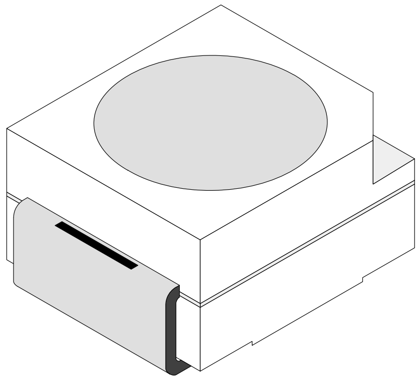
# High Intensity SMD LED

| Color | Type | Technology | Angle of Half Intensity ±φ |
|---|---|---|---|
| Blue | TLMB3140 | InGaN on SiC | 60° |
| Blue Green | TLMBG3100 | InGaN on SiC | 60° |
| True Green | TLMTG3100 | InGaN on SiC | 60° |

## Description

This device has been designed to meet the increasing demand for InGaN technology.
The package of the TLMB/TLMBG/TLMTG31.. is the P–LCC–2 (equivalent to a size B tantalum capacitor). It consists of a lead frame which is surrounded with a white thermoplast. The reflector inside this package is filled up with clear epoxy.



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## Features

- SMD LED with exceptional brightness
- Luminous intensity categorized
- 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
- Low power consumption
- Luminous intensity ratio in one packaging unit $I_{Vmax}/I_{Vmin} \leqq 1.6$

## 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 in office equipment
Flat backlight for LCDs, switches and symbols
General use

## Absolute Maximum Ratings

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

**TLMB3140** ,**TLMBG3100** ,**TLMTG3100** ,

| Parameter | Test Conditions | Symbol | Value | Unit |
|---|---|---|---|---|
| Reverse voltage | | $V_R$ | 5 | V |
| DC forward current | $T_{amb} \leq 80°C$ | $I_F$ | 20 | mA |
| Surge forward current | $t_p \leq 10\ \mu s$ | $I_{FSM}$ | 0.2 | A |
| Power dissipation | $T_{amb} \leq 80°C$ | $P_V$ | 84 | mW |
| Junction temperature | | $T_j$ | 110 | °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 $mm^2$) | $R_{thJA}$ | 350 | K/W |

## Optical and Electrical Characteristics

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

**Blue** (**TLMB3140** )

| Parameter | Test Conditions | Type | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Luminous intensity | $I_F$ = 20 mA | TLMB3140 | $I_V$ | 20 | 40 | | mcd |
| Dominant wavelength | $I_F$ = 20 mA | | $\lambda_d$ | 462 | 470 | 476 | nm |
| Peak wavelength | $I_F$ = 20 mA | | $\lambda_p$ | | 464 | | nm |
| Angle of half intensity | $I_F$ = 20 mA | | $\varphi$ | | ±60 | | deg |
| Forward voltage | $I_F$ = 20 mA | | $V_F$ | | 3.5 | 4.2 | V |
| Reverse voltage | $I_R$ = 10 µA | | $V_R$ | 5 | | | V |
| Temperature coefficient of $V_F$ | $I_F$ = 20 mA | | $TC_V$ | | –4 | | mV/K |
| Temperature coefficient of $I_V$ | $I_F$ = 20 mA | | $TC_I$ | | –0.4 | | %/K |

**Blue Green** (**TLMBG3100** )

| Parameter | Test Conditions | Type | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Luminous intensity | $I_F$ = 20 mA | TLMBG3100 | $I_V$ | 66 | 130 | | mcd |
| Dominant wavelength | $I_F$ = 20 mA | | $\lambda_d$ | 496 | 505 | 514 | nm |
| Peak wavelength | $I_F$ = 20 mA | | $\lambda_p$ | | 502 | | nm |
| Angle of half intensity | $I_F$ = 20 mA | | $\varphi$ | | ±60 | | deg |
| Forward voltage | $I_F$ = 20 mA | | $V_F$ | | 3.5 | 4.2 | V |
| Reverse voltage | $I_R$ = 10 µA | | $V_R$ | 5 | | | V |
| Temperature coefficient of $V_F$ | $I_F$ = 20 mA | | $TC_V$ | | –4 | | mV/K |
| Temperature coefficient of $I_V$ | $I_F$ = 20 mA | | $TC_I$ | | –0.2 | | %/K |

**True Green** (**TLMTG3100** )

| Parameter | Test Conditions | Type | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Luminous intensity | $I_F$ = 20 mA | TLMTG3100 | $I_V$ | 80 | 180 | | mcd |
| Dominant wavelength | $I_F$ = 20 mA | | $\lambda_d$ | 515 | 528 | 541 | nm |
| Peak wavelength | $I_F$ = 20 mA | | $\lambda_p$ | | 522 | | nm |
| Angle of half intensity | $I_F$ = 20 mA | | $\varphi$ | | ±60 | | deg |
| Forward voltage | $I_F$ = 20 mA | | $V_F$ | | 3.5 | 4.2 | V |
| Reverse voltage | $I_R$ = 10 μA | | $V_R$ | 5 | | | V |
| Temperature coefficient of $V_F$ | $I_F$ = 20 mA | | $TC_V$ | | –3.5 | | mV/K |
| Temperature coefficient of $I_V$ | $I_F$ = 20 mA | | $TC_I$ | | –0.3 | | %/K |

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

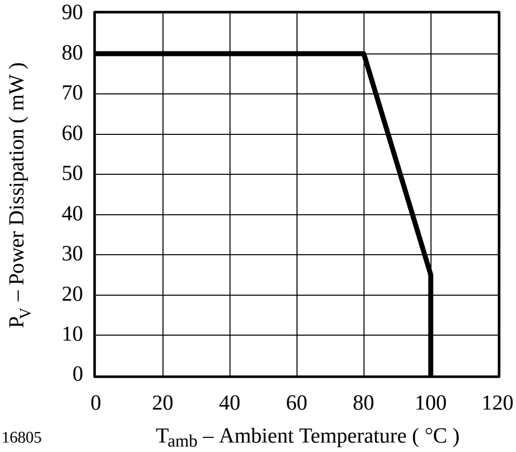



Figure 1 Power Dissipation vs. Ambient Temperature

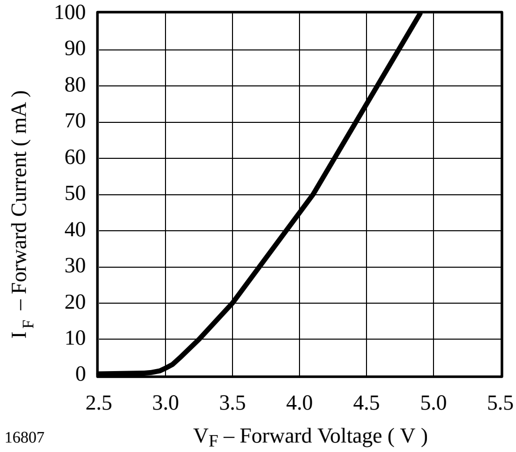



Figure 3 Forward Current vs. Forward Voltage

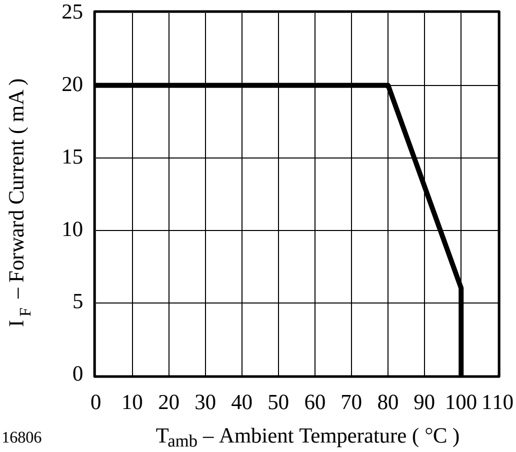



Figure 2 Forward Current vs. Ambient Temperature

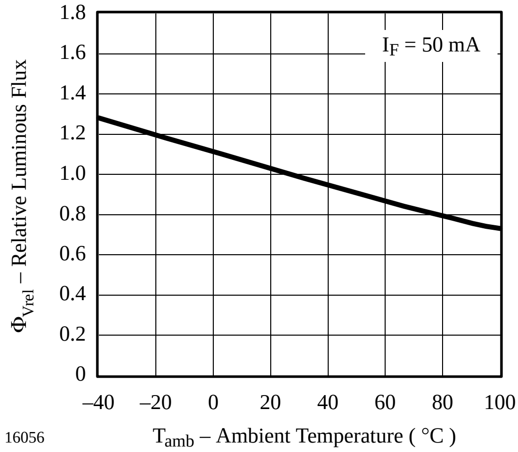



Figure 4 Rel. Luminous Flux vs. Ambient Temperature

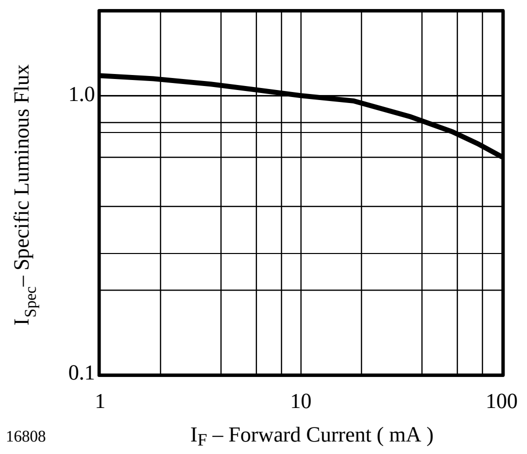



Figure 5 Specific Luminous Flux vs. Forward Current

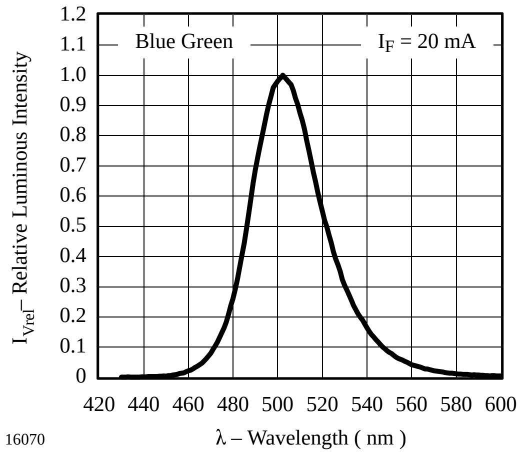



Figure 8 Relative Luminous Intensity vs. Wavelength

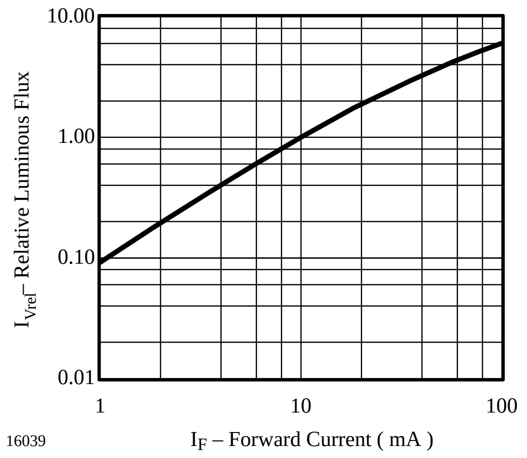



Figure 6 Relative Luminous Flux vs. Forward Current

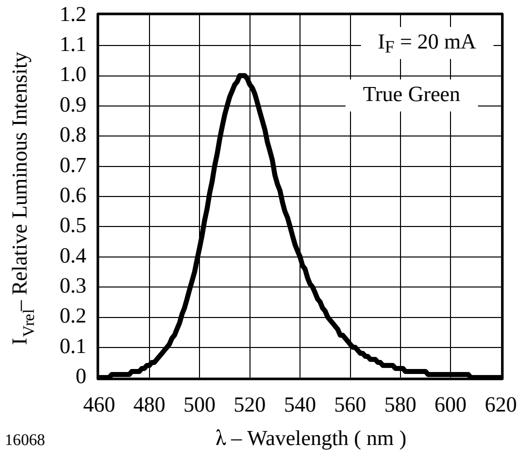



Figure 9 Relative Luminous Intensity vs. Wavelength

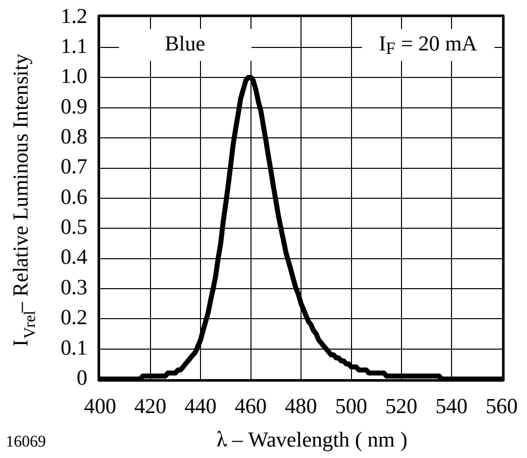



Figure 7 Relative Luminous Intensity vs. Wavelength

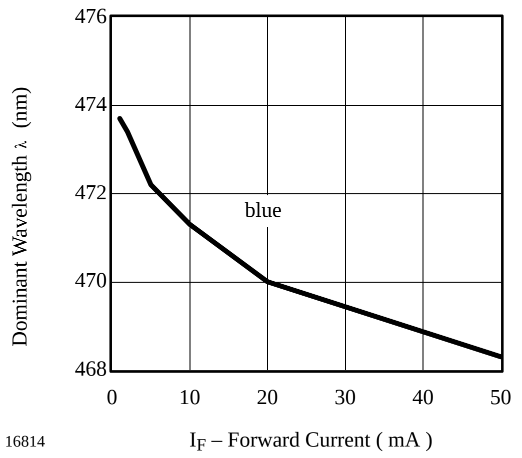



Figure 10 Dominant Wavelength vs. Forward Current

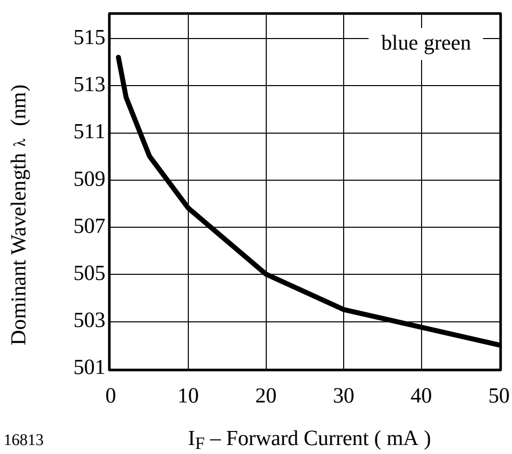



Figure 11 Dominant Wavelength vs. Forward Current

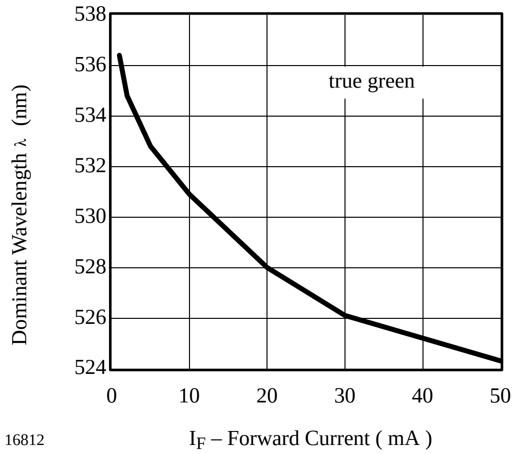
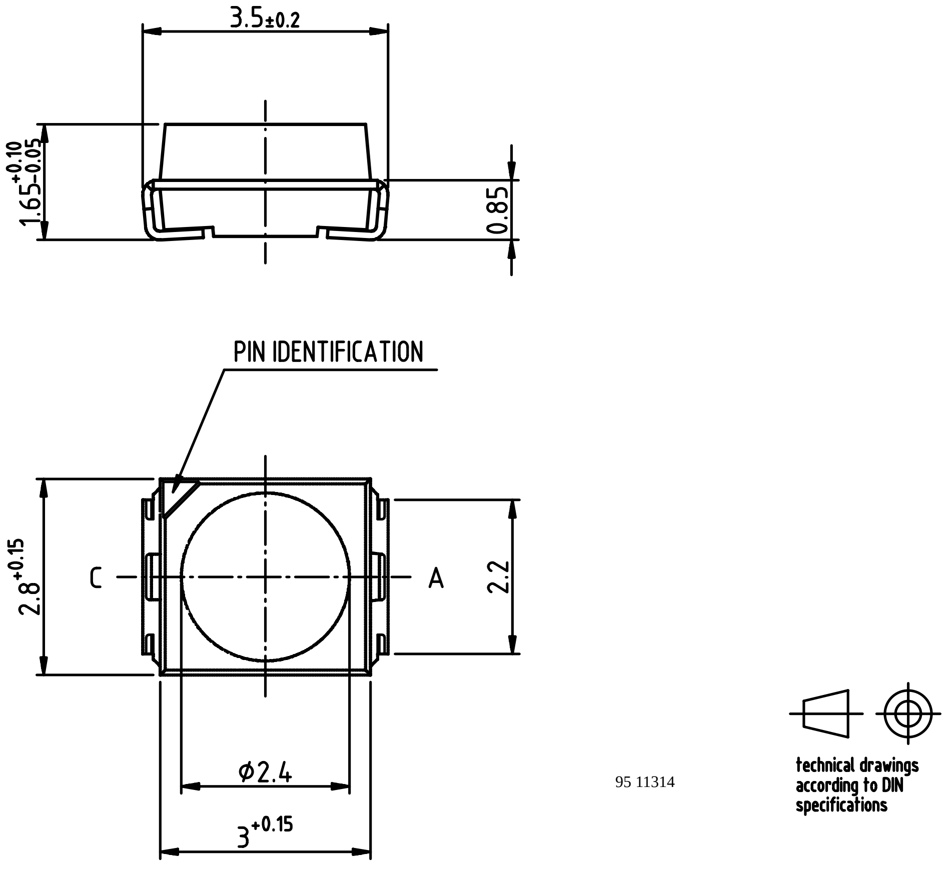
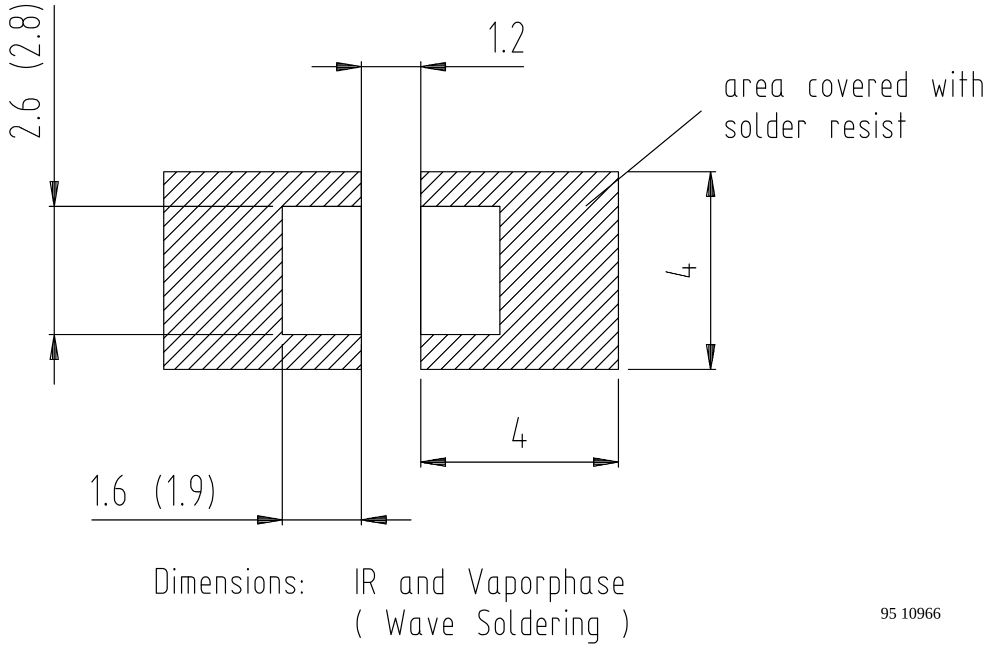



Figure 12 Dominant Wavelength vs. Forward Current

## Dimensions in mm



## PCB Layout in mm



## 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.



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