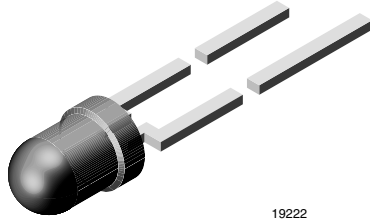


High Intensity LED in \varnothing 3 mm Tinted Diffused Package



DESCRIPTION

This device has been designed to meet the increasing demand for AllnGaP technology.

It is housed in a 3 mm clear plastic package. The wide viewing angle of these devices provides a high on-off contrast.

All packing units are categorized in luminous intensity 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: $\pm 60^\circ$

FEATURES

- AllnGaP technology
- Standard \varnothing 3 mm (T-1) package
- Small mechanical tolerances
- Suitable for DC and high peak current
- Very wide viewing angle
- Luminous intensity categorized
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



APPLICATIONS

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

PARTS TABLE

PART	COLOR, LUMINOUS INTENSITY	TECHNOLOGY
TLHK4600	Red, $I_V > 6.3$ mcd	AllnGaP on GaAs

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ\text{C}$, unless otherwise specified) TLHK4600

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V_R	5	V
DC Forward current	$T_{amb} \leq 60^\circ\text{C}$	I_F	30	mA
Surge forward current	$t_p \leq 10 \mu\text{s}$	I_{FSM}	0.1	A
Power dissipation	$T_{amb} \leq 60^\circ\text{C}$	P_V	80	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}	400	K/W

** Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) TLHK4600, RED						
PARAMETER	TEST CONDITION	SYMBOL	MIN	TYP.	MAX	UNIT
Luminous intensity ¹⁾	$I_F = 10\text{ mA}$	I_V	6.3	15		mcd
Dominant wavelength	$I_F = 10\text{ mA}$	λ_d		630		nm
Peak wavelength	$I_F = 10\text{ mA}$	λ_p		643		nm
Angle of half intensity	$I_F = 10\text{ mA}$	φ		± 60		deg
Forward voltage	$I_F = 20\text{ mA}$	V_F		1.9	2.6	V
Junction capacitance	$V_R = 0, f = 1\text{ MHz}$	C_j		15		pF
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$	V_R	5			V

Note:

¹⁾ in one packing unit $I_{Vmin}/I_{Vmax} \leq 0.5$

LUMINOUS INTENSITY CLASSIFICATION			
GROUP	LIGHT INTENSITY (mcd)		
	STANDARD	MIN.	MAX.
Q	6.3	12.5	
R	10	20	
S	16	32	
T	25	50	
U	40	80	
V	63	125	
W	100	200	
X	130	260	
Y	180	360	
Z	240	480	

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 on 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)

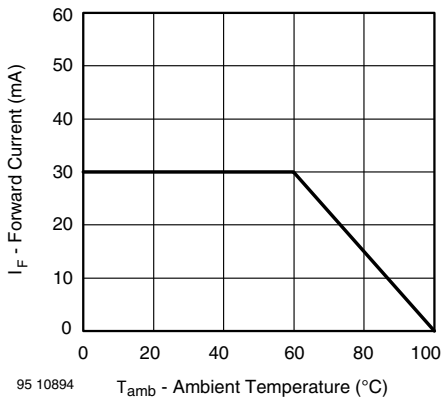


Figure 1. Forward Current vs. Ambient Temperature for InGaN

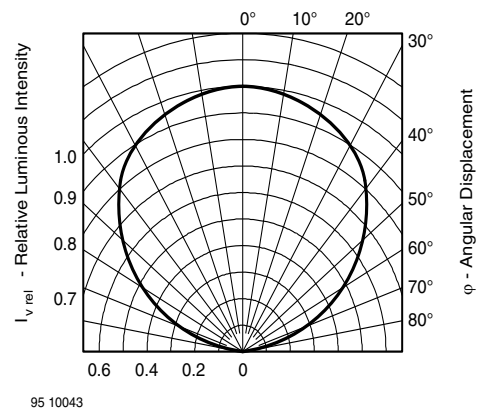


Figure 2. Rel. Luminous Intensity vs. Angular Displacement

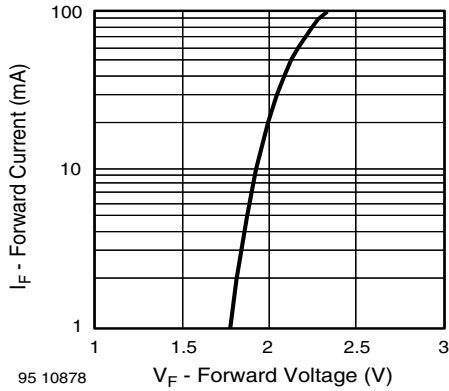


Figure 3. Forward Current vs. Forward Voltage

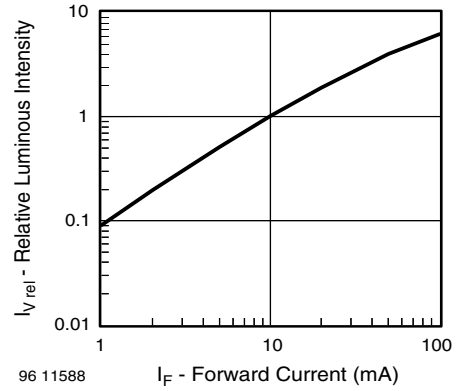


Figure 6. Relative Luminous Intensity vs. Forward Current

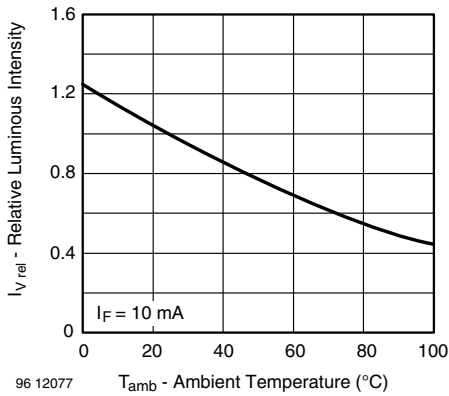


Figure 4. Rel. Luminous Intensity vs. Ambient Temperature

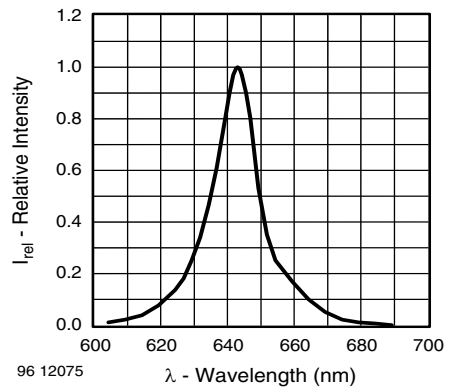


Figure 7. Relative Intensity vs. Wavelength

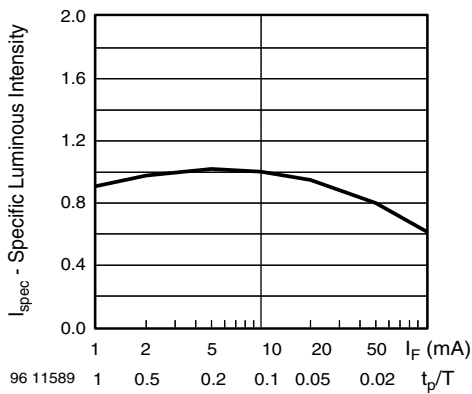
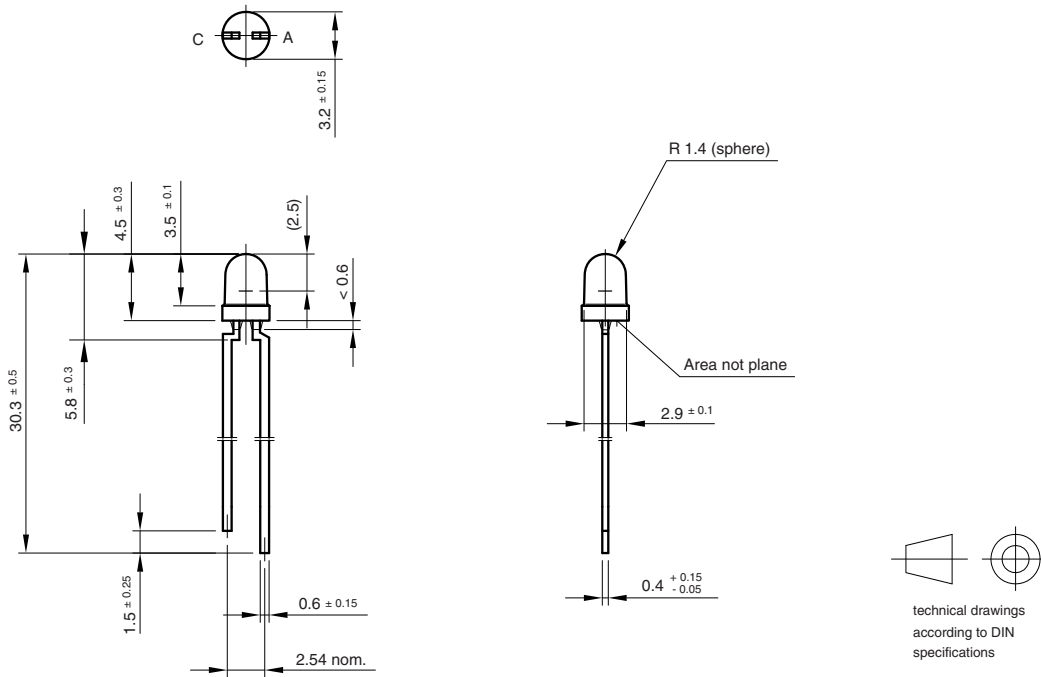


Figure 5. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5264.01-4
Issue: 2; 23.04.98
95 10951



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