

## High Efficiency Blue LED, $\varnothing$ 5 mm Untinted Non - Diffused Package

### Description

This device has been redesigned in 1998 replacing SiC by GaN technology to meet the increasing demand for high efficiency blue LEDs.

It is housed in a 5 mm waterclear plastic package.

All packing units are categorized in luminous intensity groups. That allows users to assemble LEDs with uniform appearance.



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### Features

- GaN on SiC technology
- Standard  $\varnothing$  5 mm T-1  $\frac{3}{4}$  package
- Small mechanical tolerances
- Small viewing angle
- Very high intensity
- Luminous intensity categorized
- ESD class 1
- Lead-free device

### Applications

Status lights  
 OFF / ON indicator  
 Background illumination  
 Readout lights  
 Maintenance lights  
 Legend light

### Parts Table

| Part     | Color, Luminous Intensity               | Angle of Half Intensity ( $\pm\phi$ ) | Technology |
|----------|---|---------------------------------------|------------|
| TLHB5800 | Blue, $I_V > 130$ mcd                   | 4 °                                   | GaN on SiC |
| TLHB5802 | Blue, $I_V = (240 \text{ to } 640)$ mcd | 4 °                                   | GaN on SiC |

### Absolute Maximum Ratings

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

#### TLHB580.

| Parameter                           | Test condition               | Symbol     | Value         | Unit |
|-------------------------------------|------------------------------|------------|---------------|------|
| Reverse voltage                     |                              | $V_R$      | 5             | V    |
| DC Forward current                  | $T_{amb} \leq 65$ °C         | $I_F$      | 20            | mA   |
| Surge forward current               | $t_p \leq 10$ $\mu$ s        | $I_{FSM}$  | 0.1           | A    |
| Power dissipation                   | $T_{amb} \leq 65$ °C         | $P_V$      | 100           | mW   |
| Junction temperature                |                              | $T_j$      | 100           | °C   |
| Operating temperature range         |                              | $T_{amb}$  | - 40 to + 100 | °C   |
| Storage temperature range           |                              | $T_{stg}$  | - 40 to + 100 | °C   |
| Soldering temperature               | $t \leq 5$ s, 2 mm from body | $T_{sd}$   | 260           | °C   |
| Thermal resistance junction/ambient |                              | $R_{thJA}$ | 350           | K/W  |

### Optical and Electrical Characteristics

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

#### Blue

#### TLHB580.

| Parameter                        | Test condition                | Part     | Symbol      | Min | Typ.    | Max  | Unit |
|----------------------------------|-------------------------------|----------|-------------|-----|---------|------|------|
| Luminous intensity <sup>1)</sup> | $I_F = 20\text{ mA}$          | TLHB5800 | $I_V$       | 130 | 380     |      | mcd  |
|                                  |                               | TLHB5802 | $I_V$       | 430 |         | 1500 | mcd  |
| Dominant wavelength              | $I_F = 10\text{ mA}$          |          | $\lambda_d$ |     | 466     |      | nm   |
| Peak wavelength                  | $I_F = 10\text{ mA}$          |          | $\lambda_p$ |     | 428     |      | nm   |
| Angle of half intensity          | $I_F = 10\text{ mA}$          |          | $\phi$      |     | $\pm 4$ |      | deg  |
| Forward voltage                  | $I_F = 20\text{ mA}$          |          | $V_F$       |     | 3.9     | 4.5  | V    |
| Reverse voltage                  | $I_R = 10\text{ }\mu\text{A}$ |          | $V_R$       | 5   |         |      | V    |

<sup>1)</sup> in one Packing Unit  $I_{Vmin}/I_{Vmax} \leq 0.5$

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

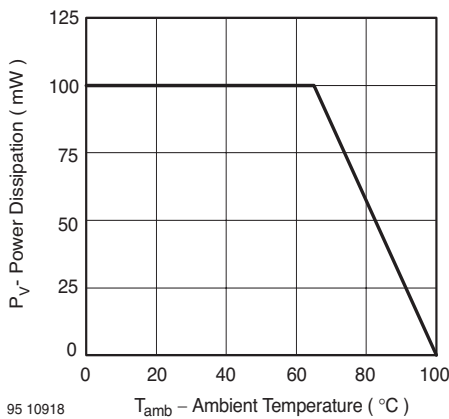


Figure 1. Power Dissipation vs. Ambient Temperature

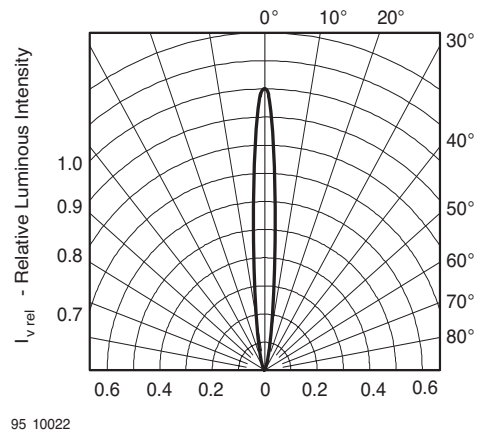


Figure 3. Rel. Luminous Intensity vs. Angular Displacement

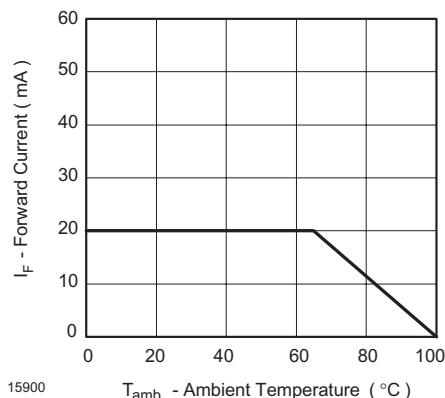


Figure 2. Forward Current vs. Ambient Temperature

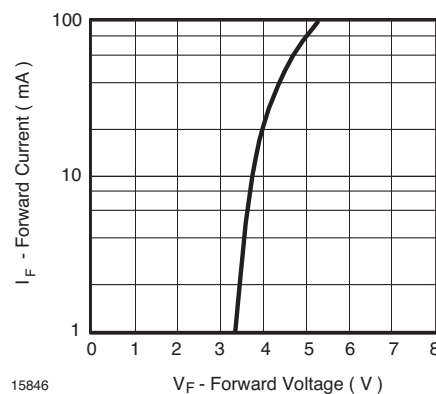


Figure 4. Forward Current vs. Forward Voltage

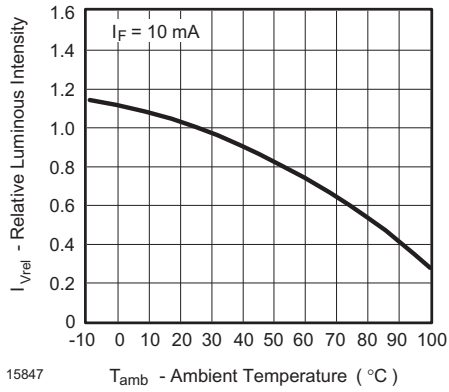


Figure 5. Rel. Luminous Flux vs. Ambient Temperature

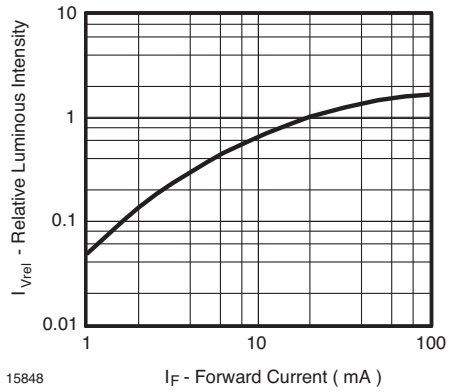


Figure 6. Relative Luminous Flux vs. Forward Current

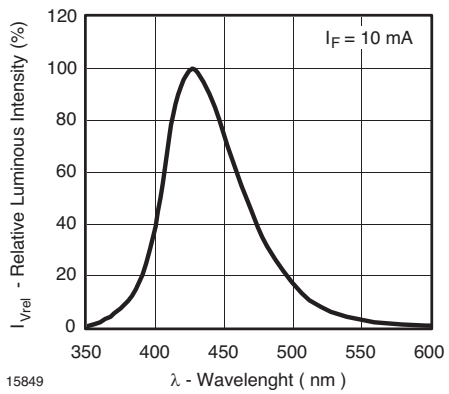
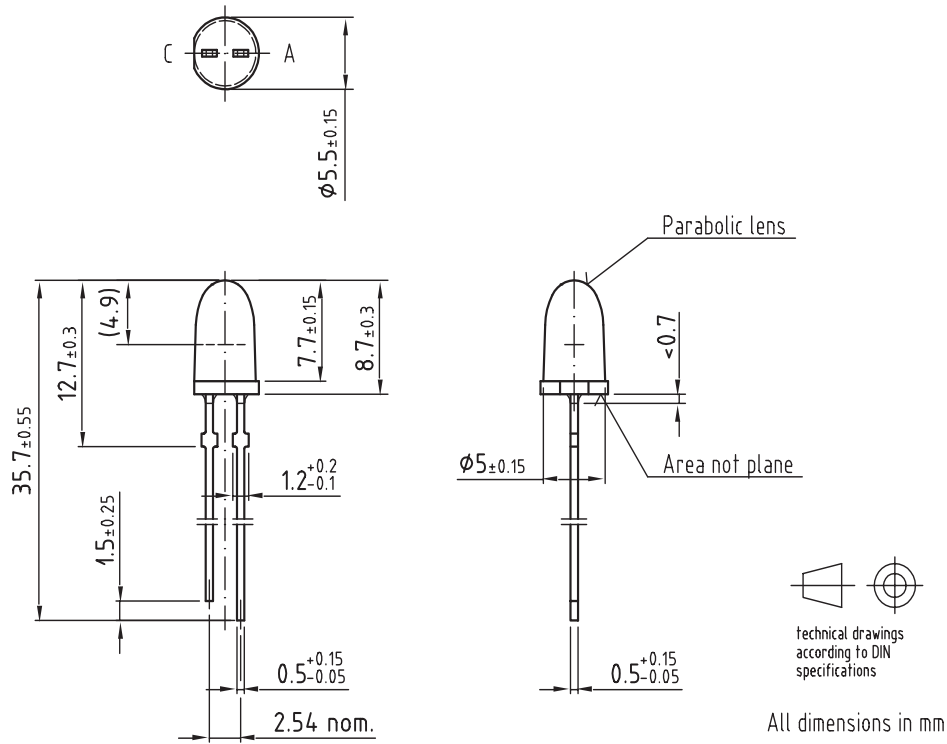


Figure 7. Relative Intensity vs. Wavelength

## Package Dimensions in mm



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3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

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