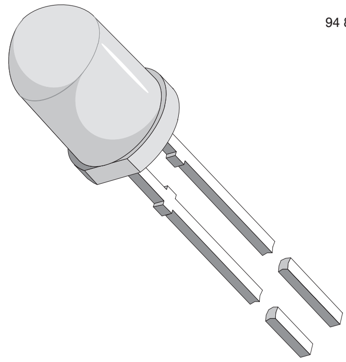
Ultrabright LED, ∅ 5 mm Untinted Non-Diffused



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 AllnGaP and GaP technologies.

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

Features

- Untinted non diffused lens
- Utilizing ultrabright AllnGaP 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 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	AllGaP on GaAs
TLCY5800	Yellow, I_V > 5750 mcd	AllGaP 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	$t \leq 5$ 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		λ_d	611	616	622	nm
Peak wavelength	I_F = 50 mA		λ_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		φ		± 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 λ_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		λ_d	585	590	597	nm
Peak wavelength	I_F = 50 mA		λ_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		φ		± 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 λ_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		λ_d	515	525	535	nm
Peak wavelength	I_F = 30 mA		λ_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		φ		± 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 λ_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		λ_d	462	470	476	nm
Peak wavelength	I_F = 30 mA		λ_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		φ		± 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 λ_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)

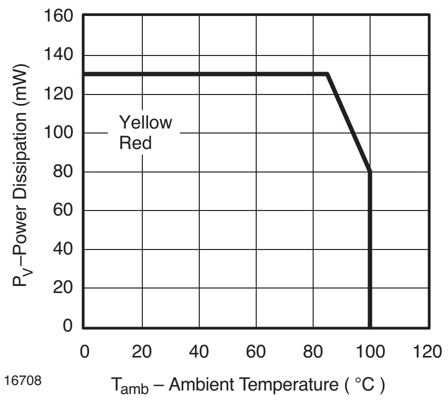


Figure 1. Power Dissipation vs. Ambient Temperature

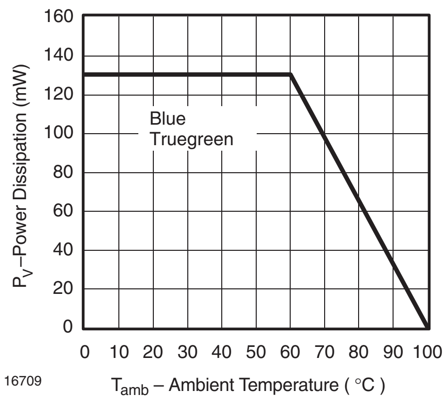


Figure 2. Power Dissipation vs. Ambient Temperature

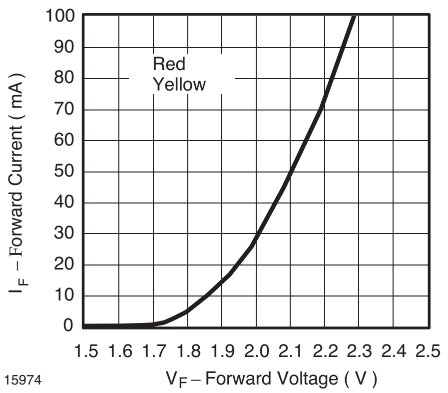


Figure 3. Forward Current vs. Forward Voltage

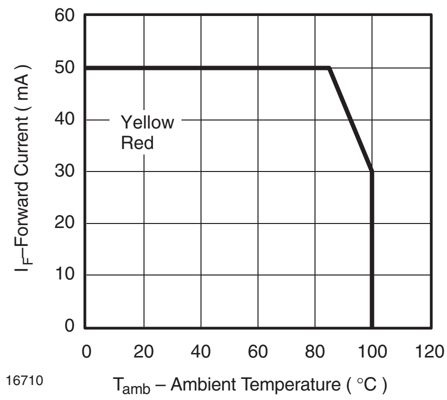


Figure 4. Forward Current vs. Ambient Temperature

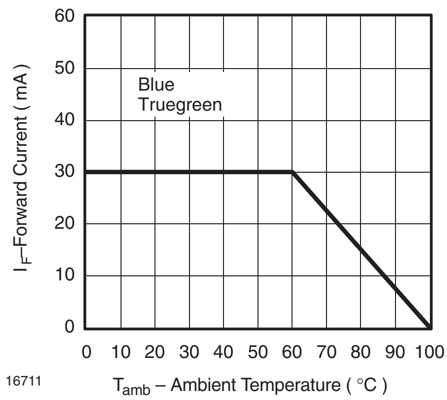


Figure 5. Forward Current vs. Ambient Temperature

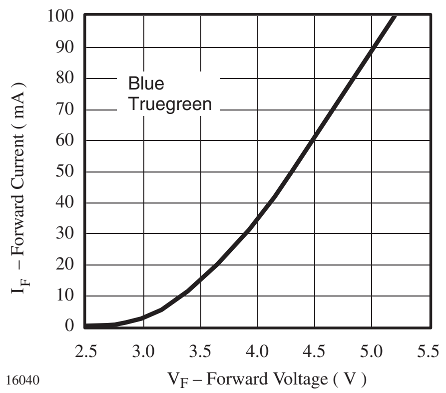


Figure 6. Forward Current vs. Forward Voltage

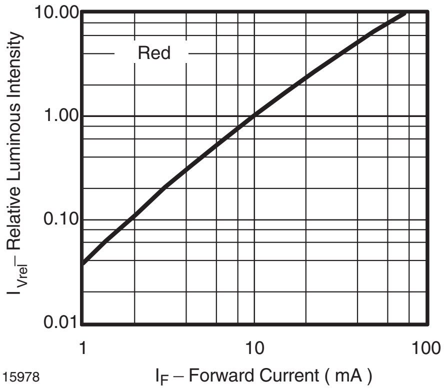


Figure 7. Relative Luminous Flux vs. Forward Current

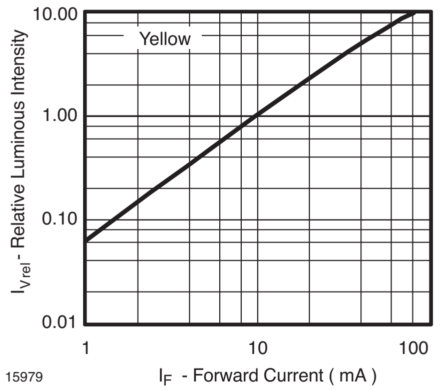


Figure 10. Relative Luminous Flux vs. Forward Current

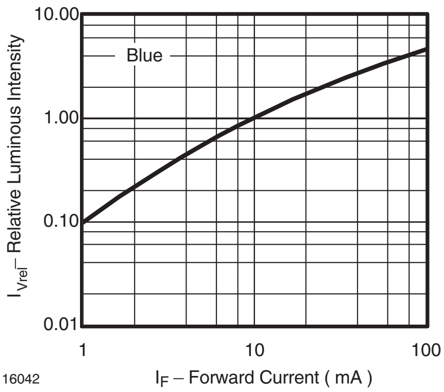


Figure 8. Relative Luminous Flux vs. Forward Current

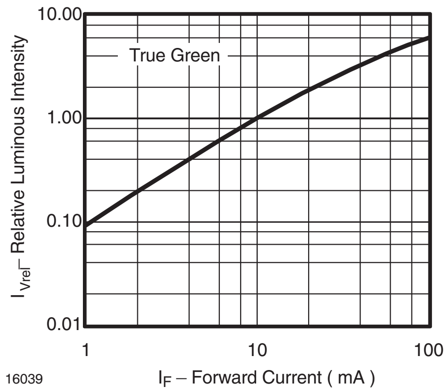


Figure 11. Relative Luminous Flux vs. Forward Current

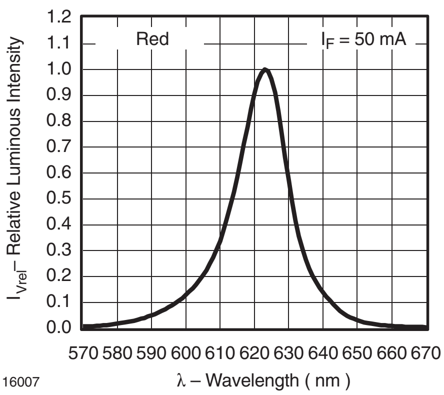


Figure 9. Relative Intensity vs. Wavelength

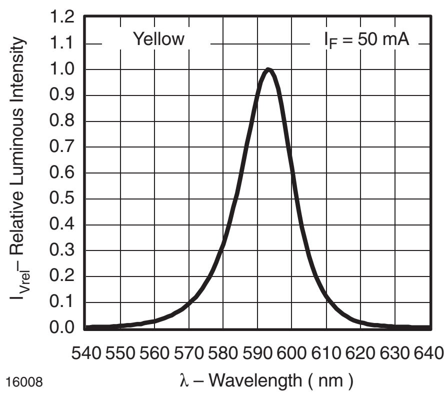


Figure 12. Relative Intensity vs. Wavelength

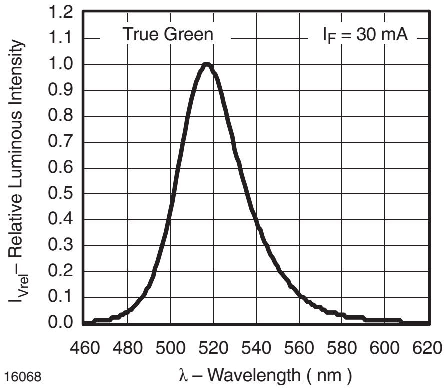


Figure 13. Relative Intensity vs. Wavelength

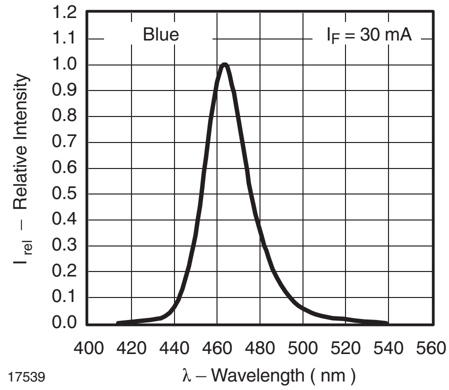
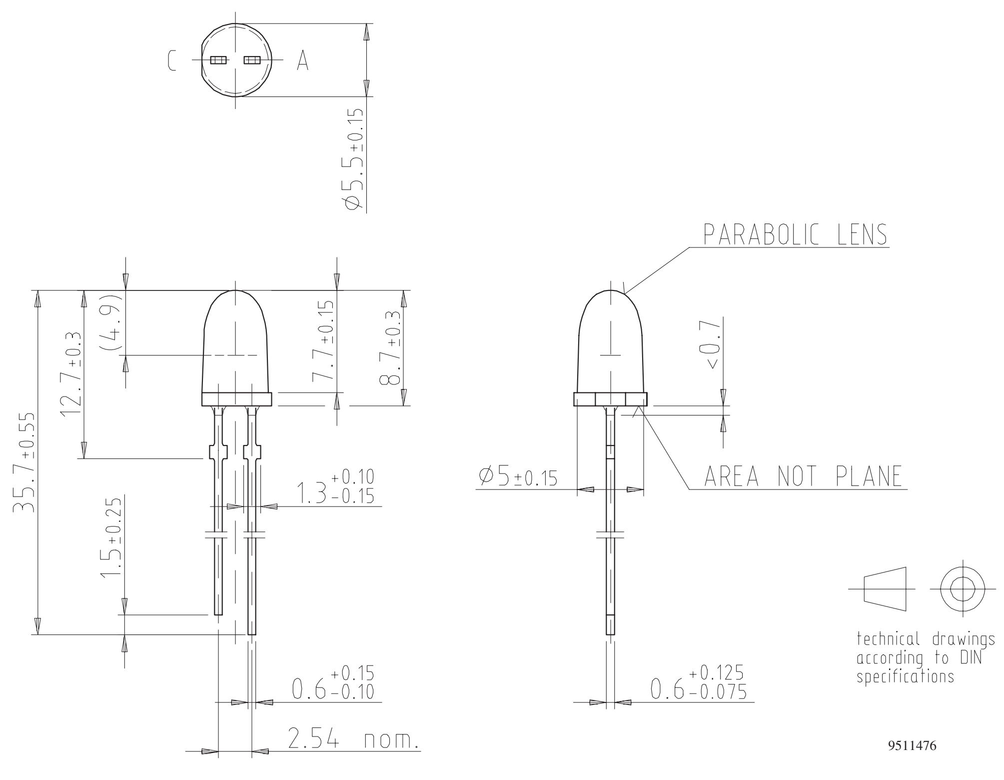


Figure 14. Relative Intensity vs. Wavelength

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