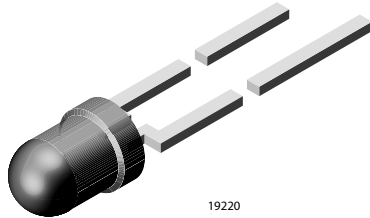


## High Intensity LED in $\varnothing$ 3 mm Clear Package



### 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.

### PRODUCT GROUP AND PACKAGE DATA

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

### 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
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



### APPLICATIONS

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

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

\*\* Please see document "Vishay Material Category Policy": [www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

## OPTICAL AND ELECTRICAL CHARACTERISTICS (T<sub>amb</sub> = 25 °C, unless otherwise specified) TLDR490., RED

| PARAMETER                        | TEST CONDITION                | PART     | SYMBOL         | MIN | TYP. | MAX | UNIT |
|----------------------------------|-------------------------------|----------|----------------|-----|------|-----|------|
| Luminous intensity <sup>1)</sup> | I <sub>F</sub> = 20 mA        | TLDR4900 | I <sub>V</sub> | 63  | 200  |     | mcd  |
|                                  |                               | TLDR4901 | I <sub>V</sub> | 63  |      | 200 | mcd  |
| Luminous intensity               | I <sub>F</sub> = 1 mA         |          | I <sub>V</sub> |     | 8    |     | mcd  |
| Dominant wavelength              | I <sub>F</sub> = 20 mA        |          | λ <sub>d</sub> |     | 648  |     | nm   |
| Peak wavelength                  | I <sub>F</sub> = 20 mA        |          | λ <sub>p</sub> |     | 650  |     | nm   |
| Spectral line half width         | I <sub>F</sub> = 20 mA        |          | Δλ             |     | 20   |     | nm   |
| Angle of half intensity          | I <sub>F</sub> = 20 mA        |          | φ              |     | ± 16 |     | deg  |
| Forward voltage                  | I <sub>F</sub> = 20 mA        |          | V <sub>F</sub> |     | 1.8  | 2.2 | V    |
| Reverse current                  | V <sub>R</sub> = 6 V          |          | I <sub>R</sub> |     |      | 10  | μA   |
| Junction capacitance             | V <sub>R</sub> = 0, f = 1 MHz |          | C <sub>j</sub> |     | 30   |     | pF   |

Note:

<sup>1)</sup> in one packing unit I<sub>Vminx</sub>/I<sub>Vmax</sub> ≤ 0.5

### LUMINOUS INTENSITY CLASSIFICATION

| GROUP | LIGHT INTENSITY (mcd) |      |
|-------|-----------------------|------|
|       | MIN.                  | MAX. |
| V     | 63                    | 125  |
| W     | 100                   | 200  |
| X     | 130                   | 260  |
| Y     | 180                   | 360  |
| Z     | 240                   | 480  |

Note:

Luminous intensity is tested at a current pulse duration of 25 ms. These type numbers represent the order groups which include only a few brightness groups. Only one group will be shipped on each reel (there will be no mixing of two groups on each reel). In order to ensure availability, single brightness groups are not be orderable. In a similar manner for colors where wavelength groups are measured and binned, single wavelength groups will be shipped on any one reel. In order to ensure availability, single wavelength groups are not be orderable.

### TYPICAL CHARACTERISTICS (T<sub>amb</sub> = 25 °C, unless otherwise specified)

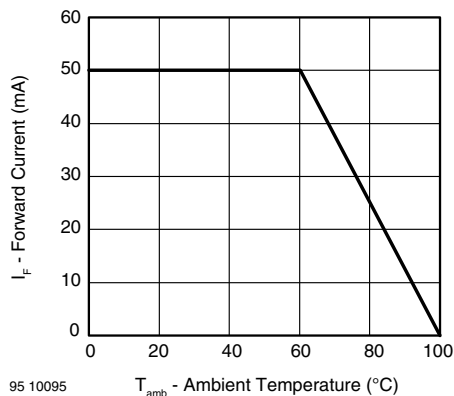


Figure 1. Forward Current vs. Ambient Temperature for InGaN

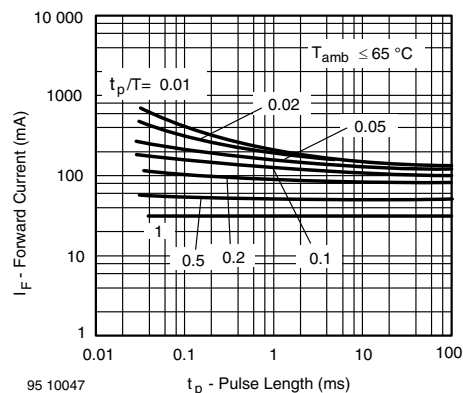


Figure 2. Forward Current vs. Pulse Length

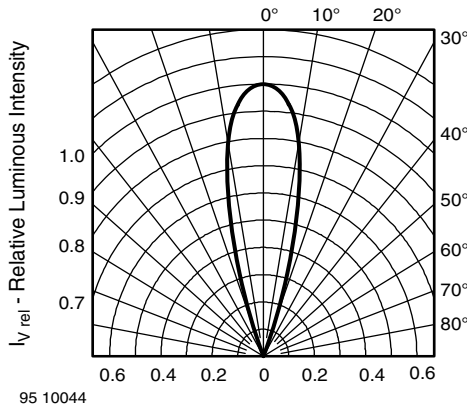


Figure 3. Rel. Luminous Intensity vs. Angular Displacement

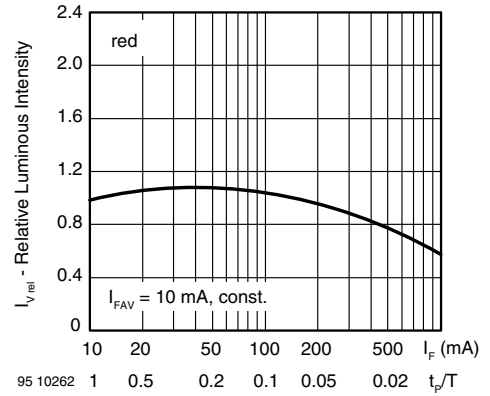


Figure 6. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

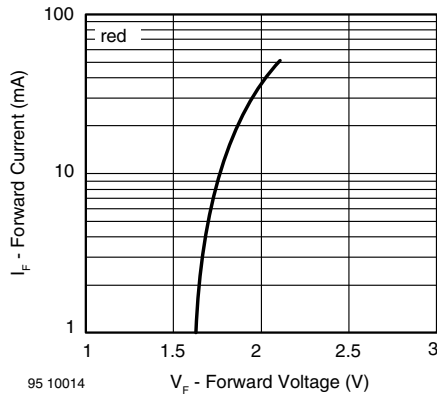


Figure 4.

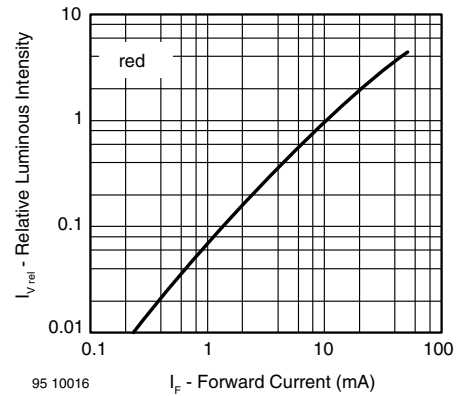


Figure 7. Relative Luminous Intensity vs. Forward Current

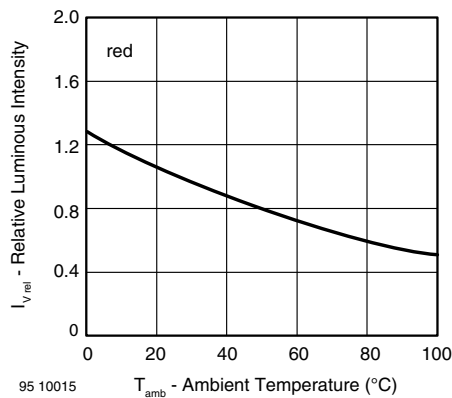


Figure 5. Rel. Luminous Intensity vs. Ambient Temperature

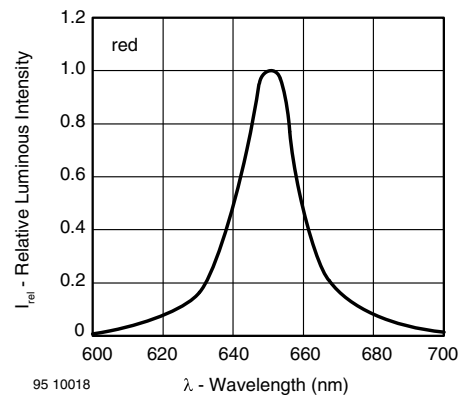


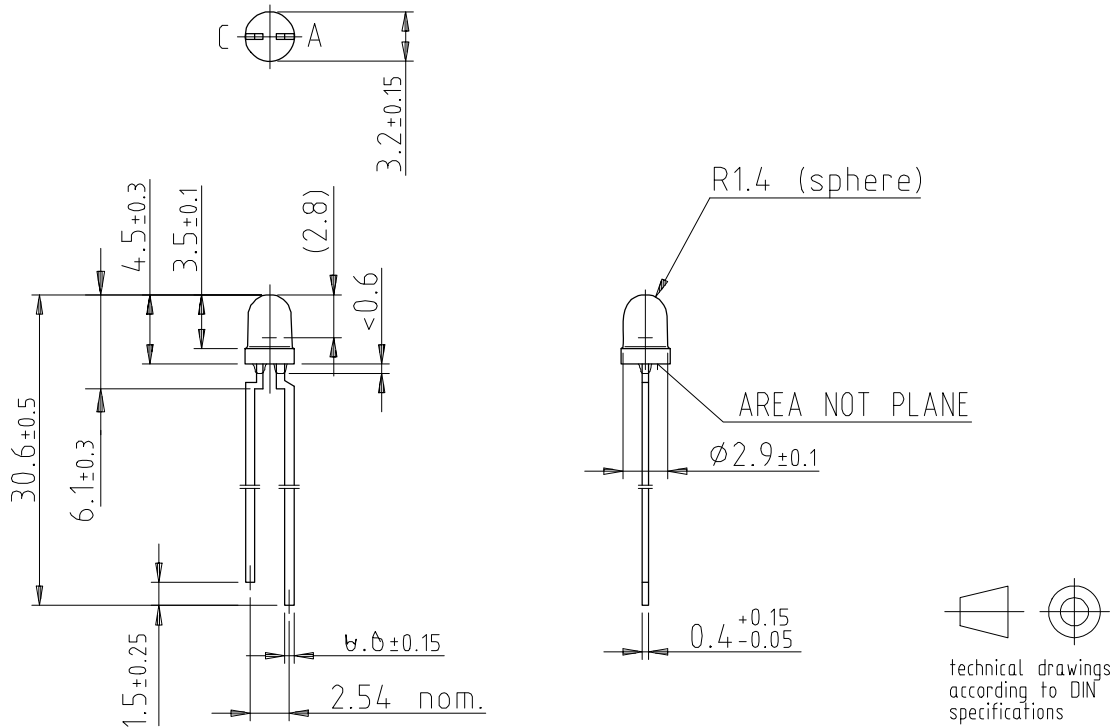
Figure 8. Relative Intensity vs. Wavelength

# TLDR4900, TLDR4901

Vishay Semiconductors



## PACKAGE DIMENSIONS in millimeters



95 10952



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