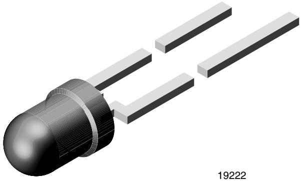
White LED in 3mm T 1 Waterclear Package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FEATURES

- High efficient InGaN technology
- Chromaticity coordinate categorized according to CIE1931 per packing unit
- Typical chromaticity coordinates x = 0.33; y = 0.33
- Typical color temperature 5500 K
- ESD-withstand voltage up to 1 kV acc. to JESD22-A114-B
- Small viewing angle, high luminous intensity
- Chip embedded in elastic resin, improved robustness against temperature cycle stress
- Lead (Pb)-free device
- RoHS compliant

DESCRIPTION

High Intensity LED with typical color coordinates x = 0.33, y = 0.33 (typical color temperature 5500 k). This LED emits white light with a high color rendering index.

The emission spectrum is tuned for ideal white, without the impression of being blue shaded or "cold". The package is a standard 3 mm.

The internal reflector is filled with a compound of TAG phosphor and an elastic resin.

Therefore the chip is better protected against temperature cycle stress.

The phosphor converts the blue emission of the InGaN chip partially to amber, which mixes with the remaining blue to produce white.

APPLICATIONS

- Indicator and backlighting
- Indoor and outdoor message panels
- Alternative to incandescent lamps
- Marker lights

PARTS TABLE

PART	COLOR, LUMINOUS INTENSITY	ANGLE OF HALF INTENSITY (± J)	TECHNOLOGY
VLHW4900	White, I_V > 240 mcd	16°	InGaN / TAG on SiC
VLHW4902	White, I_V = (430 to 2000) mcd	16°	InGaN / TAG on SiC

ABSOLUTE MAXIMUM RATINGS[1] VLHW490.

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage[2]		V_R	5	V
DC Forward current	$T_{amb} \le 50$ °C	I_F	30	mA
Surge forward current	$t_p \le 10$ µs	I_{FSM}	0.1	A
Power dissipation		P_V	126	mW
Junction temperature		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 ≤ 5 s	T_{sd}	260	°C
Thermal resistance junction/ ambient		R_{thJA}	400	K/W

[1] T_{amb} = 25 °C, unless otherwise specified
[2] Driving the LED in reverse direction is suitable for short term application

OPTICAL AND ELECTRICAL CHARACTERISTICS[1] WHITE VLHW490.

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN	TYP.	MAX	UNIT
Luminous intensity[2]	I_F = 20 mA	VLHW4900	I_V	240	500		mcd
		VLHW4902	I_V	430		2000	mcd
Luminous flux	I_F = 20 mA		ϕ_V		250		mlm
Chromaticity coordinate x acc. to CIE 1931	I_F = 20 mA		x		0.33		
Chromaticity coordinate y acc. to CIE 1931	I_F = 20 mA		y		0.33		
Angle of half intensity	I_F = 20 mA		φ		± 16		deg
Forward voltage	I_F = 20 mA		V_F		3.5	4.2	V
Reverse voltage	I_R = 10 µA		V_R	5			V
Temperature coefficient of V_F	I_F = 20 mA		TC_V		- 4		mV/K
Temperature coefficient of I_V	I_F = 20 mA		TC_I		- 0.5		% / K

[1] T_{amb} = 25 °C, unless otherwise specified
[2] in one Packing Unit $I_{Vmin}/I_{Vmax} \le 0.5$

CHROMATICITY COORDINATE CLASSIFICATION

GROUP	X		Y	
	MIN	MAX	MIN	MAX
3	0.280	0.325	0.210	0.340
4	0.305	0.350	0.260	0.390
5	0.330	0.375	0.310	0.440

LUMINOUS INTENSITY CLASSIFICATION

GROUP	LIGHT INTENSITY [MCD]	
STANDARD	MIN	MAX
Z	240	480
AA	320	640
BB	430	860
CC	575	1150
DD	750	1500
EE	1000	2000

TYPICAL CHARACTERISTICS (TAMB = 25 °C UNLESS OTHERWISE SPECIFIED)

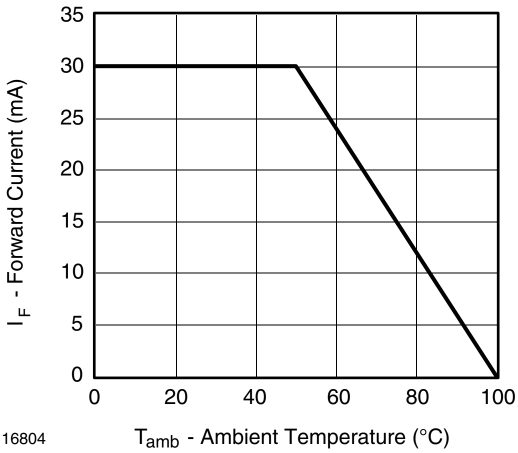

Figure 1. Forward Current vs. Ambient Temperature

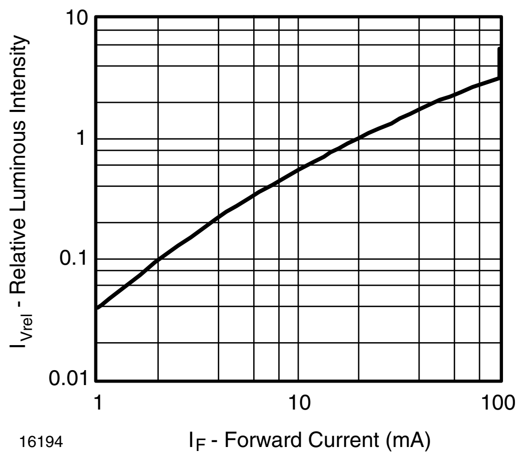

Figure 2. Relative Luminous Intensity vs. Forward Current

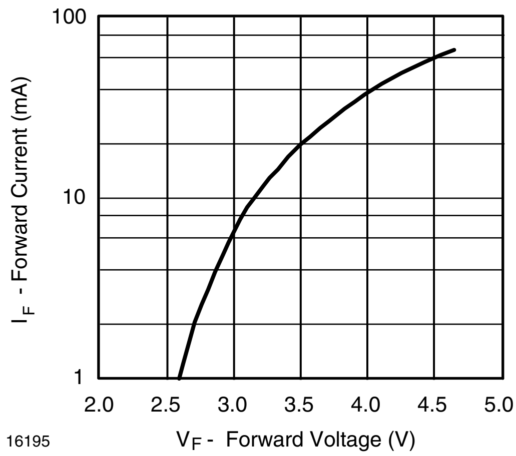

Figure 3. Forward Current vs. Forward Voltage

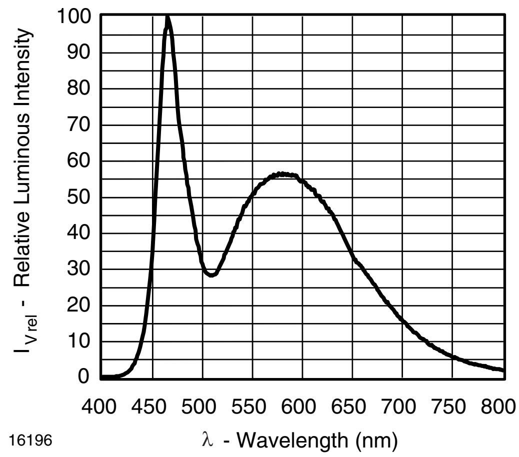

Figure 4. Relative Intensity vs. Wavelength

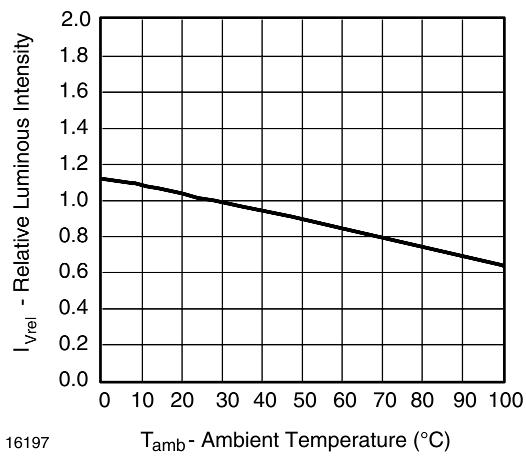

Figure 5. Rel. Luminous Intensity vs. Ambient Temperature

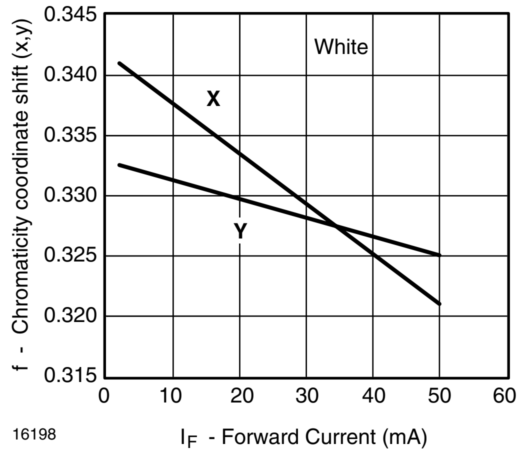

Figure 6. Chromaticity Coordinate Shift vs. Forward Current

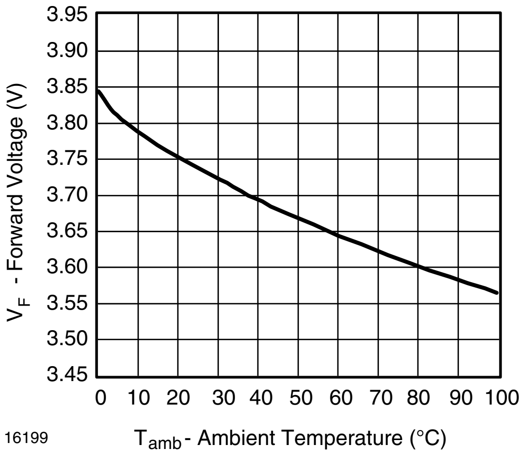

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Figure 7. Forward Voltage vs. Ambient Temperature

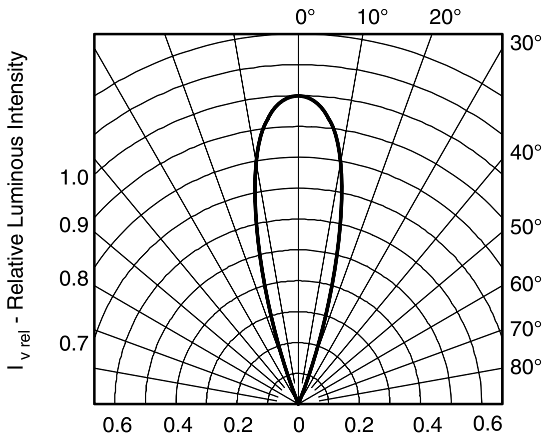

Figure 8. Rel. Luminous Intensity vs. Angular Displacement

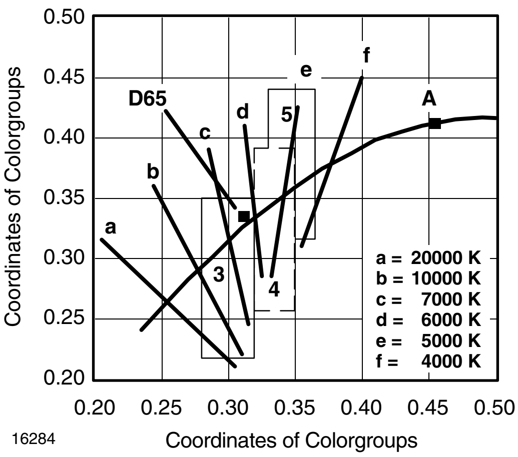

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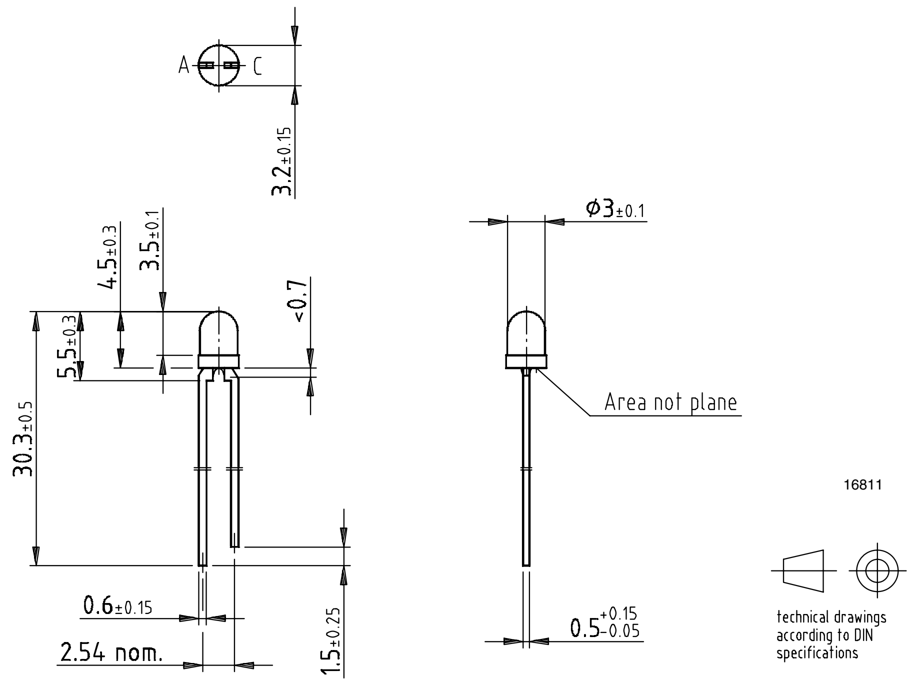
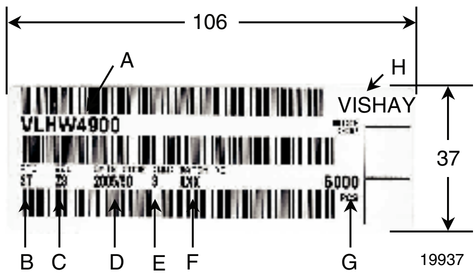
Figure 9. Coordinates of Colorgroups

PACKAGE DIMENSIONS IN MM



BARCODE-PRODUCT-LABEL



A) Type of component
B) Manufacturing plant
C) SEL - Selection Code (Bin):
e.g.: Z = Code for Luminous Intensity Group
3 = Code for Chromaticity Coordinate
D) Date Code year/week
E) Day Code (e.g. 1: Monday)
F) Batch No.
G) Total quantity
H) Company Code

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.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany

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