

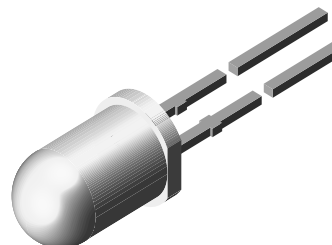
## High Brightness LED, $\varnothing$ 5 mm Untinted Non-Diffused

### Description

The TLC.51.. series is a clear, non diffused 5 mm LED for high end applications where supreme luminous intensity required.

These lamps with clear untinted plastic case utilize the highly developed ultrabright AlInGaP (AS) and InGaN technologies.

The lens and the viewing angle is optimized to achieve best performance of light output and visibility.



19223



### Features

- Untinted non diffused lens
- Utilizing ultrabright AlInGaP, OMA technology
- High luminous intensity
- 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
- Lead-free device

### Applications

Interior and exterior lighting  
Outdoor LED panels  
Instrumentation and front panel indicators  
Central high mounted stop lights (CHMSL) for motor vehicles  
Replaces incandescent lamps  
Traffic signals  
Light guide design

### Parts Table

Part	Color, Luminous Intensity	Angle of Half Intensity ( $\pm\phi$ )	Technology
TLC5110	Red, $I_V > 20000$ mcd (typ.)	9 °	AlInGaP on Si

### Absolute Maximum Ratings

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

TLC511.

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		$V_R$	5	V
DC Forward current	$T_{amb} \leq 85$ °C	$I_F$	50	mA
Surge forward current	$t_p \leq 10$ $\mu$ s	$I_{FSM}$	1	A
Power dissipation	$T_{amb} \leq 85$ °C	$P_V$	135	mW
Junction temperature		$T_j$	125	°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

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

### Red

#### TLCS5110

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Luminous intensity <sup>1)</sup>	$I_F = 50\text{ mA}$	TLCS5110	$I_V$	7500	20000		mcd
Dominant wavelength	$I_F = 50\text{ mA}$		$\lambda_d$	620	625	630	nm
Peak wavelength	$I_F = 50\text{ mA}$		$\lambda_p$		632		nm
Spectral bandwidth at 50 % $I_{rel\ max}$	$I_F = 50\text{ mA}$		$\Delta\lambda$		18		nm
Angle of half intensity	$I_F = 50\text{ mA}$		$\phi$		$\pm 9$		deg
Forward voltage	$I_F = 50\text{ mA}$		$V_F$		2.1	2.7	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$		$V_R$	5			V
Temperature coefficient of $V_F$	$I_F = 50\text{ mA}$		$TC_{V_F}$		- 3.5		mV/K
Temperature coefficient of $\lambda_d$	$I_F = 50\text{ mA}$		$TC_{\lambda_d}$		0.05		nm/K

<sup>1)</sup> in one Packing Unit  $I_{Vmax}/I_{Vmin} \leq 2.0$

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

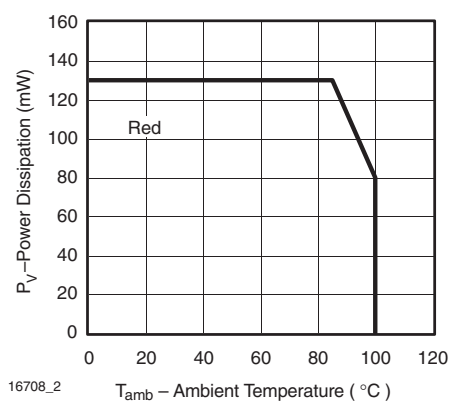


Figure 1. Power Dissipation vs. Ambient Temperature

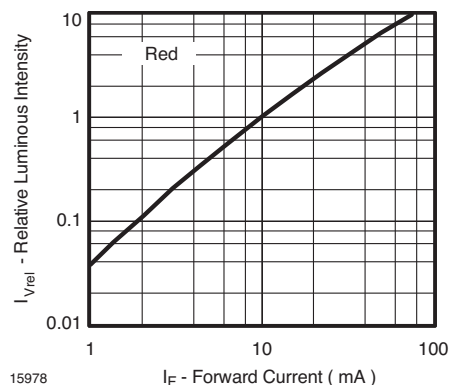


Figure 4. Relative Luminous Flux vs. Forward Current

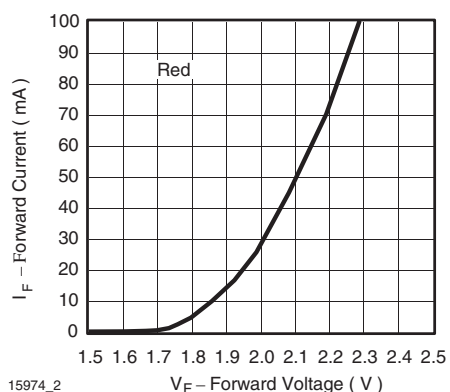


Figure 2. Forward Current vs. Forward Voltage

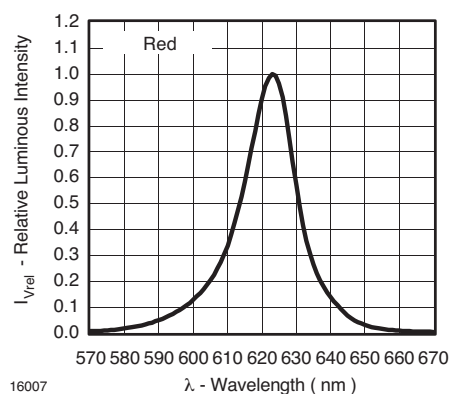


Figure 5. Relative Intensity vs. Wavelength

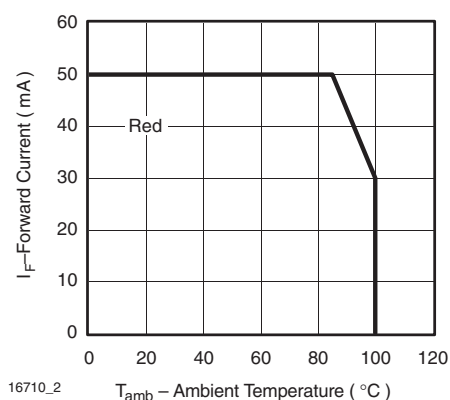

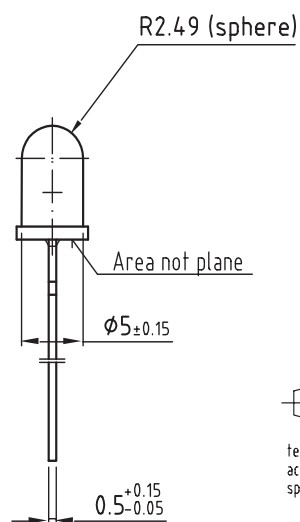
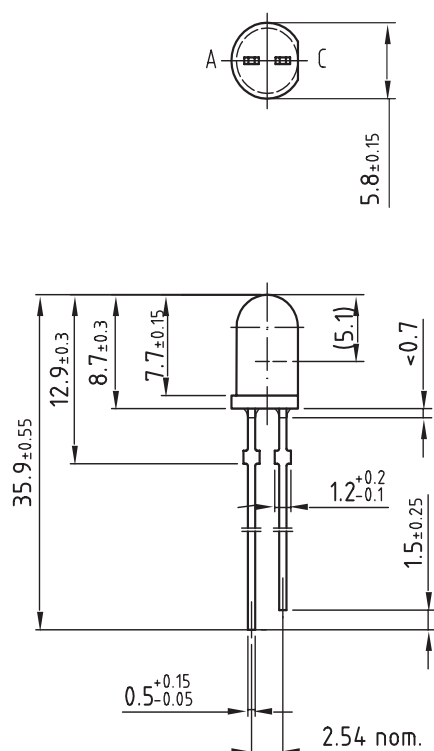


Figure 3. Forward Current vs. Ambient Temperature

### Package Dimensions in mm



technical drawings  
according to DIN  
specifications

All dimensions in mm

Drawing-No.: 6.544-5258.04-4

Issue: 6; 04.07.03

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## **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 operating systems 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.

We reserve the right to make changes to improve technical design  
and may do so without further notice.

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay Semiconductors products for any unintended or unauthorized application, the buyer shall indemnify Vishay Semiconductors against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

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