# TELUX™ LED

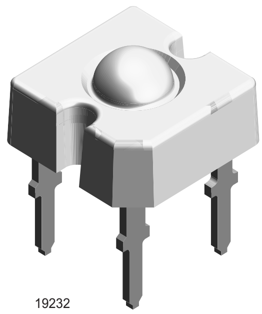
## Description

The TELUX™ series is a clear, non diffused LED for high end applications where supreme luminous flux is required.

It is designed in an industry standard 7.62 mm square package utilizing highly developed InGaN technology.

The supreme heat dissipation of TELUX™ allows applications at high ambient temperatures.

All packing units are binned for luminous flux and color to achieve best homogenous light appearance in application.



19232

## Features

- Utilizing InGaN technology
- High luminous flux
- Supreme heat dissipation: $R_{thJP}$ is 90 K/W
- High operating temperature: $T_j$ + 100 °C
- Packed in tubes for automatic insertion
- Luminous flux and color categorized for each tube
- Small mechanical tolerances allow precise usage of external reflectors or lightguides
- ESD-withstand voltage:
  > 1 kV acc. to MIL STD 883 D, Method 3015.7
- Lead-free device

## Applications

Exterior lighting
Dashboard illumination
Tail-, Stop - and Turn Signals of motor vehicles
Replaces incandescent lamps

## Parts Table

| Part | Color, Luminous Intensity | Angle of Half Intensity (±φ) | Technology |
|---|---|---|---|
| TLWW8900 | White, $\phi_V$ > 630 mlm | 45 ° | InGaN / TAG on SiC |

## Absolute Maximum Ratings

$T_{amb}$ = 25 °C, unless otherwise specified
**TLWW8900**

| Parameter | Test condition | Symbol | Value | Unit |
|---|---|---|---|---|
| Reverse voltage | $I_R$ = 10 µA | $V_R$ | 5 | V |
| DC Forward current | $T_{amb} \leq 50$ °C | $I_F$ | 50 | mA |
| Surge forward current | $t_p \leq 10$ µs | $I_{FSM}$ | 0.1 | A |
| Power dissipation | $T_{amb} \leq 50$ °C | $P_V$ | 255 | mW |
| Junction temperature | | $T_j$ | 100 | °C |
| Operating temperature range | | $T_{amb}$ | - 40 to + 100 | °C |
| Storage temperature range | | $T_{stg}$ | - 55 to + 100 | °C |

| Parameter | Test condition | Symbol | Value | Unit |
|---|---|---|---|---|
| Soldering temperature | t ≤ 5 s, 1.5 mm from body preheat temperature 100 °C/ 30 sec. | $T_{sd}$ | 260 | °C |
| Thermal resistance junction/ ambient | with cathode heatsink of 70 $mm^2$ | $R_{thJA}$ | 200 | K/W |
| Thermal resistance junction/pin | | $R_{thJP}$ | 90 | K/W |

## Optical and Electrical Characteristics

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

## White

**TLWW8900**

| Parameter | Test condition | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|
| Total flux | $I_F$ = 50 mA, $R_{thJA}$ = 200 °K/W | $\phi_V$ | 630 | 1000 | | mlm |
| Luminous intensity/Total flux | $I_F$ = 50 mA, $R_{thJA}$ = 200 °K/W | $I_V/\phi_V$ | | 0.8 | | mcd/mlm |
| Color temperature | $I_F$ = 50 mA, $R_{thJA}$ = 200 °K/W | $T_K$ | | 5500 | | K |
| Angle of half intensity | $I_F$ = 50 mA, $R_{thJA}$ = 200 °K/W | $\varphi$ | | ± 45 | | deg |
| Total included angle | 90 % of Total Flux Captured | $\varphi$ | | 75 | | deg |
| Forward voltage | $I_F$ = 50 mA, $R_{thJA}$ = 200 °K/W | $V_F$ | | 4.3 | 5.2 | V |
| Reverse voltage | $I_R$ = 10 µA | $V_R$ | 5 | 10 | | V |
| Junction capacitance | $V_R$ = 0, f = 1 MHz | $C_j$ | | 50 | | pF |

## Chromaticity Coordinate Classification

| Group | X | | Y | |
|---|---|---|---|---|
| | min | max | min | max |
| 3a | 0.2900 | 0.3025 | Y = 1.4x - 0.121 | Y = 1.4x - 0.071 |
| 3b | 0.3025 | 0.3150 | Y = 1.4x - 0.121 | Y = 1.4x - 0.071 |
| 3c | 0.2900 | 0.3025 | Y = 1.4x - 0.171 | Y = 1.4x - 0.121 |
| 3d | 0.3025 | 0.3150 | Y = 1.4x - 0.171 | Y = 1.4x - 0.121 |
| 4a | 0.3150 | 0.3275 | Y = 1.4x - 0.121 | Y = 1.4x - 0.071 |
| 4b | 0.3275 | 0.3400 | Y = 1.4x - 0.121 | Y = 1.4x - 0.071 |
| 4c | 0.3150 | 0.3275 | Y = 1.4x - 0.171 | Y = 1.4x - 0.121 |
| 4d | 0.3275 | 0.3400 | Y = 1.4x - 0.171 | Y = 1.4x - 0.121 |
| 5a | 0.3400 | 0.3525 | Y = 1.4x - 0.121 | Y = 1.4x - 0.071 |
| 5b | 0.3525 | 0.3650 | Y = 1.4x - 0.121 | Y = 1.4x - 0.071 |
| 5c | 0.3400 | 0.3525 | Y = 1.4x - 0.171 | Y = 1.4x - 0.121 |
| 5d | 0.3525 | 0.3650 | Y = 1.4x - 0.171 | Y = 1.4x - 0.121 |

tolerance ± 0.005


Document Number 83215
Rev. 1.5, 31-Aug-04

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

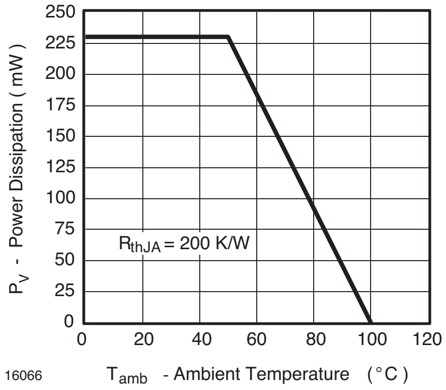



Figure 1. Power Dissipation vs. Ambient Temperature for InGaN

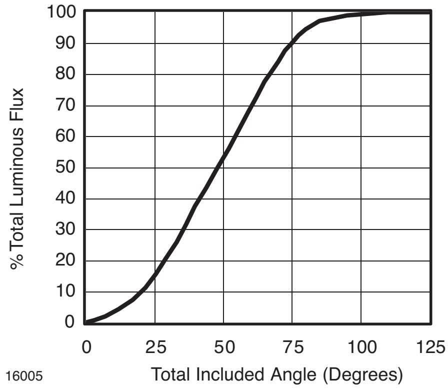



Figure 4. Percentage Total Luminous Flux vs. Total Included Angle for 60 ° emission angle

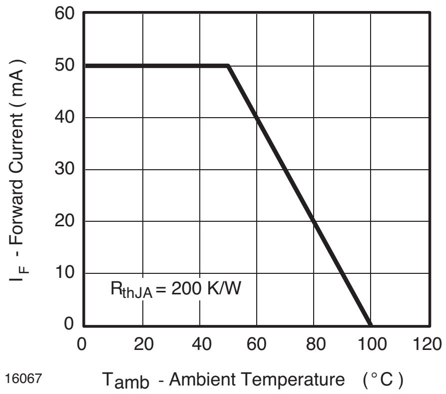



Figure 2. Forward Current vs. Ambient Temperature for InGaN

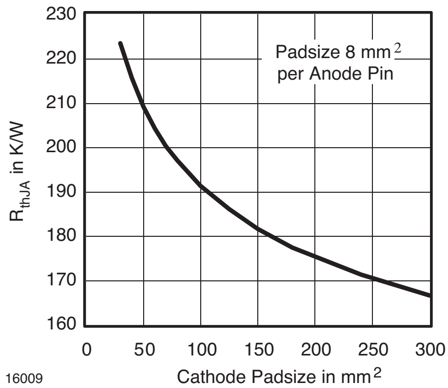



Figure 5. Thermal Resistance Junction Ambient vs. Cathode Padsize

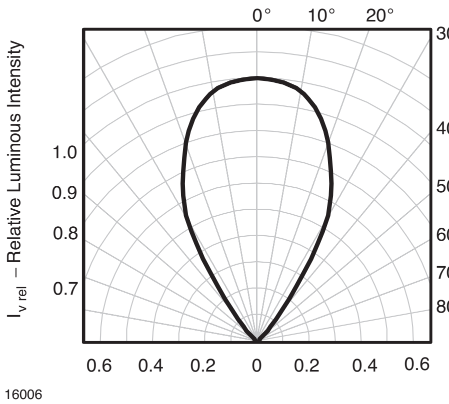



Figure 3. Rel. Luminous Intensity vs. Angular Displacement for 60 ° emission angle

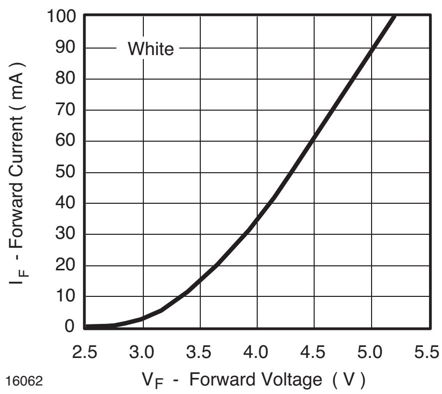



Figure 6. Forward Current vs. Forward Voltage

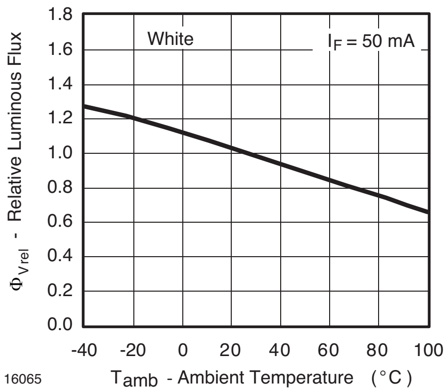



Figure 7. Rel. Luminous Flux vs. Ambient Temperature

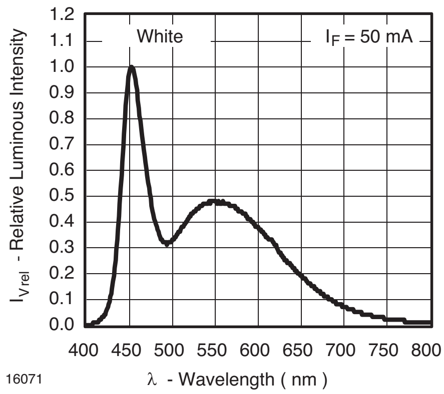



Figure 10. Relative Intensity vs. Wavelength

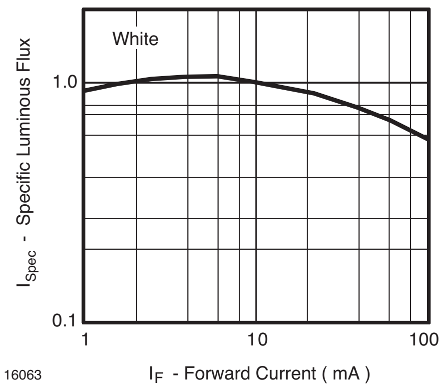



Figure 8. Specific Luminous Flux vs. Forward Current

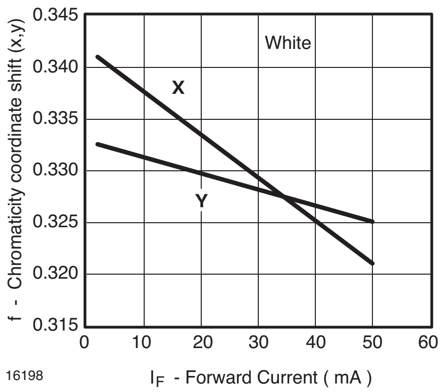



Figure 11. Chromaticity Coordinate Shift vs. Forward Current

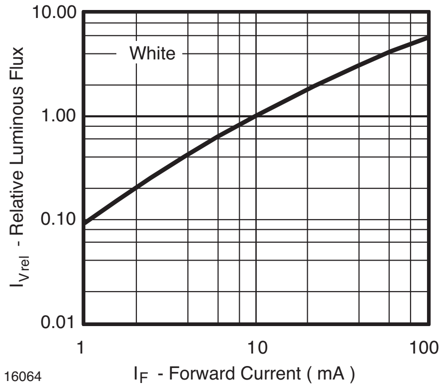



Figure 9. Relative Luminous Flux vs. Forward Current

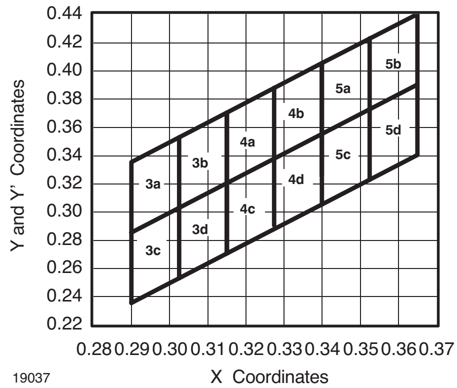
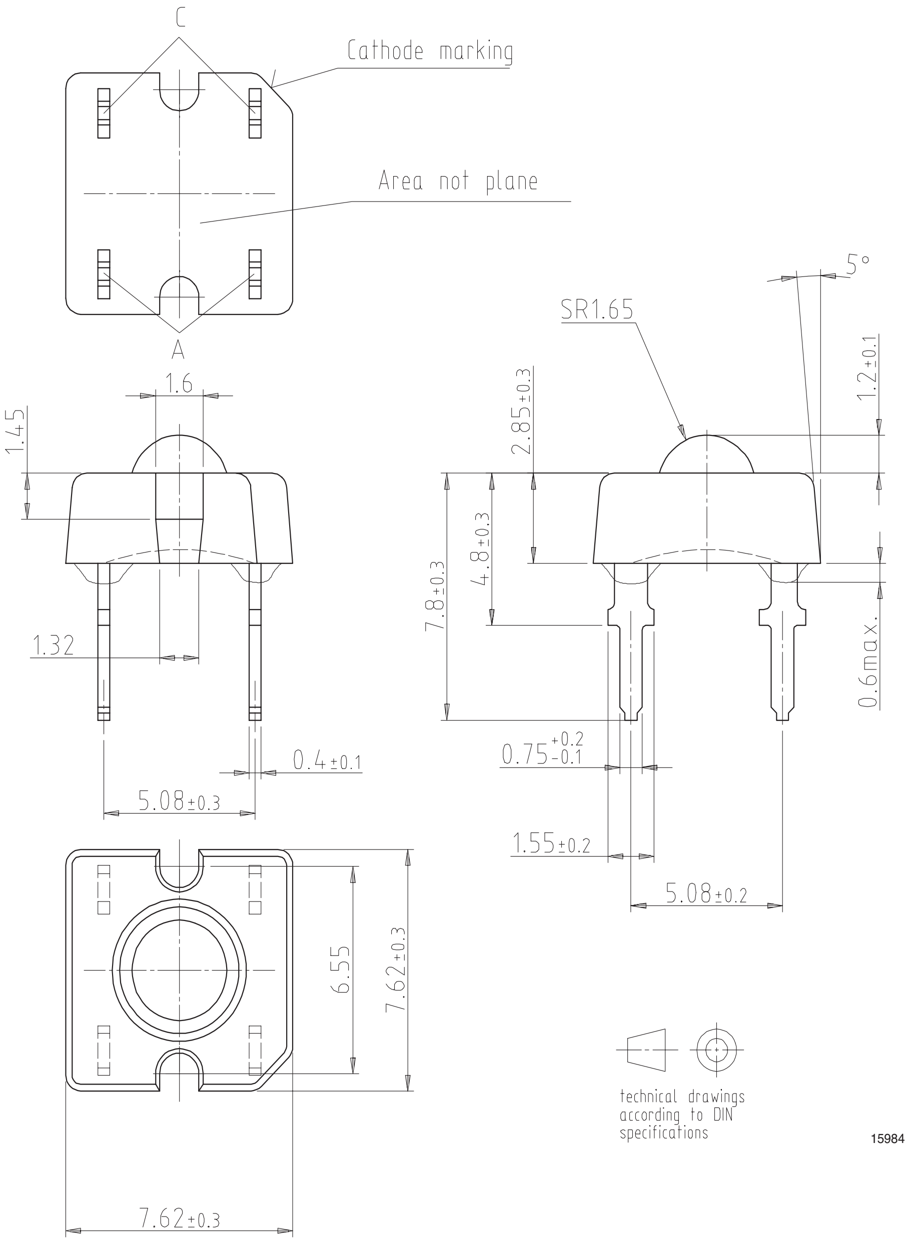



Figure 12. Coordinates of Colorgroups

## Package Dimensions 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 operatingsystems 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.



Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany
Telephone: 49 (0)7131 67 2831, Fax number: 49 (0)7131 67 2423