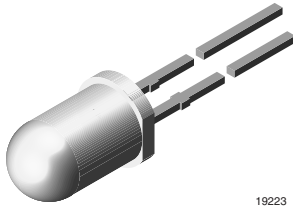


## High Efficiency LED, Ø 5 mm Untinted Non-Diffused



19223

### DESCRIPTION

The TLH.5800 series was developed for standard applications which need a very small radiation angle or a very high luminous intensity.

It is housed in a 5 mm untinted non-diffused plastic package. The very small viewing angle of these devices provide a very high luminous intensity.

The yellow and green LEDs are categorized in luminous intensity and additionally in wavelength groups.

That allows users to assemble LEDs with uniform appearance.

### FEATURES

- Standard T-1 $\frac{3}{4}$  package
- Small mechanical tolerances
- Suitable for DC and high peak current
- Very small viewing angle
- Very high intensity
- Luminous intensity categorized
- Yellow and green color categorized
- ESD-withstand voltage up to 2 kV according to JESD22-A114-B
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC


**RoHS**  
COMPLIANT

### APPLICATIONS

- Status lights
- Off/on indicator
- Lightpipe
- Outdoor display
- Medical instruments
- Maintenance lights
- Legend lights

### PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 5 mm
- Product series: standard
- Angle of half intensity:  $\pm 4^\circ$

### PARTS TABLE

PART	COLOR, LUMINOUS INTENSITY	TECHNOLOGY
TLHY5800	Yellow, $I_V > 100$ mcd	GaAsP on GaP
TLHG5800	Green, $I_V > 430$ mcd	GaP on GaP
TLHP5800	Pure green, $I_V > 25$ mcd	GaP on GaP

### ABSOLUTE MAXIMUM RATINGS <sup>1)</sup> TLHY5800 , TLHG5800, TLHP5800

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:

<sup>1)</sup>  $T_{amb} = 25^\circ\text{C}$  unless otherwise specified

OPTICAL AND ELECTRICAL CHARACTERISTICS <sup>1)</sup> TLHY5800, YELLOW						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>2)</sup>	I <sub>F</sub> = 20 mA	I <sub>V</sub>	100	250		mcd
Dominant wavelength	I <sub>F</sub> = 10 mA	λ <sub>d</sub>	581		594	nm
Peak wavelength	I <sub>F</sub> = 10 mA	λ <sub>p</sub>		585		nm
Angle of half intensity	I <sub>F</sub> = 10 mA	φ		± 4		deg
Forward voltage	I <sub>F</sub> = 20 mA	V <sub>F</sub>		2.4	3	V
Reverse voltage	I <sub>R</sub> = 10 μA	V <sub>R</sub>	6	15		V
Junction capacitance	V <sub>R</sub> = 0, f = 1 MHz	C <sub>j</sub>		50		pF

Note:

<sup>1)</sup> T<sub>amb</sub> = 25 °C unless otherwise specified

<sup>2)</sup> In one packing unit I<sub>Vmin.</sub>/I<sub>Vmax.</sub> ≤ 0.5

OPTICAL AND ELECTRICAL CHARACTERISTICS <sup>1)</sup> TLHG5800, GREEN						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>2)</sup>	I <sub>F</sub> = 20 mA	I <sub>V</sub>	430	700		mcd
Dominant wavelength	I <sub>F</sub> = 10 mA	λ <sub>d</sub>	562		575	nm
Peak wavelength	I <sub>F</sub> = 10 mA	λ <sub>p</sub>		565		nm
Angle of half intensity	I <sub>F</sub> = 10 mA	φ		± 4		deg
Forward voltage	I <sub>F</sub> = 20 mA	V <sub>F</sub>		2.4	3	V
Reverse voltage	I <sub>R</sub> = 10 μA	V <sub>R</sub>	6	15		V
Junction capacitance	V <sub>R</sub> = 0, f = 1 MHz	C <sub>j</sub>		50		pF

Note:

<sup>1)</sup> T<sub>amb</sub> = 25 °C unless otherwise specified

<sup>2)</sup> In one packing unit I<sub>Vmin.</sub>/I<sub>Vmax.</sub> ≤ 0.5

OPTICAL AND ELECTRICAL CHARACTERISTICS <sup>1)</sup> TLHP5800, PURE GREEN						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>2)</sup>	I <sub>F</sub> = 20 mA	I <sub>V</sub>	25	85		mcd
Dominant wavelength	I <sub>F</sub> = 10 mA	λ <sub>d</sub>	555		565	nm
Peak wavelength	I <sub>F</sub> = 10 mA	λ <sub>p</sub>		555		nm
Angle of half intensity	I <sub>F</sub> = 10 mA	φ		± 4		deg
Forward voltage	I <sub>F</sub> = 20 mA	V <sub>F</sub>		2.4	3	V
Reverse voltage	I <sub>R</sub> = 10 μA	V <sub>R</sub>	6	15		V
Junction capacitance	V <sub>R</sub> = 0, f = 1 MHz	C <sub>j</sub>		50		pF

Note:

<sup>1)</sup> T<sub>amb</sub> = 25 °C unless otherwise specified

<sup>2)</sup> In one packing unit I<sub>Vmin.</sub>/I<sub>Vmax.</sub> ≤ 0.5

LUMINOUS INTENSITY CLASSIFICATION			
GROUP	LIGHT INTENSITY (mcd)		
	STANDARD	MIN.	MAX.
BB		430	860
CC		575	1150
DD		750	1500
EE		1000	2000
FF		1350	2700

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.

## TYPICAL CHARACTERISTICS

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

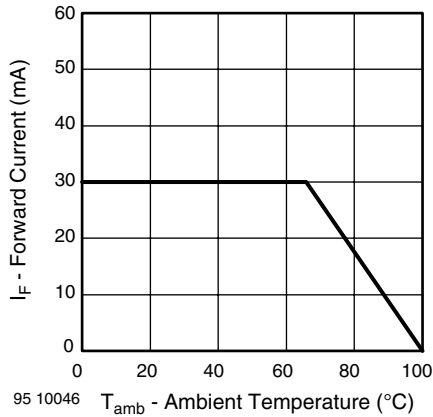


Figure 1. Forward Current vs. Ambient Temperature

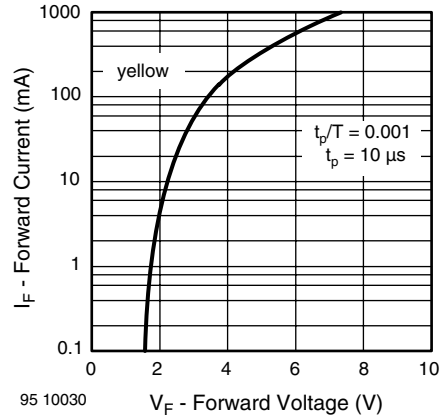


Figure 4. Forward Current vs. Forward Voltage

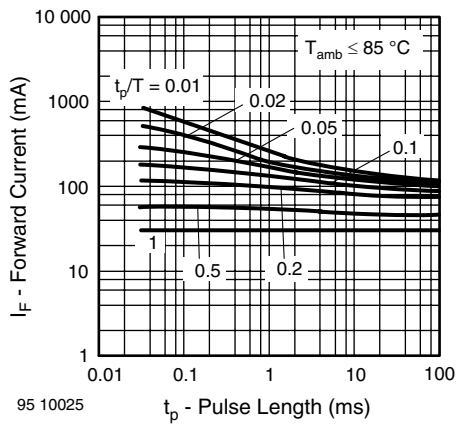


Figure 2. Forward Current vs. Pulse Length

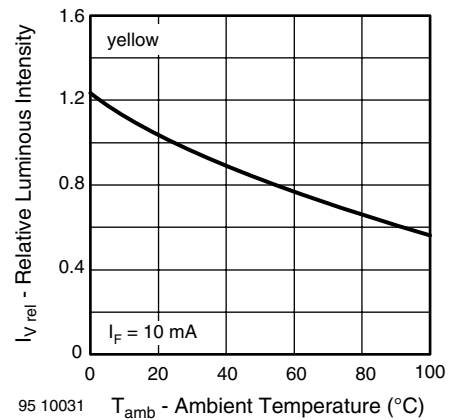


Figure 5. Rel. Luminous Intensity vs. Ambient Temperature

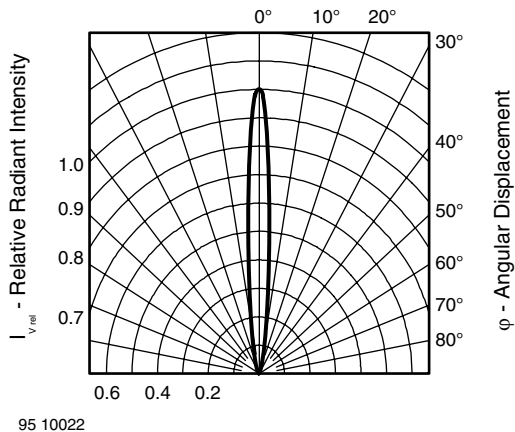


Figure 3. Rel. Luminous Intensity vs. Angular Displacement

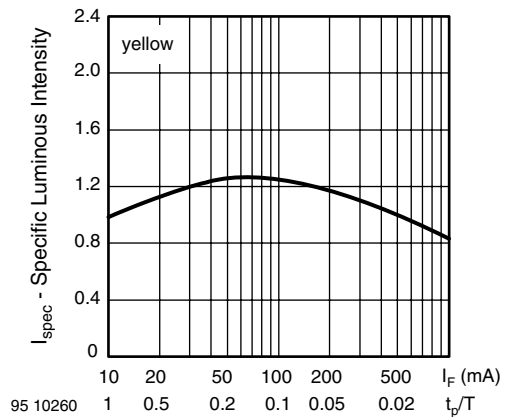


Figure 6. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

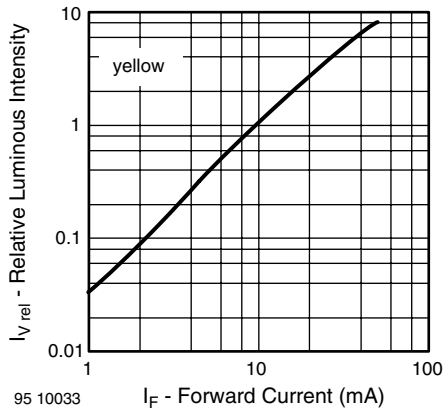


Figure 7. Relative Luminous Intensity vs. Forward Current

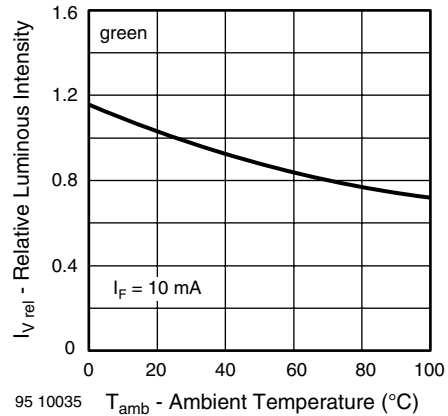


Figure 10. Rel. Luminous Intensity vs. Ambient Temperature

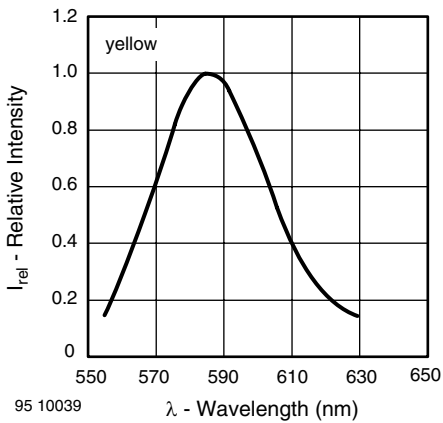


Figure 8. Relative Intensity vs. Wavelength

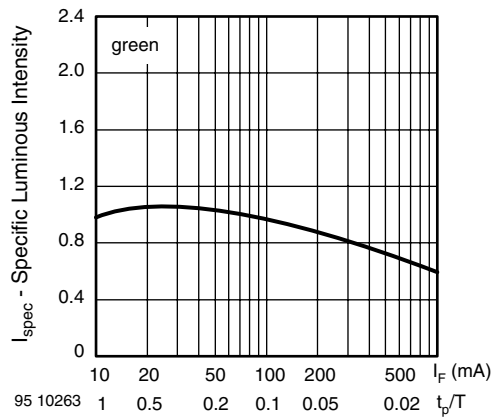


Figure 11. Specific Luminous Intensity vs. Forward Current

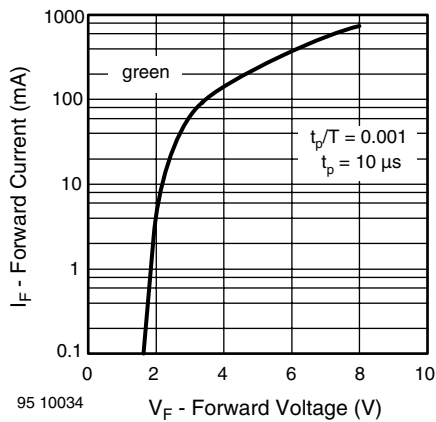


Figure 9. Forward Current vs. Forward Voltage

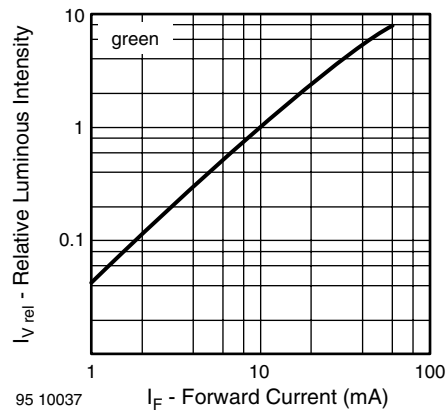


Figure 12. Relative Luminous Intensity vs. Forward Current

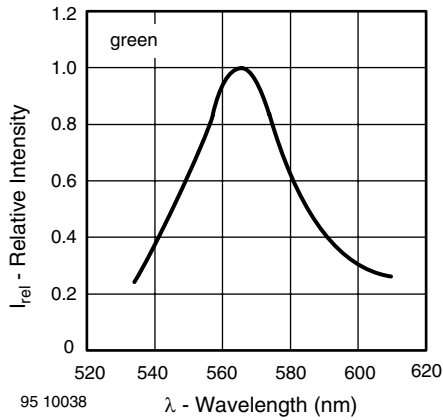


Figure 13. Relative Intensity vs. Wavelength

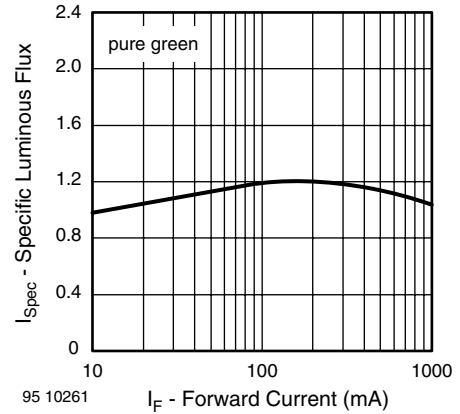


Figure 16. Specific Luminous Intensity vs. Forward Current

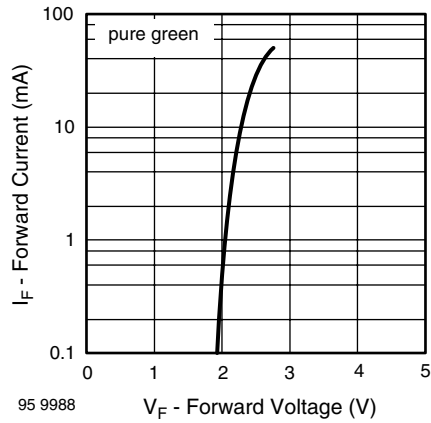


Figure 14. Forward Current vs. Forward Voltage

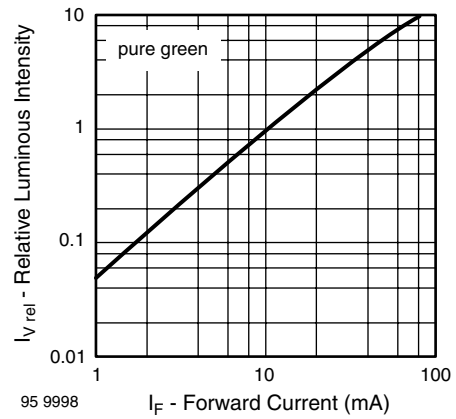


Figure 17. Relative Luminous Intensity vs. Forward Current

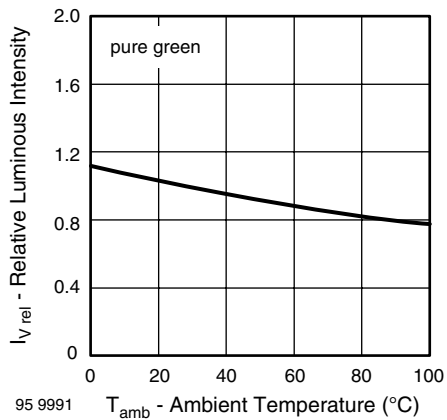


Figure 15. Rel. Luminous Intensity vs. Ambient Temperature

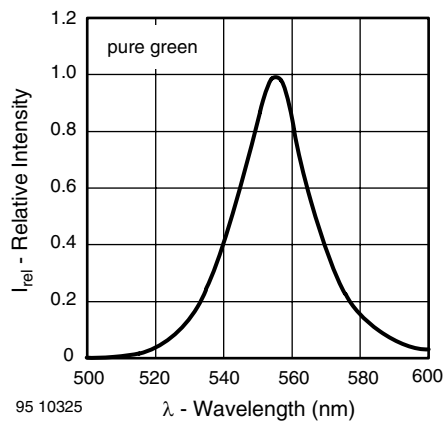
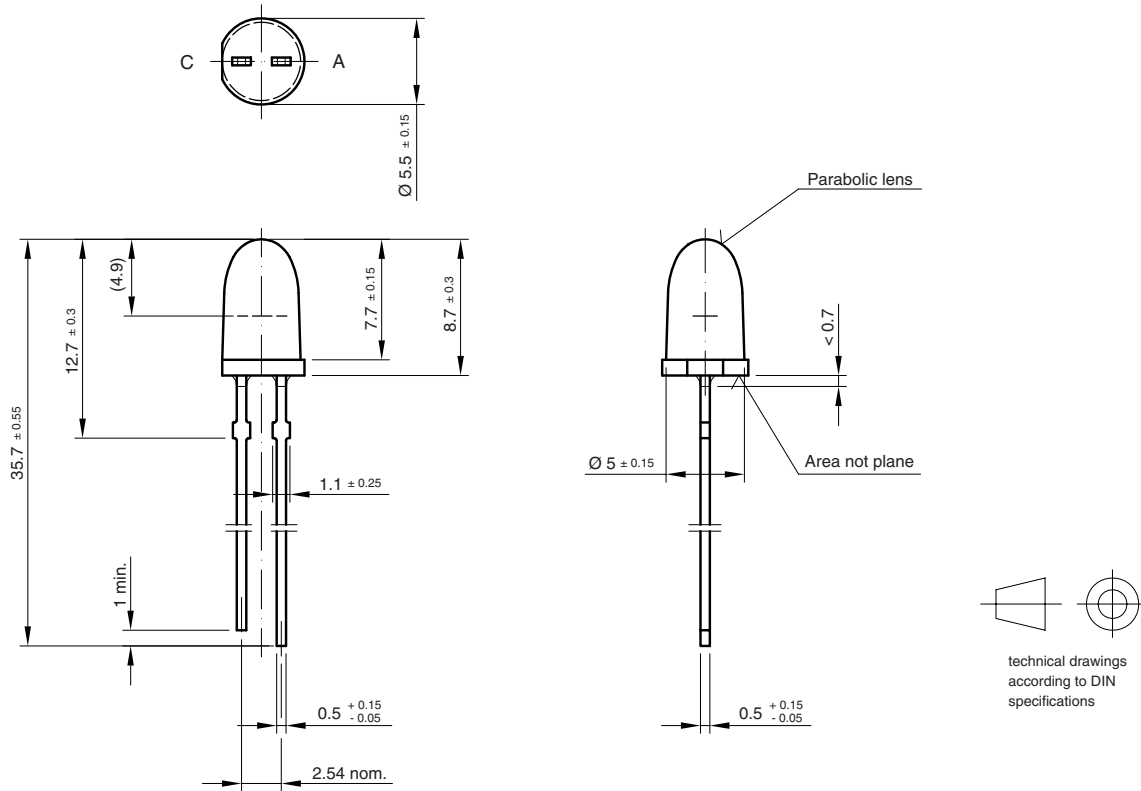


Figure 18. Relative Intensity vs. Wavelength

## PACKAGE DIMENSIONS in millimeters



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