

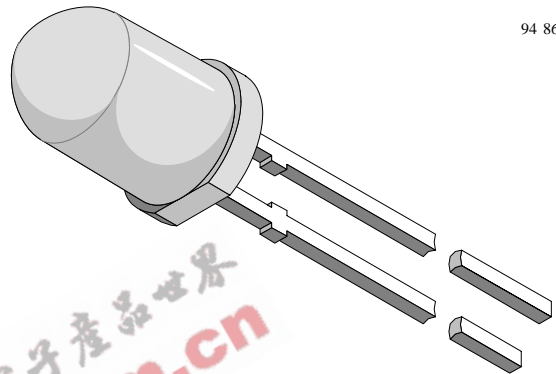
Ultrabright LED, ø 5 mm Untinted Non-Diffused

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.



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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



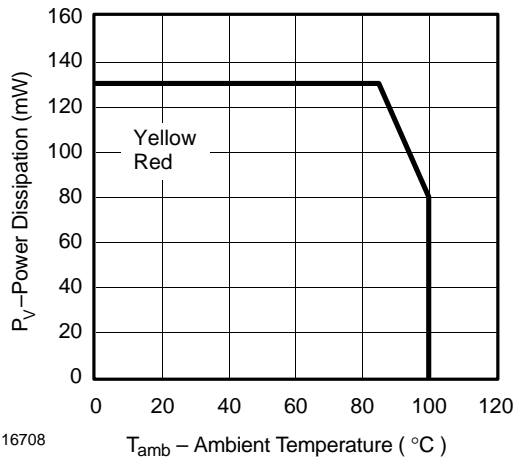
Optical and Electrical Characteristics

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

ZD-1790

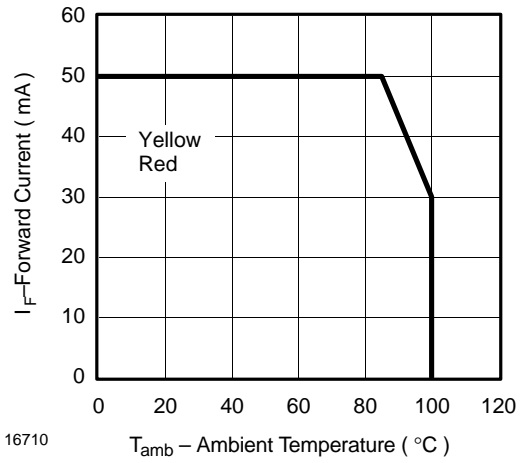
Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Luminous intensity	$I_F = 50 \text{ mA}$	TLCR5800	I_V	7500	20000		mcd
Dominant wavelength	$I_F = 50 \text{ mA}$		λ_d	611	616	622	nm
Peak wavelength	$I_F = 50 \text{ mA}$		λ_p		622		nm
Spectral bandwidth at 50% $I_{rel \max}$	$I_F = 50 \text{ mA}$		$\Delta\lambda$		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_{VF}		-3.5		mV/K
Temperature coefficient of λ_d	$I_F = 50 \text{ mA}$		$TC_{\lambda d}$		0.05		nm/K

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



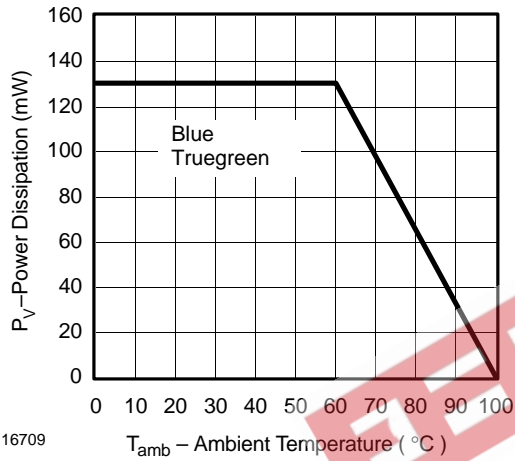
16708

Figure 1. Power Dissipation vs. Ambient Temperature



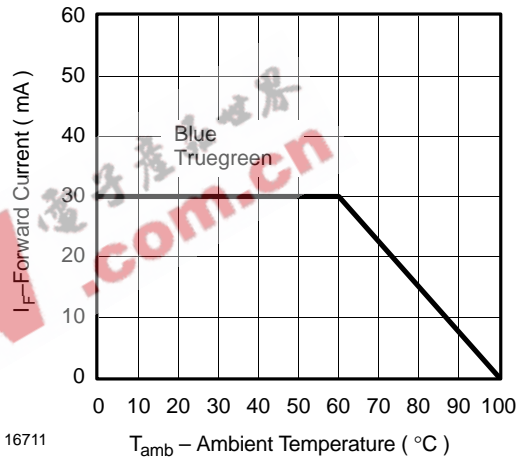
16710

Figure 4. Forward Current vs. Ambient Temperature



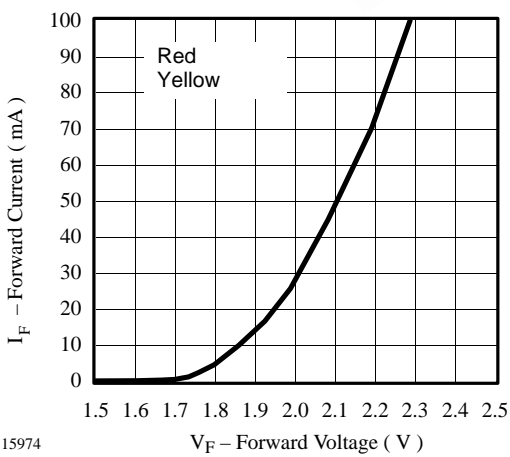
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Figure 2. Power Dissipation vs. Ambient Temperature



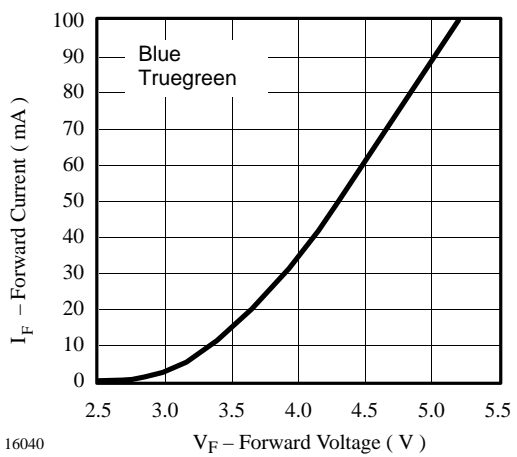
16711

Figure 5. Forward Current vs. Ambient Temperature



15974

Figure 3. Forward Current vs. Forward Voltage



16040

Figure 6. Forward Current vs. Forward Voltage

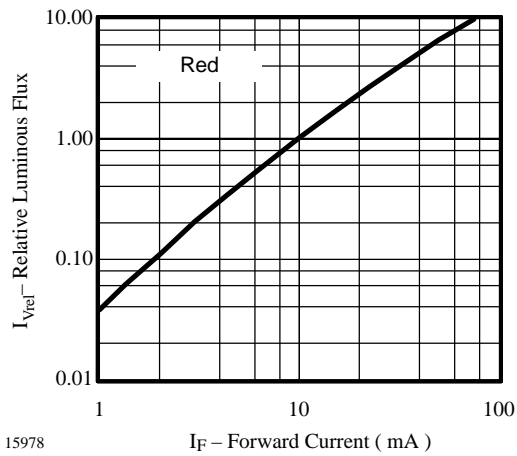


Figure 7. Relative Luminous Intensity vs. Forward Current

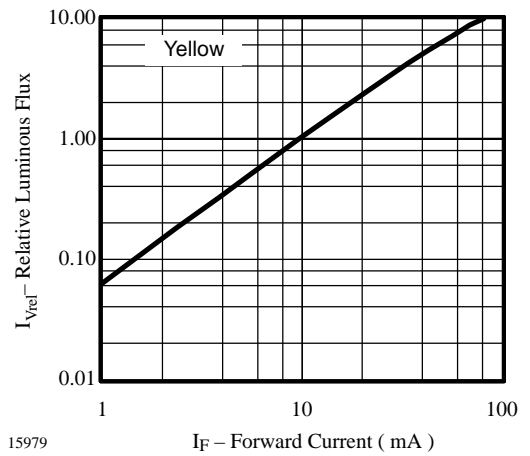


Figure 10. Relative Luminous Intensity vs. Forward Current

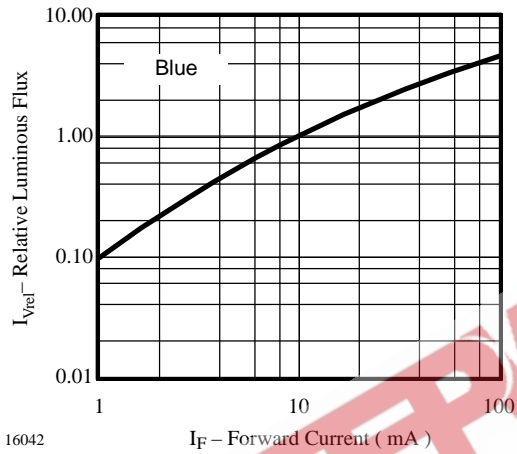


Figure 8. Relative Luminous Intensity vs. Forward Current

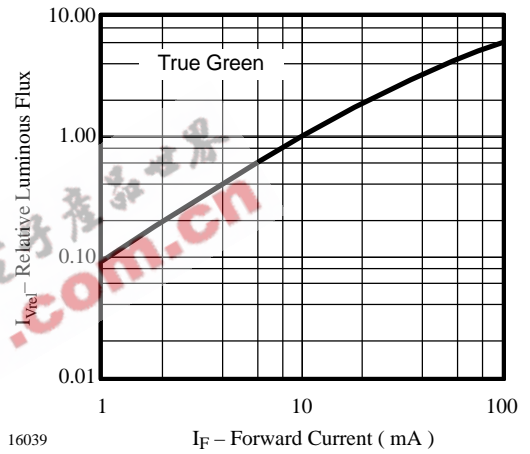


Figure 11. Relative Luminous Intensity vs. Forward Current

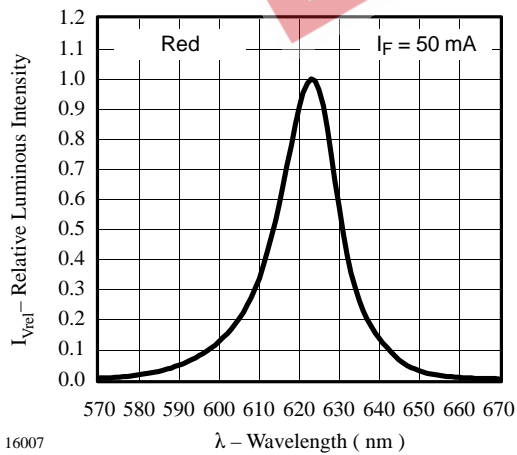


Figure 9. Relative Luminous Intensity vs. Wavelength

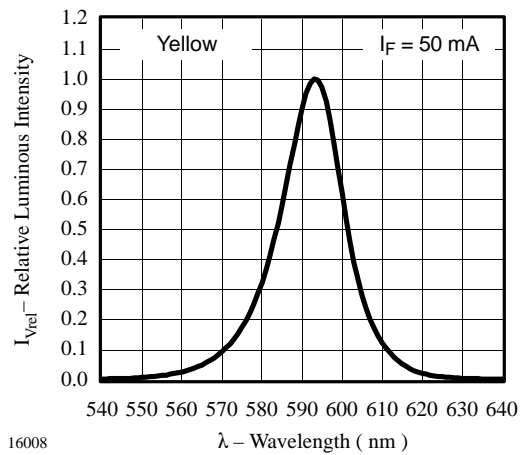


Figure 12. Relative Luminous Intensity vs. Wavelength

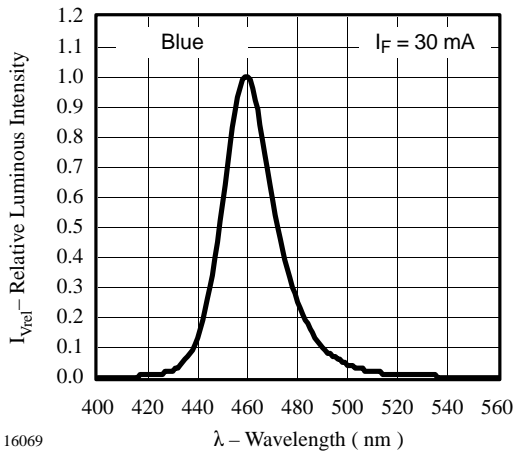


Figure 13. Relative Luminous Intensity vs. Wavelength

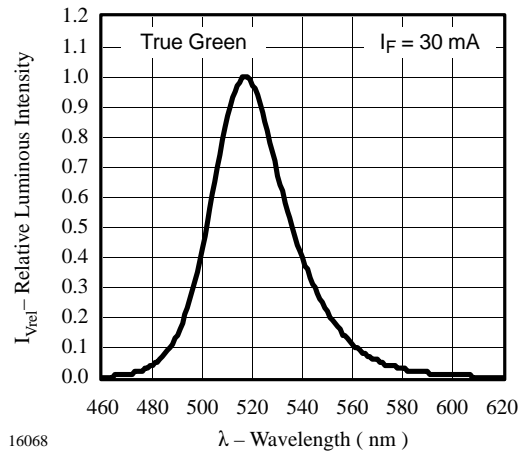


Figure 14. Relative Luminous Intensity vs. Wavelength

Dimensions in mm

