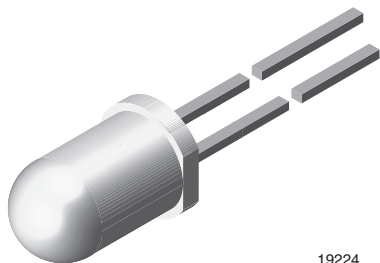


# Ultrabright LED, Ø 5 mm Untinted Non-Diffused Package



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## DESCRIPTION

The TLC.68.. 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).

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:  $\pm 4^\circ$

## 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)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

## 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 $I_F$ (mA)	WAVELENGTH (nm)			at $I_F$ (mA)	FORWARD VOLTAGE (V)			at $I_F$ (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
TLCR6800	Red	7500	35 000	-	50	611	616	622	50	-	2.1	2.7	50	AlInGaP on GaAs
TLCY6800	Yellow	5750	25 000	-	50	585	590	597	50	-	2.1	2.7	50	AlInGaP on GaAs

## ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^\circ\text{C}$ , unless otherwise specified) TLCR6800, TLCY6800

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** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**TLCR6800, RED**

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>(1)</sup>	$I_F = 50\text{ mA}$	TLCR6800	$I_V$	7500	35 000	-	mcd
Dominant wavelength	$I_F = 50\text{ mA}$		$\lambda_d$	611	616	622	nm
Peak wavelength	$I_F = 50\text{ mA}$		$\lambda_p$	-	622	-	nm
Spectral bandwidth at 50 % $I_{rel\text{ max.}}$	$I_F = 50\text{ mA}$		$\Delta\lambda$	-	18	-	nm
Angle of half intensity	$I_F = 50\text{ mA}$		$\varphi$	-	$\pm 4$	-	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

**Note**(1) In one packing unit  $I_{Vmax}/I_{Vmin.} \leq 2.0$ **OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**TLCY6800, YELLOW**

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>(1)</sup>	$I_F = 50\text{ mA}$	TLCY6800	$I_V$	5750	25 000	-	mcd
Dominant wavelength	$I_F = 50\text{ mA}$		$\lambda_d$	585	590	597	nm
Peak wavelength	$I_F = 50\text{ mA}$		$\lambda_p$	-	593	-	nm
Spectral bandwidth at 50 % $I_{rel\text{ max.}}$	$I_F = 50\text{ mA}$		$\Delta\lambda$	-	17	-	nm
Angle of half intensity	$I_F = 50\text{ mA}$		$\varphi$	-	$\pm 4$	-	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 $\lambda_d$	$I_F = 50\text{ mA}$		$TC_{\lambda_d}$	-	0.1	-	nm/K

**Note**(1) In one packing unit  $I_{Vmax}/I_{Vmin.} \leq 2.0$ **LUMINOUS INTENSITY CLASSIFICATION**

GROUP	LIGHT INTENSITY (mcd)	
	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 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 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 and an accuracy of  $\pm 1\text{ nm}$ .



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

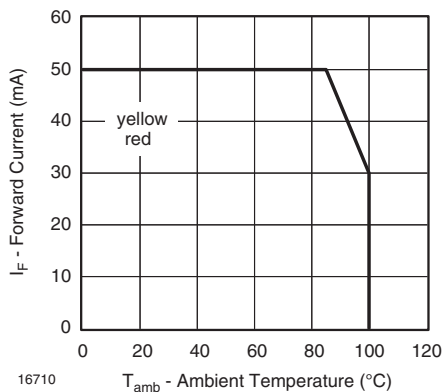


Fig. 1 - Forward Current vs. Ambient Temperature

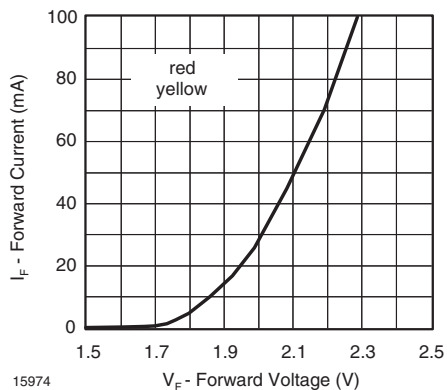


Fig. 4 - Forward Current vs. Forward Voltage

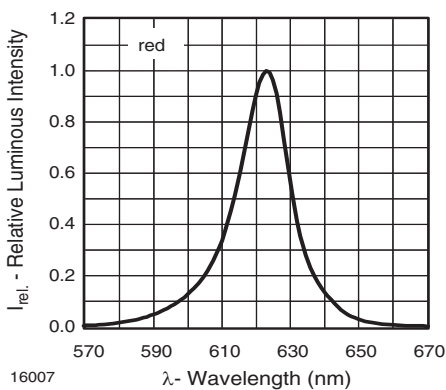


Fig. 2 - Relative Intensity vs. Wavelength

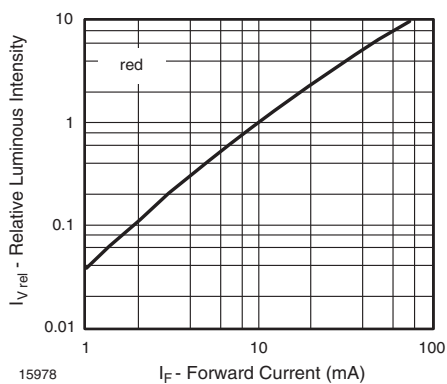


Fig. 5 - Relative Luminous Flux vs. Forward Current

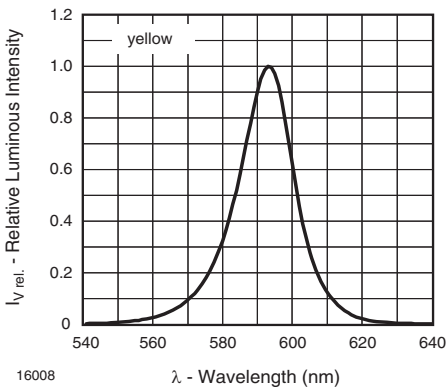


Fig. 3 - Relative Intensity vs. Wavelength

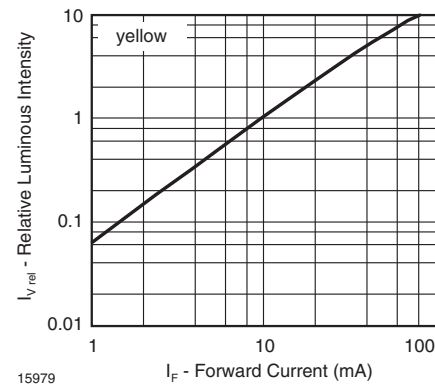
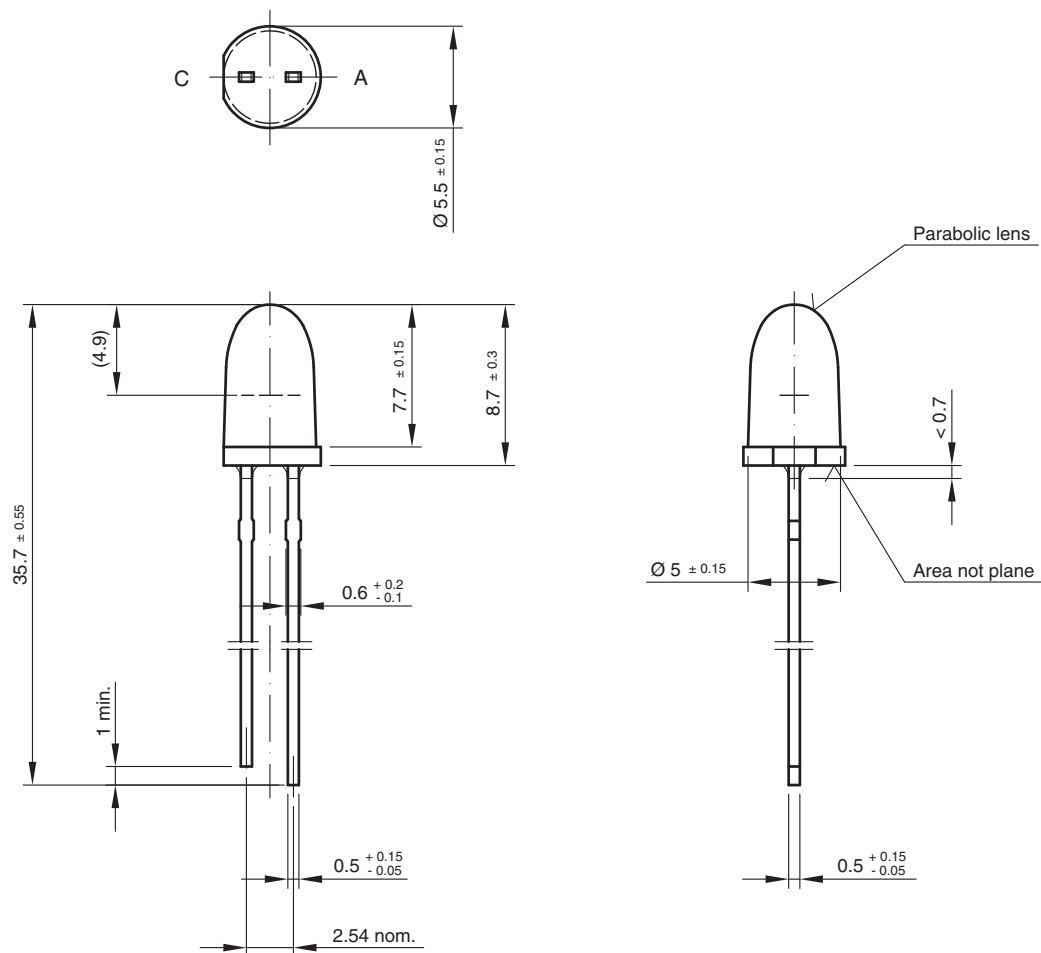


Fig. 6 - Relative Luminous Flux vs. Forward Current



**PACKAGE DIMENSIONS** in millimeters



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