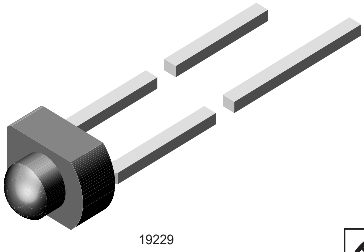
# Universal LED, ∅ 1.8 mm Tinted Diffused Miniplast Package

## Features
- Three colors
- For DC and pulse operation
- Luminous intensity categorized
- End-to-end stackable in centre-to-centre spacing of 0.1" (2.54 mm)
- Lead-free device





## Applications
General indicating and lighting purposes

## Parts Table

| Part | Color, Luminous Intensity | Angle of Half Intensity (±φ) | Technology |
|---|---|---|---|
| TLUO2400 | Red, $I_V$ > 1.6 mcd | 20 ° | GaAsP on GaP |
| TLUO2401 | Red, $I_V$ = (4 to 20) mcd | 20 ° | GaAsP on GaP |
| TLUY2400 | Yellow, $I_V$ > 1 mcd | 20 ° | GaAsP on GaP |
| TLUY2401 | Yellow, $I_V$ = (2.5 to 12.5) mcd | 20 ° | GaAsP on GaP |
| TLUG2400 | Geen, $I_V$ > 1.6 mcd | 20 ° | GaP on GaP |
| TLUG2401 | Green, $I_V$ = (4 to 20) mcd | 20 ° | GaP on GaP |

## Absolute Maximum Ratings
$T_{amb}$ = 25 °C, unless otherwise specified
**TLUO240. , TLUY240. , TLUG240.**

| Parameter | Test condition | Part | Symbol | Value | Unit |
|---|---|---|---|---|---|
| Reverse voltage | | | $V_R$ | 6 | V |
| DC Forward current | | TLUO2400 | $I_F$ | 30 | mA |
| | | TLUY2400 | $I_F$ | 30 | mA |
| | | TLUG2400 | $I_F$ | 30 | mA |
| Surge forward current | $t_p \le 10\ \mu s$ | | $I_{FSM}$ | 1 | A |
| Power dissipation | $T_{amb} \le 55$ °C | TLUO2400 | $P_V$ | 100 | mW |
| | | TLUY2400 | $P_V$ | 100 | mW |
| | | TLUG2400 | $P_V$ | 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 ≤ 3 s, 2 mm from body | | $T_{sd}$ | 260 | °C |
| | t ≤ 5 s, 4 mm from body | | $T_{sd}$ | 260 | °C |
| Thermal resistance junction/ ambient | | TLUO2400 | $R_{thJA}$ | 450 | K/W |
| | | TLUY2400 | $R_{thJA}$ | 450 | K/W |
| | | TLUG2400 | $R_{thJA}$ | 450 | K/W |

## Optical and Electrical Characteristics

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

### Red

**TLUO240.**

| Parameter | Test condition | Part | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Luminous intensity [1] | $I_F$ = 10 mA | TLUO2400 | $I_V$ | 1.6 | 2 | | mcd |
| | | TLUO2401 | $I_V$ | 4 | 5 | 20 | mcd |
| Dominant wavelength | $I_F$ = 10 mA | | $\lambda_d$ | 612 | | 625 | nm |
| Peak wavelength | $I_F$ = 10 mA | | $\lambda_p$ | | 630 | | nm |
| Angle of half intensity | $I_F$ = 10 mA | | $\varphi$ | | ± 20 | | deg |
| Forward voltage | $I_F$ = 20 mA | | $V_F$ | | 2 | 3 | V |
| Reverse voltage | $I_R$ = 10 µA | | $V_R$ | 6 | 15 | | V |
| Junction capacitance | $V_R$ = 0, f = 1 MHz | | $C_j$ | | 50 | | pF |

[1] in one Packing Unit $I_{Vmin}/I_{Vmax} \leq 0.5$

### Yellow

**TLUY240.**

| Parameter | Test condition | Part | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Luminous intensity [1] | $I_F$ = 10 mA | TLUY2400 | $I_V$ | 1 | 4 | | mcd |
| | | TLUY2401 | $I_V$ | 2.5 | 8 | 12.5 | mcd |
| Dominant wavelength | $I_F$ = 10 mA | | $\lambda_d$ | 581 | | 594 | nm |
| Peak wavelength | $I_F$ = 10 mA | | $\lambda_p$ | | 585 | | nm |
| Angle of half intensity | $I_F$ = 10 mA | | $\varphi$ | | ± 20 | | deg |
| Forward voltage | $I_F$ = 20 mA | | $V_F$ | | 2.4 | 3 | V |
| Reverse voltage | $I_R$ = 10 µA | | $V_R$ | 6 | 15 | | V |
| Junction capacitance | $V_R$ = 0, f = 1 MHz | | $C_j$ | | 50 | | pF |

[1] in one Packing Unit $I_{Vmin}/I_{Vmax} \leq 0.5$

### Green

**TLUG240.**

| Parameter | Test condition | Part | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Luminous intensity [1] | $I_F$ = 10 mA | TLUG2400 | $I_V$ | 1.6 | 5 | | mcd |
| | | TLUG2401 | $I_V$ | 4 | 12 | 20 | mcd |
| Dominant wavelength | $I_F$ = 10 mA | | $\lambda_d$ | 562 | | 575 | nm |
| Peak wavelength | $I_F$ = 10 mA | | $\lambda_p$ | | 565 | | nm |
| Angle of half intensity | $I_F$ = 10 mA | | $\varphi$ | | ± 20 | | deg |
| Forward voltage | $I_F$ = 20 mA | | $V_F$ | | 2.4 | 3 | V |
| Reverse voltage | $I_R$ = 10 µA | | $V_R$ | 6 | 15 | | V |
| Junction capacitance | $V_R$ = 0, f = 1 MHz | | $C_j$ | | 50 | | pF |

[1] in one Packing Unit $I_{Vmin}/I_{Vmax} \leq 0.5$

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

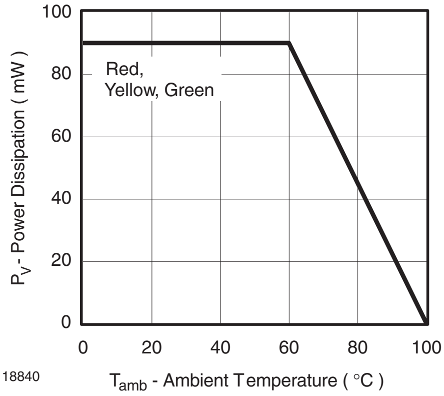



Figure 1. Power Dissipation vs. Ambient Temperature

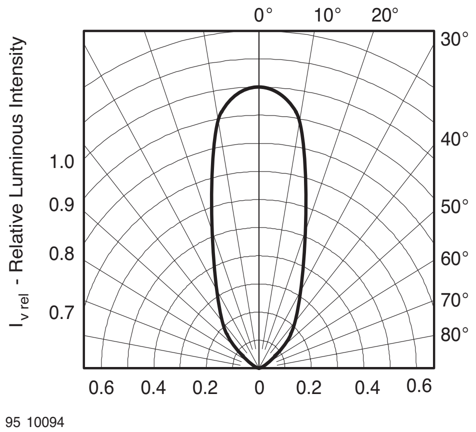



Figure 4. Rel. Luminous Intensity vs. Angular Displacement

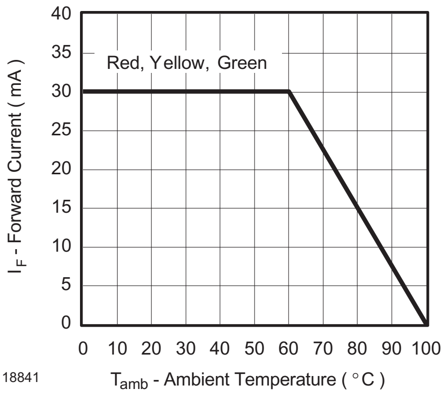



Figure 2. Forward Current vs. Ambient Temperature

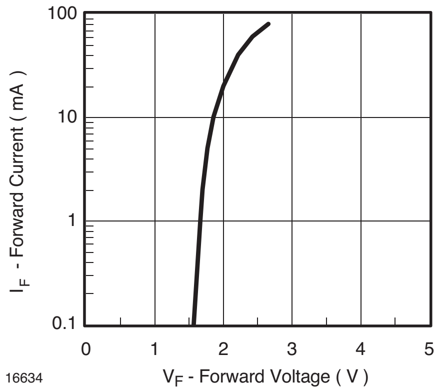



Figure 5. Forward Current vs. Forward Voltage

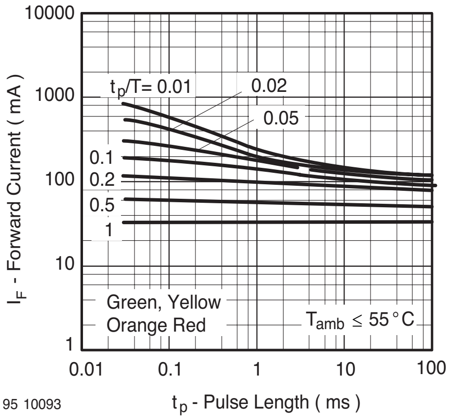



Figure 3. Forward Current vs. Pulse Length

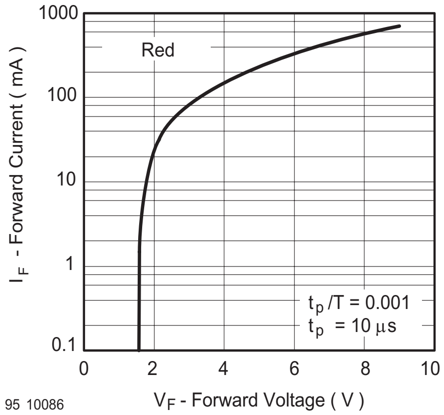



Figure 6. Forward Current vs. Forward Voltage

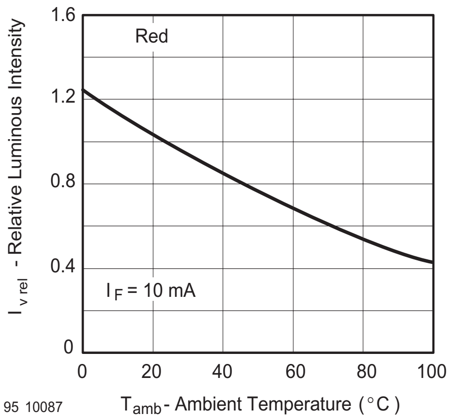



Figure 7. Rel. Luminous Intensity vs. Ambient Temperature

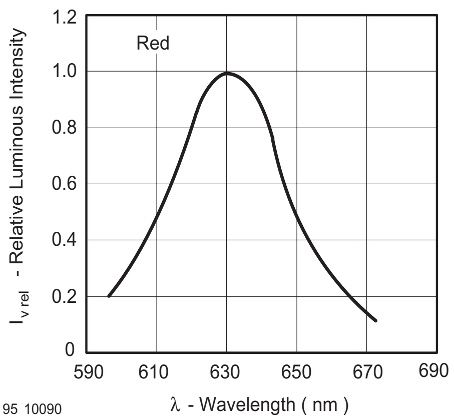



Figure 10. Relative Intensity vs. Wavelength

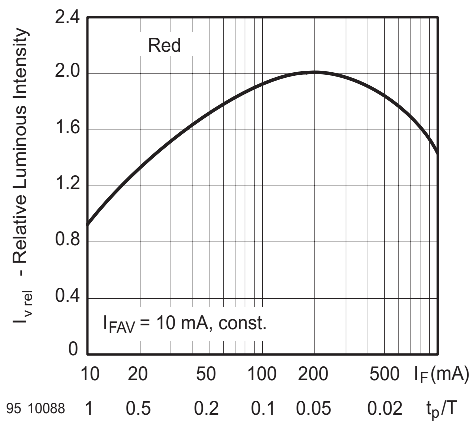



Figure 8. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

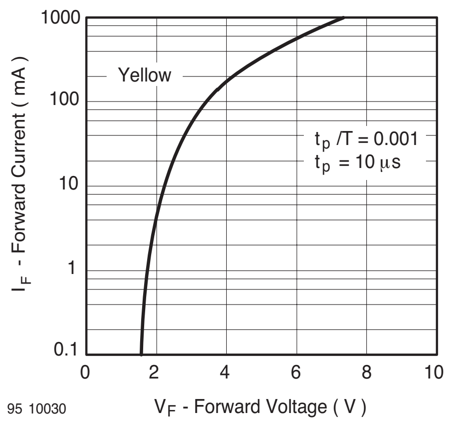



Figure 11. Forward Current vs. Forward Voltage

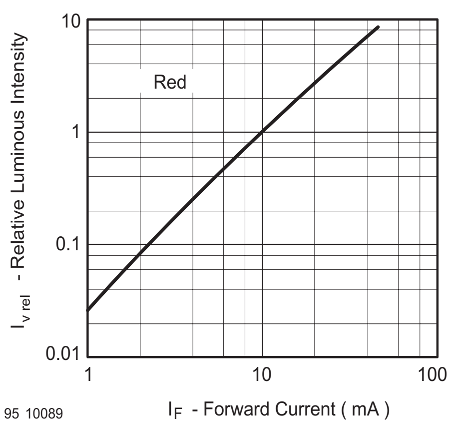



Figure 9. Relative Luminous Intensity vs. Forward Current

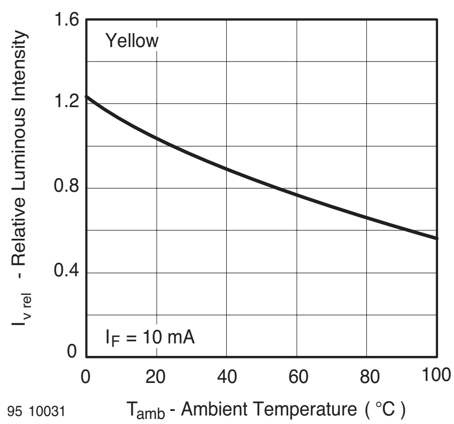



Figure 12. Rel. Luminous Intensity vs. Ambient Temperature

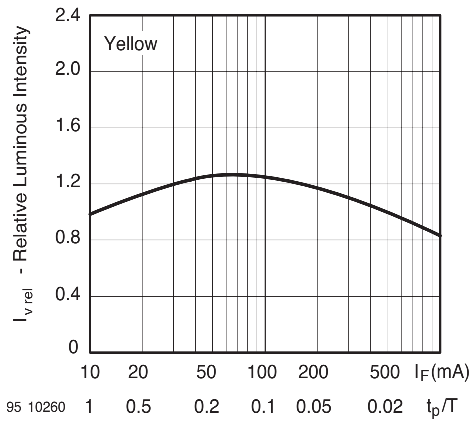



Figure 13. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

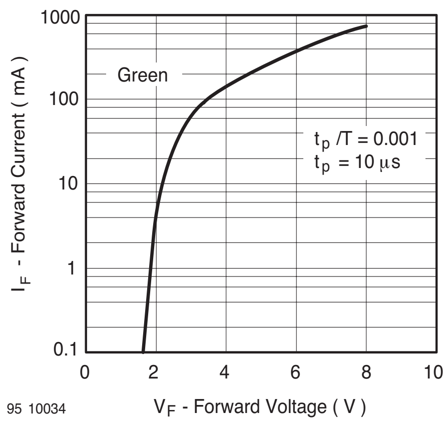



Figure 16. Forward Current vs. Forward Voltage

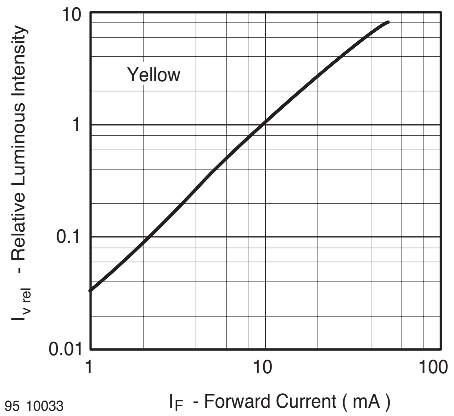



Figure 14. Relative Luminous Intensity vs. Forward Current

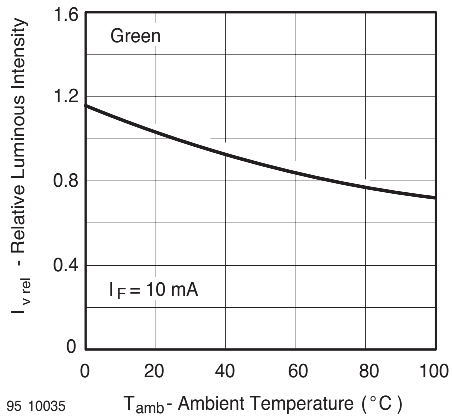



Figure 17. Rel. Luminous Intensity vs. Ambient Temperature

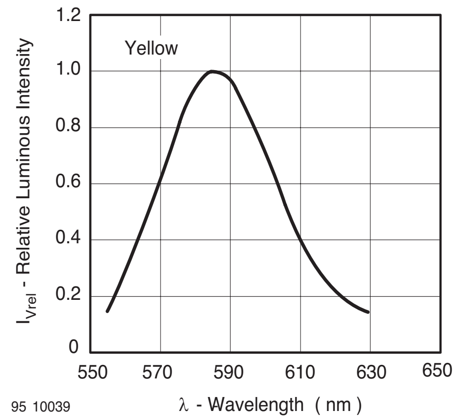



Figure 15. Relative Intensity vs. Wavelength

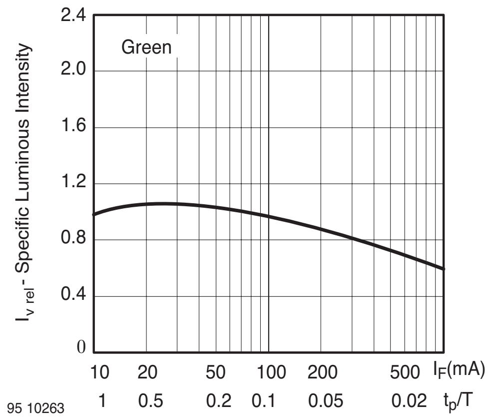



Figure 18. Specific Luminous Intensity vs. Forward Current

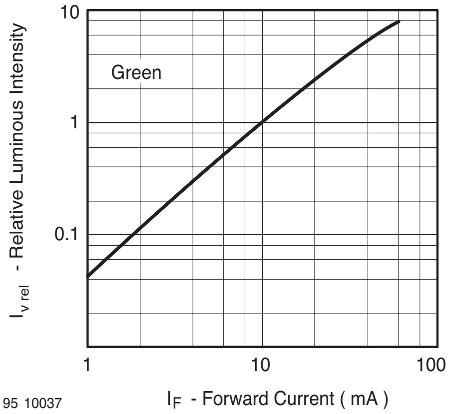



Figure 19. Relative Luminous Intensity vs. Forward Current

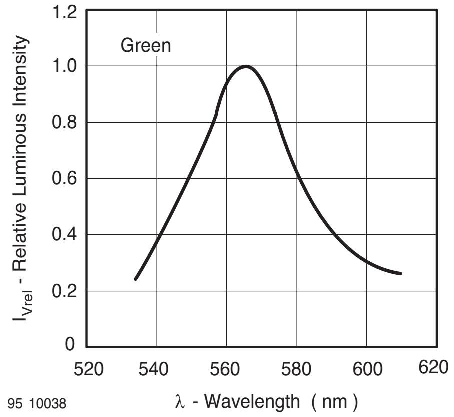
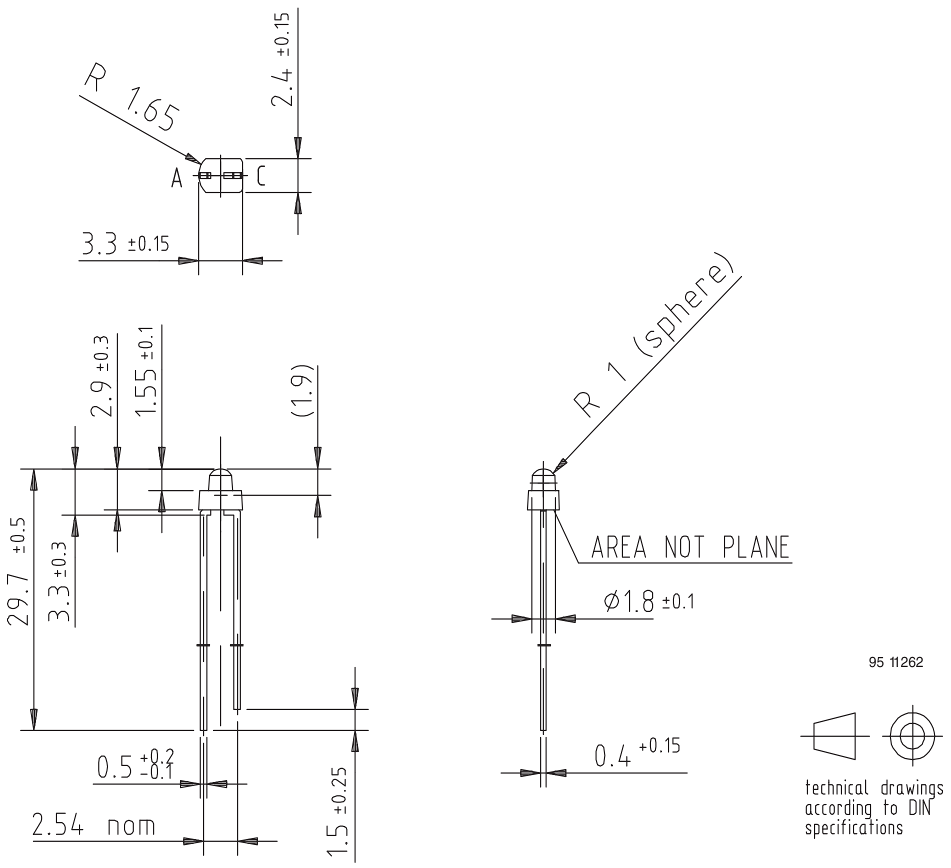



Figure 20. Relative Intensity vs. Wavelength

## 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.



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