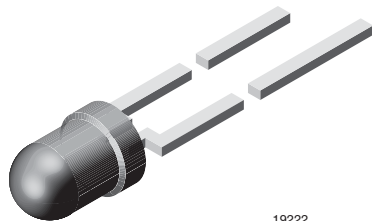


## High Intensity LED in Ø 3 mm Clear Package



19222

### DESCRIPTION

These device series has been designed to meet the increasing demand for AlInGaP technology.

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

All packing units are categorized in luminous intensity and color 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:  $\pm 16^\circ$

### FEATURES

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



**RoHS**  
COMPLIANT  
**GREEN**  
[5-2008]\*\*

### APPLICATIONS

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

### PARTS TABLE

PART	COLOR, LUMINOUS INTENSITY	TECHNOLOGY
TLHF4900	Soft orange, $I_V > 63$ mcd	AlInGaP on GaAs
TLHF4900-AS21Z	Soft orange, $I_V > 63$ mcd	AlInGaP on GaAs
TLHF4901	Soft orange, $I_V = (320 \text{ to } 1150)$ mcd	AlInGaP on GaAs
TLHF4902	Soft orange, $I_V = (240 \text{ to } 640)$ mcd	AlInGaP on GaAs

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^\circ\text{C}$ , unless otherwise specified) TLHF4900, TLHF4901, TLHF4902

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](http://www.vishay.com/doc?99902)

## OPTICAL AND ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) TLHF4900, TLHF4901, TLHF4902 SOFT ORANGE

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>(1)</sup>	$I_F = 10\text{ mA}$	TLHF4900	$I_V$	63	300		mcd
	$I_F = 10\text{ mA}$	TLHF4901	$I_V$	320		1150	mcd
	$I_F = 10\text{ mA}$	TLHF4902	$I_V$	240		640	mcd
Dominant wavelength	$I_F = 10\text{ mA}$	TLHF4900	$\lambda_d$	598	605	611	nm
	$I_F = 10\text{ mA}$	TLHF4901	$\lambda_d$	602		609	nm
	$I_F = 10\text{ mA}$	TLHF4902	$\lambda_d$	602		609	nm
Peak wavelength	$I_F = 10\text{ mA}$		$\lambda_p$		610		nm
Angle of half intensity	$I_F = 10\text{ mA}$		$\varphi$		$\pm 16$		deg
Forward voltage	$I_F = 20\text{ mA}$		$V_F$		1.9	2.6	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$		$V_R$	5			V
Junction capacitance	$V_R = 0, f = 1\text{ MHz}$		$C_j$		15		pF

Note:

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

### LUMINOUS INTENSITY CLASSIFICATION

GROUP	LIGHT INTENSITY (mcd)	
STANDARD	MIN.	MAX.
V	63	125
W	100	200
X	130	260
Y	180	360
Z	240	480
AA	320	640
BB	430	860
CC	575	1150
DD	750	1500
EE	1000	2000

Note:

Luminous intensity is tested at a current pulse duration of 25 ms.

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.

### COLOR CLASSIFICATION

GROUP	YELLOW	
	DOM. WAVELENGTH (nm)	
	MIN.	MAX.
1	598	601
2	600	603
3	602	605
4	604	607
5	606	609
6	608	611

Note:

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

## TYPICAL CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

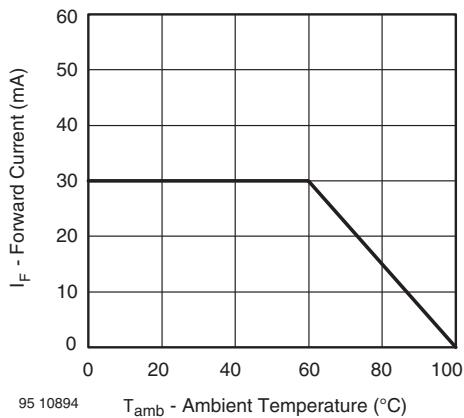


Figure 1. Forward Current vs. Ambient Temperature for InGaN

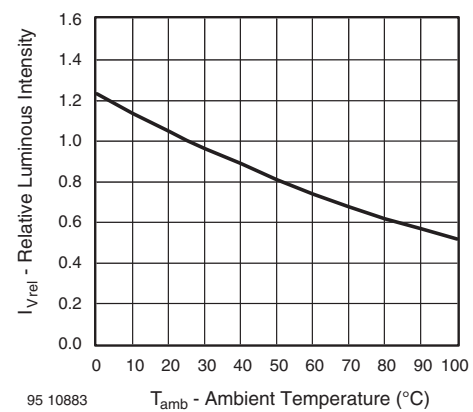


Figure 4. Rel. Luminous Intensity vs. Ambient Temperature

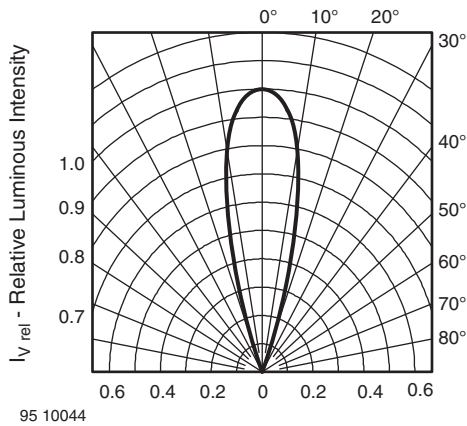


Figure 2. Rel. Luminous Intensity vs. Angular Displacement

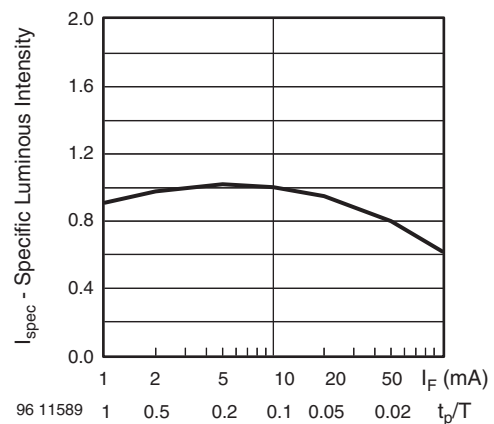


Figure 5. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

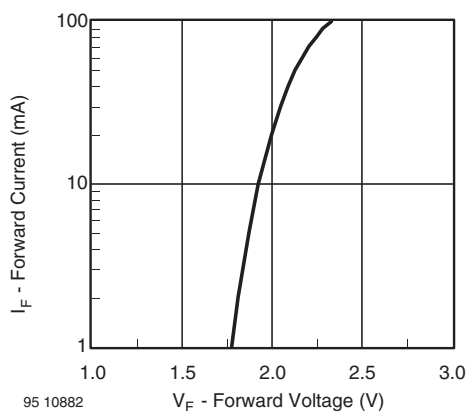


Figure 3. Forward Current vs. Forward Voltage

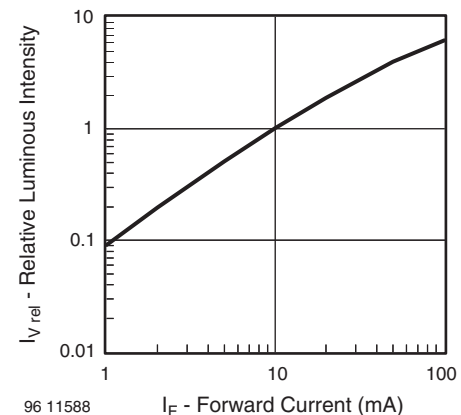


Figure 6. Relative Luminous Intensity vs. Forward Current

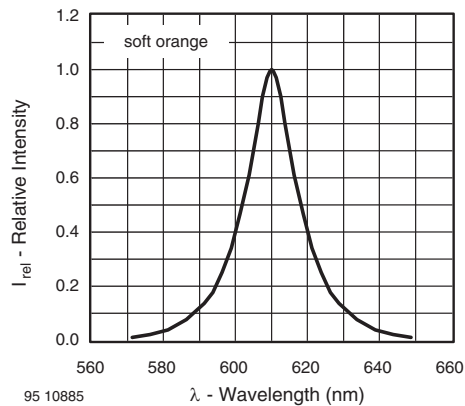
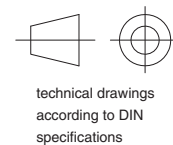
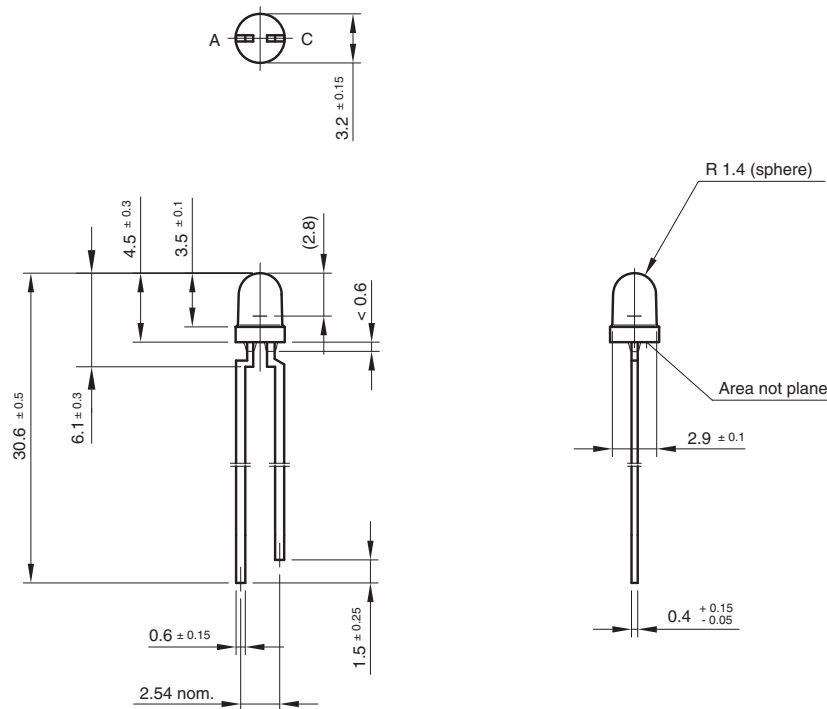


Figure 7. Relative Intensity vs. Wavelength

## PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5255.02-4

Issue: 3; 23.04.98

95 10914

## AMMOPACK

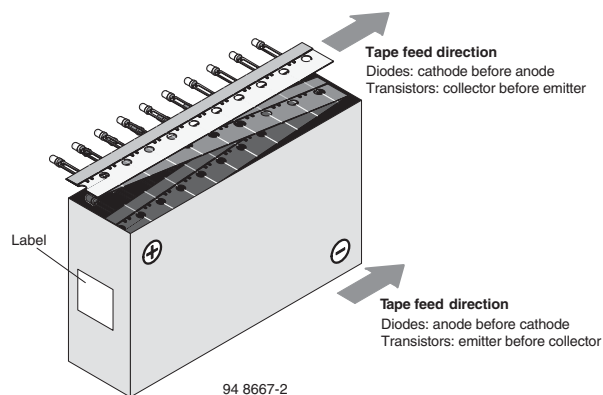
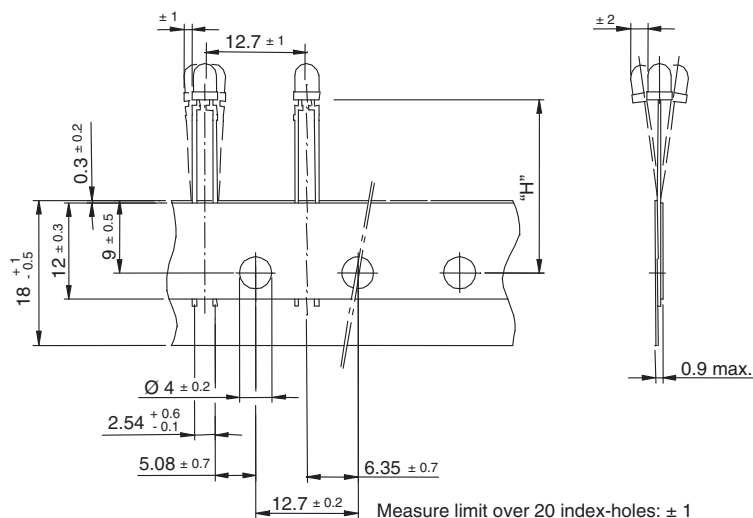


Figure 8. Tape Direction

### Note:

The new nomenclature for ammopack is ASZ only, without suffix for the LED orientation. The carton box has to be turned to the desired position: "+" for anode first, or "-" for cathode first. AS12Z and AS21Z are still valid for already existing types, BUT NOT FOR NEW DESIGN.

## TAPE DIMENSIONS in millimeters



Quantity per:	Reel (Mat. - No. 1764)
	2000

94 8171

Option	Dim. "H" $\pm 0.5$ mm
AS	17.3



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