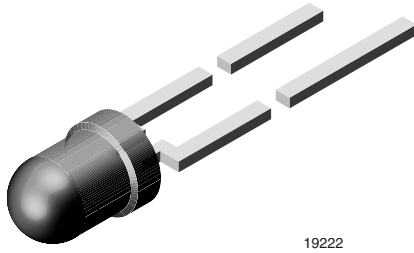




High Efficiency LED in Ø 3 mm Clear Package



FEATURES

- Choice of three bright colors
Standard Ø 3 mm (T-1) package
Small mechanical tolerances
Suitable for DC and high peak current
Very small viewing angle
Luminous intensity categorized
Yellow and green color categorized
Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS

- Status lights
Off / on indicator
Background illumination
Readout lights
Maintenance lights
Legend light

DESCRIPTION

The TLH.4900 series was developed for applications where high light output is required.

It is housed in a 3 mm clear plastic package. The small viewing angle of these devices provides a high brightness.

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

That allows users to assemble LEDs with uniform appearance.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
Package: 3 mm
Product series: standard
Angle of half intensity: ± 16°

Table with 14 columns: PART, COLOR, LUMINOUS INTENSITY (mcd) [MIN, TYP, MAX], at If (mA), WAVELENGTH (nm) [MIN, TYP, MAX], at If (mA), FORWARD VOLTAGE (V) [MIN, TYP, MAX], at If (mA), TECHNOLOGY. Rows include TLHR4900 (Red), TLHY4900 (Yellow), and TLHG4900 (Green).

Note

(1) Not for new designs

Table with 5 columns: PARAMETER, TEST CONDITION, SYMBOL, VALUE, UNIT. Title: ABSOLUTE MAXIMUM RATINGS (Tamb = 25 °C, unless otherwise specified) TLHG4900, TLHR4900, TLHY4900. Rows include Reverse voltage, DC forward current, Surge forward current, Power dissipation, Junction temperature, Operating temperature range, Storage temperature range, Soldering temperature, Thermal resistance junction to ambient.



**OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**TLHR4900, RED**

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>(1)</sup>	$I_F = 10\text{ mA}$	$I_V$	6.3	25	-	mcd
Dominant wavelength	$I_F = 10\text{ mA}$	$\lambda_d$	612	-	625	nm
Peak wavelength	$I_F = 10\text{ mA}$	$\lambda_p$	-	635	-	nm
Angle of half intensity	$I_F = 10\text{ mA}$	$\phi$	-	$\pm 16$	-	$^{\circ}$
Forward voltage	$I_F = 20\text{ mA}$	$V_F$	-	2	3	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$	$V_R$	6	15	-	V
Junction capacitance	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$	$C_j$	-	50	-	pF

**Note**

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

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**TLHY4900, YELLOW, NOT FOR NEW DESIGNS**

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>(1)</sup>	$I_F = 10\text{ mA}$	$I_V$	10	26	-	mcd
Dominant wavelength	$I_F = 10\text{ mA}$	$\lambda_d$	581	-	594	nm
Peak wavelength	$I_F = 10\text{ mA}$	$\lambda_p$	-	585	-	nm
Angle of half intensity	$I_F = 10\text{ mA}$	$\phi$	-	$\pm 16$	-	$^{\circ}$
Forward voltage	$I_F = 20\text{ mA}$	$V_F$	-	2.4	3	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$	$V_R$	6	15	-	V
Junction capacitance	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$	$C_j$	-	50	-	pF

**Note**

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

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**TLHG4900, GREEN**

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>(1)</sup>	$I_F = 10\text{ mA}$	$I_V$	16	37	-	mcd
Dominant wavelength	$I_F = 10\text{ mA}$	$\lambda_d$	562	-	575	nm
Peak wavelength	$I_F = 10\text{ mA}$	$\lambda_p$	-	565	-	nm
Angle of half intensity	$I_F = 10\text{ mA}$	$\phi$	-	$\pm 16$	-	$^{\circ}$
Forward voltage	$I_F = 20\text{ mA}$	$V_F$	-	2.4	3	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$	$V_R$	6	15	-	V
Junction capacitance	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$	$C_j$	-	50	-	pF

**Note**

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

**LUMINOUS INTENSITY CLASSIFICATION**

GROUP	LUMINOUS INTENSITY (mcd)	
	MIN.	MAX.
Q	6.3	12.5
R	10	20
S	16	32
T	25	50
U	40	80
V	63	125

**Note**

- The above type numbers represent the order groups which include only a few brightness groups. Only one group will be shipped on each reel or bulk (there will be no mixing of two groups on one reel/bulk). 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 on any one reel/bulk. In order to ensure availability, single wavelength groups will not be orderable

**COLOR CLASSIFICATION**

GROUP	DOM. WAVELENGTH (nm)			
	YELLOW		GREEN	
	MIN.	MAX.	MIN.	MAX.
0				
1	581	584		
2	583	586		
3	585	588	562	565
4	587	590	564	567
5	589	592	566	569
6	591	594	568	571
7			570	573
8			572	575

**Note**

- Wavelengths are tested at a current pulse duration of 25 ms



TYPICAL CHARACTERISTICS (T<sub>amb</sub> = 25 °C, unless otherwise specified)

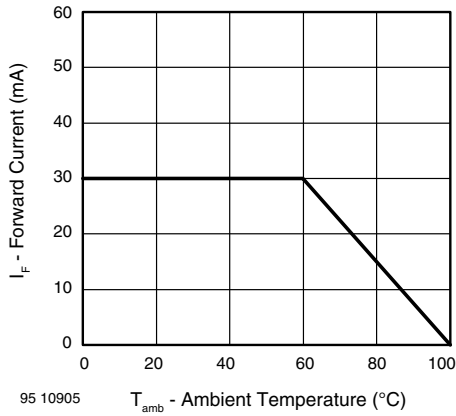


Fig. 1 - Forward Current vs. Ambient Temperature

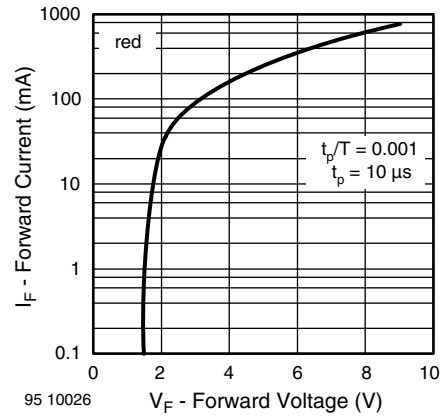


Fig. 4 - Forward Current vs. Forward Voltage

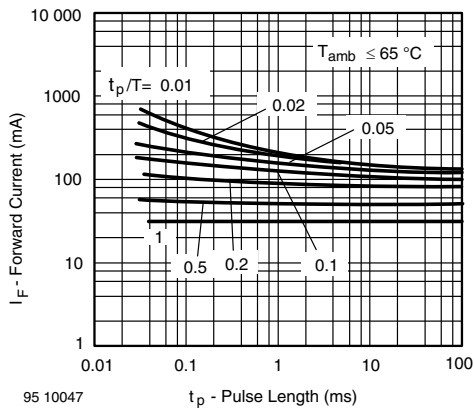


Fig. 2 - Forward Current vs. Pulse Length

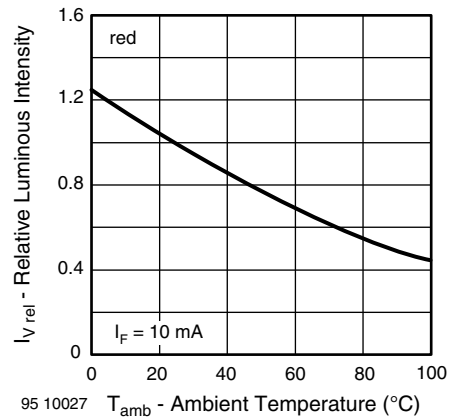


Fig. 5 - Relative Luminous Intensity vs. Ambient Temperature

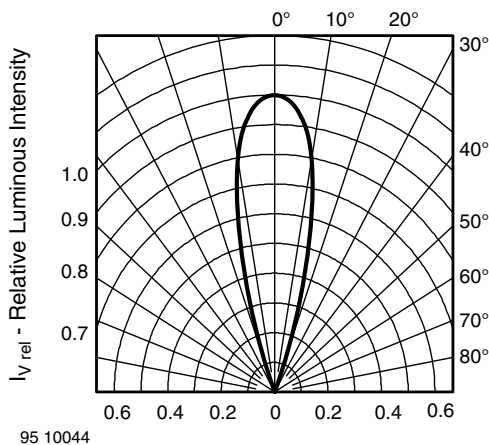


Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

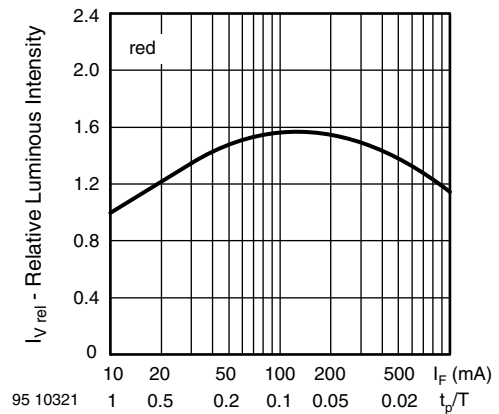


Fig. 6 - Relative Luminous Intensity vs. Forward Current/Duty Cycle



Fig. 7 - Relative Luminous Intensity vs. Forward Current



Fig. 10 - Relative Luminous Intensity vs. Ambient Temperature



Fig. 8 - Relative Intensity vs. Wavelength

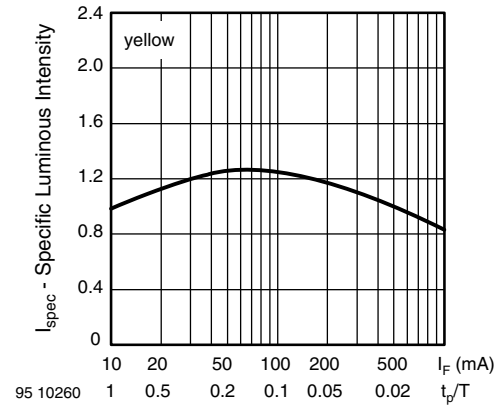


Fig. 11 - Relative Luminous Intensity vs. Forward Current/Duty Cycle



Fig. 9 - Forward Current vs. Forward Voltage

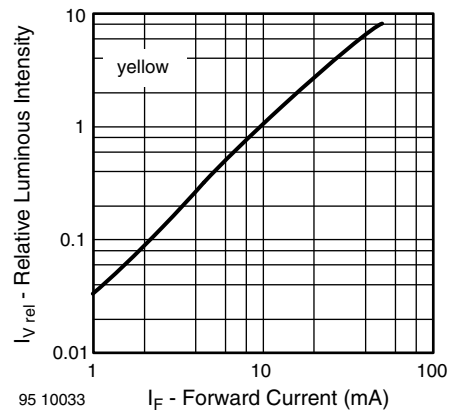


Fig. 12 - Relative Luminous Intensity vs. Forward Current



Fig. 13 - Relative Intensity vs. Wavelength

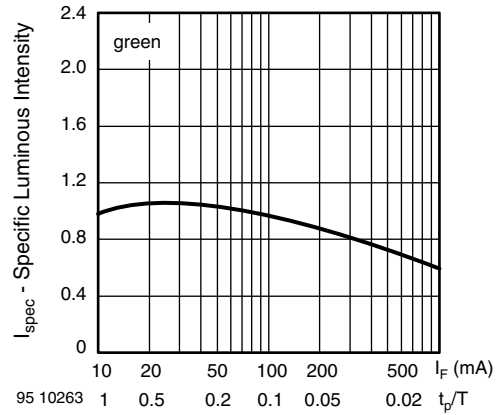


Fig. 16 - Specific Luminous Intensity vs. Forward Current

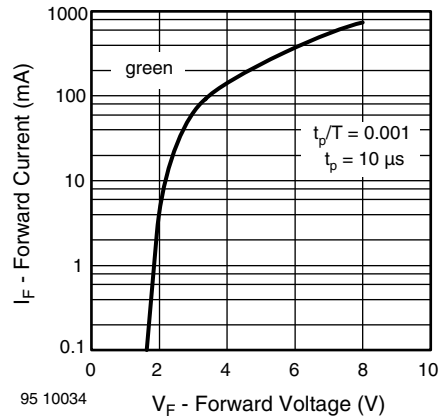


Fig. 14 - Forward Current vs. Forward Voltage

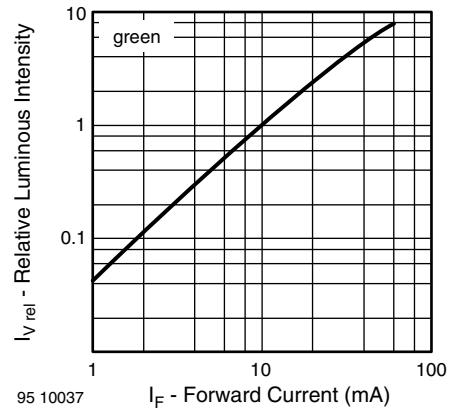


Fig. 17 - Relative Luminous Intensity vs. Forward Current

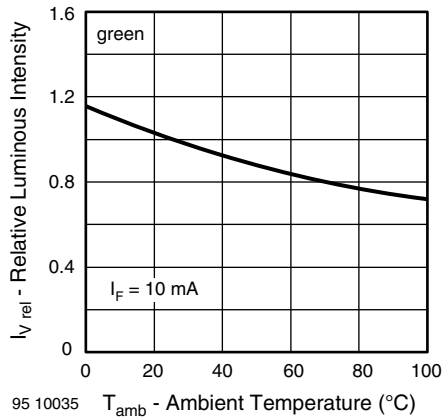


Fig. 15 - Rel. Luminous Intensity vs. Ambient Temperature

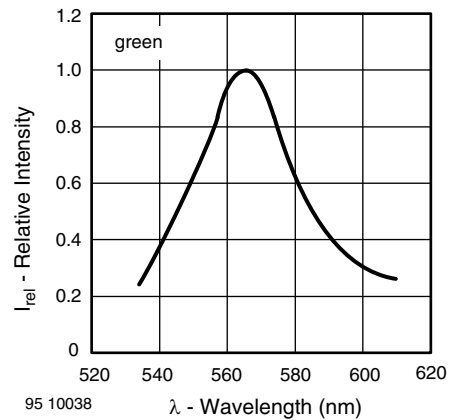
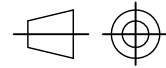
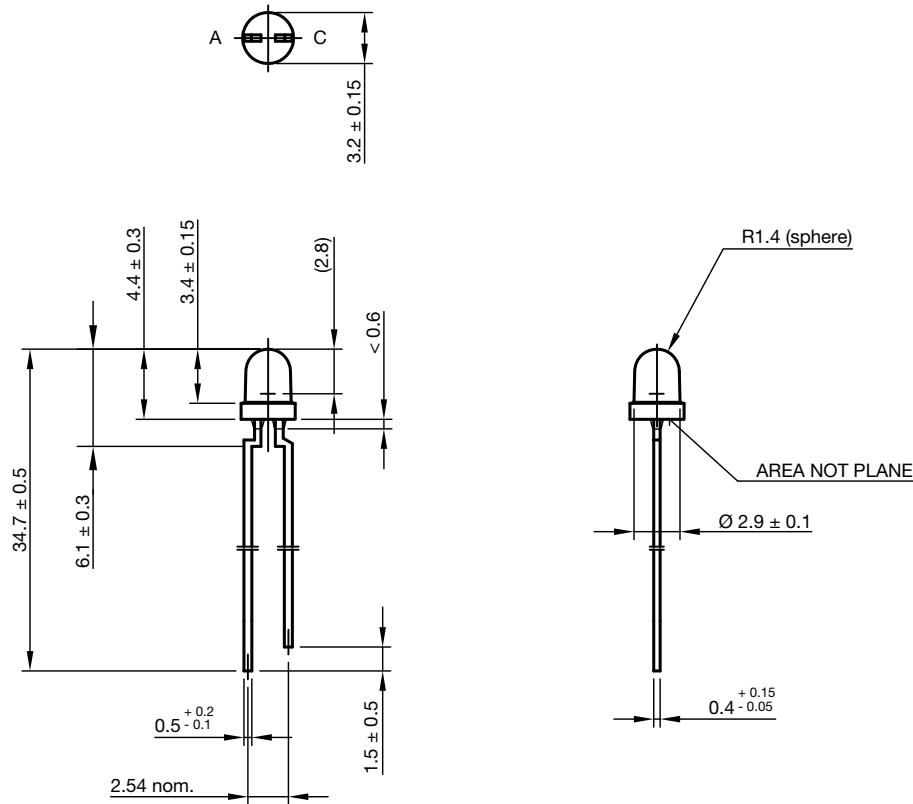


Fig. 18 - Relative Intensity vs. Wavelength



PACKAGE DIMENSIONS in millimeters



technical drawings according to DIN specifications

Drawing-No.: 6.544-5255.02-4  
Issue: 5; 28.07.14



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