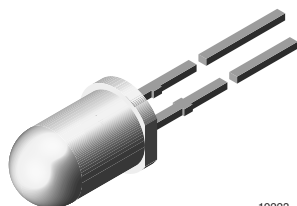


High Intensity LED, Ø 5 mm Untinted Non-Diffused



19223

FEATURES

- Untinted non diffused lens
- Choice of four colors
- TLH.5100 for cost effective design
- Medium viewing angle
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC


RoHS
COMPLIANT

DESCRIPTION

The TLH.51.. series is a clear, non diffused 5 mm LED for outdoor application.

These clear lamps utilize the highly developed technologies like AlInGaP and GaP.

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

APPLICATIONS

- Outdoor LED panels
- Central high mounted stop lights (CHMSL) for motor vehicles
- Instrumentation and front panel indicators
- Light guide design
- Traffic signals

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 5 mm
- Product series: standard
- Angle of half intensity: $\pm 9^\circ$

PARTS TABLE

PART	COLOR, LUMINOUS INTENSITY	TECHNOLOGY
TLHK5100	Red, $I_V > 320$ mcd	AlInGaP on GaAs
TLHE5100	Yellow, $I_V > 750$ mcd	AlInGaP on GaAs
TLHG5100	Green, $I_V > 240$ mcd	GaP on GaP

ABSOLUTE MAXIMUM RATINGS ¹⁾ TLHK51.. , TLHE51.. , TLHG51..

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V_R	6	V
DC Forward current	$T_{amb} \leq 65^\circ\text{C}$	I_F	30	mA
Surge forward current	$t_p \leq 10 \mu\text{s}$	I_{FSM}	1	A
Power dissipation	$T_{amb} \leq 65^\circ\text{C}$	P_V	100	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	$t \leq 5$ s, 2 mm from body	T_{sd}	260	$^\circ\text{C}$
Thermal resistance junction/ambient		R_{thJA}	350	K/W

Note:

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

OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ TLHK510., RED

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity ²⁾	$I_F = 20 \text{ mA}$	I_V	320			mcd
Dominant wavelength	$I_F = 10 \text{ mA}$	λ_d	626	630	639	nm
Peak wavelength	$I_F = 10 \text{ mA}$	λ_p		643		nm
Angle of half intensity	$I_F = 10 \text{ mA}$	φ		± 9		deg
Forward voltage	$I_F = 20 \text{ mA}$	V_F		1.9	2.6	V
Reverse voltage	$I_R = 10 \mu\text{A}$	V_R	5			V
Junction capacitance	$V_R = 0, f = 1 \text{ MHz}$	C_j		15		pF

Notes:

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

²⁾ In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$

OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ TLHE510., YELLOW

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity ²⁾	$I_F = 20 \text{ mA}$	I_V	750			mcd
Dominant wavelength	$I_F = 10 \text{ mA}$	λ_d	581	588	594	nm
Peak wavelength	$I_F = 10 \text{ mA}$	λ_p		590		nm
Angle of half intensity	$I_F = 10 \text{ mA}$	φ		± 9		deg
Forward voltage	$I_F = 20 \text{ mA}$	V_F		2	2.6	V
Reverse voltage	$I_R = 10 \mu\text{A}$	V_R	5			V
Junction capacitance	$V_R = 0, f = 1 \text{ MHz}$	C_j		15		pF

Notes:

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

²⁾ In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$

OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ TLHG510., GREEN

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity ²⁾	$I_F = 20 \text{ mA}$	I_V	240			mcd
Dominant wavelength	$I_F = 10 \text{ mA}$	λ_d	562		575	nm
Peak wavelength	$I_F = 10 \text{ mA}$	λ_p		565		nm
Angle of half intensity	$I_F = 10 \text{ mA}$	φ		± 9		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

Notes:

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

²⁾ In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$

LUMINOUS INTENSITY CLASSIFICATION

GROUP	LUMINOUS INTENSITY (mcd)	
	MIN.	MAX.
STANDARD		
Z	240	480
AA	320	640
BB	430	860
CC	575	1150
DD	750	1500
EE	1000	2000
FF	1350	2700
GG	1800	3600
HH	2400	4800
II	3200	6400
KK	4300	8600

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.

TYPICAL CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

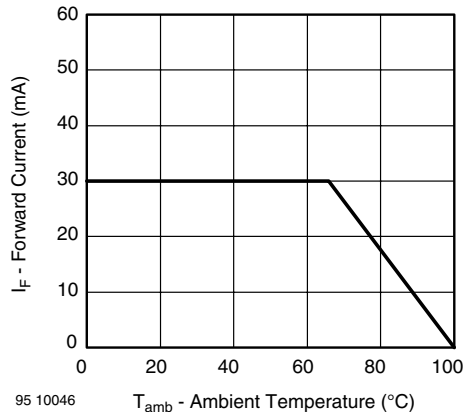


Figure 1. Forward Current vs. Ambient Temperature

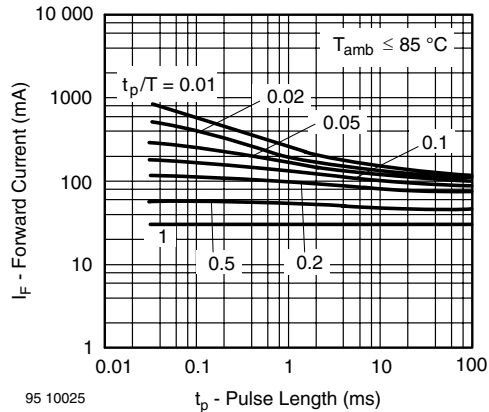


Figure 2. Forward Current vs. Pulse Length

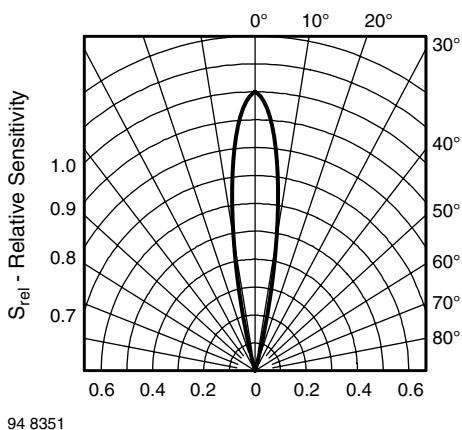


Figure 3. Relative Radiant Sensitivity vs. Angular Displacement

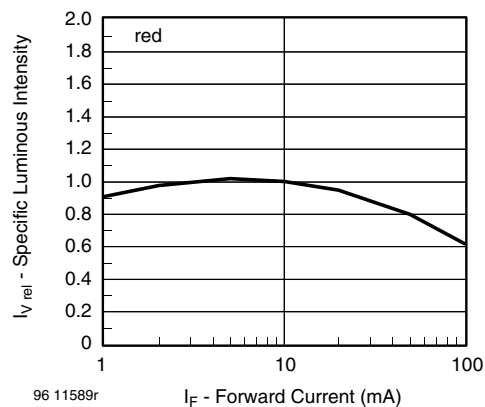


Figure 6. Specific Luminous Intensity vs. Forward Current

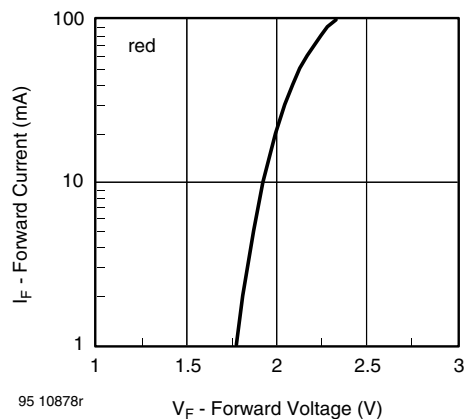


Figure 4. Forward Current vs. Forward Voltage

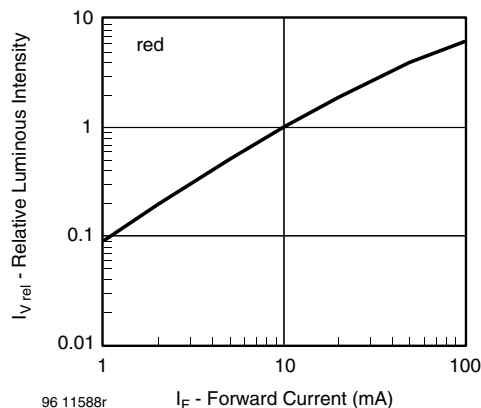


Figure 7. Relative Luminous Intensity vs. Forward Current

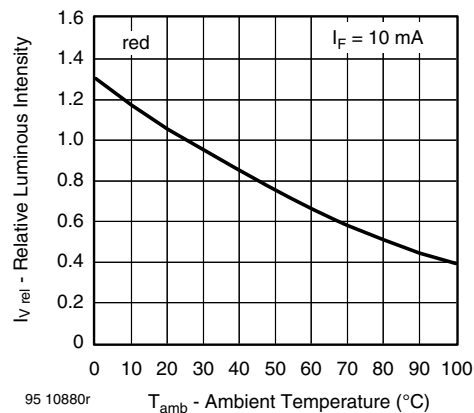


Figure 5. Rel. Luminous Intensity vs. Ambient Temperature

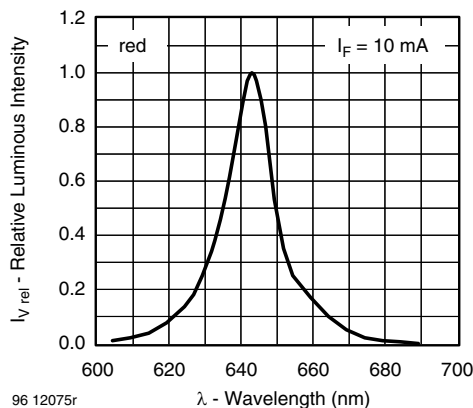


Figure 8. Relative Intensity vs. Wavelength

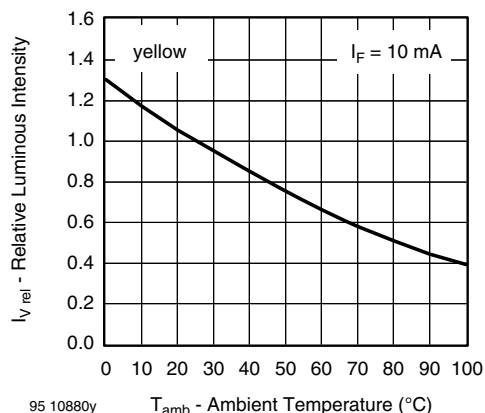


Figure 9. Rel. Luminous Intensity vs. Ambient Temperature

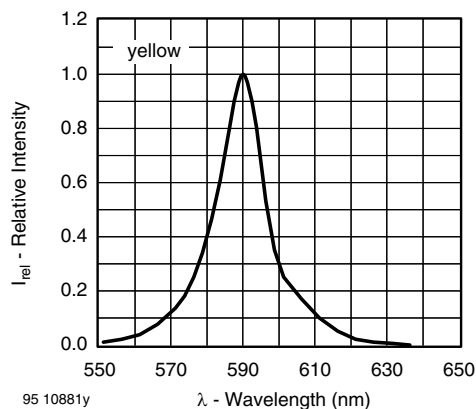


Figure 12. Relative Intensity vs. Wavelength

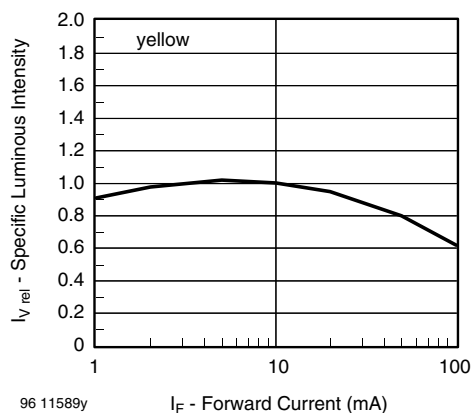


Figure 10. Specific Luminous Intensity vs. Forward Current

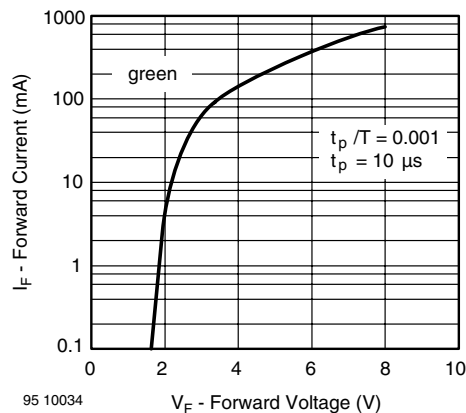


Figure 13. Forward Current vs. Forward Voltage

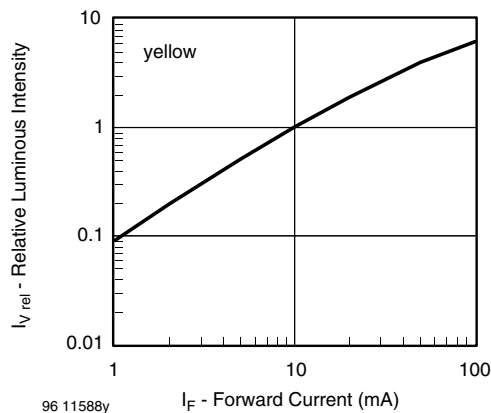


Figure 11. Relative Luminous Intensity vs. Forward Current

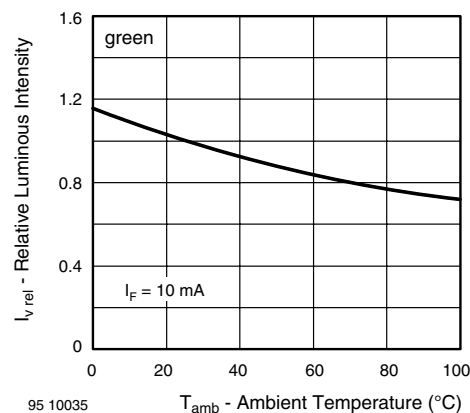


Figure 14. Rel. Luminous Intensity vs. Ambient Temperature

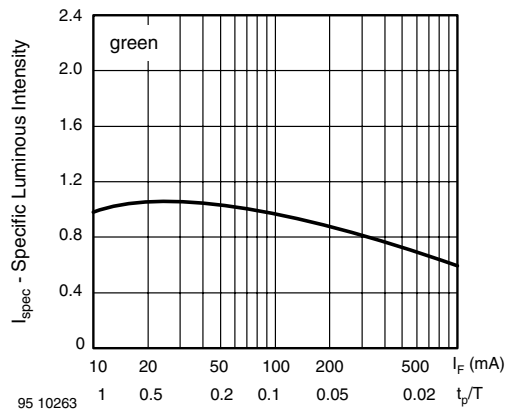


Figure 15. Specific Luminous Intensity vs. Forward Current

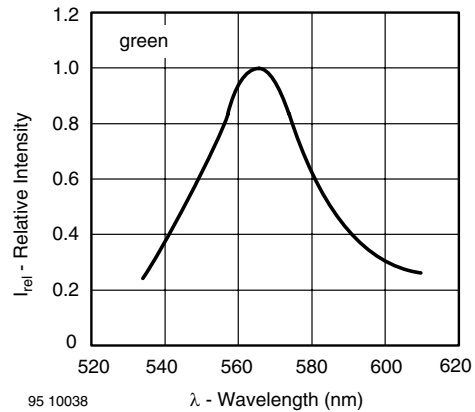


Figure 17. Relative Intensity vs. Wavelength

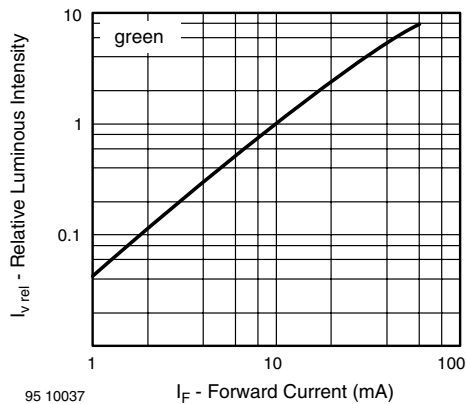
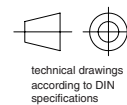
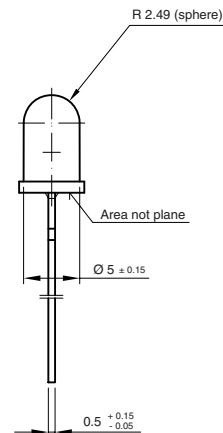
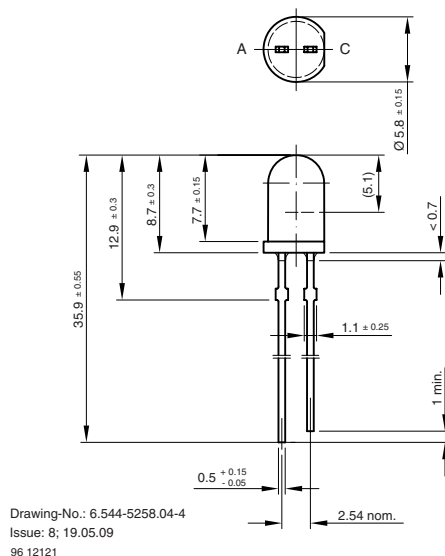


Figure 16. Relative Luminous Intensity vs. Forward Current

PACKAGE DIMENSIONS in millimeters





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