

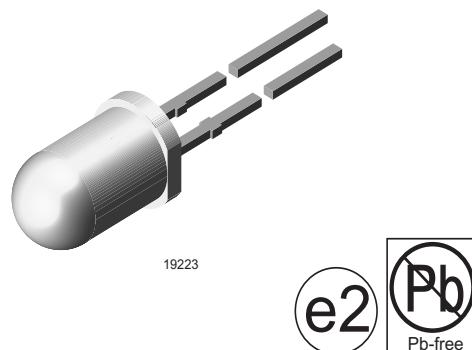
## High Efficiency LED, Ø 5 mm Untinted Non-Diffused

### Description

The TLH.5800 series was developed for standard applications which need a very small radiation angle or a very high luminous intensity.

It is housed in a 5 mm untinted non-diffused plastic package. The very small viewing angle of these devices provide a very high luminous intensity.

The yellow and green LEDs are categorized in luminous intensity and additionally in wavelength groups. That allows users to assemble LEDs with uniform appearance.



### Features

- Standard T-1 1/4 package
- Small mechanical tolerances
- Suitable for DC and high peak current
- Very small viewing angle
- Very high intensity
- Luminous intensity categorized
- Yellow and green color categorized
- Lead-free device

### Applications

- Status lights
- OFF / ON indicator
- Lightpipe
- Outdoor display
- Medical instruments
- Maintenance lights
- Legend lights

### Parts Table

| Part     | Color, Luminous Intensity  | Angle of Half Intensity ( $\pm\phi$ ) | Technology   |
|----------|----------------------------|---------------------------------------|--------------|
| TLHY5800 | Yellow, $I_V > 100$ mcd    | 4 °                                   | GaAsP on GaP |
| TLHG5800 | Green, $I_V > 400$ mcd     | 4 °                                   | GaP on GaP   |
| TLHP5800 | Pure green, $I_V > 25$ mcd | 4 °                                   | GaP on GaP   |

### Absolute Maximum Ratings

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

**TLHY5800 , TLHG5800 , TLHP5800**

| Parameter                           | Test condition               | Symbol     | Value         | Unit |
|-------------------------------------|------------------------------|------------|---------------|------|
| Reverse voltage                     |                              | $V_R$      | 6             | V    |
| DC Forward current                  | $T_{amb} \leq 65$ °C         | $I_F$      | 30            | mA   |
| Surge forward current               | $t_p \leq 10$ µs             | $I_{FSM}$  | 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           |                              | $T_{stg}$  | - 55 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

### Yellow

#### TLHY5800

| Parameter                        | Test condition               | Symbol      | Min | Typ.    | Max | Unit |
|----------------------------------|------------------------------|-------------|-----|---------|-----|------|
| Luminous intensity <sup>1)</sup> | $I_F = 20 \text{ mA}$        | $I_V$       | 100 | 250     |     | mcd  |
| Dominant wavelength              | $I_F = 10 \text{ mA}$        | $\lambda_d$ | 581 |         | 594 | nm   |
| Peak wavelength                  | $I_F = 10 \text{ mA}$        | $\lambda_p$ |     | 585     |     | nm   |
| Angle of half intensity          | $I_F = 10 \text{ mA}$        | $\varphi$   |     | $\pm 4$ |     | deg  |
| Forward voltage                  | $I_F = 20 \text{ mA}$        | $V_F$       |     | 2.4     | 3   | V    |
| Reverse voltage                  | $I_R = 10 \mu\text{A}$       | $V_R$       | 6   | 15      |     | V    |
| Junction capacitance             | $V_R = 0, f = 1 \text{ MHz}$ | $C_j$       |     | 50      |     | pF   |

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

### Green

#### TLHG5800

| Parameter                        | Test condition               | Symbol      | Min | Typ.    | Max | Unit |
|----------------------------------|------------------------------|-------------|-----|---------|-----|------|
| Luminous intensity <sup>1)</sup> | $I_F = 20 \text{ mA}$        | $I_V$       | 400 | 700     |     | mcd  |
| Dominant wavelength              | $I_F = 10 \text{ mA}$        | $\lambda_d$ | 562 |         | 575 | nm   |
| Peak wavelength                  | $I_F = 10 \text{ mA}$        | $\lambda_p$ |     | 565     |     | nm   |
| Angle of half intensity          | $I_F = 10 \text{ mA}$        | $\varphi$   |     | $\pm 4$ |     | deg  |
| Forward voltage                  | $I_F = 20 \text{ mA}$        | $V_F$       |     | 2.4     | 3   | V    |
| Reverse voltage                  | $I_R = 10 \mu\text{A}$       | $V_R$       | 6   | 15      |     | V    |
| Junction capacitance             | $V_R = 0, f = 1 \text{ MHz}$ | $C_j$       |     | 50      |     | pF   |

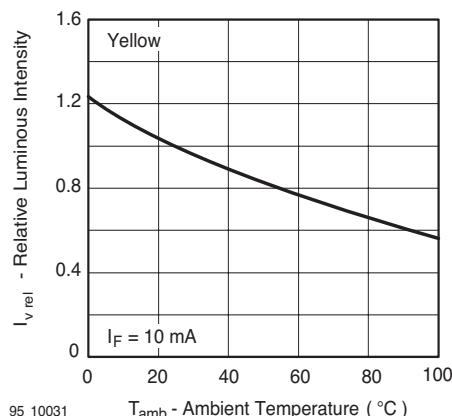
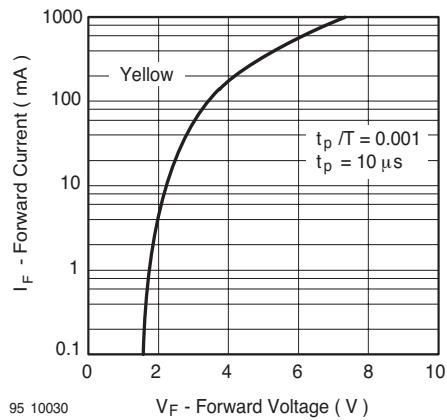
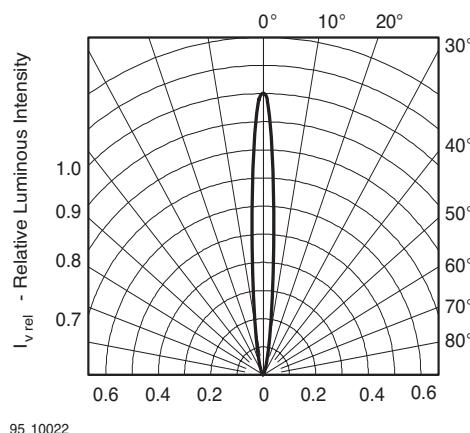
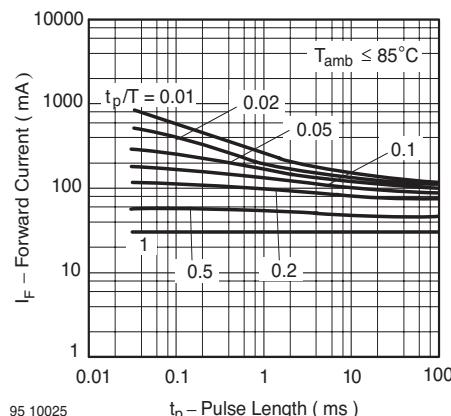
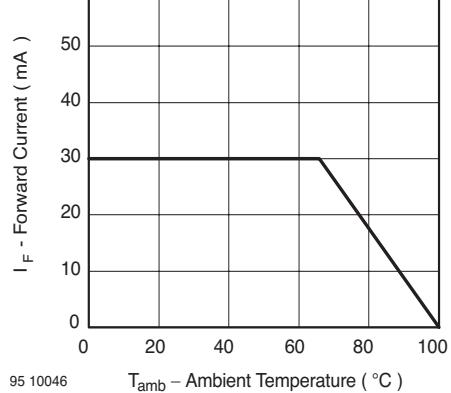
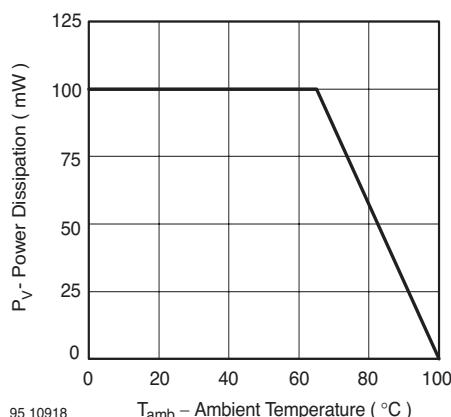
<sup>1)</sup> in one Packing Unit  $I_{Vmin}/I_{Vmax} \leq 0.5$

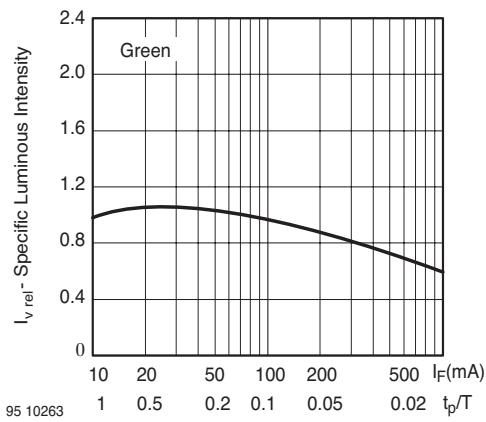
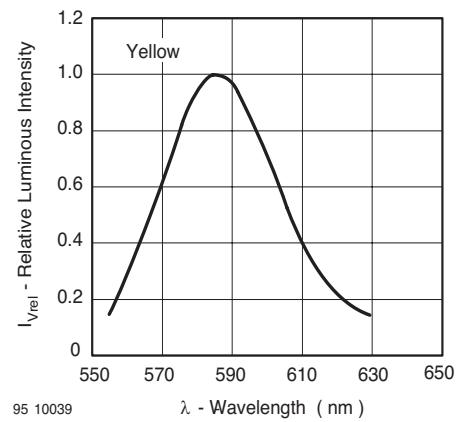
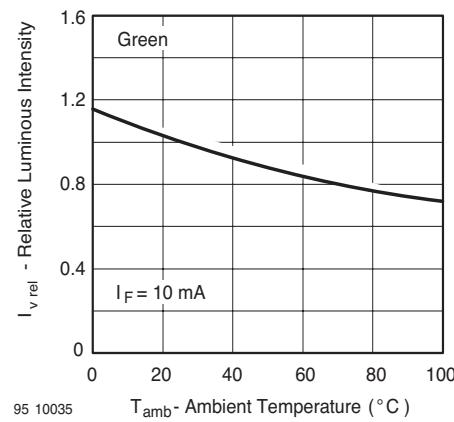
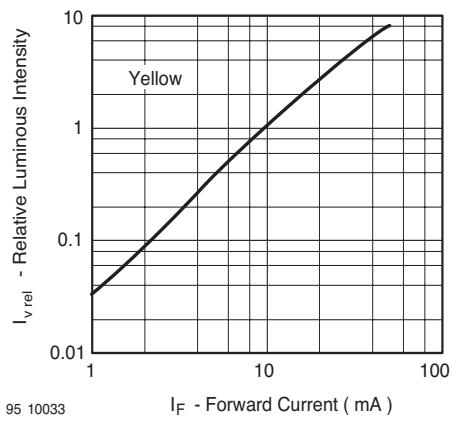
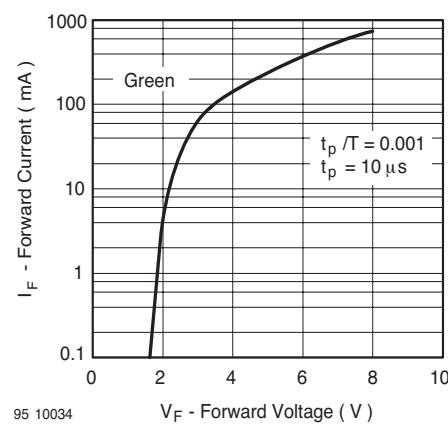
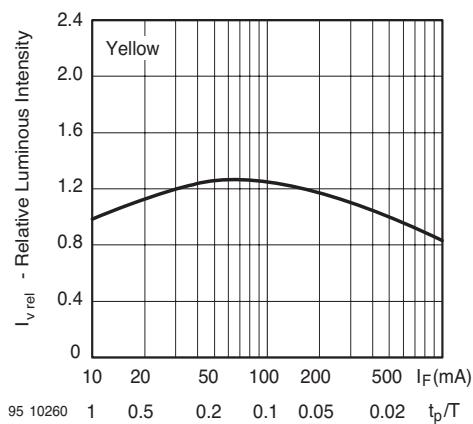
### Pure green

#### TLHP5800

| Parameter                        | Test condition               | Symbol      | Min | Typ.    | Max | Unit |
|----------------------------------|------------------------------|-------------|-----|---------|-----|------|
| Luminous intensity <sup>1)</sup> | $I_F = 20 \text{ mA}$        | $I_V$       | 25  | 85      |     | mcd  |
| Dominant wavelength              | $I_F = 10 \text{ mA}$        | $\lambda_d$ | 555 |         | 565 | nm   |
| Peak wavelength                  | $I_F = 10 \text{ mA}$        | $\lambda_p$ |     | 555     |     | nm   |
| Angle of half intensity          | $I_F = 10 \text{ mA}$        | $\varphi$   |     | $\pm 4$ |     | deg  |
| Forward voltage                  | $I_F = 20 \text{ mA}$        | $V_F$       |     | 2.4     | 3   | V    |
| Reverse voltage                  | $I_R = 10 \mu\text{A}$       | $V_R$       | 6   | 15      |     | V    |
| Junction capacitance             | $V_R = 0, f = 1 \text{ MHz}$ | $C_j$       |     | 50      |     | pF   |

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

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




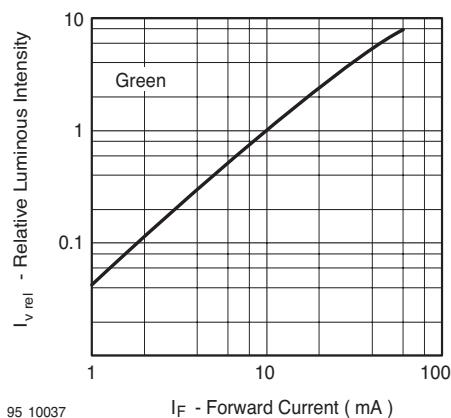


Figure 13. Relative Luminous Intensity vs. Forward Current

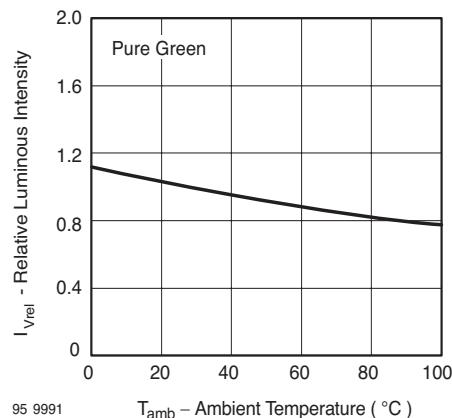


Figure 16. Rel. Luminous Intensity vs. Ambient Temperature

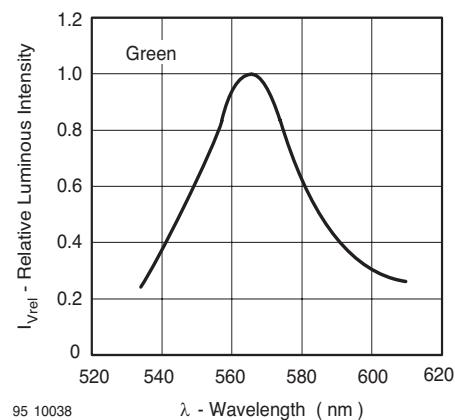


Figure 14. Relative Intensity vs. Wavelength

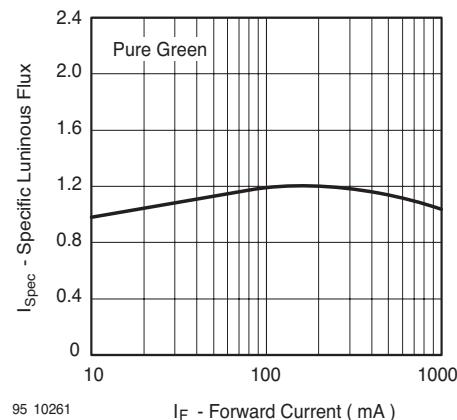


Figure 17. Specific Luminous Intensity vs. Forward Current

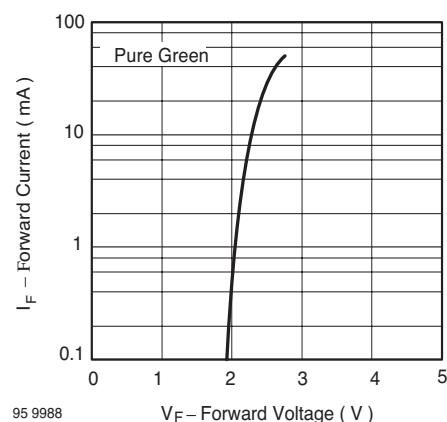


Figure 15. Forward Current vs. Forward Voltage

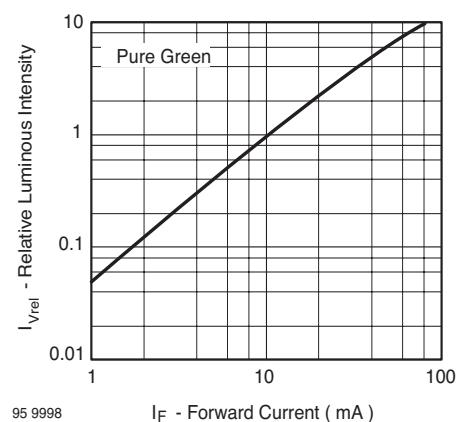


Figure 18. Relative Luminous Intensity vs. Forward Current

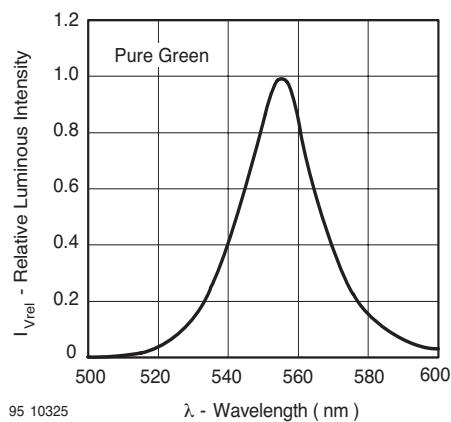
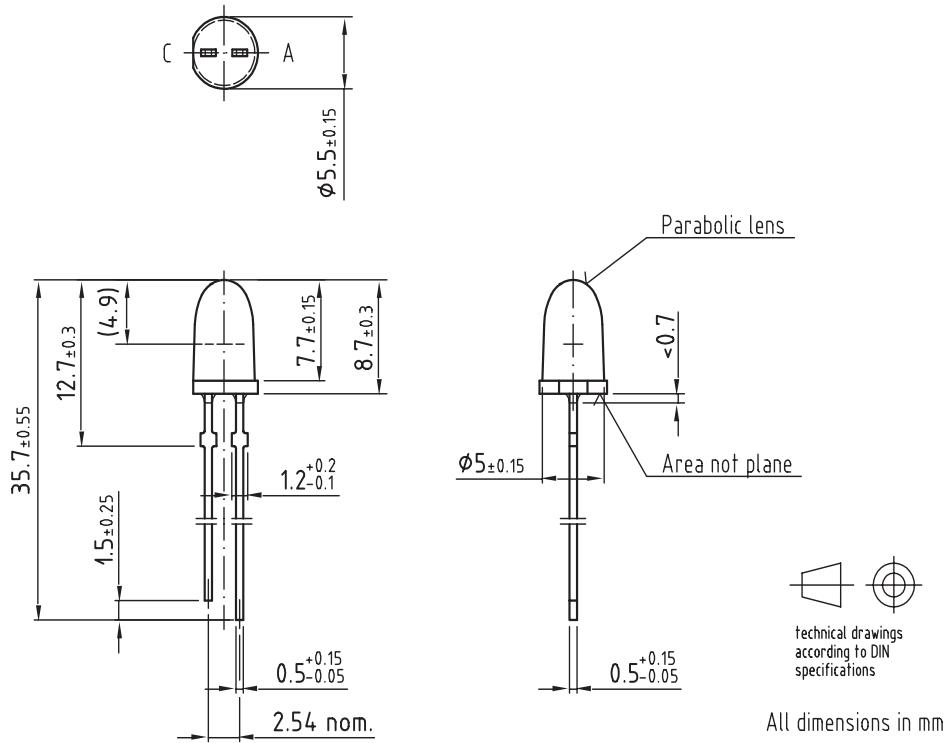


Figure 19. Relative Intensity vs. Wavelength

## Package Dimensions in mm



Drawing-No.: 6.544-5310.01-4

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## 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.

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