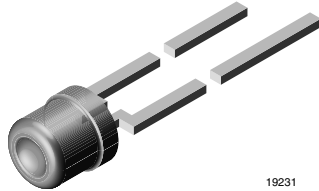


## Backlighting LED in $\varnothing$ 3 mm Tinted Non-Diffused Package



### DESCRIPTION

The TLV.4200 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 diffuser 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:  $\pm 85^\circ$

### FEATURES

- High light output
- Wide viewing angle
- Categorized for luminous flux
- Tinted clear package
- Low power dissipation
- Low self heating
- Rugged design
- High reliability
- Lead (Pb)-free device
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



### 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 TABLE		
PART	COLOR, LUMINOUS FLUX	TECHNOLOGY
TLVH4200	Red, $\phi_V > 10$ mlm	GaAsP on GaP
TLVH4201	Red, $\phi_V = (40 \text{ to } 125)$ mlm	GaAsP on GaP
TLVS4200	Soft orange, $\phi_V > 10$ mlm	GaAsP on GaP
TLVY4200	Yellow, $\phi_V > 10$ mlm	GaAsP on GaP
TLVG4200	Green, $\phi_V > 10$ mlm	GaP on GaP
TLVP4200	Pure green, $\phi_V > 4$ mlm	GaP on GaP



<b>ABSOLUTE MAXIMUM RATINGS <sup>1)</sup> TLVH4200, TLVS4200, TLVY4200, TLVG4200, TLVP4200</b>				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage <sup>2)</sup>		$V_R$	6	V
DC Forward current	$T_{amb} \leq 60\text{ }^\circ\text{C}$	$I_F$	30	mA
Surge forward current	$t_p \leq 10\text{ }\mu\text{s}$	$I_{FSM}$	1	A
Power dissipation		$P_V$	90	mW
Junction temperature		$T_j$	100	$^\circ\text{C}$
Operating temperature range		$T_{amb}$	- 40 to + 100	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	- 55 to + 100	$^\circ\text{C}$
Soldering temperature	$t \leq 5\text{ s, 2 mm from body}$	$T_{sd}$	260	$^\circ\text{C}$
Thermal resistance junction/ambient		$R_{thJA}$	400	K/W

Note:

<sup>1)</sup>  $T_{amb} = 25\text{ }^\circ\text{C}$ , unless otherwise specified

<sup>2)</sup> Driving the LED in reverse direction is suitable for a short term application

<b>OPTICAL AND ELECTRICAL CHARACTERISTICS <sup>1)</sup> TLVH4200, RED</b>							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	$I_F = 15\text{ mA}$	TLVH4200	$\phi_V$	10	25		mlm
		TLVH4201	$\phi_V$	40		125	mlm
Dominant wavelength	$I_F = 10\text{ mA}$		$\lambda_d$	612		625	nm
Peak wavelength	$I_F = 10\text{ mA}$		$\lambda_p$		635		nm
Angle of half intensity	$I_F = 10\text{ mA}$		$\varphi$		$\pm 85$		deg
Forward voltage	$I_F = 20\text{ mA}$		$V_F$		2.4	3	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$		$V_R$	6	15		V
Junction capacitance	$V_R = 0, f = 1\text{ MHz}$		$C_j$		50		pF

Note:

<sup>1)</sup>  $T_{amb} = 25\text{ }^\circ\text{C}$ , unless otherwise specified

<b>OPTICAL AND ELECTRICAL CHARACTERISTICS <sup>1)</sup> TLVS4200, SOFT ORANGE</b>							
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT	
Luminous flux	$I_F = 15\text{ mA}$	$\phi_V$	10	25		mlm	
Dominant wavelength	$I_F = 10\text{ mA}$	$\lambda_d$	598		611	nm	
Peak wavelength	$I_F = 10\text{ mA}$	$\lambda_p$		605		nm	
Angle of half intensity	$I_F = 10\text{ mA}$	$\varphi$		$\pm 85$		deg	
Forward voltage	$I_F = 20\text{ mA}$	$V_F$		2.4	3	V	
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$	$V_R$	6	15		V	
Junction capacitance	$V_R = 0, f = 1\text{ MHz}$	$C_j$		50		pF	

Note:

<sup>1)</sup>  $T_{amb} = 25\text{ }^\circ\text{C}$ , unless otherwise specified



<b>OPTICAL AND ELECTRICAL CHARACTERISTICS <sup>1)</sup> TLVY4200, YELLOW</b>						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	$I_F = 15 \text{ mA}$	$\phi_V$	10	20		mlm
Dominant wavelength	$I_F = 10 \text{ mA}$	$\lambda_d$	581		594	nm
Peak wavelength	$I_F = 10 \text{ mA}$	$\lambda_p$		585		nm
Angle of half intensity	$I_F = 10 \text{ mA}$	$\varphi$		$\pm 85$		deg
Forward voltage	$I_F = 20 \text{ mA}$	$V_F$		2.4	3	V
Reverse voltage	$I_R = 10 \mu\text{A}$	$V_R$	6	15		V
Junction capacitance	$V_R = 0, f = 1 \text{ MHz}$	$C_j$		50		pF

Note:

<sup>1)</sup>  $T_{amb} = 25 \text{ }^\circ\text{C}$ , unless otherwise specified

<b>OPTICAL AND ELECTRICAL CHARACTERISTICS <sup>1)</sup> TLVG4200, GREEN</b>						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	$I_F = 15 \text{ mA}$	$\phi_V$	10	30		mlm
Dominant wavelength	$I_F = 10 \text{ mA}$	$\lambda_d$	562		575	nm
Peak wavelength	$I_F = 10 \text{ mA}$	$\lambda_p$		565		nm
Angle of half intensity	$I_F = 10 \text{ mA}$	$\varphi$		$\pm 85$		deg
Forward voltage	$I_F = 20 \text{ mA}$	$V_F$		2.4	3	V
Reverse voltage	$I_R = 10 \mu\text{A}$	$V_R$	6	15		V
Junction capacitance	$V_R = 0, f = 1 \text{ MHz}$	$C_j$		50		pF

Note:

<sup>1)</sup>  $T_{amb} = 25 \text{ }^\circ\text{C}$ , unless otherwise specified

<b>OPTICAL AND ELECTRICAL CHARACTERISTICS <sup>1)</sup> TLVP4200, PURE GREEN</b>						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	$I_F = 15 \text{ mA}$	$\phi_V$	4	10		mlm
Dominant wavelength	$I_F = 10 \text{ mA}$	$\lambda_d$	555		565	nm
Peak wavelength	$I_F = 10 \text{ mA}$	$\lambda_p$		555		nm
Angle of half intensity	$I_F = 10 \text{ mA}$	$\varphi$		$\pm 85$		deg
Forward voltage	$I_F = 20 \text{ mA}$	$V_F$		2.4	3	V
Reverse voltage	$I_R = 10 \mu\text{A}$	$V_R$	6	15		V
Junction capacitance	$V_R = 0, f = 1 \text{ MHz}$	$C_j$		50		pF

Note:

<sup>1)</sup>  $T_{amb} = 25 \text{ }^\circ\text{C}$ , unless otherwise specified



<b>LUMINOUS FLUX CLASSIFICATION</b>		
<b>GROUP</b>	<b>LUMINOUS FLUX (MLM)</b>	
<b>STANDARD</b>	<b>MIN.</b>	<b>MAX.</b>
P	4.0	8.0
Q	6.3	12.5
R	10	20
S	16	32
T	25	50
U	40	80
V	63	125
W	100	200
X	130	260
Y	180	360
Z	240	480

Note:

Luminous flux is tested at a current pulse duration of 25 ms and an accuracy of  $\pm 11\%$ .

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.

<b>COLOR CLASSIFICATION</b>								
<b>GROUP</b>	<b>DOM. WAVELENGTH (NM)</b>							
	<b>SOFT ORANGE</b>		<b>YELLOW</b>		<b>GREEN</b>		<b>PURE GREEN</b>	
	<b>MIN.</b>	<b>MAX.</b>	<b>MIN.</b>	<b>MAX.</b>	<b>MIN.</b>	<b>MAX.</b>	<b>MIN.</b>	<b>MAX.</b>
0							555	559
1	598	601	581	584			558	561
2	600	603	583	586			560	563
3	602	605	585	588	562	565	562	565
4	604	607	587	590	564	567		
5	606	609	589	592	566	569		
6	608	611	591	594	568	571		
7					570	573		
8					572	575		

Note:

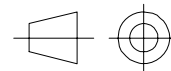
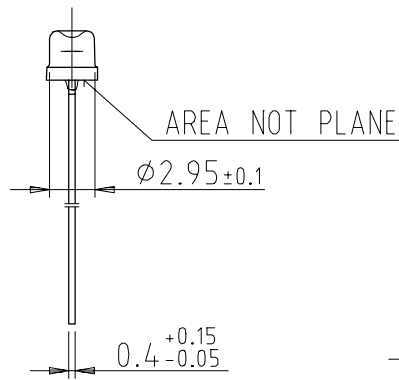
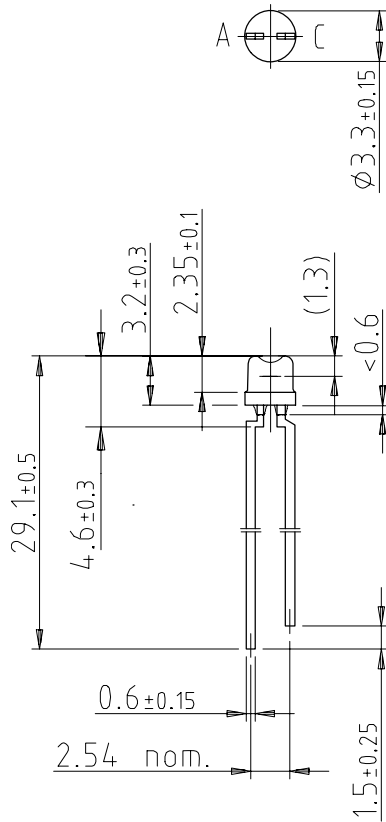
Wavelengths are tested at a current pulse duration of 25 ms.

# TLVG/H/P/S/Y420.

Vishay Semiconductors



**PACKAGE DIMENSIONS** in millimeters



technical drawings  
according to DIN  
specifications

9510954