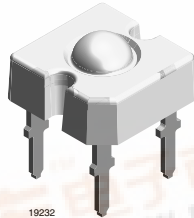


TELUX™



FEATURES

- High luminous flux
- Supreme heat dissipation: R_{thJP} is 90 K/W
- High operating temperature:
 $T_{amb} = -40\text{ °C to }+100\text{ °C}$
- 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
- Lead (Pb)-free device
- ESD-withstand voltage: up to 1 kV according to JESD22-A114-B
- Compatible with wave solder process acc. to CECC 00802 and J-STD-020C
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC
- Automotive qualified



DESCRIPTION

The VLWB9900 is a clear, non diffused LED for 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 VLWB9900 allows applications at high ambient temperatures.

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

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: TELUX™
- Product series: power
- Angle of half intensity: $\pm 45^\circ$

APPLICATIONS

- Exterior lighting
- Replaces small incandescent lamps
- Traffic signals and signs

| PARTS TABLE | | |
|--------------------|---------------------------------|-------------------|
| PART | COLOR, LUMINOUS FLUX | TECHNOLOGY |
| VLWB9900 | Blue, $\phi_V > 800\text{ mlm}$ | InGaN on SiC |



| ABSOLUTE MAXIMUM RATINGS ¹⁾ VLWB9900 | | | | |
|---|---|-------------------|---------------|------------------|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
| Reverse voltage ²⁾ | $I_R = 10 \mu\text{A}$ | V_R | 5 | V |
| DC Forward current | $T_{\text{amb}} \leq 50 \text{ }^\circ\text{C}$ | I_F | 50 | mA |
| Surge forward current | $t_p \leq 10 \mu\text{s}$ | I_{FSM} | 0.1 | A |
| Power dissipation | | P_V | 230 | 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} | - 55 to + 100 | $^\circ\text{C}$ |
| Soldering temperature | $t \leq 5 \text{ s}$, 1.5 mm from body preheat temperature 100 $^\circ\text{C}/30 \text{ s}$ | T_{sd} | 260 | $^\circ\text{C}$ |
| 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 |

Note:

¹⁾ $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$, unless otherwise specified

²⁾ Driving the LED in reverse direction is suitable for short term application

| OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ VLWB9900, BLUE | | | | | | |
|---|--|--------------------------|------|----------|------|---------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Total flux | $I_F = 50 \text{ mA}$, $R_{\text{thJA}} = 200 \text{ }^\circ\text{K/W}$ | ϕ_V | 800 | 1200 | | mlm |
| Luminous intensity/total flux | $I_F = 50 \text{ mA}$, $R_{\text{thJA}} = 200 \text{ }^\circ\text{K/W}$ | I_V/ϕ_V | | 0.8 | | mcd/mlm |
| Dominant wavelength | $I_F = 50 \text{ mA}$, $R_{\text{thJA}} = 200 \text{ }^\circ\text{K/W}$ | λ_d | 462 | 470 | 476 | nm |
| Angle of half intensity | $I_F = 50 \text{ mA}$, $R_{\text{thJA}} = 200 \text{ }^\circ\text{K/W}$ | φ | | ± 45 | | deg |
| Total included angle | 90 % of total flux captured | φ | | 100 | | deg |
| Forward voltage | $I_F = 50 \text{ mA}$, $R_{\text{thJA}} = 200 \text{ }^\circ\text{K/W}$ | V_F | | 3.9 | 4.7 | V |
| Reverse voltage | $I_R = 10 \mu\text{A}$ | V_R | 5 | 10 | | V |
| Junction capacitance | $V_R = 0$, $f = 1 \text{ MHz}$ | C_j | | 50 | | pF |
| Temperature coefficient of λ_{dom} | $I_F = 30 \text{ mA}$ | $TC\lambda_{\text{dom}}$ | | 0.02 | | nm/K |

Note:

¹⁾ $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$, unless otherwise specified

| LUMINOUS FLUX CLASSIFICATION | | |
|------------------------------|---------------------|------|
| GROUP | BLUE | |
| | LUMINOUS FLUX (MLM) | |
| | MIN. | MAX. |
| A | 800 | 1250 |
| B | 1000 | 1800 |
| C | 1500 | 2400 |

Note:

Luminous flux 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 in one tube (there will be no mixing of two groups on each tube).

In order to ensure availability, single brightness groups will not be orderable. In a similar manner for colors where wavelength groups are measured and binned, single wavelength groups will be shipped in any one tube.

In order to ensure availability, single wavelength groups will not be orderable.

| COLOR CLASSIFICATION | | |
|----------------------|----------------------|------|
| GROUP | BLUE | |
| | DOM. WAVELENGTH (NM) | |
| | MIN. | MAX. |
| 3 | 462 | 468 |
| 4 | 466 | 472 |
| 5 | 470 | 476 |

Note:

Wavelengths are tested at a current pulse duration of 25 ms and an accuracy of $\pm 1 \text{ nm}$.

TYPICAL CHARACTERISTICS

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

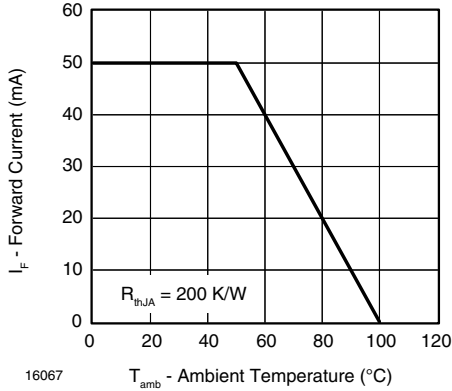


Figure 1. Forward Current vs. Ambient Temperature for InGaN

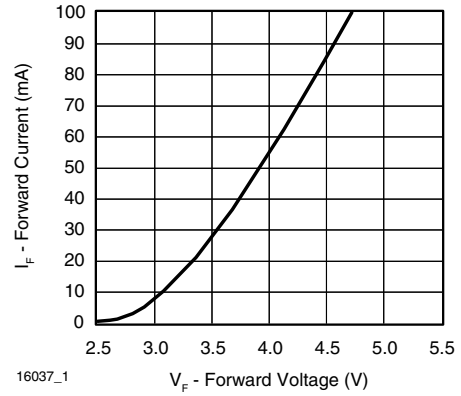


Figure 4. Forward Current vs. Forward Voltage

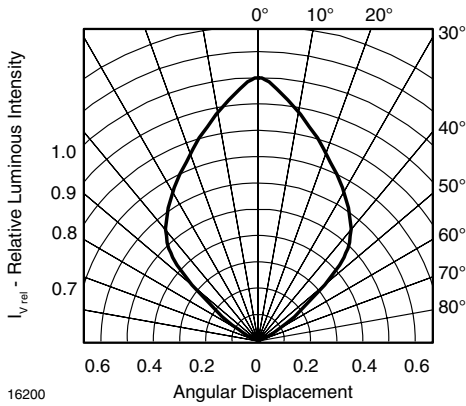


Figure 2. Rel. Luminous Intensity vs. Angular Displacement

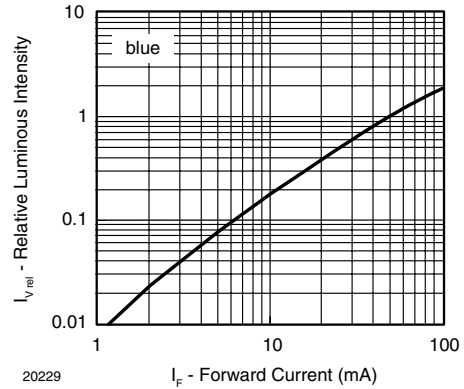


Figure 5. Relative Luminous Flux vs. Forward Current

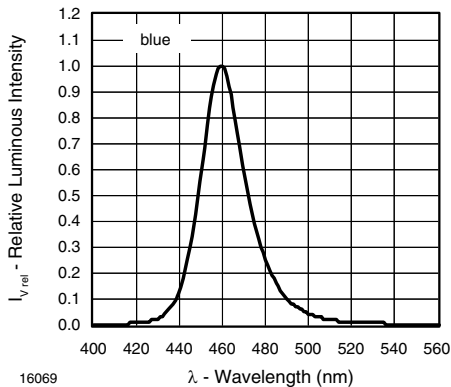


Figure 3. Relative Intensity vs. Wavelength

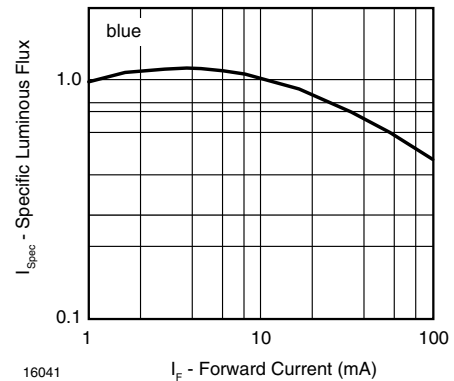


Figure 6. Specific Luminous Flux vs. Forward Current

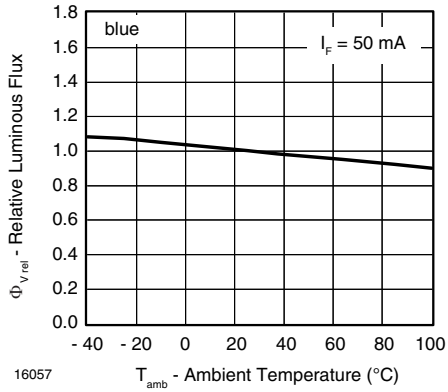


Figure 7. Rel. Luminous Flux vs. Ambient Temperature

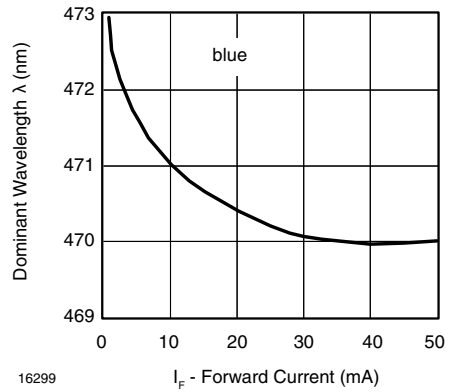
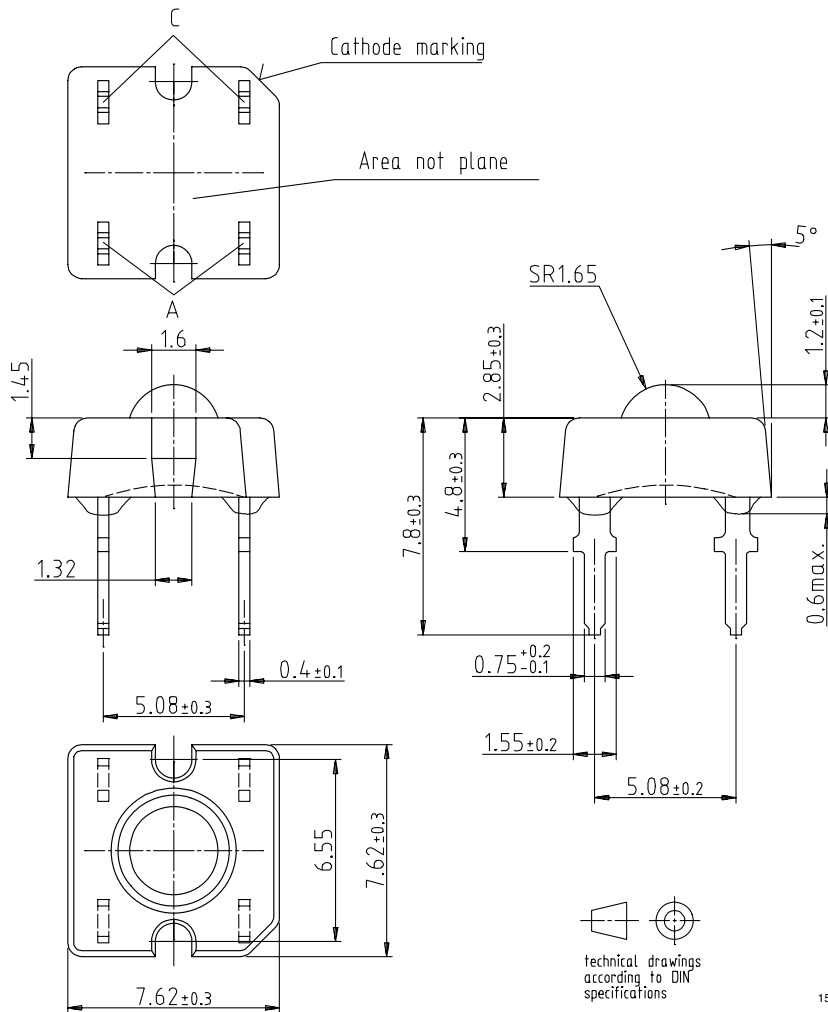


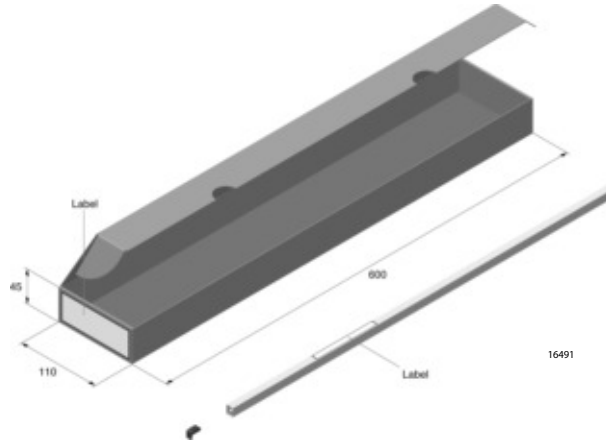
Figure 8. Dominant Wavelength vs. Forward Current

PACKAGE DIMENSIONS in millimeters

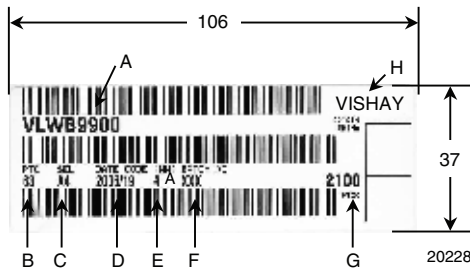


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FAN FOLD BOX Dimensions in millimeters

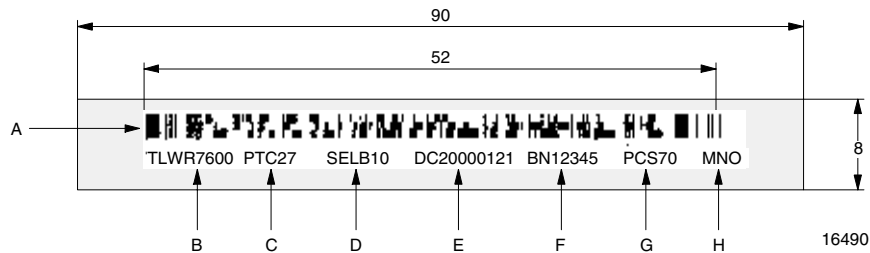


LABEL OF FAN FOLD BOX
EXAMPLE:



- A) Type of component
- B) Manufacturing plant
- C) SEL - selection code (bin):
 e.g.: A = code for luminous intensity group
 4 = code for color group
- D) Date code year/week
- E) Day code (e.g. 4: Thursday, A: early shift)
- F) Batch no.
- G) Total quantity
- H) Company code

EXAMPLE FOR TELUX TUBE LABEL Dimensions in millimeters



- A) Bar code
- B) Type of component
- C) Manufacturing plant
- D) SEL - Selection code (bin)
 Digit1 - code for luminous flux group
 Digit2 - code for dominant wavelength group
 Digit3 - code for forward voltage group
- E) Date code
- F) Batch no.
- G) Total quantity
- H) Company code

TUBE WITH BAR CODE LABEL Dimensions in millimeters

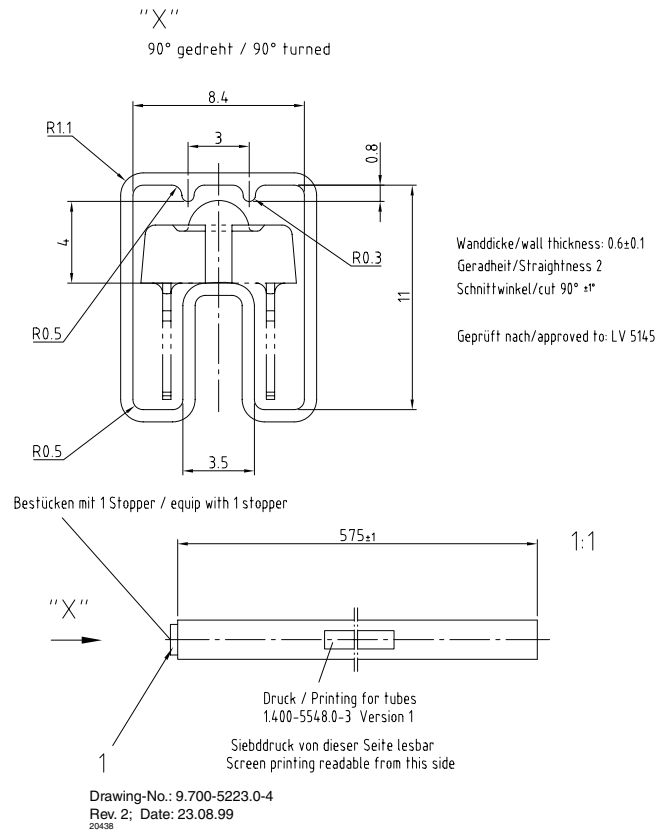


Figure 9. Drawing Proportions not scaled



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.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany

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