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[Vishay Semiconductor/Opto Division](#)  
[TLHK4200](#)

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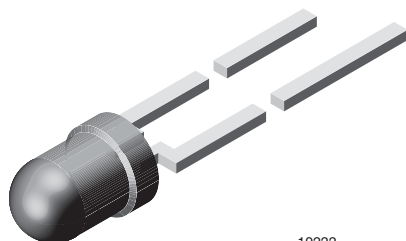


www.vishay.com

**TLHK4200**

Vishay Semiconductors

## High Intensity LED in Ø 3 mm Tinted Non-Diffused Package



19222

### 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 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:  $\pm 22^\circ$

### FEATURES

- AllnGaP technology
- Standard Ø 3 mm (T-1) package
- Small mechanical tolerances
- Suitable for DC and high peak current
- Small viewing angle
- Very high intensity
- Luminous intensity color categorized
- Material categorization:  
for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

### APPLICATIONS

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

PARTS TABLE														
PART	COLOR	LUMINOUS INTENSITY (mcd)			at I <sub>F</sub> (mA)	WAVELENGTH (nm)			at I <sub>F</sub> (mA)	FORWARD VOLTAGE (V)			at I <sub>F</sub> (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
TLHK4200	Red	25	100	-	10	-	630	-	10	-	1.9	2.6	20	AllnGaP on GaAs
TLHK4200-AS12Z	Red	25	100	-	10	-	630	-	10	-	1.9	2.6	20	AllnGaP on GaAs

ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified)				
TLHK4200				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V <sub>R</sub>	5	V
DC forward current	T <sub>amb</sub> ≤ 60 °C	I <sub>F</sub>	30	mA
Surge forward current	t <sub>p</sub> ≤ 10 μs	I <sub>FSM</sub>	0.1	A
Power dissipation	T <sub>amb</sub> ≤ 60 °C	P <sub>V</sub>	80	mW
Junction temperature		T <sub>j</sub>	100	°C
Operating temperature range		T <sub>amb</sub>	-40 to +100	°C
Storage temperature range		T <sub>stg</sub>	-55 to +100	°C
Soldering temperature	t ≤ 5 s, 2 mm from body	T <sub>sd</sub>	260	°C
Thermal resistance junction/ambient		R <sub>thJA</sub>	400	K/W



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<b>OPTICAL AND ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
<b>TLHK4200, RED</b>						
PARAMETER	TEST CONDITION	SYMBOL	MIN	TYP.	MAX	UNIT
Luminous intensity <sup>(1)</sup>	$I_F = 10\text{ mA}$	$I_V$	25	100	-	mcd
Dominant wavelength	$I_F = 10\text{ mA}$	$\lambda_d$	-	630	-	nm
Peak wavelength	$I_F = 10\text{ mA}$	$\lambda_p$	-	643	-	nm
Angle of half intensity	$I_F = 10\text{ mA}$	$\phi$	-	$\pm 22$	-	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	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$	$C_j$	-	15	-	pF

**Note**

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

<b>LUMINOUS INTENSITY CLASSIFICATION</b>			
GROUP	LIGHT INTENSITY (mcd)		
	STANDARD	MIN.	MAX.
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. 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)

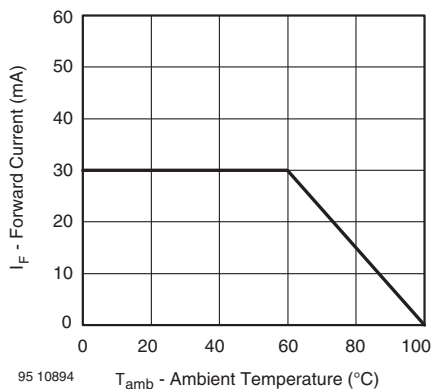


Fig. 1 - Forward Current vs. Ambient Temperature for InGaN

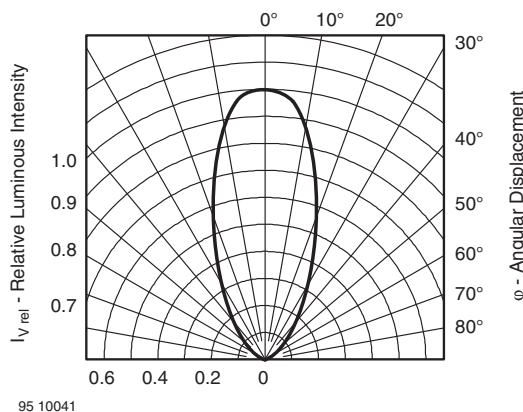


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement



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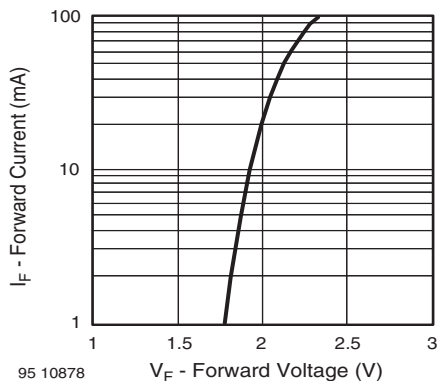


Fig. 3 - Forward Current vs. Forward Voltage

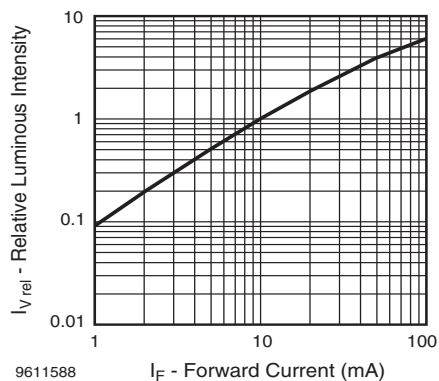


Fig. 6 - Relative Luminous Intensity vs. Forward Current

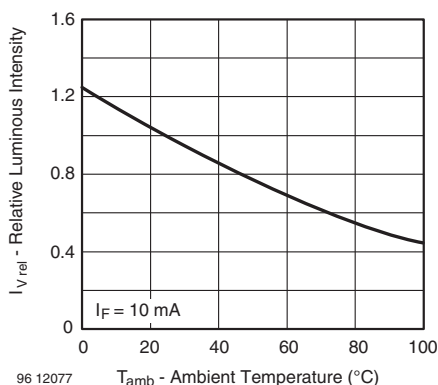


Fig. 4 - Relative Luminous Intensity vs. Ambient Temperature

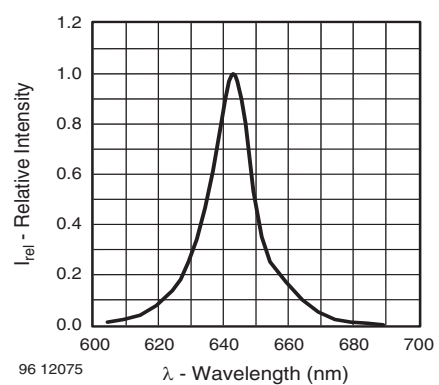


Fig. 7 - Relative Intensity vs. Wavelength

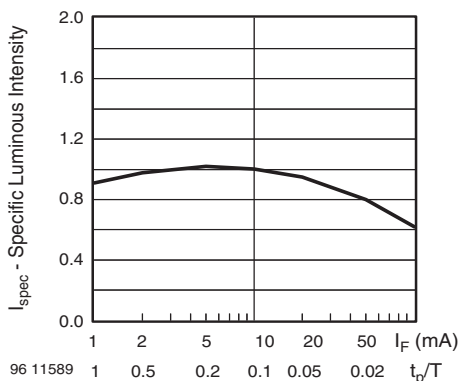


Fig. 5 - Relative Luminous Intensity vs. Forward Current/Duty Cycle

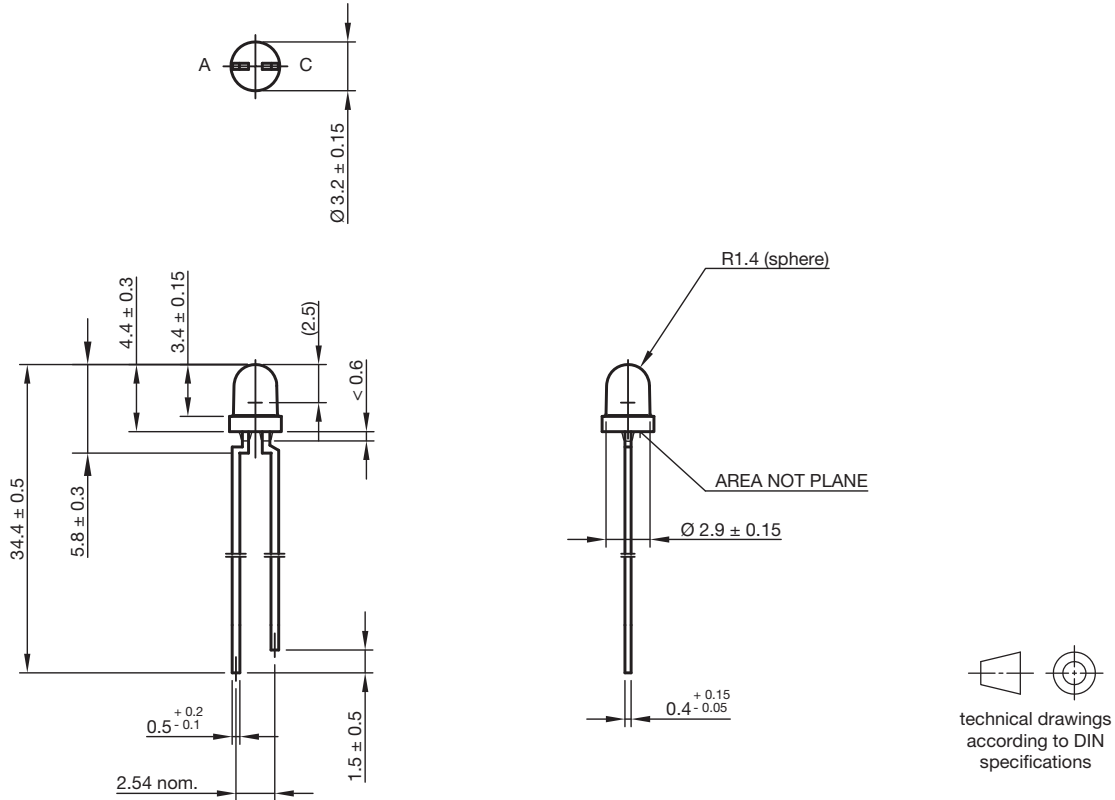


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**PACKAGE DIMENSIONS** in millimeters



Drawing-No.: 6.544-5255.01-4  
 Issue: 9; 28.07.14

**REEL DIMENSIONS** in millimeters

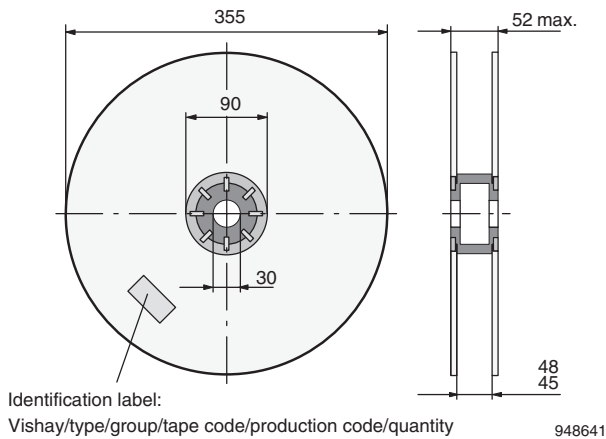


Fig. 8 - Reel

**TAPE**

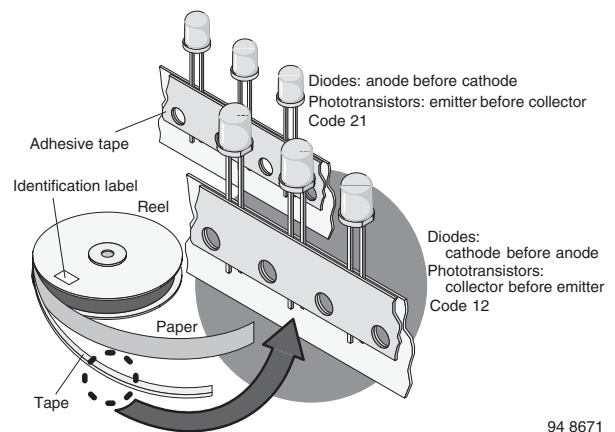


Fig. 9 - LED in Tape



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**AMMOPACK**

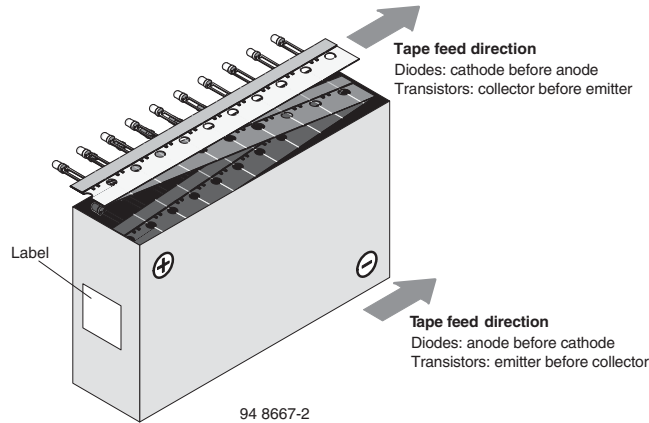
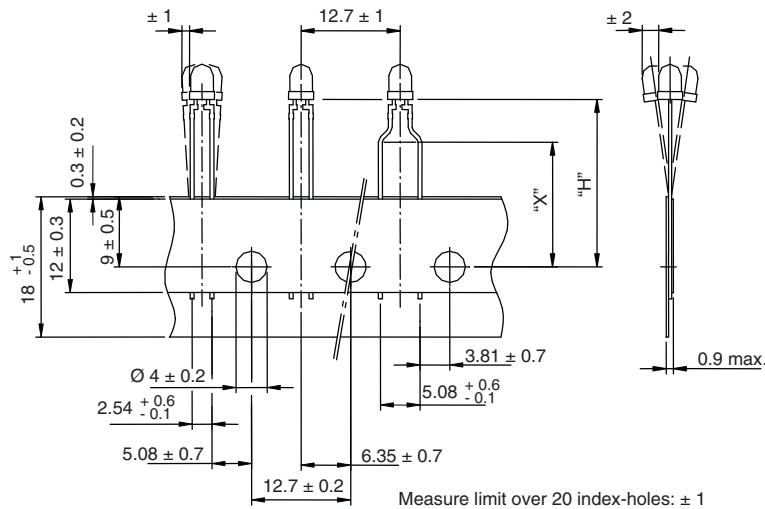


Fig. 10 - Tape Direction

**Note**

- The new nomenclature for ammpack is e.g. 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

21885

Option	Dim. "H" ± 0.5 mm	Dim. "X" ± 0.5 mm
AS	17.3	



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