

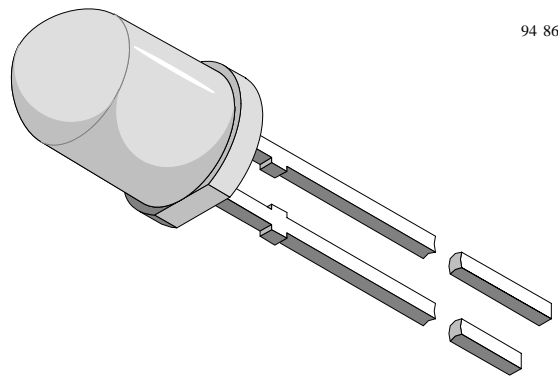
Ultrabright LED, ø 5 mm Untinted Non-Diffused

| Color | Type | Technology | Angle of Half Intensity $\pm\varphi$ |
|-------|---------|-----------------|---|
| Red | ZD-1790 | AllnGaP on GaAs | 4° |

Description

The ZD-1790 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 AllnGaP (AS) and InGaN technologies.

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



94 8631

Features

- Untinted non diffused lens
- Utilizing ultrabright AllnGaP (AS) and InGaN technology
- Very high luminous intensity
- Very small emission angle
- High operating temperature:
 T_j (chip junction temperature)
up to +125°C for AllnGaP 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 AllnGaP, 1 kV for InGaN

Applications

- Interior an 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

Absolute Maximum Ratings

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

ZD-1790

| Parameter | Test Conditions | Symbol | Value | Unit |
|-------------------------------------|-----------------------------------|------------|-------------|--------------------|
| Reverse voltage | | V_R | 5 | V |
| DC forward current | $T_{amb} \leq 85^{\circ}\text{C}$ | I_F | 50 | mA |
| Surge forward current | $t_p \leq 10 \mu\text{s}$ | I_{FSM} | 1 | A |
| Power dissipation | $T_{amb} \leq 85^{\circ}\text{C}$ | P_V | 135 | mW |
| Junction temperature | | T_j | 125 | $^{\circ}\text{C}$ |
| Operating temperature range | | T_{amb} | -40 to +100 | $^{\circ}\text{C}$ |
| Storage temperature range | | T_{stg} | -40 to +100 | $^{\circ}\text{C}$ |
| Soldering temperature | $t \leq 5 \text{ s}$ | T_{sd} | 260 | $^{\circ}\text{C}$ |
| Thermal resistance junction/ambient | | R_{thJA} | 300 | K/W |

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

Optical and Electrical Characteristics

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

ZD-1790

| Parameter | Test Conditions | Type | Symbol | Min | Typ | Max | Unit |
|--|------------------------|----------|------------------|------|---------|-----|------|
| Luminous intensity | $I_F = 50 \text{ mA}$ | TLCR5800 | I_V | 7500 | 20000 | | mcd |
| Dominant wavelength | $I_F = 50 \text{ mA}$ | | λ_d | 611 | 616 | 622 | nm |
| Peak wavelength | $I_F = 50 \text{ mA}$ | | λ_p | | 622 | | nm |
| Spectral bandwidth at 50% $I_{rel \max}$ | $I_F = 50 \text{ mA}$ | | $\Delta\lambda$ | | 18 | | nm |
| Angle of half intensity | $I_F = 50 \text{ mA}$ | | ϕ | | ± 4 | | deg |
| Forward voltage | $I_F = 50 \text{ mA}$ | | V_F | | 2.1 | 2.7 | V |
| Reverse voltage | $I_R = 10 \mu\text{A}$ | | V_R | 5 | | | V |
| Temperature coefficient of V_F | $I_F = 50 \text{ mA}$ | | TC_{V_F} | | -3.5 | | mV/K |
| Temperature coefficient of λ_d | $I_F = 50 \text{ mA}$ | | TC_{λ_d} | | 0.05 | | nm/K |

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

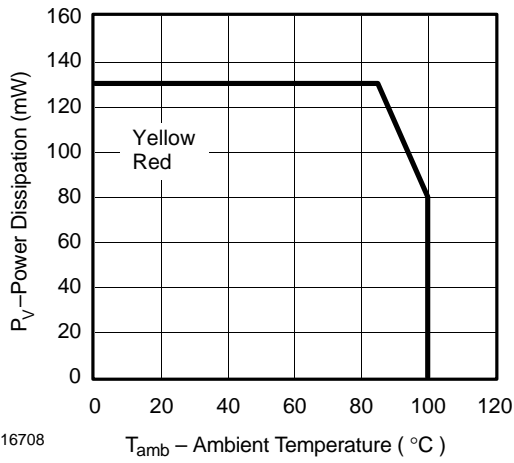


Figure 1. Power Dissipation vs. Ambient Temperature

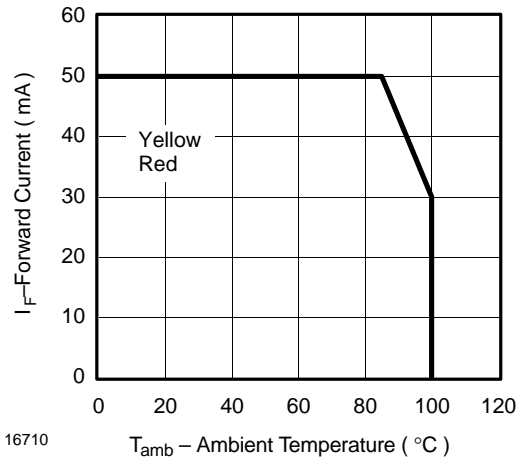


Figure 4. Forward Current vs. Ambient Temperature

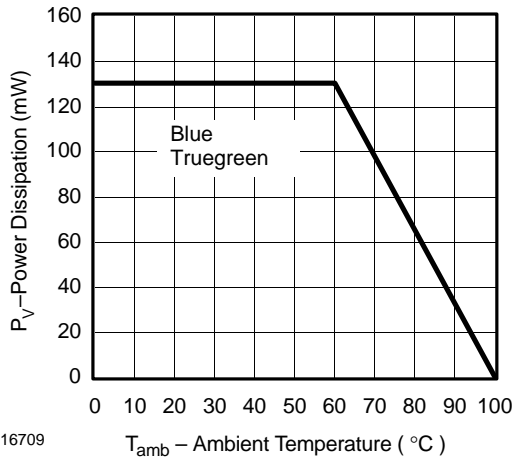


Figure 2. Power Dissipation vs. Ambient Temperature

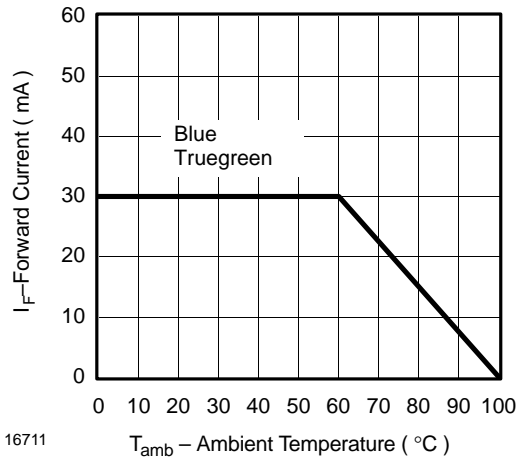


Figure 5. Forward Current vs. Ambient Temperature

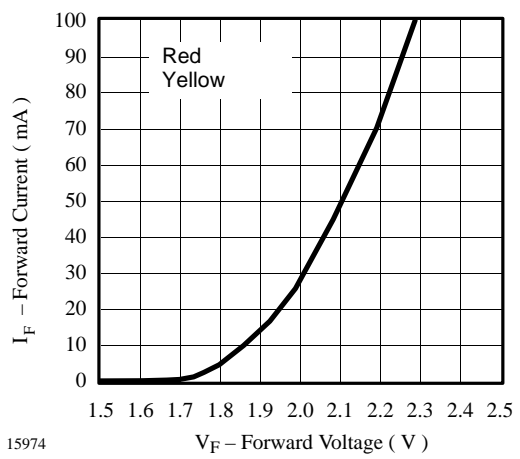


Figure 3. Forward Current vs. Forward Voltage

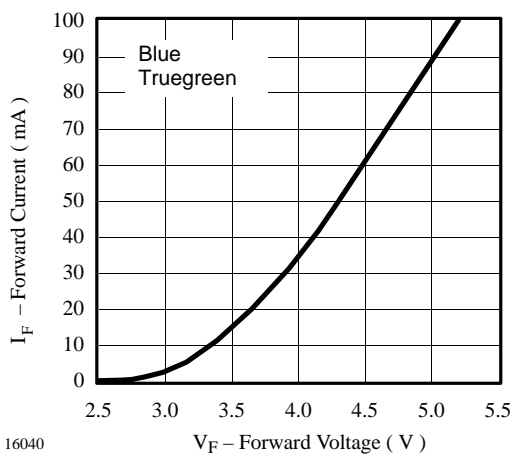


Figure 6. Forward Current vs. Forward Voltage

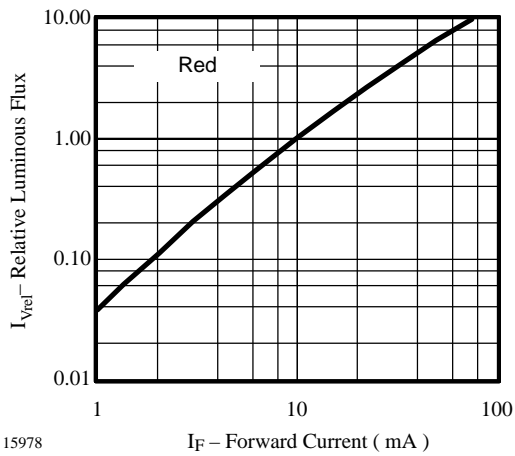


Figure 7. Relative Luminous Intensity vs. Forward Current

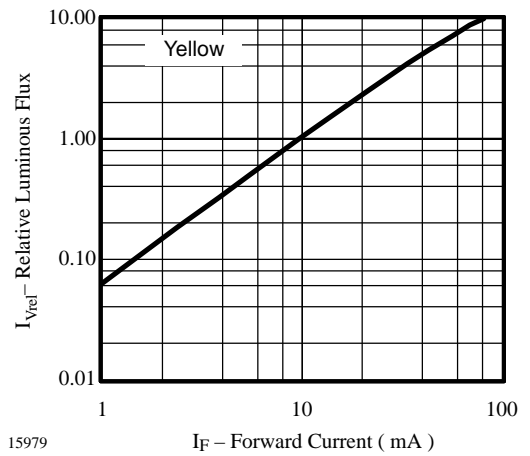


Figure 10. Relative Luminous Intensity vs. Forward Current

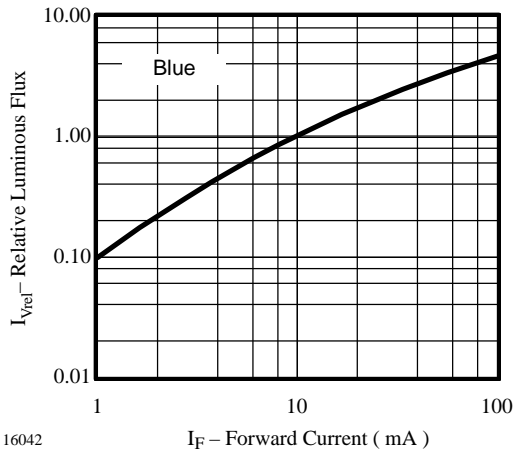


Figure 8. Relative Luminous Intensity vs. Forward Current

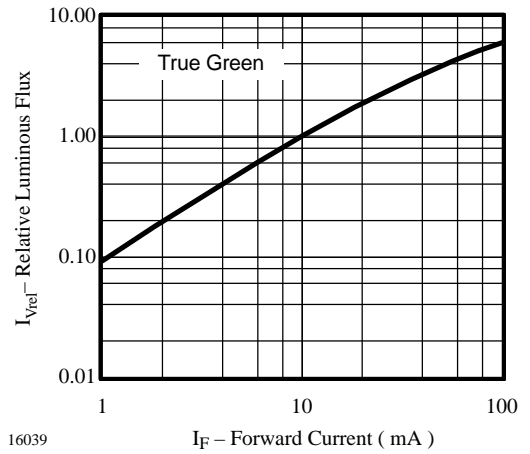


Figure 11. Relative Luminous Intensity vs. Forward Current

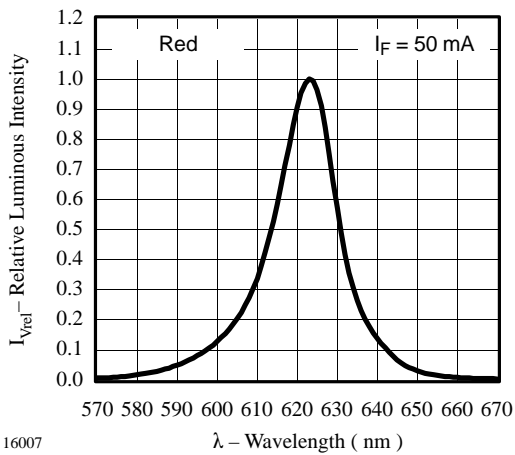


Figure 9. Relative Luminous Intensity vs. Wavelength

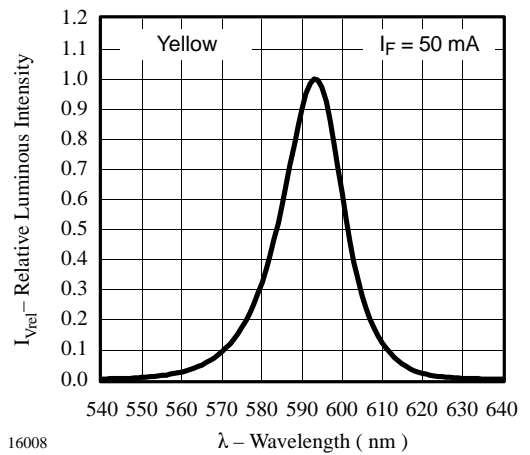


Figure 12. Relative Luminous Intensity vs. Wavelength

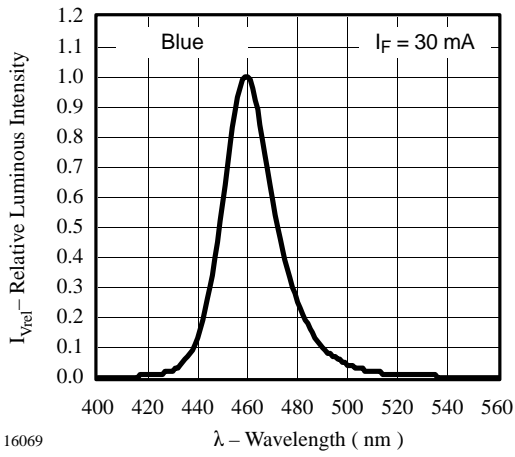


Figure 13. Relative Luminous Intensity vs. Wavelength

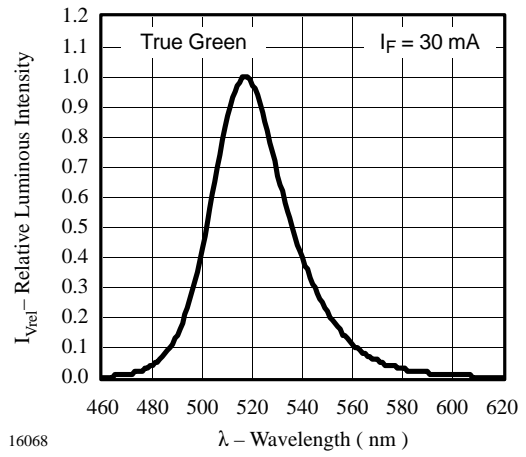
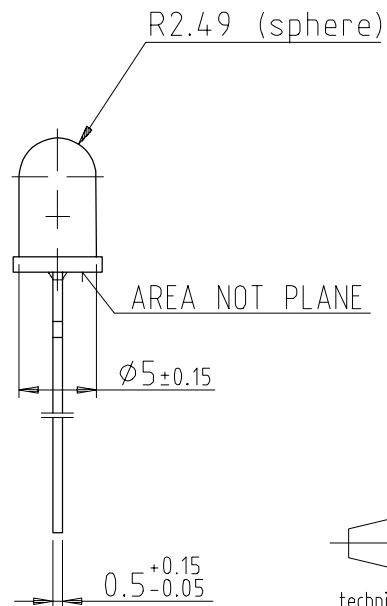
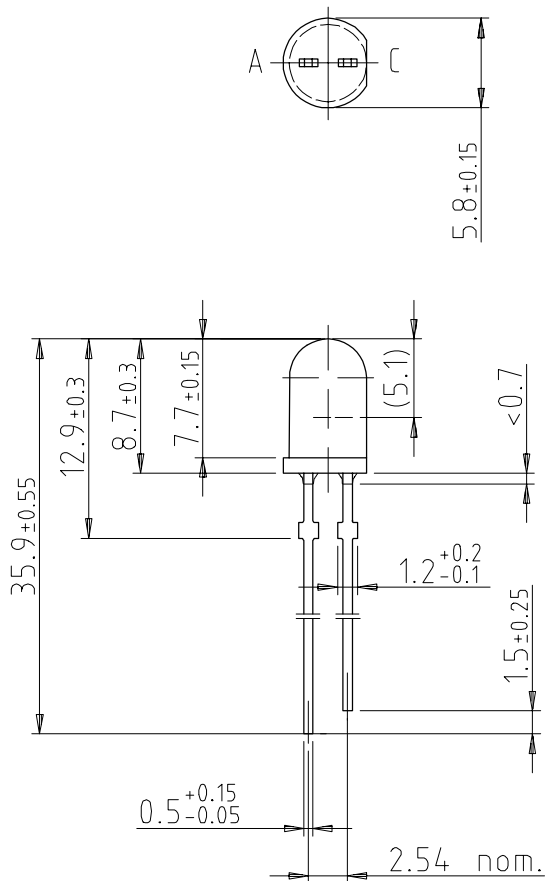
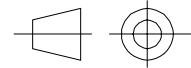


Figure 14. Relative Luminous Intensity vs. Wavelength

Dimensions in mm



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technical drawings
according to DIN
specifications