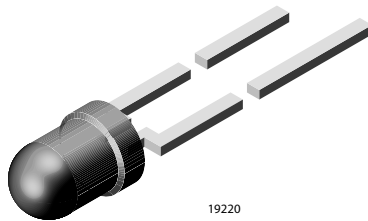


High Intensity LED in \varnothing 3 mm Clear Package



FEATURES

- Exceptional brightness
- Very high intensity even at low drive currents
- Small viewing angle
- Low forward voltage
- 3 mm (T-1) untinted non-diffused package
- Deep red color
- Categorized for luminous intensity
- Outstanding material efficiency
- Lead (Pb)-free device

DESCRIPTION

This LED contains the double heterojunction (DH) GaAlAs on GaAs technology.

This deep red LED can be utilized over a wide range of drive current. It can be DC or pulse driven to achieve desired light output.

The device is available in a clear 3 mm package.

APPLICATIONS

- Bright ambient lighting conditions
- Battery powered equipment
- Indoor and outdoor information displays
- Portable equipment
- Telecommunication indicators
- General use

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 3 mm
- Product series: standard
- Angle of half intensity: $\pm 16^\circ$

| PARTS TABLE | | |
|-------------|---------------------------------------|----------------|
| PART | COLOR, LUMINOUS INTENSITY | TECHNOLOGY |
| TLDR4900 | Red, $I_V > 63$ mcd | GaAlAs on GaAs |
| TLDR4901 | Red, $I_V = (63 \text{ to } 200)$ mcd | GaAlAs on GaAs |

| ABSOLUTE MAXIMUM RATINGS ¹⁾ TLDR490. | | | | |
|---|---------------------------------|------------|---------------|------------------|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
| Reverse voltage | | V_R | 6 | V |
| DC Forward current | | I_F | 50 | mA |
| Surge forward current | $t_p \leq 10 \mu\text{s}$ | I_{FSM} | 1 | 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} | - 55 to + 100 | $^\circ\text{C}$ |
| Soldering temperature | $t \leq 5$ s, 2 mm from body | T_{sd} | 260 | $^\circ\text{C}$ |
| Thermal resistance junction/ambient | | R_{thJA} | 400 | K/W |

Note:

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

| OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ TLDR490., RED | | | | | | | |
|--|------------------------------|----------|-----------------|-----|----------|-----|---------------|
| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN | TYP. | MAX | UNIT |
| Luminous intensity ²⁾ | $I_F = 20 \text{ mA}$ | TLDR4900 | I_V | 63 | 200 | | mcd |
| | | TLDR4901 | I_V | 63 | | 200 | mcd |
| Luminous intensity | $I_F = 1 \text{ mA}$ | | I_V | | 8 | | mcd |
| Dominant wavelength | $I_F = 20 \text{ mA}$ | | λ_d | | 648 | | nm |
| Peak wavelength | $I_F = 20 \text{ mA}$ | | λ_p | | 650 | | nm |
| Spectral line half width | $I_F = 20 \text{ mA}$ | | $\Delta\lambda$ | | 20 | | nm |
| Angle of half intensity | $I_F = 20 \text{ mA}$ | | φ | | ± 16 | | deg |
| Forward voltage | $I_F = 20 \text{ mA}$ | | V_F | | 1.8 | 2.2 | V |
| Reverse current | $V_R = 6 \text{ V}$ | | I_R | | | 10 | μA |
| Junction capacitance | $V_R = 0, f = 1 \text{ MHz}$ | | C_j | | 30 | | pF |

Note:

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

2) in one packing unit $I_{Vminx}/I_{Vmax} \leq 0.5$

TYPICAL CHARACTERISTICS

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

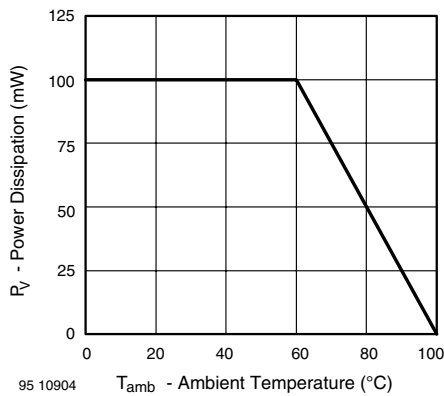


Figure 1. Power Dissipation vs. Ambient Temperature

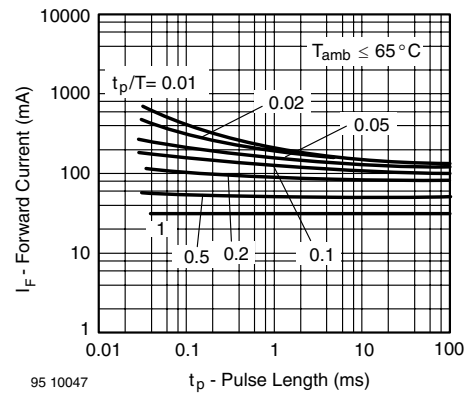


Figure 3. Forward Current vs. Pulse Length

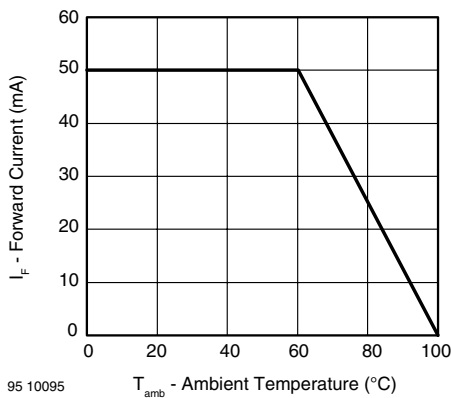


Figure 2. Forward Current vs. Ambient Temperature for InGaN

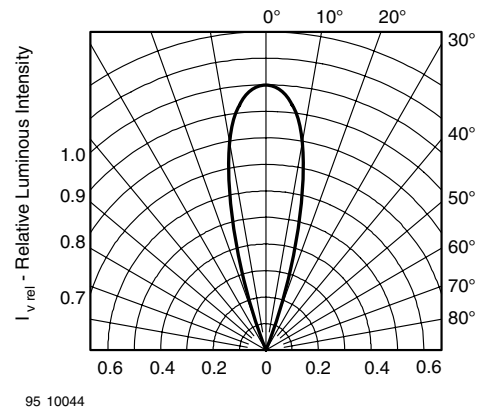


Figure 4. Rel. Luminous Intensity vs. Angular Displacement

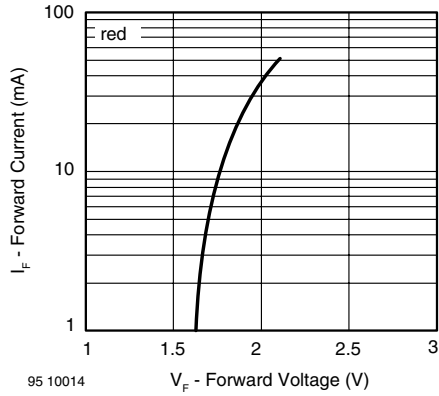


Figure 5.

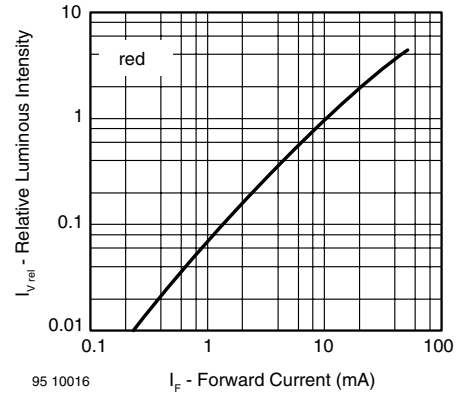


Figure 8. Relative Luminous Intensity vs. Forward Current

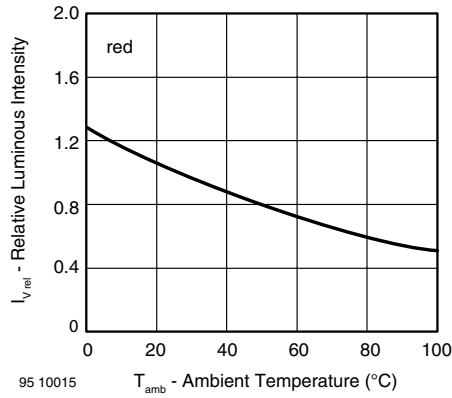


Figure 6. Rel. Luminous Intensity vs. Ambient Temperature

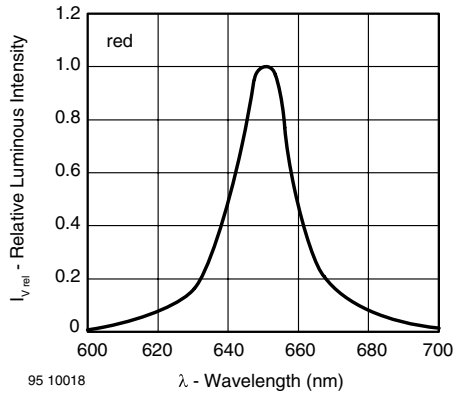


Figure 9. Relative Intensity vs. Wavelength

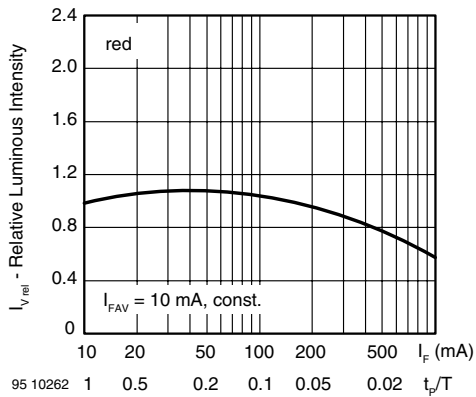
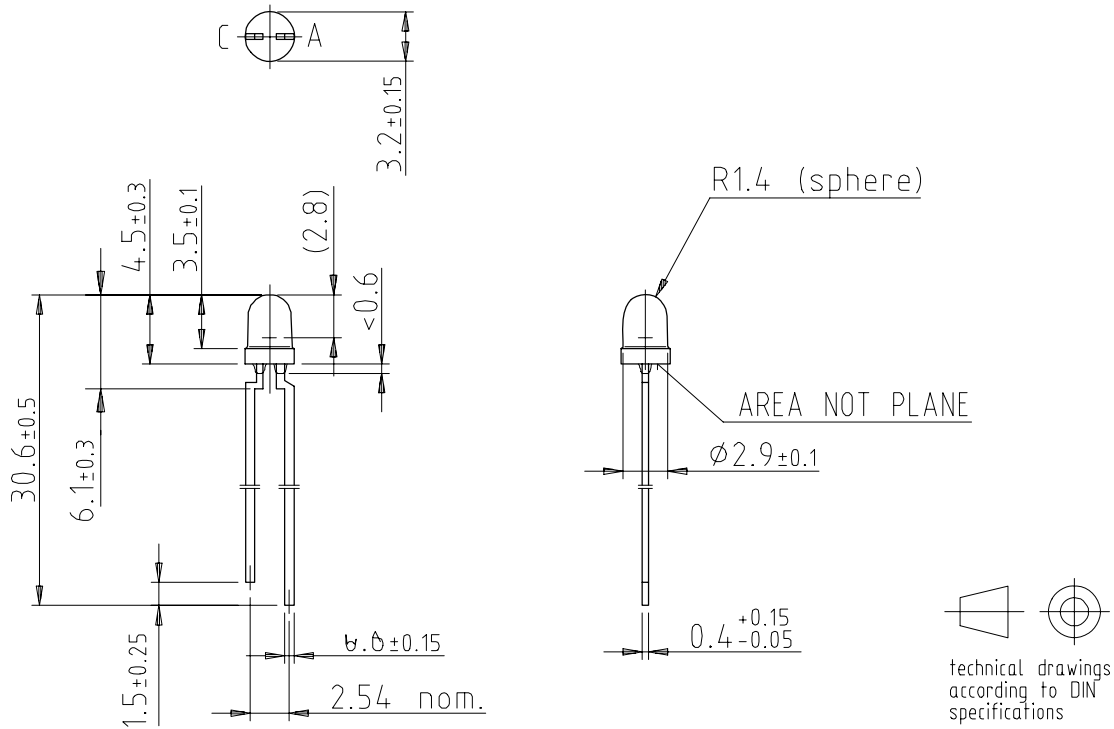


Figure 7. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

PACKAGE DIMENSIONS in millimeters



95 10952

**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.

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