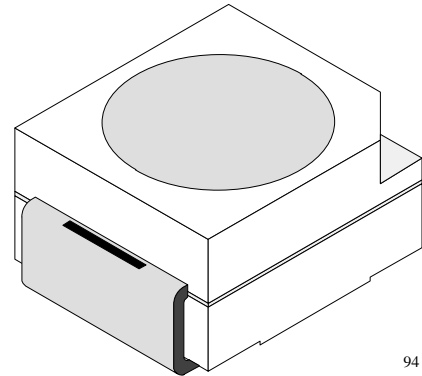


SMD LED in P-LCC-2 Package

| Color | Type | Technology | Angle of Half Intensity $\pm\varphi$ |
|-----------|----------|--------------|---|
| Super red | TLMS310. | GaAsP on GaP | 60° |

Description

These devices have been designed to meet the increasing demand for surface mounting technology. The package of the TLMS310. is the P-LCC-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.



94 8553

Features

- SMD LEDs 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
 $I_{Vmax}/I_{Vmin} \leq 2.0$, optional ≤ 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

$T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified

TLMS310., , , ,

| Parameter | Test Conditions | Symbol | Value | Unit |
|-------------------------------------|---|------------|-------------|--------------------|
| Reverse voltage | | V_R | 6 | V |
| DC forward current | $T_{amb} \leq 60^{\circ}\text{C}$ | I_F | 30 | mA |
| Surge forward current | $t_p \leq 10 \mu\text{s}$ | I_{FSM} | 0.5 | A |
| Power dissipation | $T_{amb} \leq 60^{\circ}\text{C}$ | P_V | 100 | mW |
| Junction temperature | | T_j | 100 | $^{\circ}\text{C}$ |
| Operating temperature range | | T_{amb} | -40 to +100 | $^{\circ}\text{C}$ |
| Storage temperature range | | T_{stg} | -40 to +100 | $^{\circ}\text{C}$ |
| Soldering temperature | $t \leq 5 \text{ s}$ | T_{sd} | 260 | $^{\circ}\text{C}$ |
| Thermal resistance junction/ambient | mounted on PC board (pad size > 16 mm ²) | R_{thJA} | 400 | K/W |

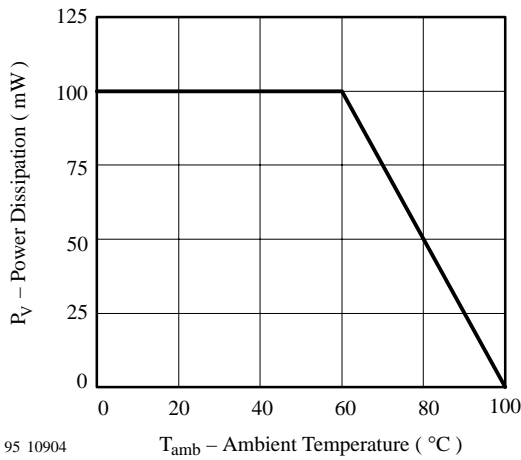
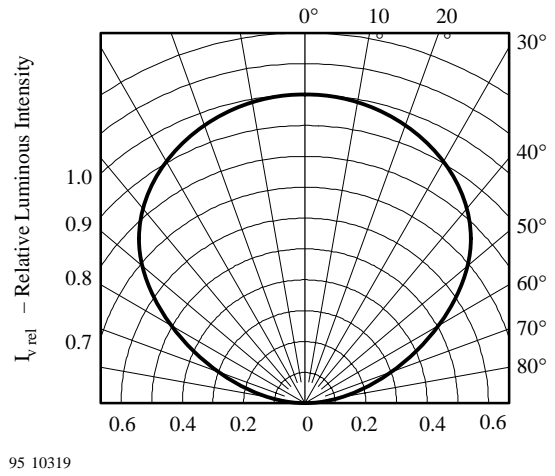
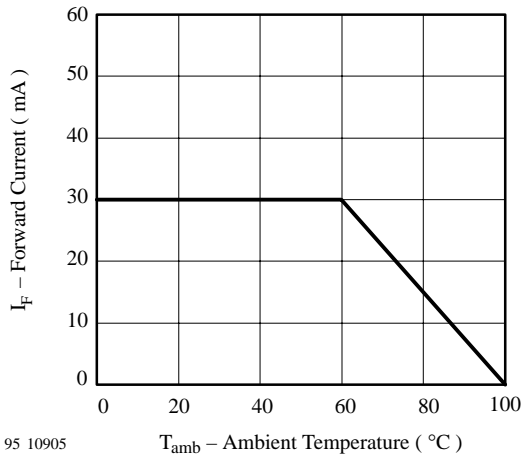
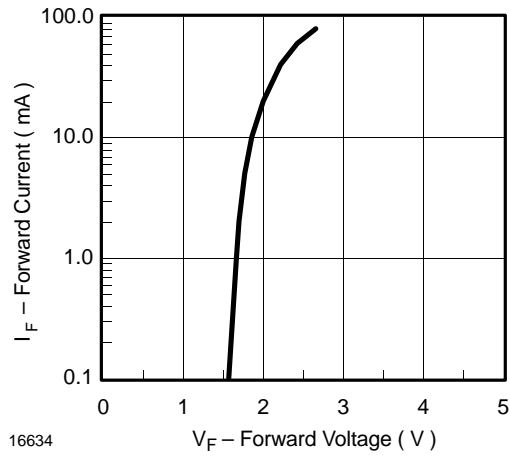
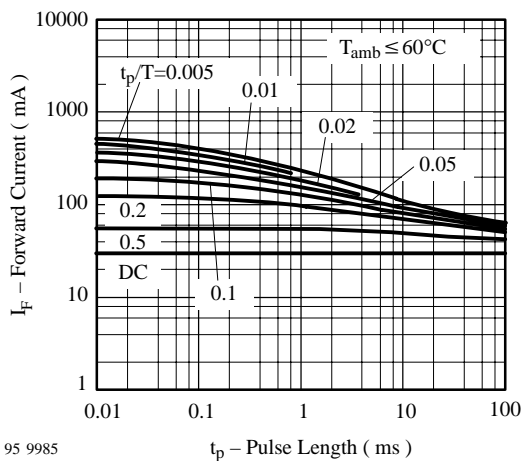
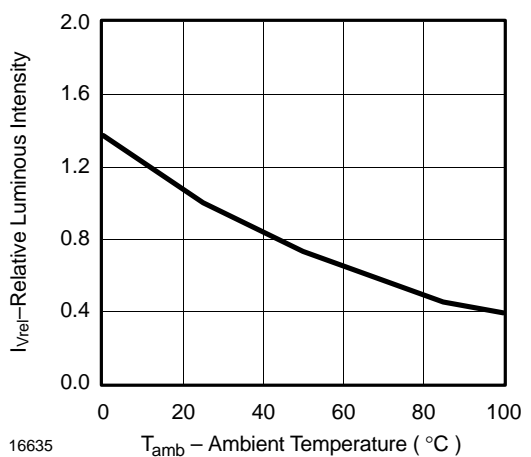
Optical and Electrical Characteristics

$T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified

Super red (TLMS310.)

| Parameter | Test Conditions | Type | Symbol | Min. | Typ. | Max. | Unit |
|--|----------------------------|----------|------------------|------|----------|------|------|
| Luminous intensity ¹⁾ | $I_F = 10 \text{ mA}$ | TLMS3100 | I_V | 2.5 | 7.5 | | |
| | $I_F = 10 \text{ mA}$ | TLMS3101 | I_V | 4 | | 12.5 | mcd |
| Dominant wavelength | $I_F = 10 \text{ mA}$ | | λ_d | 624 | | 636 | nm |
| Peak wavelength | $I_F = 10 \text{ mA}$ | | λ_p | | 640 | | nm |
| Angle of half intensity | $I_F = 10 \text{ mA}$ | | ϕ | | ± 60 | | deg |
| Forward voltage | $I_F = 20 \text{ mA}$ | | V_F | | 2.0 | 2.6 | V |
| Reverse voltage | $I_R = 10 \mu\text{A}$ | | V_R | 6 | | | V |
| Junction capacitance | $V_R = 0, f = 1\text{MHz}$ | | C_j | | 7.0 | | pF |
| Temperature coefficient of V_F | $I_F = 20 \text{ mA}$ | | TC_{V_F} | | -1.8 | | mV/K |
| Temperature coefficient of λ_d | $I_F = 10 \text{ mA}$ | | TC_{λ_d} | | 0.05 | | nm/K |

¹⁾ in one Packing Unit $I_{VMin.}/I_{VMax.} \leq 1.6$

Typical Characteristics ($T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified)

Figure 1. Power Dissipation vs. Ambient Temperature

Figure 4. Rel. Luminous Intensity vs. Angular Displacement

Figure 2. Forward Current vs. Ambient Temperature

Figure 5. Forward Current vs. Forward Voltage

Figure 3. Forward Current vs. Pulse Length

Figure 6. Rel. Luminous Intensity vs. Ambient Temperature

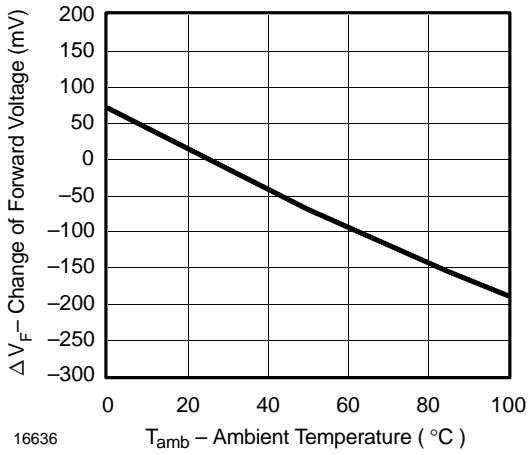


Figure 7. Change of Forward Voltage vs. Ambient Temperature

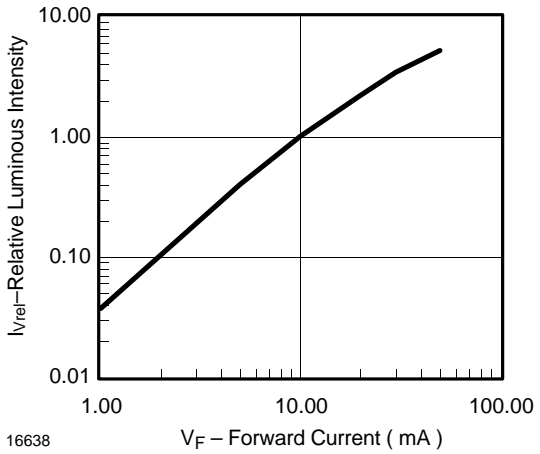


Figure 9. Rel. Luminous Intensity vs. Forward Current

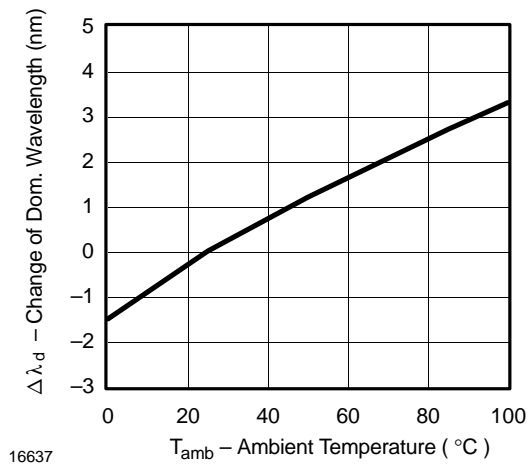


Figure 8. Change of Dominant Wavelength vs. Ambient Temperature

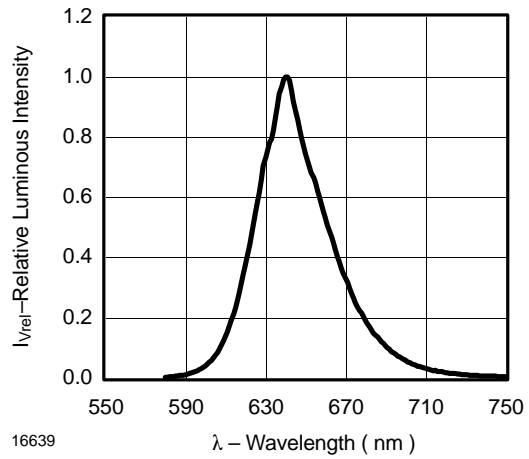
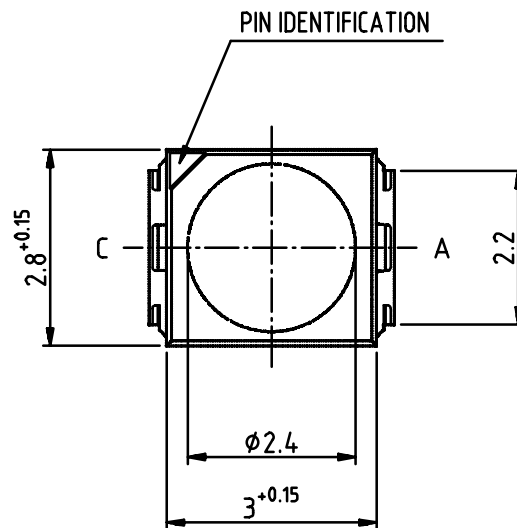
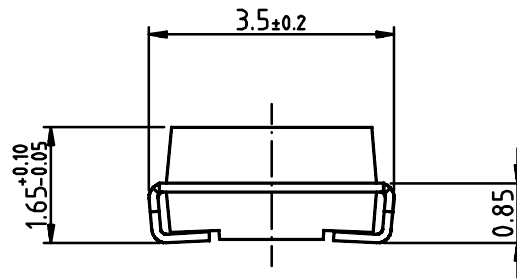
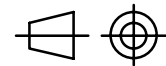


Figure 10. Rel. Luminous Intensity vs. Wavelength

Dimensions in mm

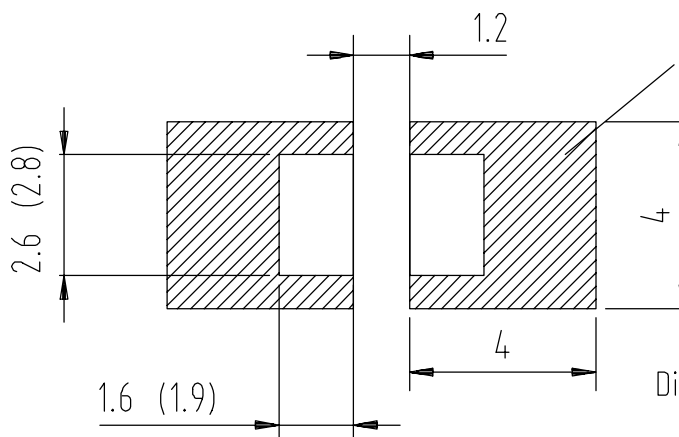


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technical drawings
according to DIN
specifications

PCB Layout in mm



area covered with
solder resist

Dimensions: IR and Vaporphase
(Wave Soldering)

95 10966

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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