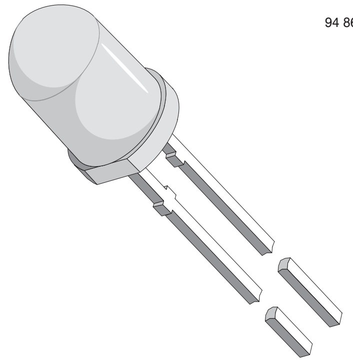
# Ultrabright LED, ∅ 5 mm Untinted Non-Diffused




## Description

The TLC.58.. series is a clear, non diffused 5 mm LED for high end applications where supreme luminous intensity and a very small emission angle is required.

These lamps with clear untinted plastic case utilize the highly developed ultrabright AlInGaP and GaP technologies.

The very small viewing angle of these devices provide a very high luminous intensity.

## Features

- Untinted non diffused lens
- Utilizing ultrabright AlInGaP and InGaN technology
- Very high luminous intensity
- Very small emission angle
- High operating temperature: $T_j$ (chip junction temperature) up to 125 °C for AlInGaP devices
- Luminous intensity and color categorized for each packing unit
- ESD-withstand voltage: 2 kV acc. to MIL STD 883 D, Method 3015.7 for AlInGaP, 1 kV for InGaN

## Applications

Interior and exterior lighting

Outdoor LED panels, displays

Instrumentation and front panel indicators

Central high mounted stop lights (CHMSL) for motor vehicles

Replaces incandescent lamps

Traffic signals and signs

Light guide design

## Parts Table

| Part | Color, Luminous Intensity | Technology |
|---|---|---|
| TLCR5800 | Red, $I_V$ > 7500 mcd | AlGaP on GaAs |
| TLCY5800 | Yellow, $I_V$ > 5750 mcd | AlGaP on GaAs |
| TLCTG5800 | True green, $I_V$ > 2400 mcd | InGaN on SiC |
| TLCB5800 | Blue, $I_V$ > 750 mcd | InGaN on SiC |

## Absolute Maximum Ratings

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

**TLCR5800 , TLCY5800 , TLCTG5800 , TLCB5800**

| Parameter | Test condition | Part | Symbol | Value | Unit |
|---|---|---|---|---|---|
| Reverse voltage | | | $V_R$ | 5 | V |
| DC forward current | $T_{amb} \le 85°C$ | TLCR5800 | $I_F$ | 50 | mA |
| | $T_{amb} \le 85°C$ | TLCR5800 | $I_F$ | 50 | mA |
| | $T_{amb} \le 60°C$ | TLCTG5800 | $I_F$ | 30 | mA |
| | $T_{amb} \le 60°C$ | TLCTG5800 | $I_F$ | 30 | mA |

| Parameter | Test condition | Part | Symbol | Value | Unit |
|---|---|---|---|---|---|
| Surge forward current | $t_p \leq 10\ \mu s$ | TLCR5800 | $I_{FSM}$ | 1 | A |
| | $t_p \leq 10\ \mu s$ | TLCR5800 | $I_{FSM}$ | 1 | A |
| | $t_p \leq 10\ \mu s$ | TLCTG5800 | $I_{FSM}$ | 0.1 | A |
| | $t_p \leq 10\ \mu s$ | TLCTG5800 | $I_{FSM}$ | 0.1 | A |
| Power dissipation | $T_{amb} \leq 85°C$ | TLCR5800 | $P_V$ | 135 | mW |
| | $T_{amb} \leq 85°C$ | TLCR5800 | $P_V$ | 135 | mW |
| | $T_{amb} \leq 60°C$ | TLCTG5800 | $P_V$ | 135 | mW |
| | $T_{amb} \leq 60°C$ | TLCTG5800 | $P_V$ | 135 | mW |
| Junction temperature | | TLCR5800 | $T_j$ | 125 | °C |
| | | TLCR5800 | $T_j$ | 125 | °C |
| | | TLCTG5800 | $T_j$ | 100 | °C |
| | | TLCTG5800 | $T_j$ | 100 | °C |
| Operating temperature range | | | $T_{amb}$ | - 40 to + 100 | °C |
| Storage temperature range | | | $T_{stg}$ | - 40 to + 100 | °C |
| Soldering temperature | t ≤ 5 s, 2 mm from body | | $T_{sd}$ | 260 | °C |
| Thermal resistance junction/ ambient | | | $R_{thJA}$ | 300 | K/W |

## Optical and Electrical Characteristics

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

## Red

**TLCR5800**

| Parameter | Test condition | Part | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Luminous intensity [1)] | $I_F$ = 50 mA | TLCR5800 | $I_V$ | 7500 | 20000 | | |
| Dominant wavelength | $I_F$ = 50 mA | | $\lambda_d$ | 611 | 616 | 622 | nm |
| Peak wavelength | $I_F$ = 50 mA | | $\lambda_p$ | | 622 | | nm |
| Spectral bandwidth at 50 % $I_{rel\ max}$ | $I_F$ = 50 mA | | $\Delta\lambda$ | | 18 | | nm |
| Angle of half intensity | $I_F$ = 50 mA | | $\varphi$ | | ± 4 | | deg |
| Forward voltage | $I_F$ = 50 mA | | $V_F$ | | 2.1 | 2.7 | V |
| Reverse voltage | $I_R = 10\ \mu A$ | | $V_R$ | 5 | | | V |
| Temperature coefficient of $V_F$ | $I_F$ = 50 mA | | $TC_{VF}$ | | - 3.5 | | mV/K |
| Temperature coefficient of $\lambda_d$ | $I_F$ = 50 mA | | $TC_{\lambda d}$ | | 0.05 | | nm/K |

[1)] in one Packing Unit $I_{VMax.}/I_{VMin.} \leq 1.6$

## Yellow

**TLCY5800**

| Parameter | Test condition | Part | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Luminous intensity [1] | $I_F$ = 50 mA | TLCY5800 | $I_V$ | 5750 | 14000 | | mcd |
| Dominant wavelength | $I_F$ = 50 mA | | $\lambda_d$ | 585 | 590 | 597 | nm |
| Peak wavelength | $I_F$ = 50 mA | | $\lambda_p$ | | 593 | | nm |
| Spectral bandwidth at 50 % $I_{rel\ max}$ | $I_F$ = 50 mA | | $\Delta\lambda$ | | 17 | | nm |
| Angle of half intensity | $I_F$ = 50 mA | | $\varphi$ | | ± 4 | | deg |
| Forward voltage | $I_F$ = 50 mA | | $V_F$ | | 2.1 | 2.7 | V |
| Reverse voltage | $I_R$ = 10 µA | | $V_R$ | 5 | | | V |
| Temperature coefficient of $V_F$ | $I_F$ = 50 mA | | $TC_{VF}$ | | - 3.5 | | mV/K |
| Temperature coefficient of $\lambda_d$ | $I_F$ = 50 mA | | $TC_{\lambda d}$ | | 0.1 | | nm/K |

[1] in one Packing Unit $I_{VMax.}/I_{VMin.} \leq 1.6$

## Pure green

| Parameter | Test condition | Part | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Luminous intensity [1] | $I_F$ = 30 mA | TLCTG5800 | $I_V$ | 2400 | 7000 | | mcd |
| Dominant wavelength | $I_F$ = 30 mA | | $\lambda_d$ | 515 | 525 | 535 | nm |
| Peak wavelength | $I_F$ = 30 mA | | $\lambda_p$ | | 520 | | nm |
| Spectral bandwidth at 50 % $I_{rel\ max}$ | $I_F$ = 30 mA | | $\Delta\lambda$ | | 37 | | nm |
| Angle of half intensity | $I_F$ = 30 mA | | $\varphi$ | | ± 4 | | deg |
| Forward voltage | $I_F$ = 30 mA | | $V_F$ | | 3.9 | 4.5 | V |
| Reverse voltage | $I_R$ = 10 µA | | $V_R$ | 5 | | | V |
| Temperature coefficient of $V_F$ | $I_F$ = 30 mA | | $TC_{VF}$ | | - 4.5 | | mV/K |
| Temperature coefficient of $\lambda_d$ | $I_F$ = 30 mA | | $TC_{\lambda d}$ | | 0.02 | | nm/K |

[1] in one Packing Unit $I_{VMax.}/I_{VMin.} \leq 1.6$

## Blue

**TLCB5800**

| Parameter | Test condition | Part | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Luminous intensity [1] | $I_F$ = 30 mA | TLCB5800 | $I_V$ | 750 | 2500 | | mcd |
| Dominant wavelength | $I_F$ = 30 mA | | $\lambda_d$ | 462 | 470 | 476 | nm |
| Peak wavelength | $I_F$ = 30 mA | | $\lambda_p$ | | 464 | | nm |
| Spectral bandwidth at 50 % $I_{rel\ max}$ | $I_F$ = 30 mA | | $\Delta\lambda$ | | 25 | | nm |
| Angle of half intensity | $I_F$ = 30 mA | | $\varphi$ | | ± 4 | | deg |
| Forward voltage | $I_F$ = 30 mA | | $V_F$ | | 3.9 | 4.5 | V |
| Reverse voltage | $I_R$ = 10 µA | | $V_R$ | 5 | | | V |
| Temperature coefficient of $V_F$ | $I_F$ = 30 mA | | $TC_{VF}$ | | - 5.0 | | mV/K |
| Temperature coefficient of $\lambda_d$ | $I_F$ = 30 mA | | $TC_{\lambda d}$ | | 0.02 | | nm/K |

[1] in one Packing Unit $I_{VMax.}/I_{VMin.} \leq 1.6$

## Typical Characteristics ($T_{amb}$ = 25 °C unless otherwise specified)

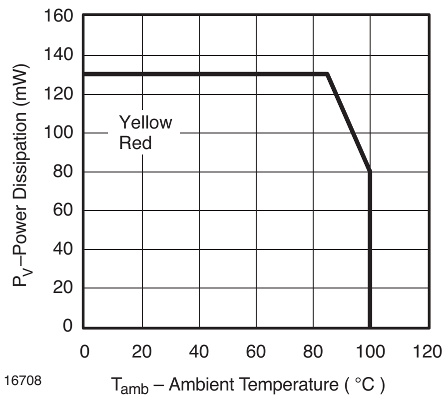



Figure 1. Power Dissipation vs. Ambient Temperature

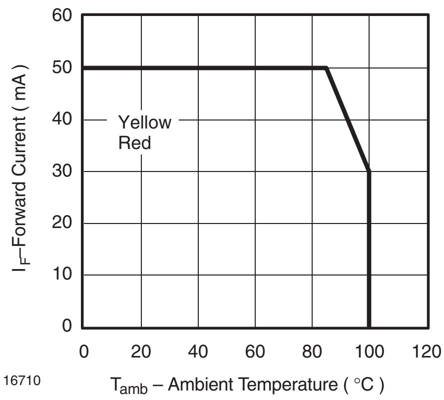



Figure 4. Forward Current vs. Ambient Temperature

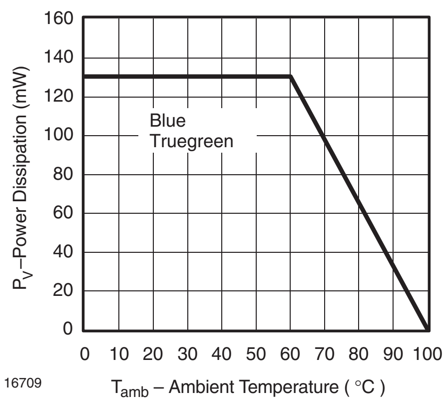



Figure 2. Power Dissipation vs. Ambient Temperature

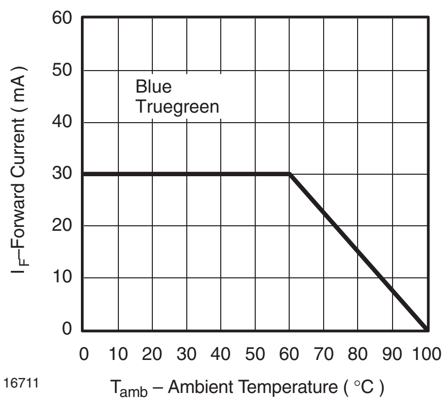



Figure 5. Forward Current vs. Ambient Temperature

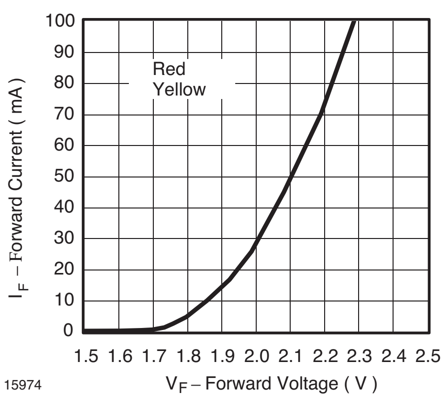



Figure 3. Forward Current vs. Forward Voltage

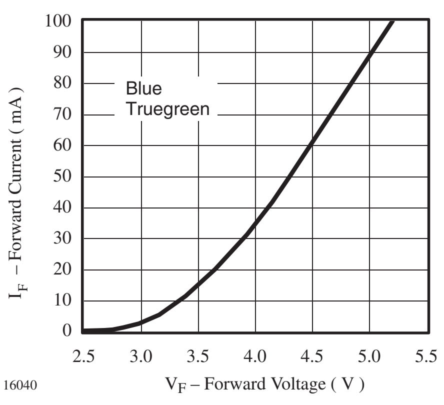



Figure 6. Forward Current vs. Forward Voltage

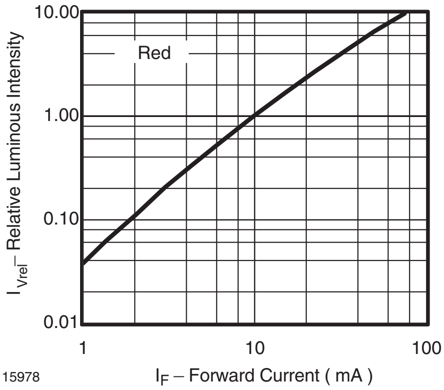



Figure 7. Relative Luminous Flux vs. Forward Current

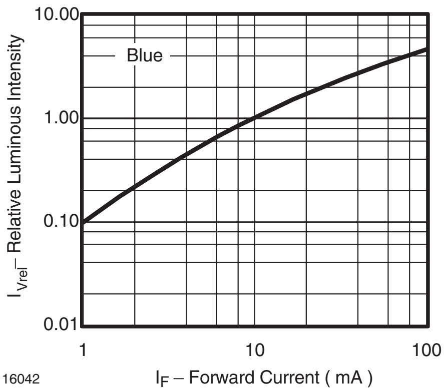



Figure 8. Relative Luminous Flux vs. Forward Current

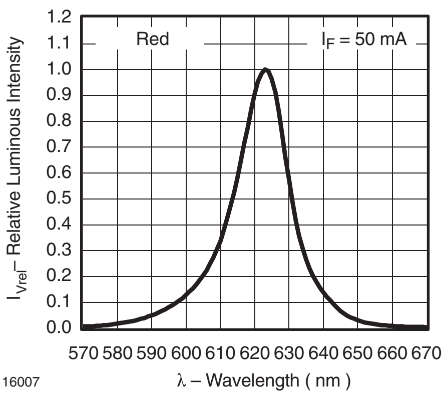



Figure 9. Relative Intensity vs. Wavelength

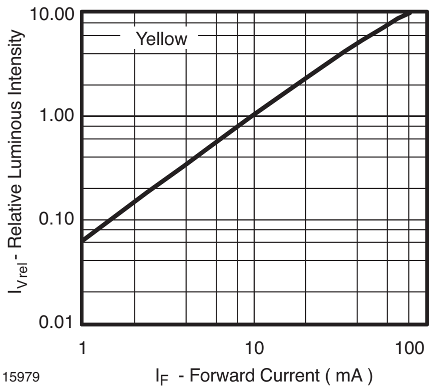



Figure 10. Relative Luminous Flux vs. Forward Current

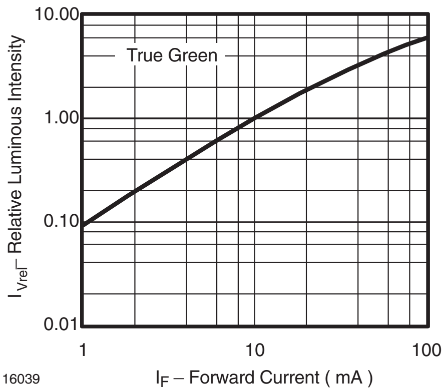



Figure 11. Relative Luminous Flux vs. Forward Current

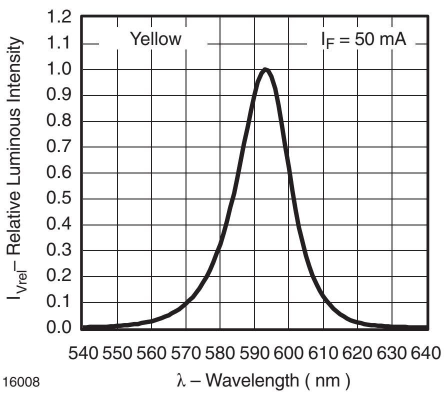



Figure 12. Relative Intensity vs. Wavelength

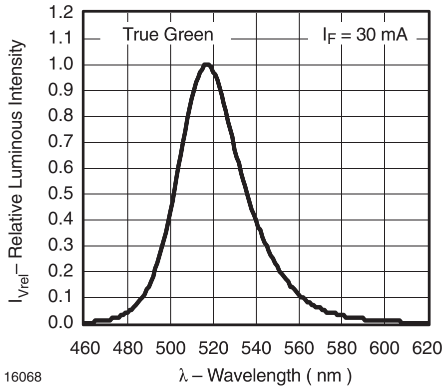



Figure 13. Relative Intensity vs. Wavelength

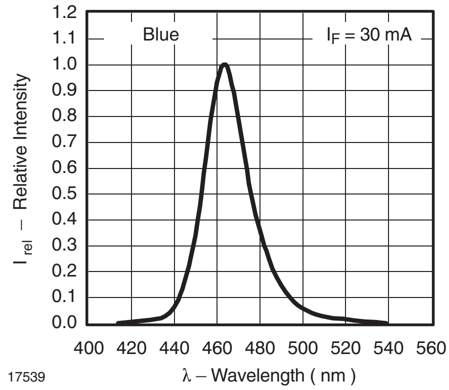
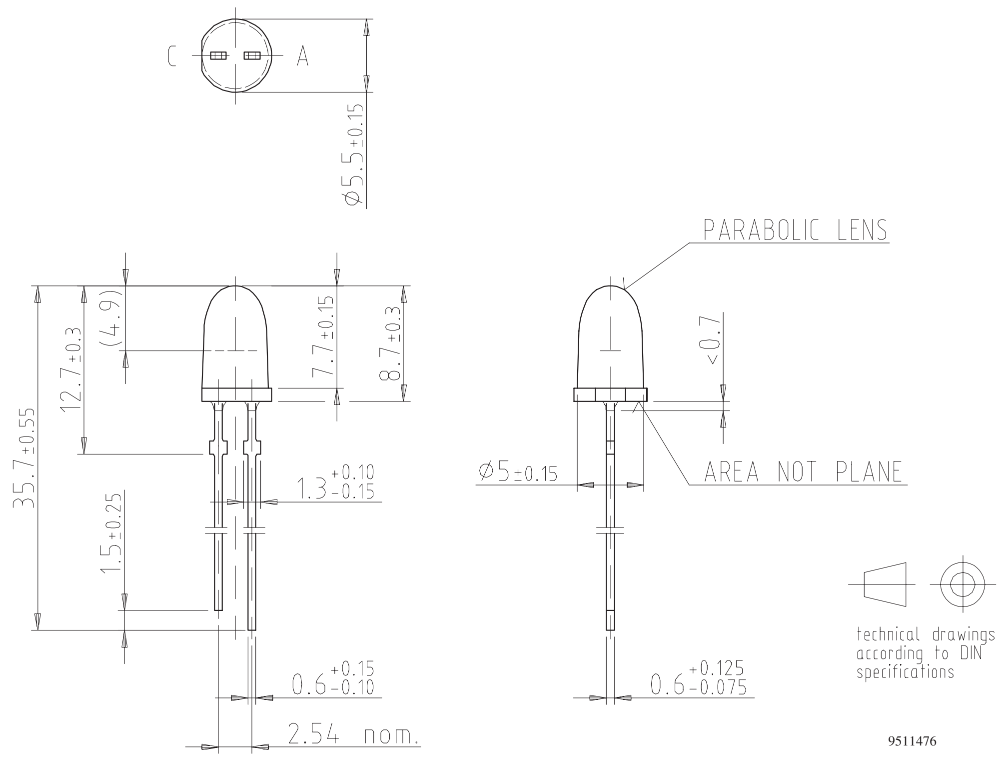



Figure 14. Relative Intensity vs. Wavelength

## Package Dimensions in mm



## 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 operatingsystems 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.



Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany
Telephone: 49 (0)7131 67 2831, Fax number: 49 (0)7131 67 2423

Стандарт
Электрон
Связь

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!


**Наши контакты:**

**Телефон:** +7 812 627 14 35

**Электронная почта:** sales@st-electron.ru

**Адрес:** 198099, Санкт-Петербург,
Промышленная ул, дом № 19, литера Н,
помещение 100-Н Офис 331