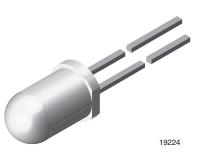
Vishay Semiconductors

Ultrabright LED, Ø 5 mm Untinted Non-Diffused Package



www.vishay.com

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: ± 4°

FEATURES

- Untinted non-diffused lens
- Utilizing ultrabright AllnGaP (AS)
- High luminous intensity
- High operating temperature: T_{j} (chip junction temperature) up to 125 $^{\circ}\text{C}$ for AllnGaP 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 <u>www.vishay.com/doc?99912</u>

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	PART COLOR (mcd)		at I _F WAVELENGTH (mA) (nm)		at I _F (mA)	FORWARD VOLTAGE (V)		at I _F (mA)	TECHNOLOGY					
		MIN.	TYP.	MAX.	(IIIA)	MIN.	TYP.	MAX.	(11174)	MIN.	TYP.	MAX.	(1174)	
TLCR6800	Red	7500	35 000	-	50	611	616	622	50	-	2.1	2.7	50	AllnGaP on GaAs
TLCY6800	Yellow	5750	25 000	-	50	585	590	597	50	-	2.1	2.7	50	AllnGaP on GaAs

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified) **TLCR6800, TLCY6800**

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT			
Reverse voltage ⁽¹⁾		V _R	5	V			
DC forward current	T _{amb} ≤ 85 °C	I _F	50	mA			
Surge forward current	t _p ≤ 10 µs	I _{FSM}	1	A			
Power dissipation		Pv	135	mW			
Junction temperature		Тj	125	°C			
Operating temperature range		T _{amb}	- 40 to + 100	°C			
Storage temperature range		T _{stg}	- 40 to + 100	°C			
Soldering temperature	$t \leq 5$ s, 2 mm from body	T _{sd}	260	°C			
Thermal resistance junction/ambient		R _{thJA}	300	K/W			

Note

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

Pb-free (e3)



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TLCR6800, TLCY6800

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OPTICAL AND ELECTRIC TLCR6800, RED	AL CHARACTERISTICS	(T _{amb} = 25 °C	, unless ot	herwise	specifie	d)	
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity (1)	I _F = 50 mA	TLCR6800	Ι _V	7500	35 000	-	mcd
Dominant wavelength	l _F = 50 mA		λ_d	611	616	622	nm
Peak wavelength	I _F = 50 mA		λρ	-	622	-	nm

Peak wavelength	I _F = 50 mA	λ _p	-	622	-	nm
Spectral bandwidth at 50 % Irel max.	I _F = 50 mA	Δλ	-	18	-	nm
Angle of half intensity	I _F = 50 mA	φ	-	± 4	-	deg
Forward voltage	I _F = 50 mA	V _F	-	2.1	2.7	V
Reverse voltage	I _R = 10 μA	V _R	5	-	-	V
Temperature coefficient of V _F	I _F = 50 mA	TC _{VF}	-	- 3.5	-	mV/K
Temperature coefficient of λ_d	I _F = 50 mA	TCλd	-	0.05	-	nm/K

Note

 $^{(1)}$ In one packing unit $I_{Vmax.}/I_{Vmin.} \leq 2.0$

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified) **TLCY6800. YELLOW**

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity ⁽¹⁾	I _F = 50 mA	TLCY6800	Ι _V	5750	25 000	-	mcd
Dominant wavelength	I _F = 50 mA		λ_d	585	590	597	nm
Peak wavelength	I _F = 50 mA		λp	-	593	-	nm
Spectral bandwidth at 50 % I _{rel max.}	I _F = 50 mA		Δλ	-	17	-	nm
Angle of half intensity	I _F = 50 mA		φ	-	± 4	-	deg
Forward voltage	I _F = 50 mA		V _F	-	2.1	2.7	V
Reverse voltage	I _R = 10 μΑ		V _R	5	-	-	V
Temperature coefficient of V _F	I _F = 50 mA		TC _{VF}	-	- 3.5	-	mV/K
Temperature coefficient of λ_d	l _F = 50 mA		TCλd	-	0.1	-	nm/K

Note

 $^{(1)}$ In one packing unit $I_{Vmax.}/I_{Vmin.} \leq 2.0$

LUMINOUS INTENSITY CLASSIFICATION						
GROUP	LIGHT INTENSITY (mcd)					
STANDARD	MIN.	MAX.				
FF	1350	2700				
GG	1800	3600				
HH	2400	4800				
II	3200	6400				
КК	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				
Π	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 ± 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								
DOM. WAVELENGTH (nm)								
GROUP	YEL	LOW	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 ± 1 nm.

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

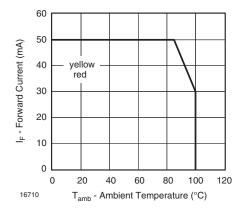


Fig. 1 - Forward Current vs. Ambient Temperature

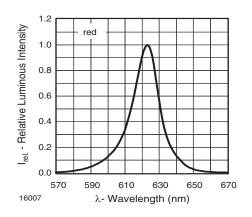


Fig. 2 - Relative Intensity vs. Wavelength

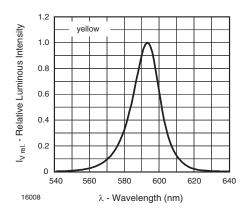


Fig. 3 - Relative Intensity vs. Wavelength

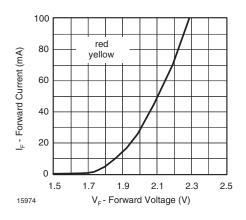


Fig. 4 - Forward Current vs. Forward Voltage

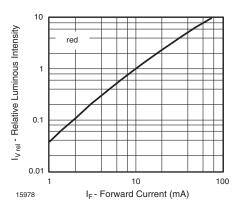


Fig. 5 - Relative Luminous Flux vs. Forward Current

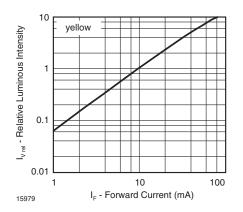


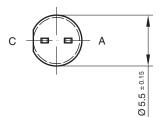
Fig. 6 - Relative Luminous Flux vs. Forward Current

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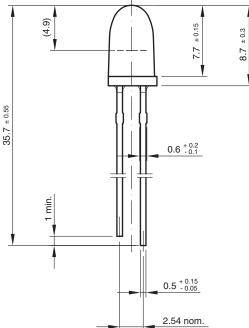
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PACKAGE DIMENSIONS in millimeters



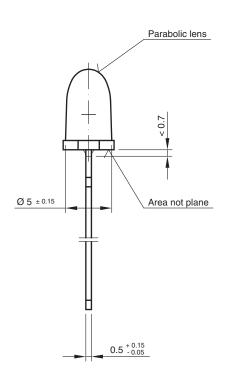
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technical drawings according to DIN specifications



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