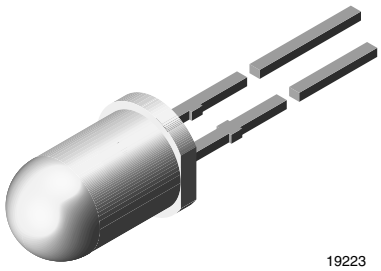
Ultrabright LED, Ø 5 mm Untinted Non-Diffused Package



19223

DESCRIPTION

The TLC.58.. 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 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

Pb-free

e3

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.		
TLCR5800	Red	7500	35 000	-	50	611	616	622	50	-	2.1	2.7	50	AlInGaP on GaAs
TLCR5800-AS21 (1)	Red	7500	35 000	-	50	611	616	622	50	-	2.1	2.7	50	AlInGaP on GaAs
TLCY5800	Yellow	5750	25 000	-	50	585	590	597	50	-	2.1	2.7	50	AlInGaP on GaAs

Note

(1) Not for new designs

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

TLCR5800, TLCY5800

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage (1)		V_R	5	V
DC forward current	$T_{amb} \leq 85$ °C	I_F	50	mA
Surge forward current	$t_p \leq 10$ µs	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 ≤ 5 s, 2 mm from body	T_{sd}	260	°C
Thermal resistance junction to ambient		R_{thJA}	300	K/W

Note

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

For technical questions, contact: LED@vishay.com

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
TLCR5800, RED

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity (1)	I_F = 50 mA	TLCR5800	I_V	7500	35 000	-	mcd
Dominant wavelength	I_F = 50 mA		λ_d	611	616	622	nm
Peak wavelength	I_F = 50 mA		λ_p	-	622	-	nm
Spectral bandwidth at 50 % $I_{rel\ max.}$	I_F = 50 mA		$\Delta\lambda$	-	18	-	nm
Angle of half intensity	I_F = 50 mA		φ	-	± 4	-	°
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		$TC\lambda_d$	-	0.05	-	nm/K

Note

(1) In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
TLCY5800, YELLOW

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity (1)	I_F = 50 mA	TLCY5800	I_V	5750	25 000	-	mcd
Dominant wavelength	I_F = 50 mA		λ_d	585	590	597	nm
Peak wavelength	I_F = 50 mA		λ_p	-	593	-	nm
Spectral bandwidth at 50 % $I_{rel\ max.}$	I_F = 50 mA		$\Delta\lambda$	-	17	-	nm
Angle of half intensity	I_F = 50 mA		φ	-	± 4	-	°
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		$TC\lambda_d$	-	0.1	-	nm/K

Note

(1) In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$

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 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

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 ± 1 nm.

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

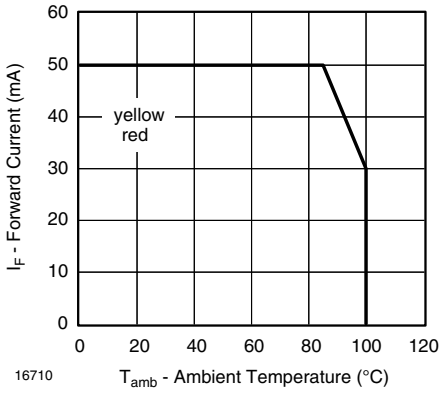


Fig. 1 - Forward Current vs. Ambient Temperature

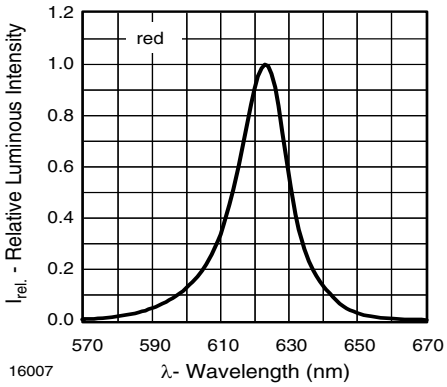


Fig. 4 - Relative Intensity vs. Wavelength

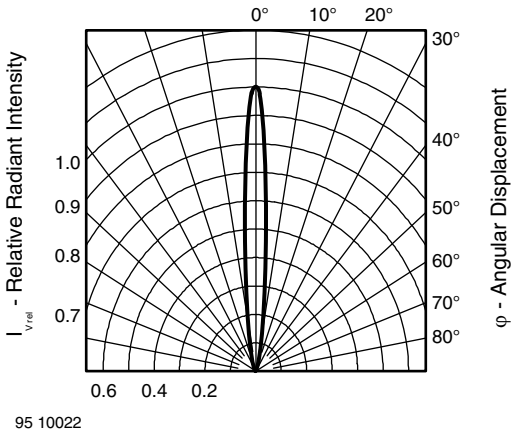


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

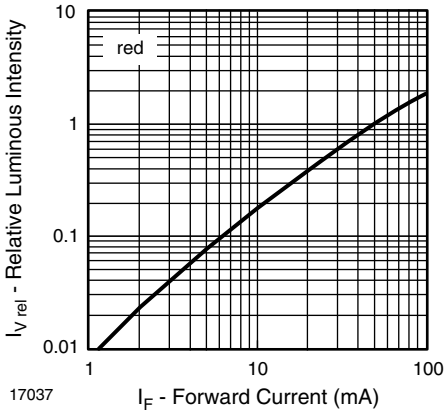


Fig. 5 - Relative Luminous Flux vs. Forward Current

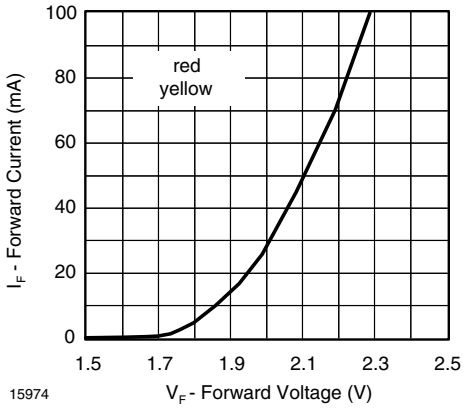


Fig. 3 - Forward Current vs. Forward Voltage

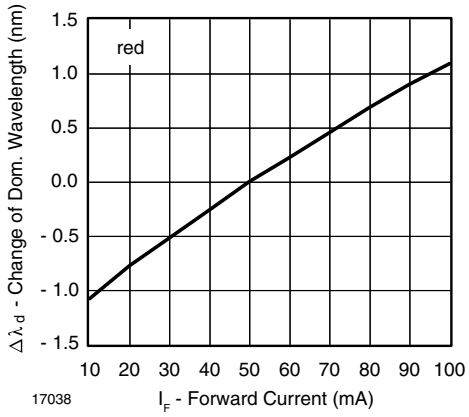


Fig. 6 - Changes of Dominant Wavelength vs. Forward Current

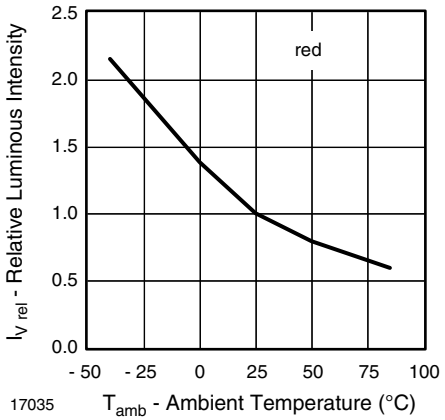


Fig. 7 - Relative Luminous Intensity vs. Ambient Temperature

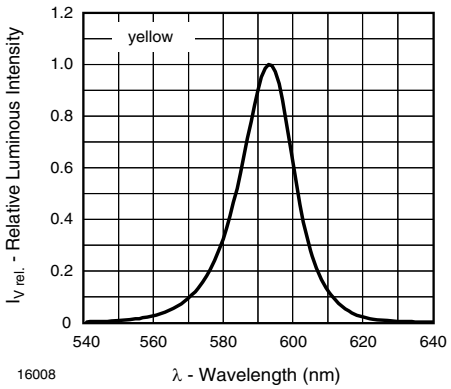


Fig. 10 - Relative Intensity vs. Wavelength

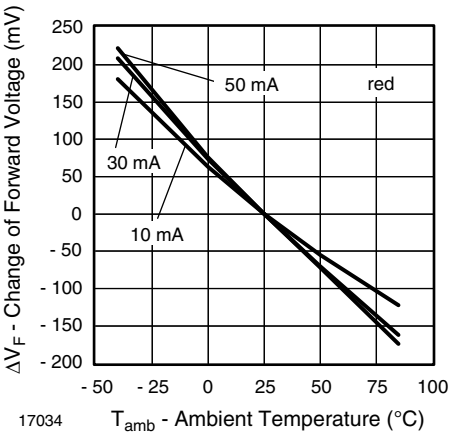


Fig. 8 - Change of Forward Voltage vs. Ambient Temperature

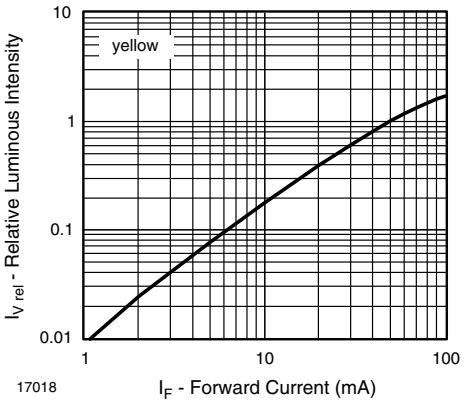


Fig. 11 - Relative Luminous Flux vs. Forward Current

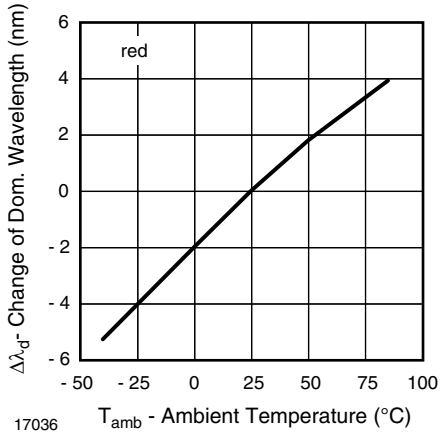


Fig. 9 - Change of Dominant Wavelength vs. Ambient Temperature

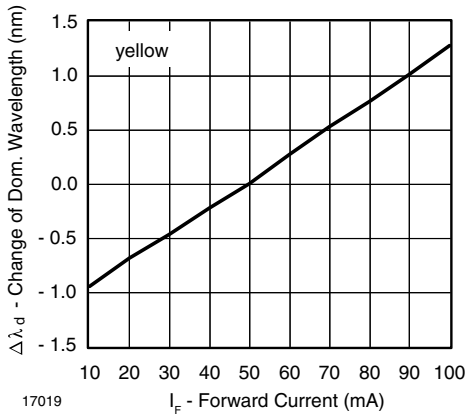


Fig. 12 - Change of Dominant Wavelength vs. Forward Current

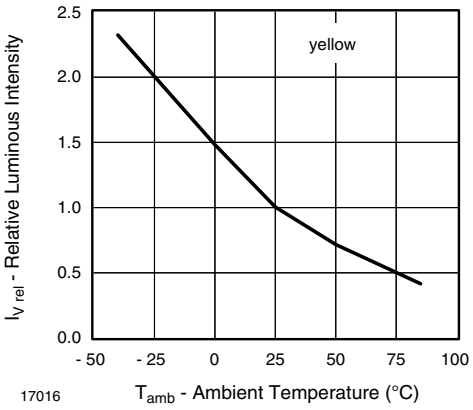


Fig. 13 - Relative Luminous Intensity vs. Ambient Temperature

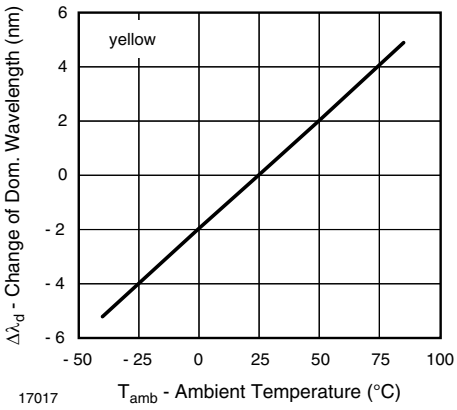


Fig. 15 - Change of Dominant Wavelength vs. Ambient Temperature

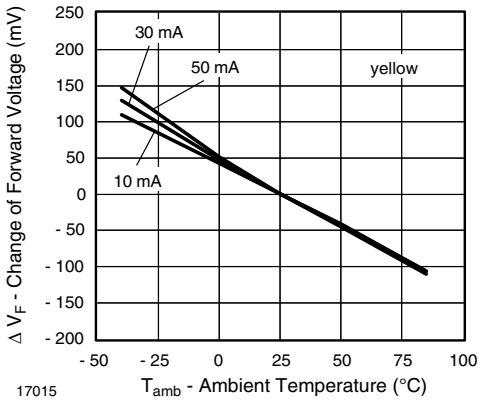
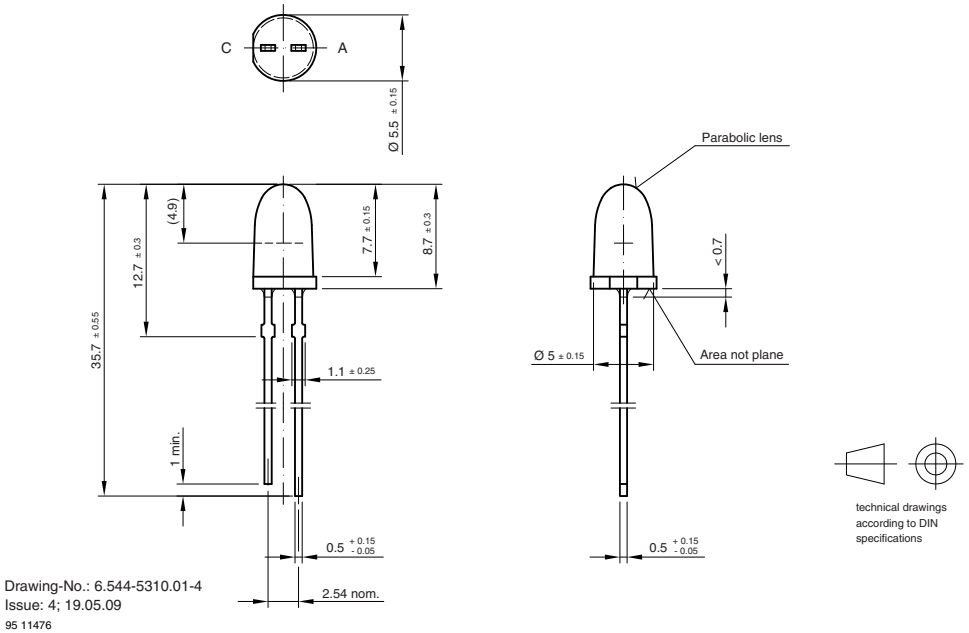
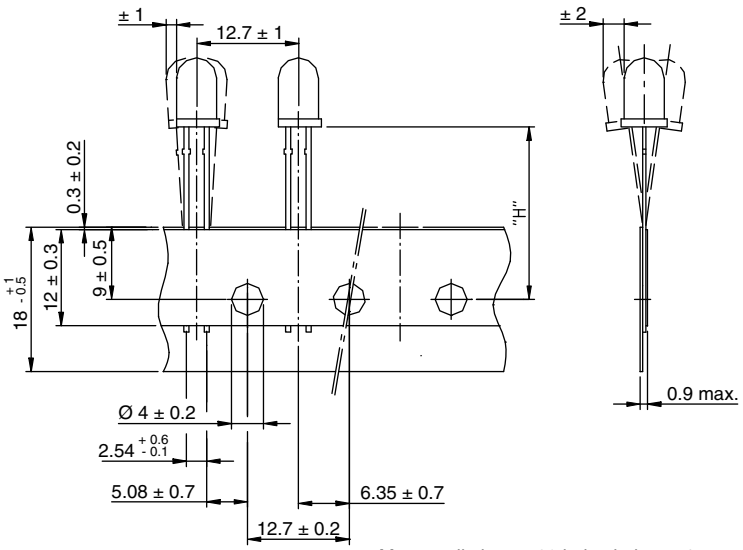


Fig. 14 - Change of Forward Voltage vs. Ambient Temperature

PACKAGE DIMENSIONS in millimeters



TAPE DIMENSIONS in millimeters



Quantity per:	Reel (Mat.-no. 1764)
	1000

94 8172

Option	Dim. “H” ± 0.5 mm
AS	17.3

Explanation

12 - cathode leaves first

21 - anode leaves first

REEL

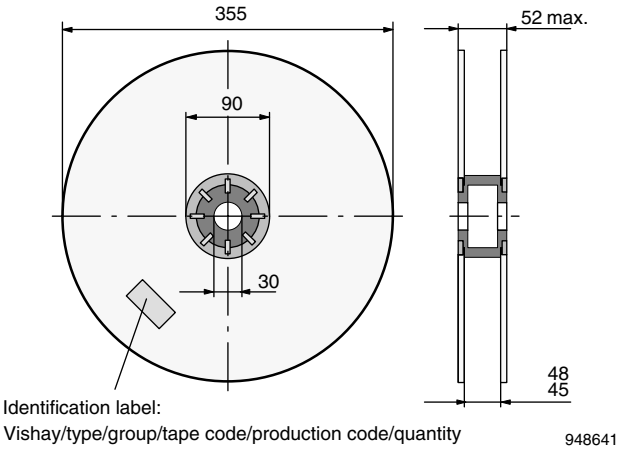


Fig. 16 - Reel Dimensions

TAPE

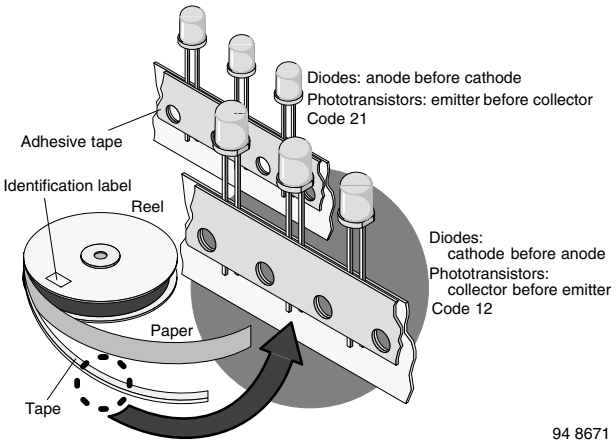


Fig. 17 - LED in Tape

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