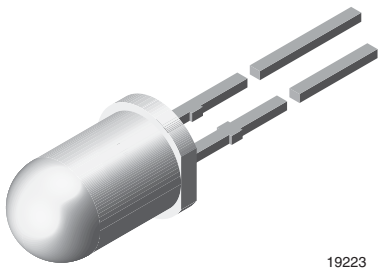
# High Intensity LED, Ø 5 mm Clear Package



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## FEATURES

- Exceptional brightness ($I_{Vtyp}$ = 2500 mcd at $I_F$ = 20 mA)
- Narrow viewing angle (φ = ± 4°)
- Low forward voltage
- 5 mm (T-1¾") clear package
- Very high intensity even at low drive currents
- Deep red color
- Categorized for luminous intensity
- Outstanding material efficiency
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

## 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.

A clear 5 mm package is used to provide an extremely high light intensity of more than 2000 mcd at a very narrow viewing angle.

## PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 5 mm
- Product series: standard
- Angle of half intensity: ± 4°

## 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 (mcd) | | | at $I_F$ (mA) | WAVELENGTH (nm) | | | at $I_F$ (mA) | FORWARD VOLTAGE (V) | | | at $I_F$ (mA) | TECHNOLOGY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MIN. | TYP. | MAX. | | MIN. | TYP. | MAX. | | MIN. | TYP. | MAX. | | |
| TLDR5800 | Red | 1000 | 2500 | - | 20 | - | 648 | - | 20 | - | 1.8 | 2.2 | 20 | GaAlAs on GaAs |
| TLDR5800-AS12Z | Red | 1000 | 2500 | - | 20 | - | 648 | - | 20 | - | 1.8 | 2.2 | 20 | GaAlAs on GaAs |

**ABSOLUTE MAXIMUM RATINGS** ($T_{amb}$ = 25 °C, unless otherwise specified)
**TLDR5800**

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|---|---|---|---|---|
| Reverse voltage (1) | | $V_R$ | 6 | V |
| DC forward current | | $I_F$ | 50 | mA |
| Surge forward current | $t_p \leq 10$ µs | $I_{FSM}$ | 1 | A |
| Power dissipation | | $P_V$ | 100 | 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 |
| Soldering temperature | t ≤ 5 s, 2 mm from body | $T_{sd}$ | 260 | °C |
| Thermal resistance junction/ambient | | $R_{thJA}$ | 350 | K/W |

**Note**

(1) Driving the LED in reverse direction is suitable for a short term application

## OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb}$ = 25 °C, unless otherwise specified)
## TLDR5800, RED

| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Luminous intensity | $I_F$ = 20 mA | $I_V$ | 1000 | 2500 | - | mcd |
| Dominant wavelength | $I_F$ = 20 mA | $\lambda_d$ | - | 648 | - | nm |
| Peak wavelength | $I_F$ = 20 mA | $\lambda_p$ | - | 650 | - | nm |
| Angle of half intensity | $I_F$ = 20 mA | $\varphi$ | - | ± 4 | - | deg |
| Forward voltage | $I_F$ = 20 mA | $V_F$ | - | 1.8 | 2.2 | V |
| Reverse current | $V_R$ = 6 V | $I_R$ | - | - | 10 | µA |
| Junction capacitance | $V_R$ = 0 V, f = 1 MHz | $C_j$ | - | 50 | - | pF |

## LUMINOUS INTENSITY CLASSIFICATION

| GROUP | LUMINOUS INTENSITY (mcd) | |
|---|---|---|
| STANDARD | MIN. | MAX. |
| EE | 1000 | 2000 |
| FF | 1350 | 2700 |
| GG | 1800 | 3600 |
| HH | 2400 | 4800 |
| II | 3200 | 6400 |
| KK | 4300 | 8600 |
| LL | 5750 | 11 500 |
| MM | 7500 | 15 000 |
| NN | 10 000 | 20 000 |

**Note**

- Luminous intensity is tested at a current pulse duration of 25 ms and an accuracy of ± 11 %.
  The above type numbers represent the order groups which include only a few brightness groups. Only one group will be shipped on each bag (there will be no mixing of two groups in each bag).
  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 on any one bag. In order to ensure availability, single wavelength groups will not be orderable.

## TYPICAL CHARACTERISTICS ($T_{amb}$ = 25 °C, unless otherwise specified)

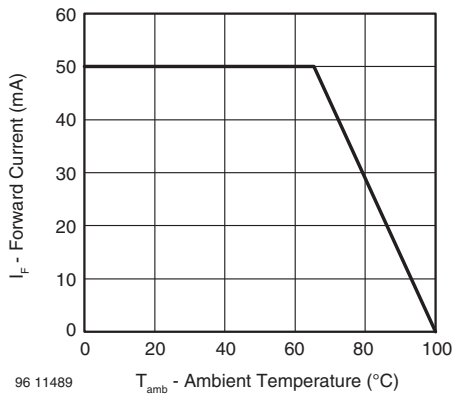



Fig. 1 - Forward Current vs. Ambient Temperature for AlInGaP

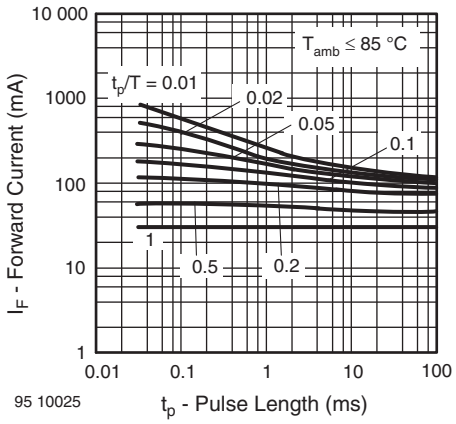



Fig. 2 - Forward Current vs. Pulse Length

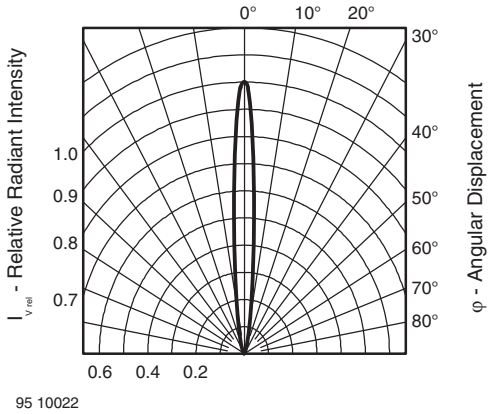



Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

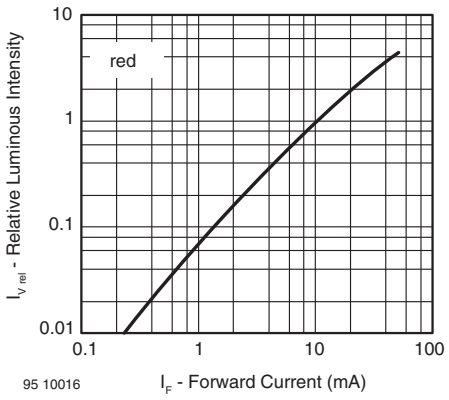



Fig. 6 - Relative Luminous Intensity vs. Forward Current

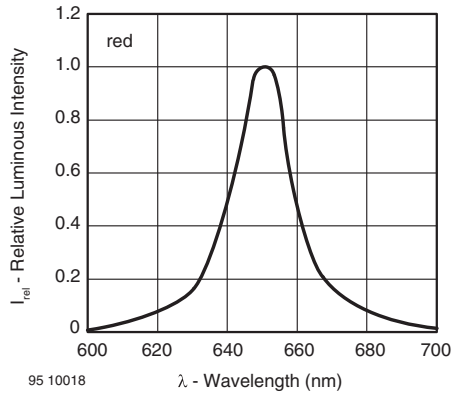



Fig. 4 - Relative Intensity vs. Wavelength

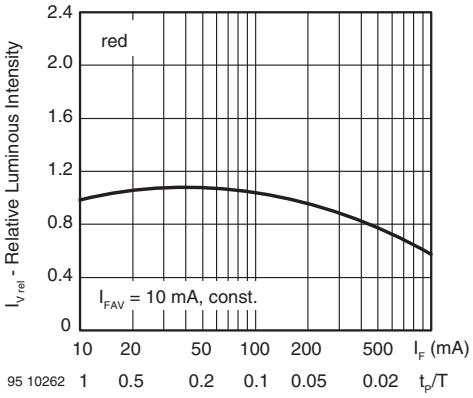



Fig. 7 - Relative Luminous. Intensity vs. Forward Current/Duty Cycle

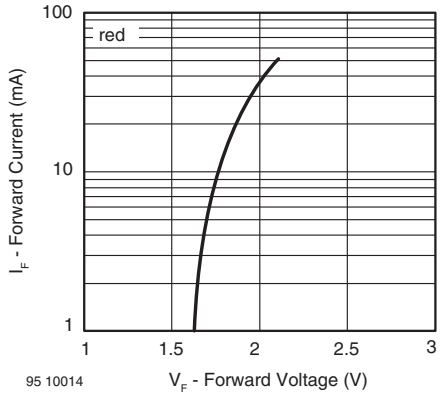



Fig. 5 - Forward Current vs. Forward Voltage

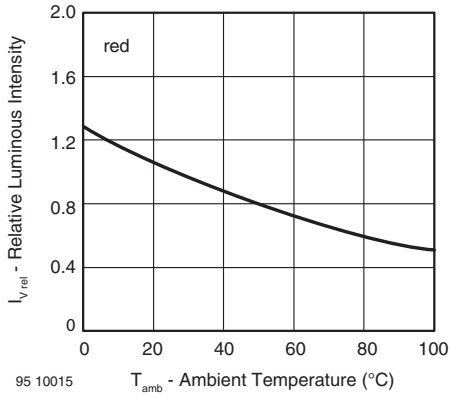
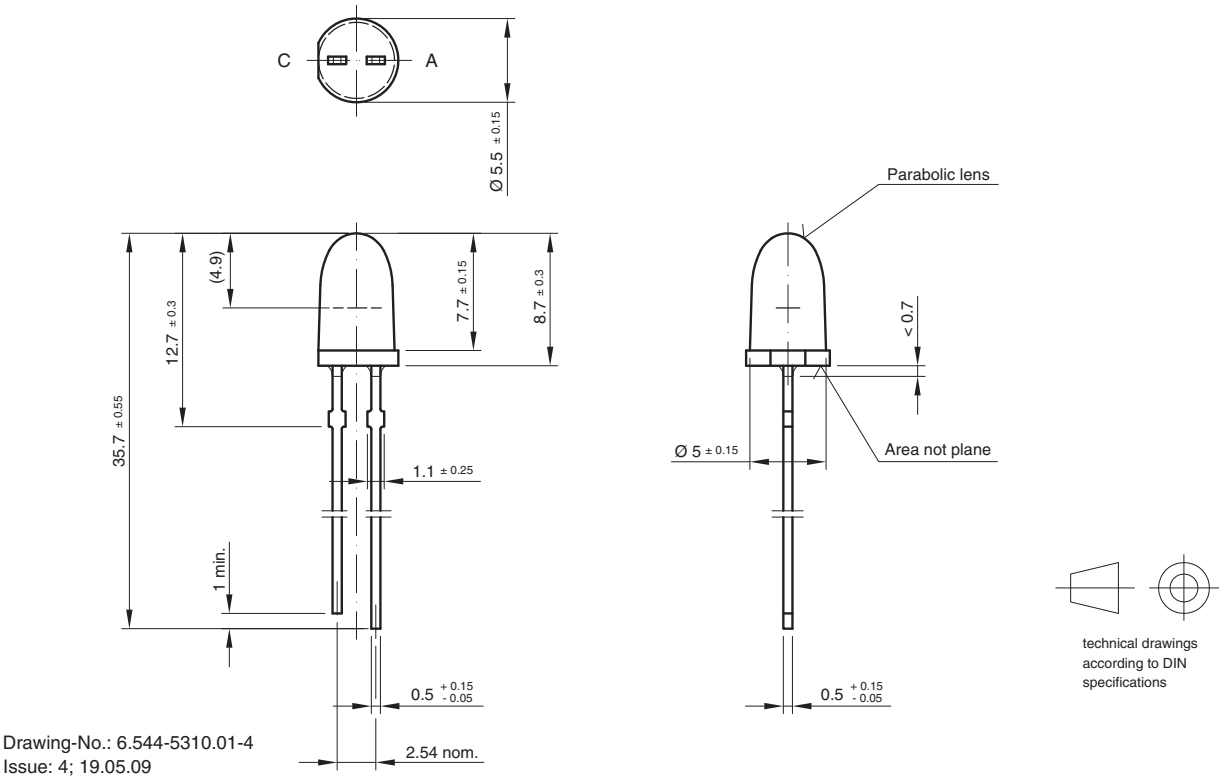



Fig. 8 - Relative Luminous Intensity vs. Ambient Temperature

## **PACKAGE DIMENSIONS** in millimeters

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Issue: 4; 19.05.09
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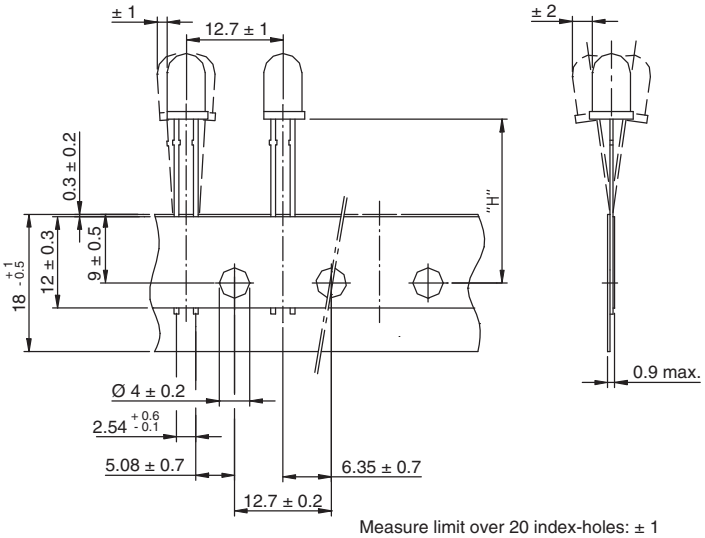
## **TAPE DIMENSIONS** in millimeters




Measure limit over 20 index-holes: ± 1

| Quantity per: | Reel (Mat.-no. 1764) |
|---|---|
| | 1000 |

94 8172

| Option | Dim. “H” ± 0.5 mm |
|---|---|
| AS | 17.3 |

**Explanation**
12 - cathode leaves first
21 - anode leaves first

## AMMOPACK

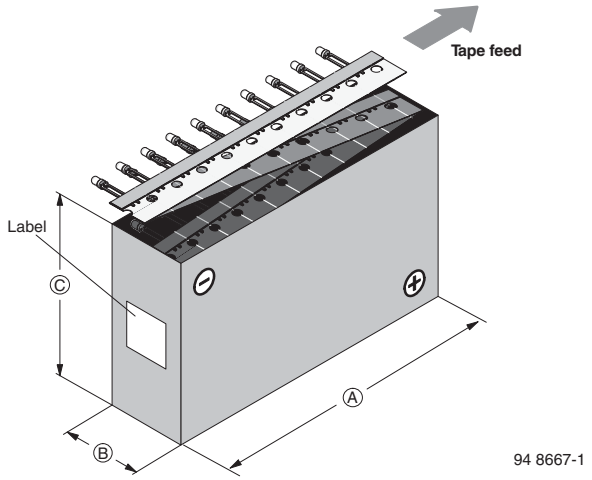



Fig. 9 - Tape Direction

**Note**

- The new nomenclature for ammopack is e.g. ASZ only, without suffix for the LED orientation. The carton box has to be turned to the desired position: “+” for anode first, or “-” for cathode first. AS12Z and AS21Z are still valid for already existing types, BUT NOT FOR NEW DESIGN.

## TAPE

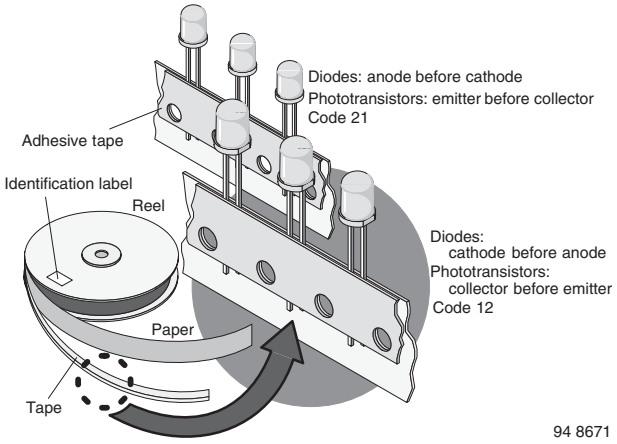



Fig. 10 - LED in Tape

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