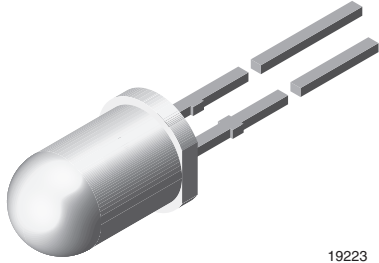




# Ultrabright LED, Ø 5 mm Untinted Non-Diffused Package



19223

## DESCRIPTION

The TLC.52.. series are 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).

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

## PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 5 mm
- Product series: power
- Angle of half intensity:  $\pm 15^\circ$

## FEATURES

- Untinted non-diffused lens
- Utilizing ultrabright AlInGaP (AS)
- 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: Up to 2 kV according to JESD22-A114-B
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



## 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 (mcd)			at I <sub>F</sub> (mA)	WAVELENGTH (nm)			at I <sub>F</sub> (mA)	FORWARD VOLTAGE (V)			at I <sub>F</sub> (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
TLCR5200	Red	1350	4000	-	50	611	616	622	50	-	2.1	2.7	50	AllInGaP on GaAs
TLCY5200	Yellow	1350	4000	-	50	585	590	597	50	-	2.1	2.7	50	AllInGaP on GaAs

ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^\circ\text{C}$ , unless otherwise specified) TLCR5200, TLCY5200				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage <sup>(1)</sup>		$V_R$	5	V
DC forward current	$T_{amb} \leq 85^\circ\text{C}$	$I_F$	50	mA
Surge forward current	$t_p \leq 10 \mu\text{s}$	$I_{FSM}$	1	A
Power dissipation		$P_V$	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	$t \leq 5 \text{ s}$ , 2 mm from body	$T_{sd}$	260	°C
Thermal resistance junction/ambient		$R_{thJA}$	300	K/W

### Note

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



OPTICAL AND ELECTRICAL CHARACTERISTICS (T <sub>amb</sub> = 25 °C, unless otherwise specified)							
TLCR5200, RED							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>(1)</sup>	I <sub>F</sub> = 50 mA	TLCR5200	I <sub>V</sub>	1350	4000	-	mcd
Dominant wavelength	I <sub>F</sub> = 50 mA		λ <sub>d</sub>	611	616	622	nm
Peak wavelength	I <sub>F</sub> = 50 mA		λ <sub>p</sub>	-	622	-	nm
Spectral bandwidth at 50 % I <sub>rel max.</sub>	I <sub>F</sub> = 50 mA		Δλ	-	18	-	nm
Angle of half intensity	I <sub>F</sub> = 50 mA		φ	-	± 15	-	deg
Forward voltage	I <sub>F</sub> = 50 mA		V <sub>F</sub>	-	2.1	2.7	V
Reverse voltage	I <sub>R</sub> = 10 μA		V <sub>R</sub>	5	-	-	V
Temperature coefficient of V <sub>F</sub>	I <sub>F</sub> = 50 mA		TC <sub>V<sub>F</sub></sub>	-	- 3.5	-	mV/K
Temperature coefficient of λ <sub>d</sub>	I <sub>F</sub> = 50 mA		TC <sub>λ<sub>d</sub></sub>	-	0.05	-	nm/K

Note

(1) In one packing unit I<sub>Vmax</sub>/I<sub>Vmin</sub>. ≤ 2.0

OPTICAL AND ELECTRICAL CHARACTERISTICS (T <sub>amb</sub> = 25 °C, unless otherwise specified)							
TLCY5200, YELLOW							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>(1)</sup>	I <sub>F</sub> = 50 mA	TLCY5200	I <sub>V</sub>	1350	4000	-	mcd
Dominant wavelength	I <sub>F</sub> = 50 mA		λ <sub>d</sub>	585	590	597	nm
Peak wavelength	I <sub>F</sub> = 50 mA		λ <sub>p</sub>	-	593	-	nm
Spectral bandwidth at 50 % I <sub>rel max.</sub>	I <sub>F</sub> = 50 mA		Δλ	-	17	-	nm
Angle of half intensity	I <sub>F</sub> = 50 mA		φ	-	± 15	-	deg
Forward voltage	I <sub>F</sub> = 50 mA		V <sub>F</sub>	-	2.1	2.7	V
Reverse voltage	I <sub>R</sub> = 10 μA		V <sub>R</sub>	5	-	-	V
Temperature coefficient of V <sub>F</sub>	I <sub>F</sub> = 50 mA		TC <sub>V<sub>F</sub></sub>	-	- 3.5	-	mV/K
Temperature coefficient of λ <sub>d</sub>	I <sub>F</sub> = 50 mA		TC <sub>λ<sub>d</sub></sub>	-	0.1	-	nm/K

Note

(1) In one packing unit I<sub>Vmax</sub>/I<sub>Vmin</sub>. ≤ 2.0

LUMINOUS INTENSITY CLASSIFICATION			
GROUP	LIGHT INTENSITY (mcd)		
	STANDARD	MIN.	MAX.
FF	1350	2700	
GG	1800	3600	
HH	2400	4800	
II	3200	6400	
KK	4300	8600	
LL	5750	11 500	
MM	7500	15 000	
NN	10 000	20 000	
PP	13 500	27 000	
QQ	18 000	36 000	
RR	24 000	48 000	
SS	32 000	64 000	
TT	43 000	86 000	
UU	57 500	115 000	

Note

- Luminous intensity is tested at a current pulse duration of 25 ms. The 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 on 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 in any one bag. In order to ensure availability, single wavelength groups will not be orderable.

COLOR CLASSIFICATION				
GROUP	DOM. WAVELENGTH (nm)			
	YELLOW		RED	
	MIN.	MAX.	MIN.	MAX.
0	585	588		
1	587	591	611	618
2	589	594	614	622
3	592	597		

Note

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

**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

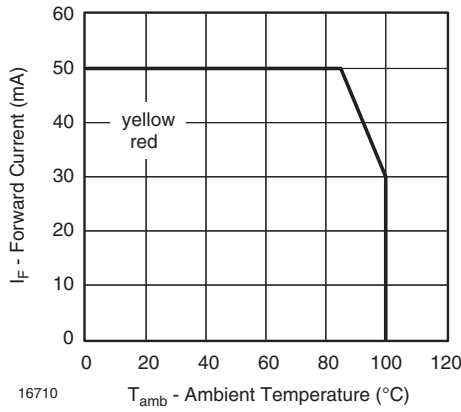


Fig. 1 - Forward Current vs. Ambient Temperature

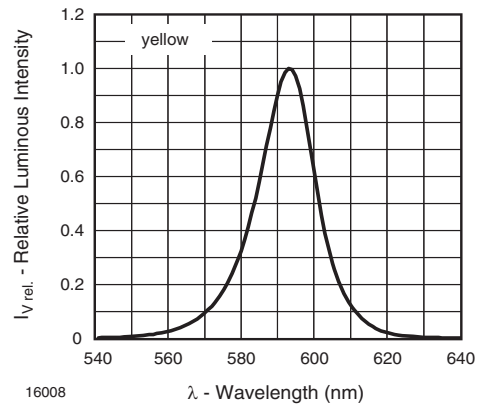


Fig. 4 - Relative Intensity vs. Wavelength

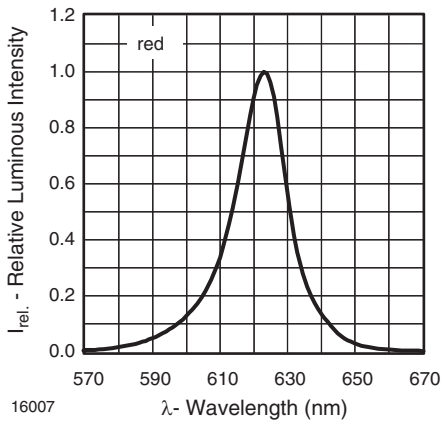


Fig. 2 - Relative Intensity vs. Wavelength

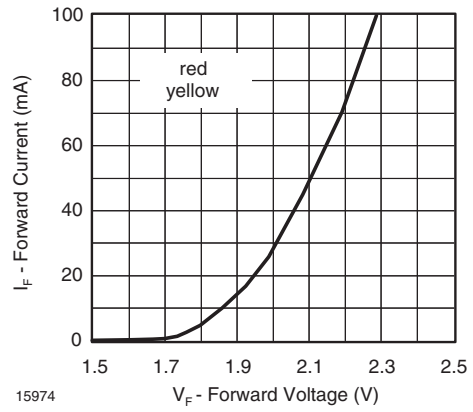


Fig. 5 - Forward Current vs. Forward Voltage

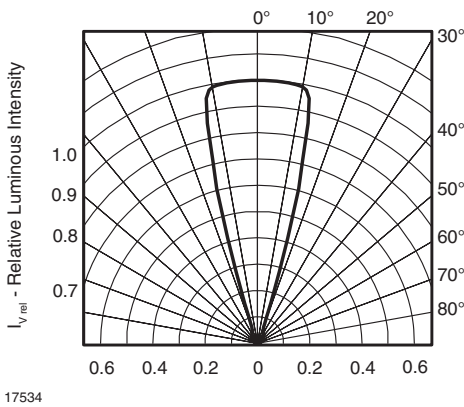


Fig. 3 - Relative Intensity vs. Angular Displacement

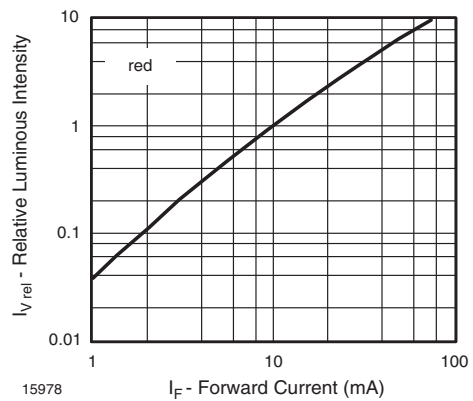


Fig. 6 - Relative Luminous Flux vs. Forward Current

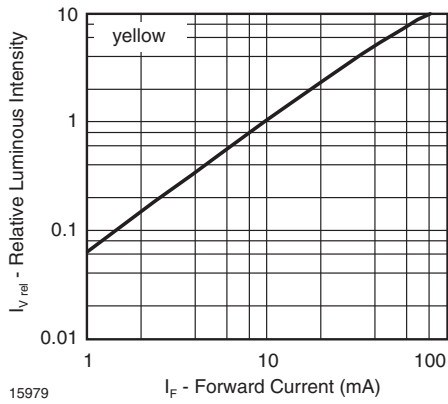
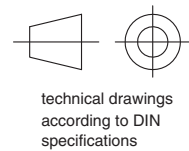
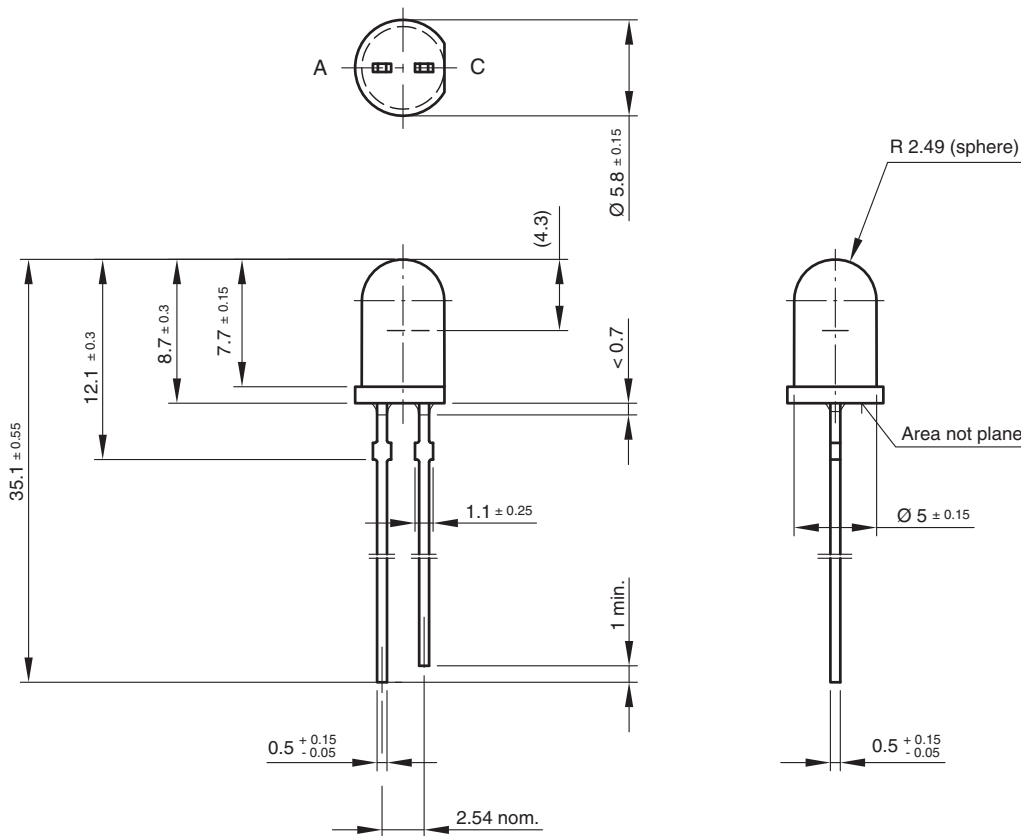


Fig. 7 - Relative Luminous Flux vs. Forward Current

**PACKAGE DIMENSIONS** in millimeters



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