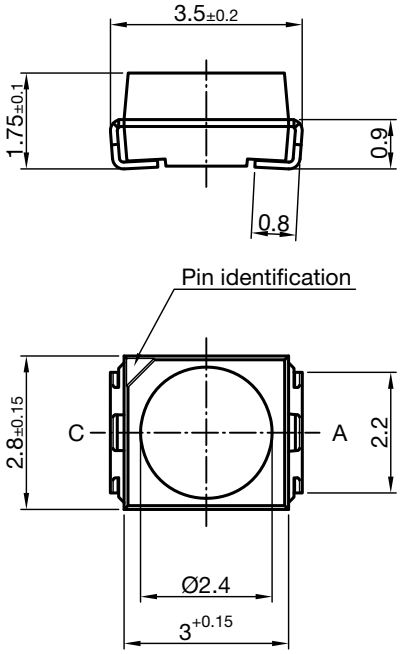


Fig. 9 - Change of Forward Voltage vs. Ambient Temperature

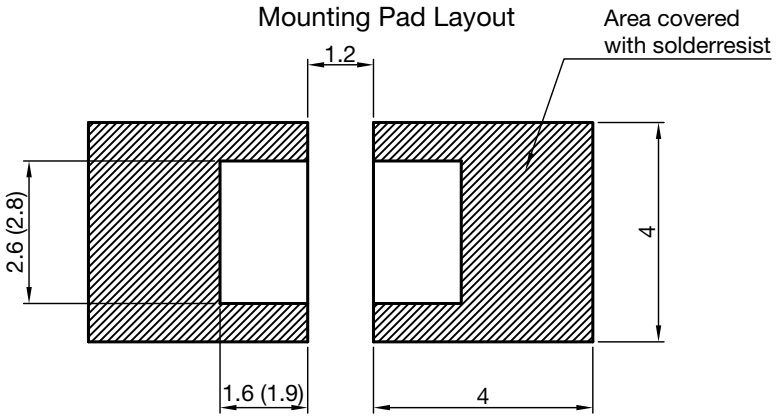
PACKAGE DIMENSIONS in millimeters



Technical drawings according to DIN specifications

Dimensions in mm

Drawing-No.: 6.541-5067.01-4
Issue: 6; 23.09.13

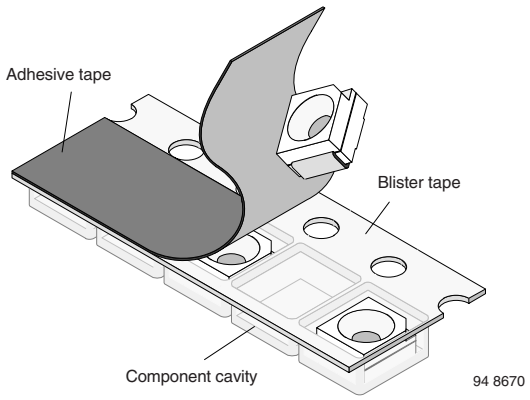


Dimensions: Reflow and vapor phase (wave soldering)

METHOD OF TAPING/POLARITY AND TAPE AND REEL

SMD LED (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.



TAPING OF VLM.3..

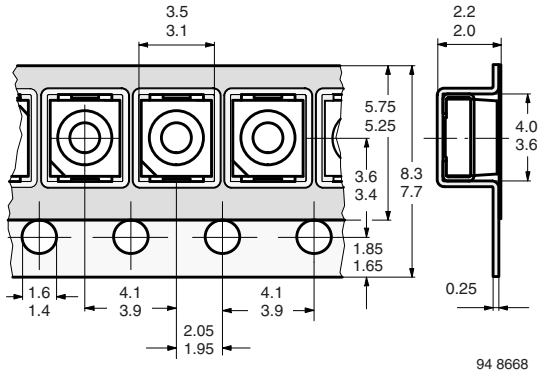


Fig. 10 - Tape Dimensions in mm for PLCC-2

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

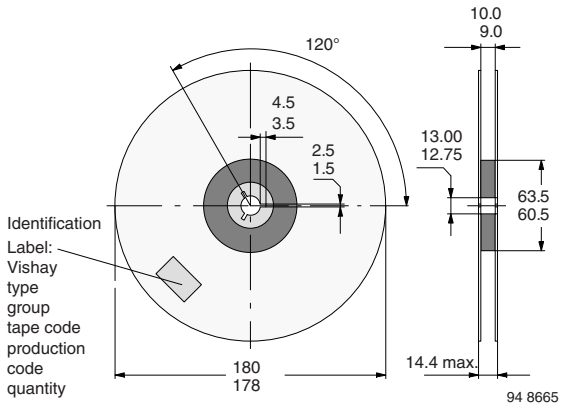


Fig. 11 - Reel Dimensions - GS08

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

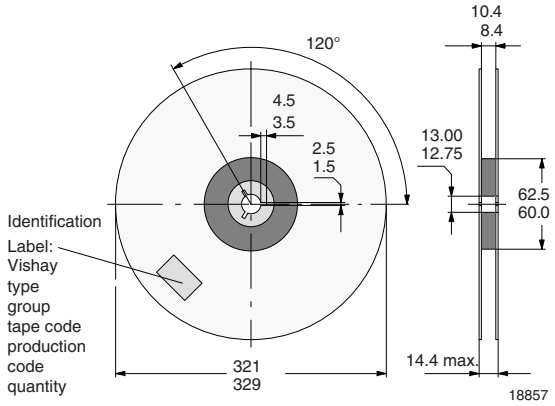


Fig. 12 - Reel Dimensions - GS18

SOLDERING PROFILE

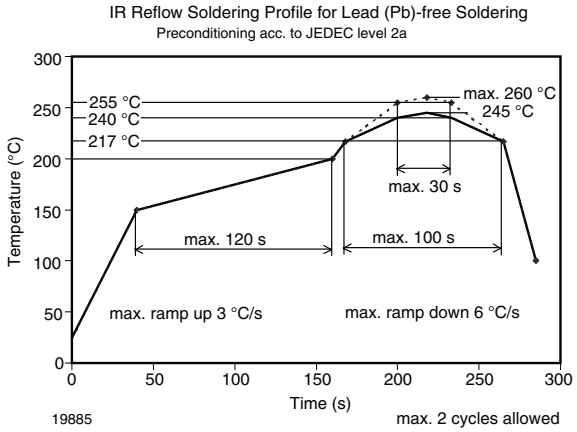


Fig. 13 - Vishay Lead (Pb)-free Reflow Soldering Profile (acc. to J-STD-020)

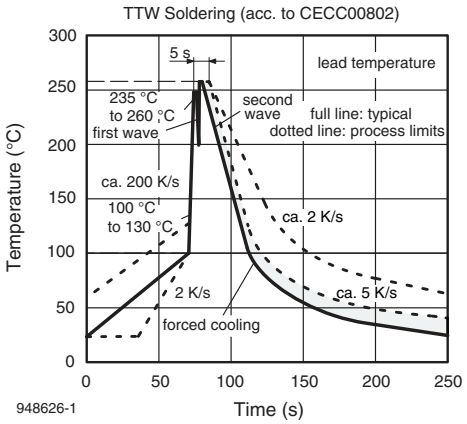
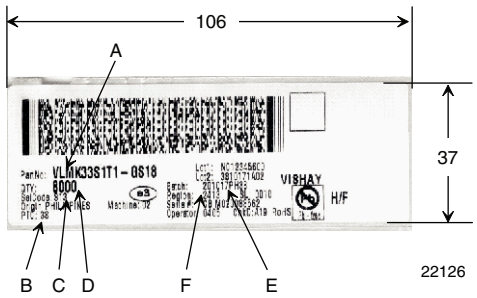


Fig. 14 - Double Wave Soldering of Opto Devices (all Packages)

BAR CODE PRODUCT LABEL (example)



A) Type of component

B) Manufacturing plant

C) SEL - selection code (bin):
e.g.: S1 = code for luminous intensity group
3 = code for colour group

D) Total quantity

E) Batch = date code: year/week/manufacturing plant

F) Region code

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