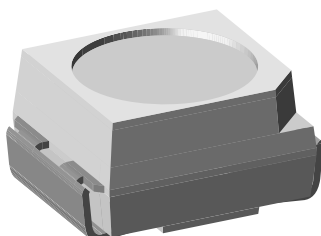


Power SMD LED PLCC-2



19225

DESCRIPTION

The VLMK33S1T1 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 VLMK33S1T1 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

AUTOMOTIVE
GRADE

RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

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. | | |
| VLMK33S1T1-GS08 | Amber | 180 | 275 | 355 | 20 | 611 | 617 | 622 | 20 | - | 1.9 | 2.5 | 20 | AlInGaP on GaAs |

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C unless otherwise specified) VLMK33S1T1

| 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 ($T_{amb} = 25^{\circ}\text{C}$ unless otherwise specified)
VLMK33S1T1, AMBER

| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|--|----------------------|-----------------|------|----------|------|---------------|
| Luminous intensity | $I_F = 20\text{ mA}$ | I_V | 180 | 275 | 355 | mcd |
| Luminous flux/luminous intensity | | ϕ_V/I_V | - | 3.14 | - | mlm/mcd |
| Dominant wavelength | $I_F = 20\text{ mA}$ | λ_d | 611 | 617 | 622 | nm |
| Peak wavelength | $I_F = 20\text{ mA}$ | λ_p | - | 624 | - | nm |
| Spectral bandwidth at 50 % $I_{rel\text{ max.}}$ | $I_F = 20\text{ mA}$ | $\Delta\lambda$ | - | 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. |
| 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 |
|------------|-------------|
| VLMK33S1T1 | LAT676-S1T1 |

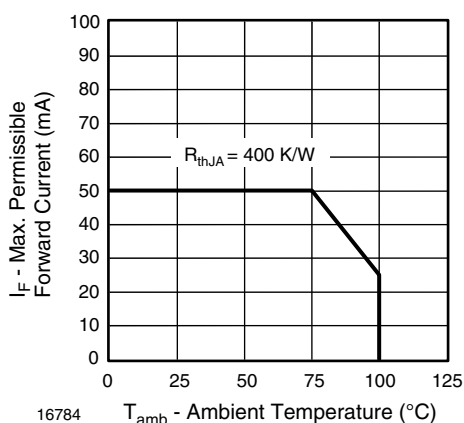
TYPICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$ unless otherwise specified)


Fig. 1 - Forward Current vs. Ambient Temperature

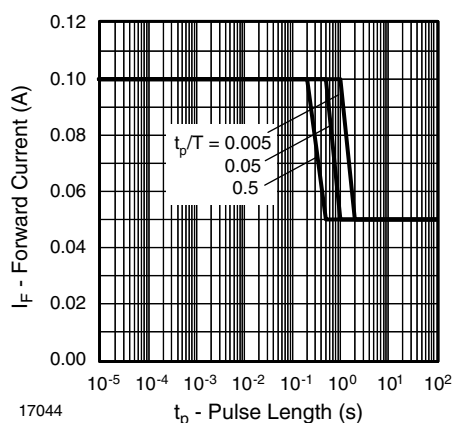


Fig. 2 - Forward Current vs. Pulse Length

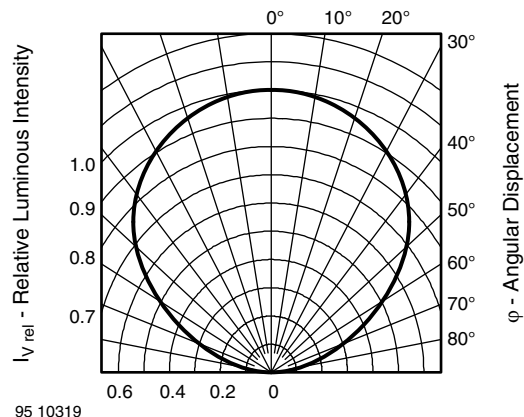


Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

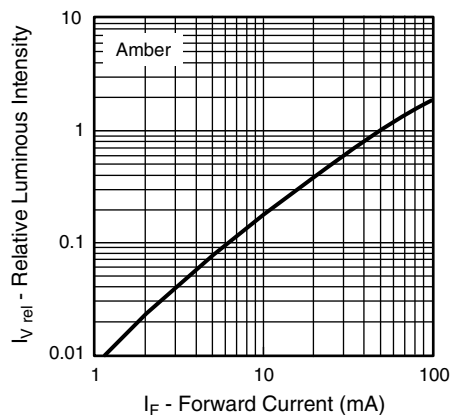


Fig. 6 - Relative Luminous Intensity vs. Forward Current

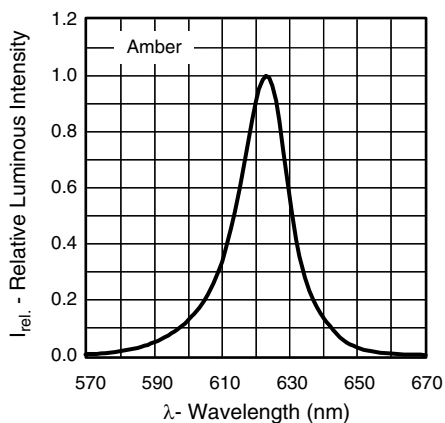


Fig. 4 - Relative Intensity vs. Angular Displacement

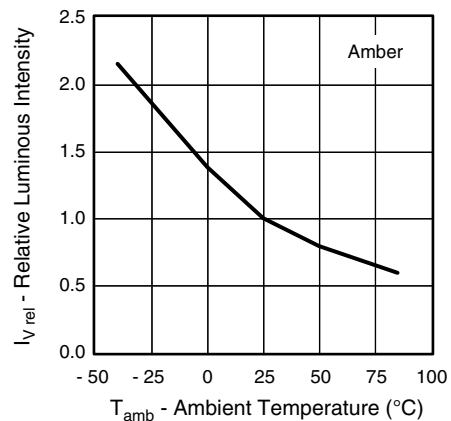


Fig. 7 - Relative Luminous Intensity vs. Ambient Temperature

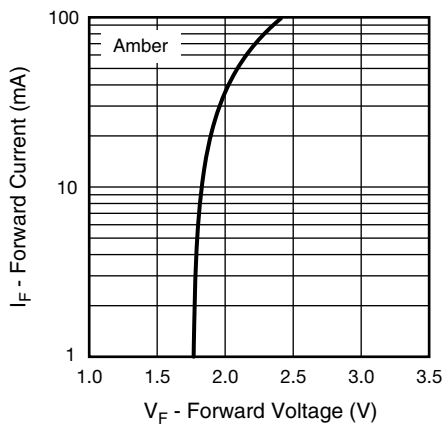


Fig. 5 - Forward Current vs. Forward Voltage

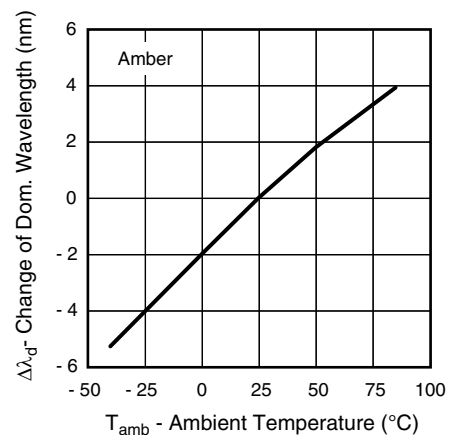


Fig. 8 - Change of Dominant Wavelength vs. Ambient Temperature

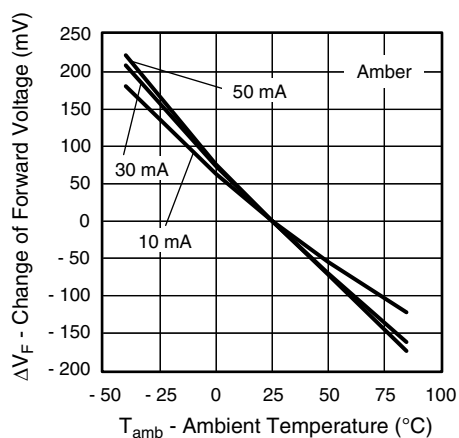
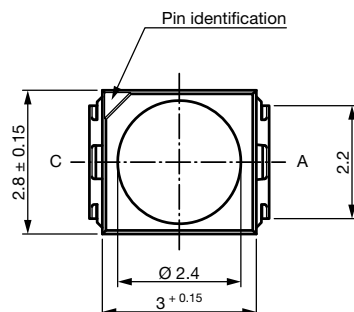
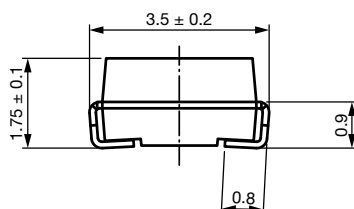
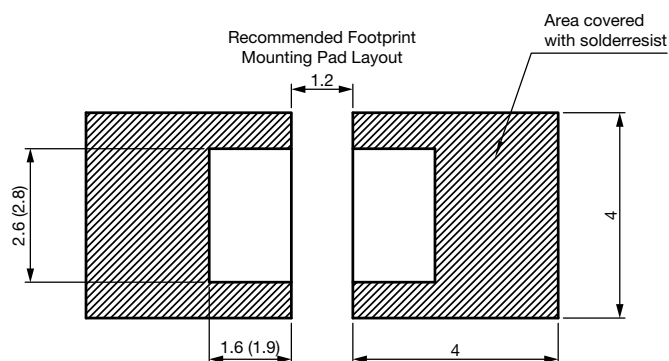


Fig. 9 - Change of Forward Voltage vs. Ambient Temperature

PACKAGE DIMENSIONS in millimeters



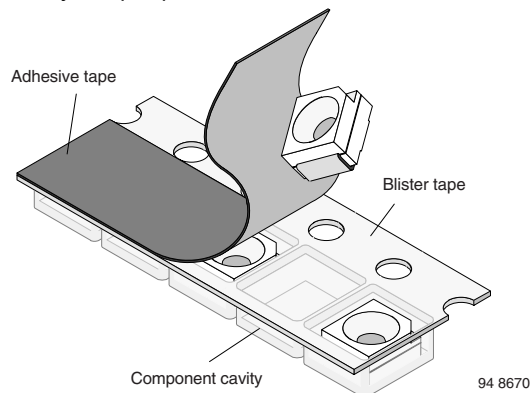
Drawing-No.: 6.541-5067.01-4
Issue: 7; 12.03.14



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..

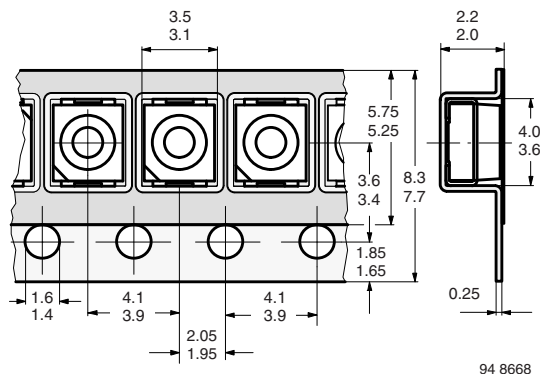


Fig. 10 - Tape Dimensions in mm for PLCC-2

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

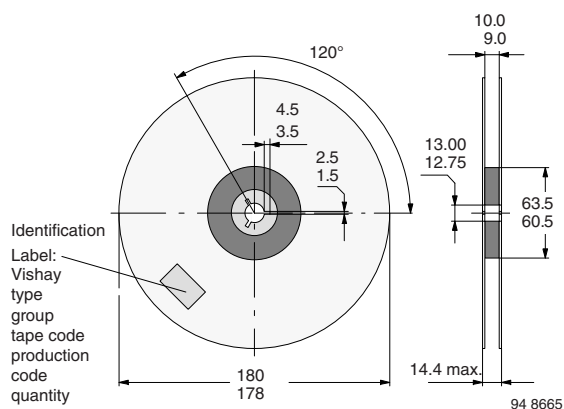


Fig. 11 - Reel Dimensions - GS08

SOLDERING PROFILE

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

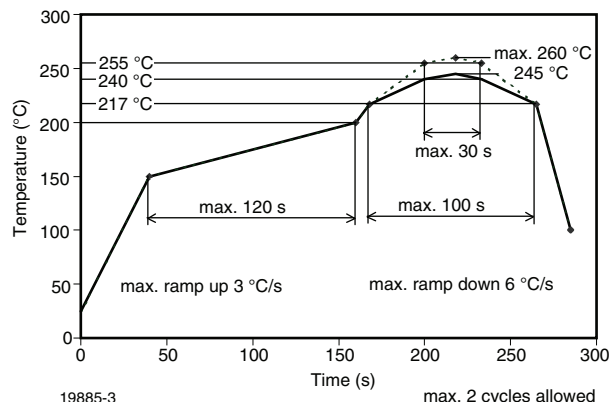


Fig. 12 - Vishay Lead (Pb)-free Reflow Soldering Profile (according to J-STD-020)

TTW Soldering (according to CECC00802)

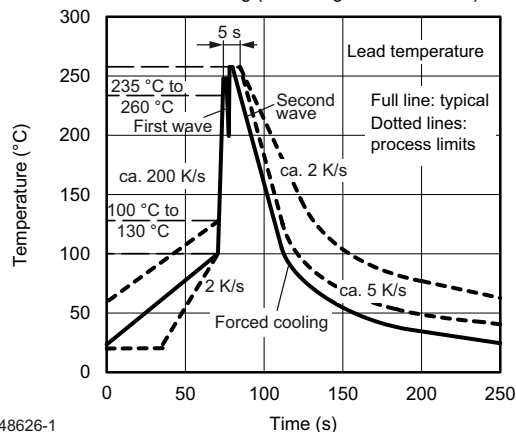


Fig. 13 - Double Wave Soldering of Opto Devices (all packages)

PACKING INFORMATION

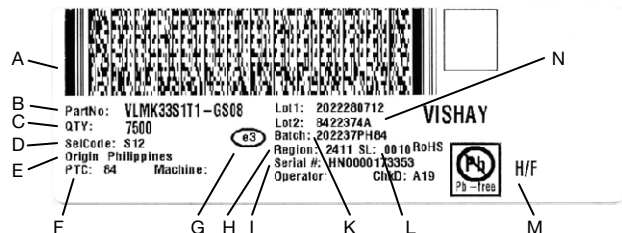
| PART | PIECES PER REEL | REELS PER BOX | MOQ ⁽¹⁾ |
|-----------------|-----------------|---------------|--------------------|
| VLMK33S1T1-GS08 | 1500 | 5 | 7500 |

Note

⁽¹⁾ MOQ = minimum order quantity



BAR CODE PRODUCT LABEL (example)



A. 2D barcode

B. Part No: Vishay part number

C. QTY: quantity

D. SelCode: selection bin code

E. Country of origin

F. PTC: production plant code

G. Termination finish

H. Region code

I. Serial#: serial number

K. Batch number: year, week, country code, plant code

L. SL: storage location

M. Environmental symbols: RoHS, lead (Pb)-free, halogen-free

N. Lot numbers



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