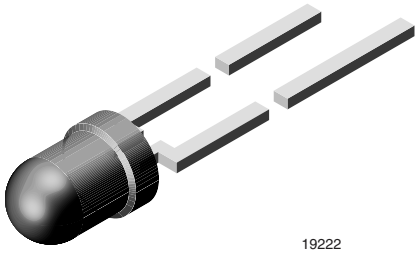
High Efficiency LED in Ø 3 mm Clear Package



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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
- Green color categorized
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

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 LED is 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°

APPLICATIONS

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

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.		
TLHR4900	Red	6.3	25	-	10	612	-	625	10	-	2	3	20	GaAsP on GaP
TLHG4900	Green	16	37	-	10	562	-	575	10	-	2.4	3	20	GaP on GaP

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)
TLHR4900, TLHG4900

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V_R	6	V
DC forward current	$T_{amb} \leq 60$ °C	I_F	30	mA
Surge forward current	$t_p \leq 10$ µs	I_{FSM}	1	A
Power dissipation	$T_{amb} \leq 60$ °C	P_V	100	mW
Junction temperature		T_j	100	°C
Operating temperature range		T_{amb}	-40 to +100	°C
Storage temperature range		T_{stg}	-55 to +100	°C
Soldering temperature	t ≤ 5 s, 2 mm from body	T_{sd}	260	°C
Thermal resistance junction to ambient		R_{thJA}	400	K/W

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified) **TLHR4900, RED**						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Luminous intensity (1)	I_F = 10 mA	I_V	6.3	25	-	mcd
Dominant wavelength	I_F = 10 mA	λ_d	612	-	625	nm
Peak wavelength	I_F = 10 mA	λ_p	-	635	-	nm
Angle of half intensity	I_F = 10 mA	φ	-	± 16	-	°
Forward voltage	I_F = 20 mA	V_F	-	2	3	V
Reverse voltage	I_R = 10 µA	V_R	6	15	-	V
Junction capacitance	V_R = 0 V, f = 1 MHz	C_j	-	50	-	pF

Note

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

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified) **TLHG4900, GREEN**						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Luminous intensity (1)	I_F = 10 mA	I_V	16	37	-	mcd
Dominant wavelength	I_F = 10 mA	λ_d	562	-	575	nm
Peak wavelength	I_F = 10 mA	λ_p	-	565	-	nm
Angle of half intensity	I_F = 10 mA	φ	-	± 16	-	°
Forward voltage	I_F = 20 mA	V_F	-	2.4	3	V
Reverse voltage	I_R = 10 µA	V_R	6	15	-	V
Junction capacitance	V_R = 0 V, f = 1 MHz	C_j	-	50	-	pF

Note

(1) 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)**	
	GREEN	
	MIN.	**MAX.**
3	562	565
4	564	567
5	566	569
6	568	571
7	570	573
8	572	575

Note

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

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

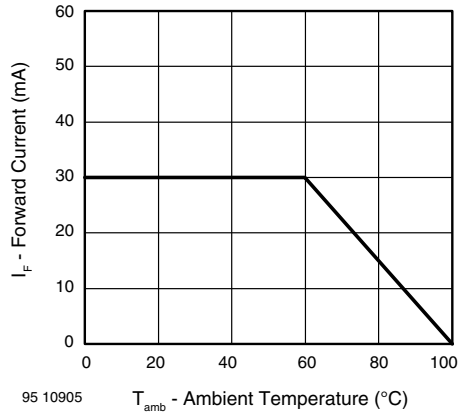


Fig. 1 - Forward Current vs. Ambient Temperature

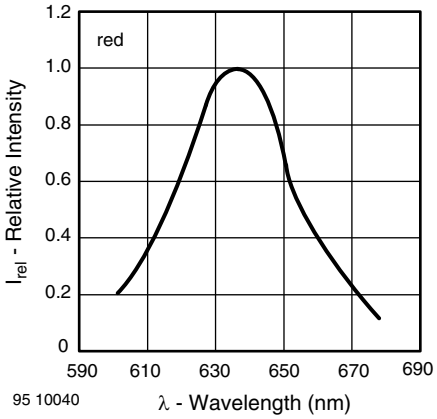


Fig. 4 - Relative Intensity vs. Wavelength

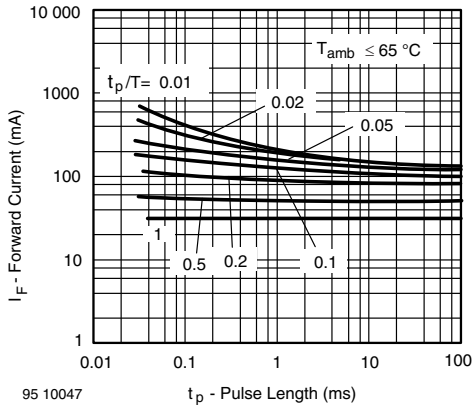


Fig. 2 - Forward Current vs. Pulse Length

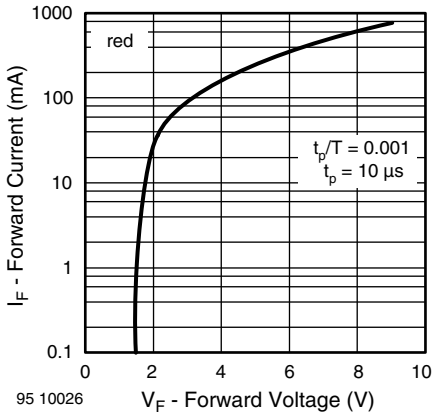


Fig. 5 - Forward Current vs. Forward Voltage

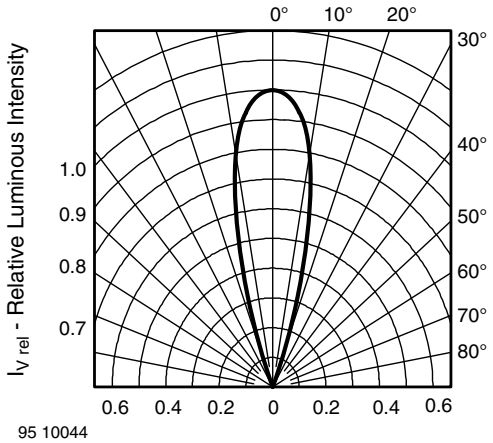


Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

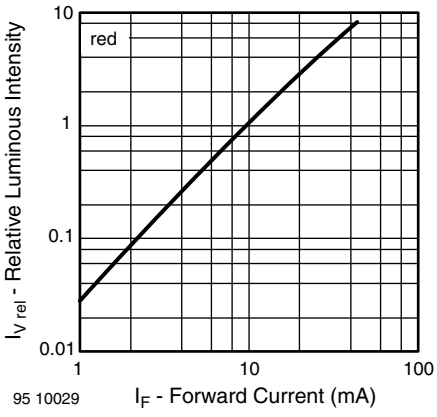


Fig. 6 - Relative Luminous Intensity vs. Forward Current

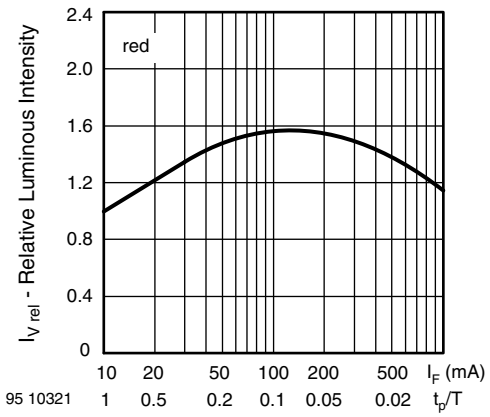


Fig. 7 - Relative Luminous Intensity vs. Forward Current / Duty Cycle

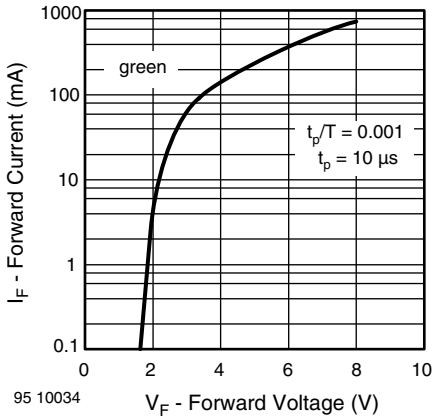


Fig. 10 - Forward Current vs. Forward Voltage

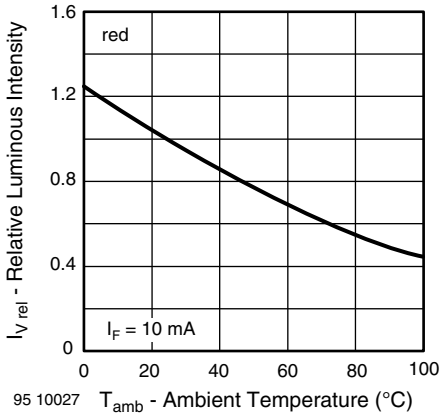


Fig. 8 - Relative Luminous Intensity vs. Ambient Temperature

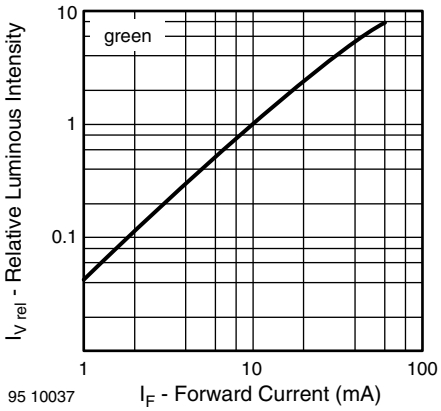


Fig. 11 - Relative Luminous Intensity vs. Forward Current

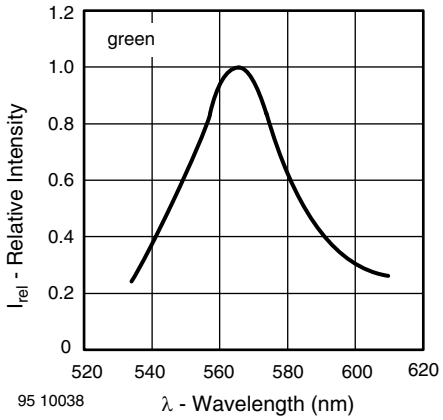


Fig. 9 - Relative Intensity vs. Wavelength

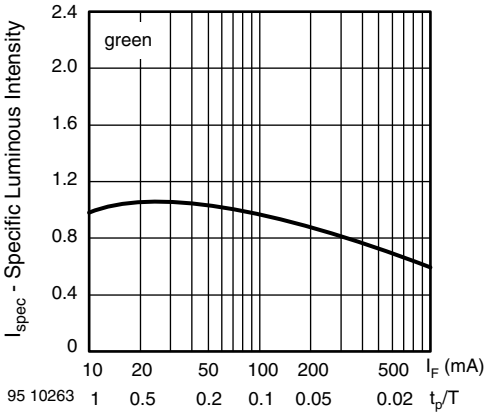


Fig. 12 - Specific Luminous Intensity vs. Forward Current

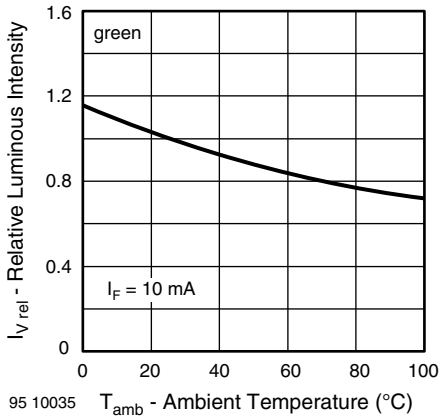
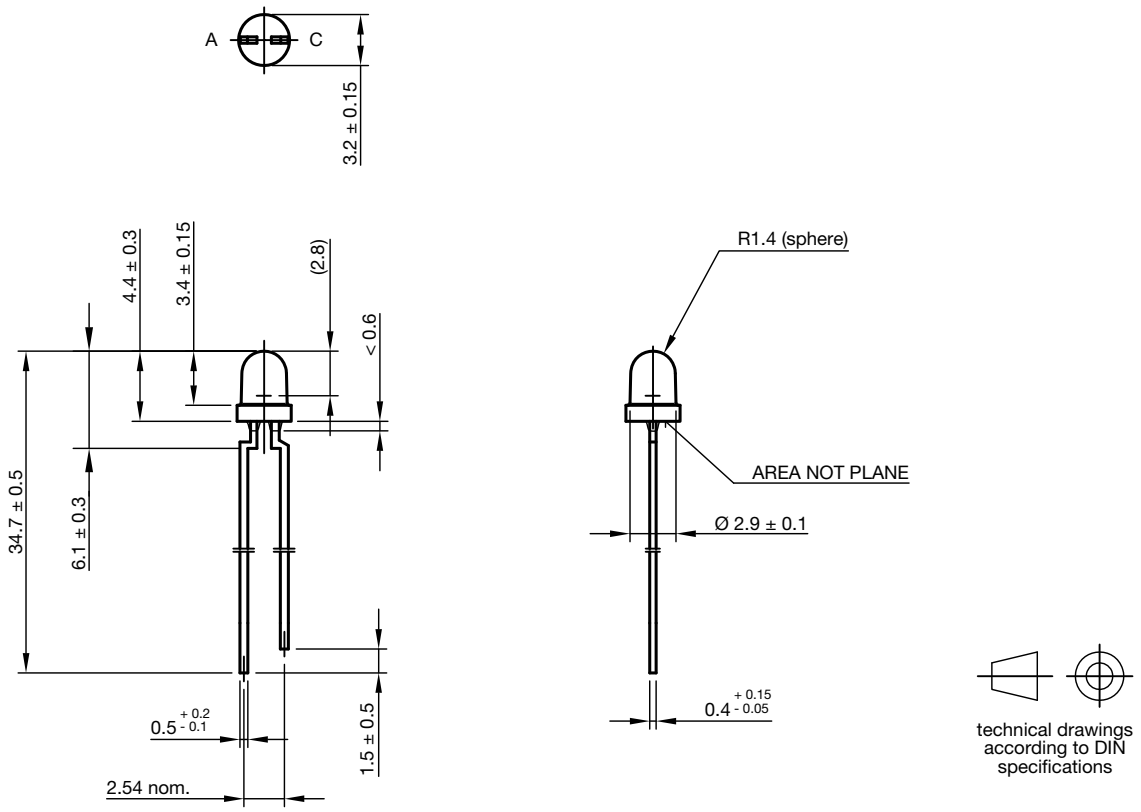


Fig. 13 - Rel. Luminous Intensity vs. Ambient Temperature

PACKAGE DIMENSIONS in millimeters



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

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