**Vishay Semiconductors** 

# Backlighting LED in Ø 3 mm Tinted Non-Diffused Package

# 19231

www.vishay.com

## DESCRIPTION

The TLV.420. series was developed for backlighting. Due to its special shape the spatial distribution of the radiation is qualified for backlighting.

To optimize the brightness of backlighting a custom-built reflector (with scattering) is required. Uniform illumination can be enhanced by covering the front of the reflector with diffusor material.

This is a flexible solution for backlighting different areas.

## **PRODUCT GROUP AND PACKAGE DATA**

- Product group: LED
- · Package: 3 mm backlighting
- Product series: standard
- Angle of half intensity: ± 85°

## **FEATURES**

- High light output
- · Wide viewing angle
- Categorized for luminous flux
- Tinted clear package
- Low power dissipation
- · Low self heating
- Rugged design
- High reliability
- · Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

#### **APPLICATIONS**

- · Backlighting of display panels, LCD displays, symbols on switches, keyboards, graphic boards, and measuring scales
- Illumination of large areas e.g. dot matrix displays

PARTS TA	BLE													
PART	COLOR	LUM	INOUS (mlm)	FLUX	at I <sub>F</sub>	WA	VELEN (nm)	GTH	at I <sub>F</sub>	FORW	ARD VO (V)	LTAGE	at I <sub>F</sub>	TECHNOLOGY
		MIN.	TYP.	MAX.	(mA)	MIN.	TYP.	MAX.	(mA)	MIN.	TYP.	MAX.	(mA)	
TLVY4200	Yellow	10	30	-	15	581	-	594	10	-	2.4	3	20	GaAsP on GaP
TLVG4200	Green	10	30	-	15	562	-	575	10	-	2.4	3	20	GaP on GaP

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage <sup>(1)</sup>		V <sub>R</sub>	5	V
DC forward current	T <sub>amb</sub> ≤ 60 °C	I <sub>F</sub>	30	mA
Surge forward current	t <sub>p</sub> ≤ 10 μs	I <sub>FSM</sub>	1	A
Power dissipation		Pv	90	mW
Junction temperature		Тj	100	°C
Operating temperature range		T <sub>amb</sub>	-40 to +100	°C
Storage temperature range		T <sub>stg</sub>	-55 to +100	°C
Soldering temperature	$t \le 5$ s, 2 mm from body	T <sub>sd</sub>	260	°C
Thermal resistance junction to ambient		R <sub>thJA</sub>	400	K/W

#### Note

<sup>(1)</sup> Driving the LED in reverse direction is suitable for a short term application



RoHS

COMPLIANT

HALOGEN

FREE

GREEN

(5-2008)





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OPTICAL AND ELE TLVY4200, YELLO	CTRICAL CHARACT	ERISTICS (1	「 <sub>amb</sub> = 25 °€	C, unless c	otherwise sp	pecified)	
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	I <sub>F</sub> = 15 mA	TLVY4200	φv	10	30	-	mlm
Dominant wavelength	I <sub>F</sub> = 10 mA		λ <sub>d</sub>	581	-	594	nm
Peak wavelength	I <sub>F</sub> = 10 mA		λρ	-	585	-	nm
Angle of half intensity	I <sub>F</sub> = 10 mA		φ	-	± 85	-	0
Forward voltage	I <sub>F</sub> = 20 mA		V <sub>F</sub>	-	2.4	3	V
Reverse voltage	I <sub>R</sub> = 10 μA		V <sub>R</sub>	6	15	-	V
Junction capacitance	V <sub>R</sub> = 0 V, f = 1 MHz		Cj	-	50	-	pF

## **OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25 \text{ °C}$ , unless otherwise specified) **TLVG4200, GREEN**

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	I <sub>F</sub> = 15 mA	TLVG4200	φv	10	30	-	mlm
Dominant wavelength	I <sub>F</sub> = 10 mA		$\lambda_d$	562	-	575	nm
Peak wavelength	I <sub>F</sub> = 10 mA		λρ	-	555	-	nm
Angle of half intensity	I <sub>F</sub> = 10 mA		φ	-	± 85	-	0
Forward voltage	I <sub>F</sub> = 20 mA		V <sub>F</sub>	-	2.4	3	V
Reverse voltage	I <sub>R</sub> = 10 μA		V <sub>R</sub>	6	15	-	V
Junction capacitance	V <sub>R</sub> = 0 V, f = 1 MHz		Cj	-	50	-	pF

LUMINOUS FLUX CLASSIFICA	TION	
GROUP	LUMINOUS	FLUX (mlm)
STANDARD	MIN.	MAX.
Р	4	8
Q	6.3	12.5
R	10	20
S	16	32
Т	25	50
U	40	80
V	63	125
W	100	200
Х	130	260
Y	180	360
Z	240	480

#### Note

• Luminous flux is tested at a current pulse duration of 25 ms.

The above type numbers represent the order groups which include only a few brightness groups. Only one group will be shipped on each bag (there will be no mixing of two groups in each bag).

In order to ensure availability, single brightness groups will not be orderable.

In a similar manner for colors where wavelength groups are measured and binned, single wavelength groups will be shipped on any one bag. In order to ensure availability, single wavelength groups will not be orderable

## TLVY4200, TLVG4200



## **COLOR CLASSIFICATION**

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	DOM. WAVELENGTH (nm)							
GROUP	YELI	LOW	GREEN					
	MIN.	MAX.	MIN.	MAX.				
0	-	-	-	-				
1	581	584	-	-				
2	583	586	-	-				
3	585	588	562	565				
4	587	590	564	567				
5	589	592	566	569				
6	591	594	568	571				
7	-	-	570	573				
8	_	-	572	575				

#### Note

· Wavelengths are tested at a current pulse duration of 25 ms

#### TYPICAL CHARACTERISTICS (T<sub>amb</sub> = 25 °C, unless otherwise specified)

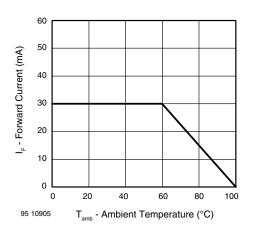


Fig. 1 - Forward Current vs. Ambient Temperature

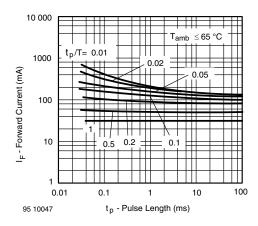


Fig. 2 - Forward Current vs. Pulse Length

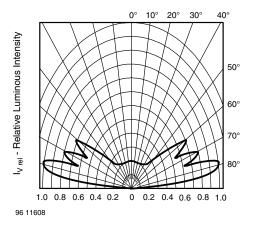


Fig. 3 - Relative Luminous Intensity vs. Angular Displacement for 90 ° Emission Angle

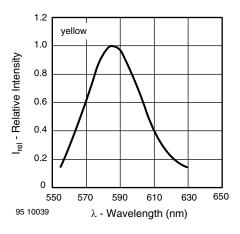


Fig. 4 - Relative Intensity vs. Wavelength

3 For technical questions, contact: <u>LED@vishav.com</u>



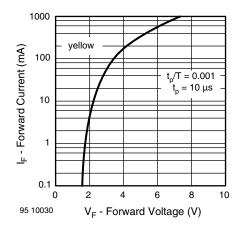


Fig. 5 - Forward Current vs. Forward Voltage

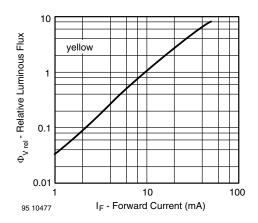


Fig. 6 - Relative Luminous Flux vs. Forward Current

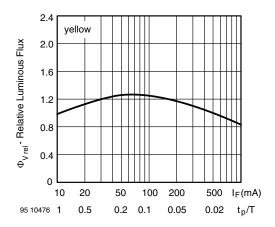


Fig. 7 - Relative Luminous Flux vs. Forward Current / Duty Cycle

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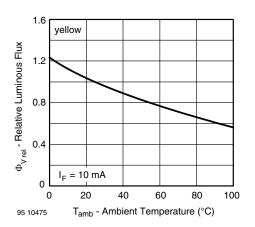


Fig. 8 - Relative Luminous Flux vs. Ambient Temperature

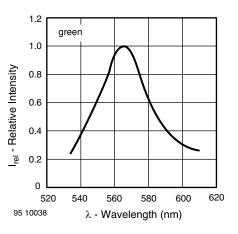


Fig. 9 - Relative Intensity vs. Wavelength

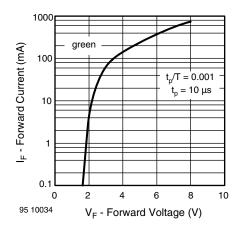


Fig. 10 - Forward Current vs. Forward Voltage

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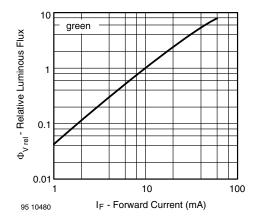


Fig. 11 - Relative Luminous Flux vs. Forward Current

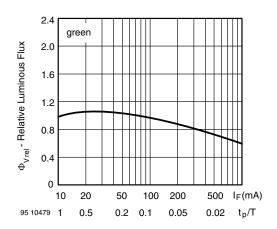


Fig. 12 - Relative Luminous Flux vs. Forward Current / Duty Cycle

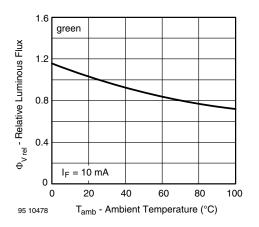


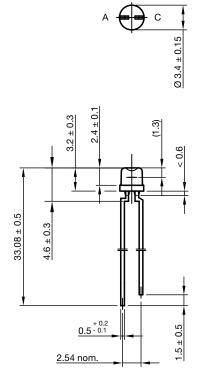
Fig. 13 - Relative Luminous Flux vs. Ambient Temperature

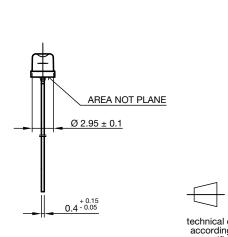
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### **PACKAGE DIMENSIONS** in millimeters

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technical drawings according to DIN specifications

Drawing-No.: 6.544-5268.01-4 Issue: 3; 28.07.14

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