

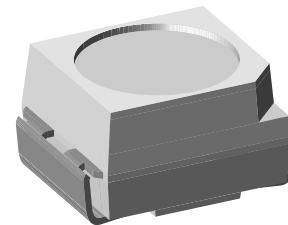
## Low Current SMD LED

### Description

These new devices have been designed to meet the increasing demand for low current SMD LEDs.

The package of the TLMC310. 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.



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### Features

- SMD LED with exceptional brightness
- Compatible with automatic placement equipment
- EIA and ICE standard package
- Compatible with infrared, vapor phase and wave solder processes according to CECC
- Available in 8 mm tape
- Low profile package
- Non-diffused lens: excellent for coupling to light pipes and backlighting
- Very low power consumption
- Luminous intensity ratio in one packaging unit  
 $I_{Vmax}/I_{Vmin} \leq 2.0$
- Lead-free device

### 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 for battery driven equipment

Small indicator for outdoor applications

Indicator and backlight in office equipment

Flat backlight for LCDs, switches and symbols

General use

### Parts Table

| Part     | Color, Luminous Intensity | Angle of Half Intensity ( $\pm\phi$ ) | Technology |
|----------|---------------------------|---------------------------------------|------------|
| TLMC3100 | Green, $I_V > 0.63$ mcd   | 60 °                                  | GaP on GaP |
| TLMC3101 | Green, $I_V > 1$ mcd      | 60 °                                  | GaP on GaP |

### Absolute Maximum Ratings

$T_{amb} = 25$  °C, unless otherwise specified

#### TLMC310.

| Parameter                   | Test condition        | Symbol    | Value         | Unit |
|-----------------------------|-----------------------|-----------|---------------|------|
| Reverse voltage             |                       | $V_R$     | 6             | V    |
| DC Forward current          |                       | $I_F$     | 7             | mA   |
| Surge forward current       | $t_p \leq 10$ $\mu$ s | $I_{FSM}$ | 0.5           | A    |
| Power dissipation           | $T_{amb} \leq 90$ °C  | $P_V$     | 20            | mW   |
| Junction temperature        |                       | $T_j$     | 100           | °C   |
| Operating temperature range |                       | $T_{amb}$ | - 40 to + 100 | °C   |

| Parameter                           | Test condition  | Symbol     | Value         | Unit |
|-------------------------------------|---|------------|---------------|------|
| Storage temperature range           |   | $T_{stg}$  | - 55 to + 100 | °C   |
| Soldering temperature               | $t \leq 5$ s  | $T_{sd}$   | 260           | °C   |
| Thermal resistance junction/ambient | mounted on PC board<br>(pad size > 16 mm <sup>2</sup> ) | $R_{thJA}$ | 500           | K/W  |

### Optical and Electrical Characteristics

$T_{amb} = 25$  °C, unless otherwise specified

#### Green

#### TLMC310.

| Parameter                        | Test condition          | Part     | Symbol      | Min  | Typ.     | Max | Unit |
|----------------------------------|-------------------------|----------|-------------|------|----------|-----|------|
| Luminous intensity <sup>2)</sup> | $I_F = 2$ mA            | TLMC3100 | $I_V$       | 0.63 | 1.6      |     | mcd  |
|                                  |                         | TLMC3101 | $I_V$       | 1.0  | 1.6      |     | mcd  |
| Dominant wavelength              | $I_F = 2$ mA            |          | $\lambda_d$ | 563  |          | 575 | nm   |
| Peak wavelength                  | $I_F = 2$ mA            |          | $\lambda_p$ |      | 565      |     | nm   |
| Angle of half intensity          | $I_F = 2$ mA            |          | $\phi$      |      | $\pm 60$ |     | deg  |
| Forward voltage                  | $I_F = 2$ mA            |          | $V_F$       |      | 1.9      | 2.4 | V    |
| Reverse voltage                  | $I_R = 10$ $\mu$ A      |          | $V_R$       | 6    | 15       |     | V    |
| Junction capacitance             | $V_R = 0$ , $f = 1$ MHz |          | $C_j$       |      | 50       |     | pF   |

<sup>2)</sup> in one Packing Unit  $I_{Vmax}/I_{Vmin} \leq 2.0$

### Typical Characteristics ( $T_{amb} = 25$ °C unless otherwise specified)

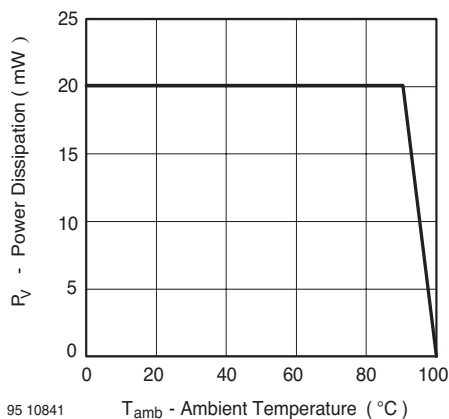


Figure 1. Power Dissipation vs. Ambient Temperature

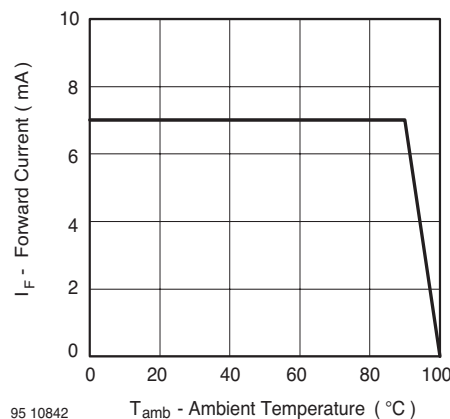
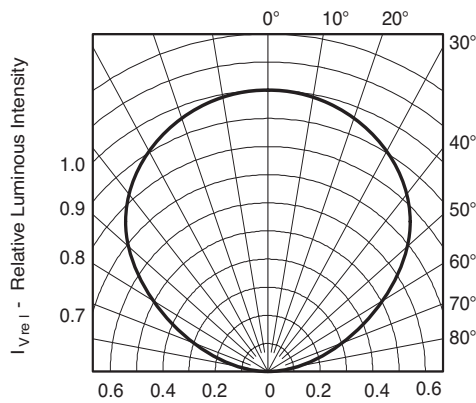
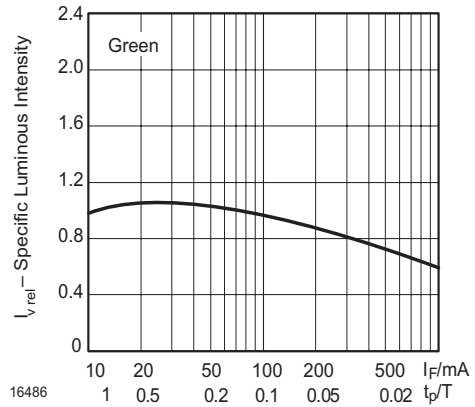


Figure 2. Forward Current vs. Ambient Temperature



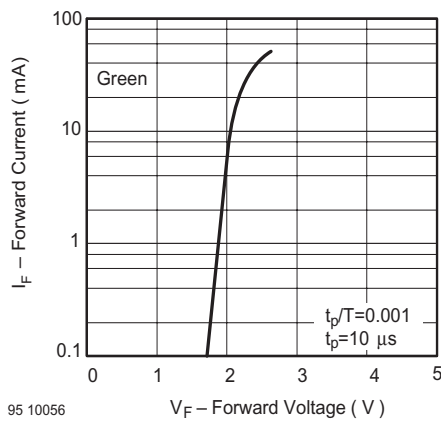
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Figure 3. Rel. Luminous Intensity vs. Angular Displacement



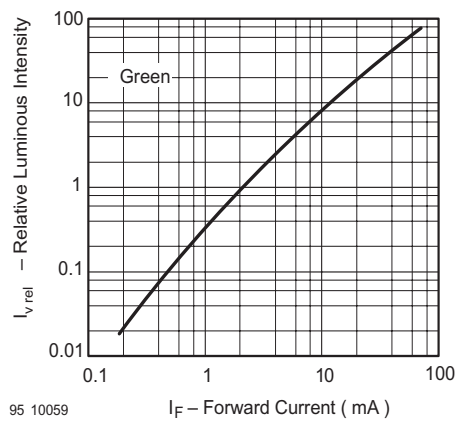
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Figure 6. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle



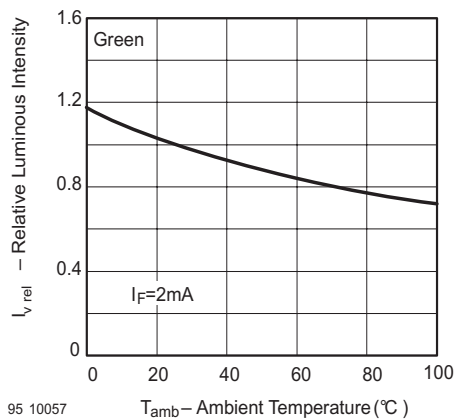
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Figure 4. Forward Current vs. Forward Voltage



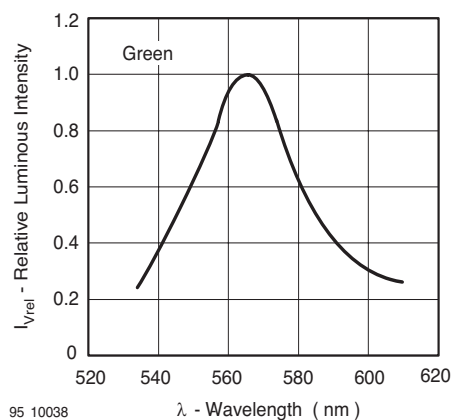
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Figure 7. Relative Luminous Intensity vs. Forward Current



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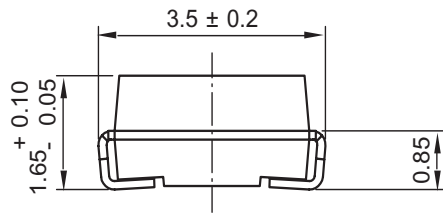
Figure 5. Rel. Luminous Intensity vs. Ambient Temperature



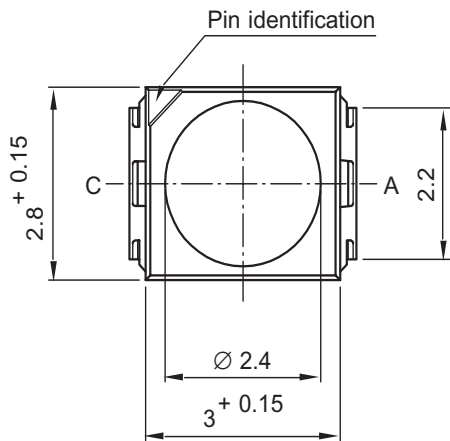
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Figure 8. Relative Intensity vs. Wavelength

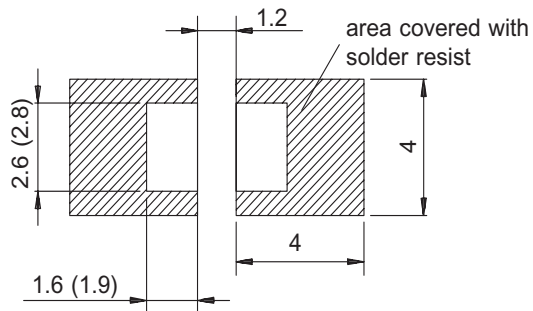
### Package Dimensions in mm



technical drawings  
according to DIN  
specifications



### Mounting Pad Layout



Dimensions: IR and Vaporphase  
(Wave Soldering)

Drawing-No. : 6.541-5025.01-4  
Issue: 7; 05.04.04

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## **Ozone Depleting Substances Policy Statement**

It is the policy of **Vishay Semiconductor GmbH** to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

**Vishay Semiconductor GmbH** has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

**Vishay Semiconductor GmbH** can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

### **We reserve the right to make changes to improve technical design and may do so without further notice.**

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay Semiconductors products for any unintended or unauthorized application, the buyer shall indemnify Vishay Semiconductors against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

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