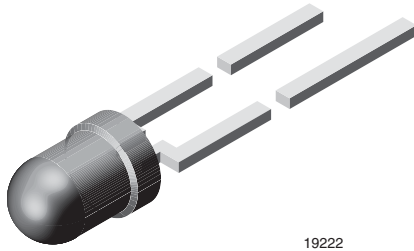


## High Intensity LED in Ø 3 mm Tinted Clear Package



19222

### DESCRIPTION

This series is housed in a 3 mm tinted, clear plastic package. The wide viewing angle of these devices provides a high brightness across a large field of view.

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

- Standard Ø 3 mm (T-1) package
- Small mechanical tolerances
- Suitable for DC and high peak current
- Wide viewing angle
- Very high intensity
- Luminous intensity and color categorized
- ESD-withstand voltage: up to 2 kV HBM according to JESD22-A114-B
- 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.		
TLHP4200	Pure green	2.5	7	-	10	555	-	565	10	-	2.4	3	20	GaP on GaP
TLHP4201	Pure green	6.3	-	20	10	555	-	565	10	-	2.4	3	20	GaP on GaP
TLHP4201-AS12Z	Pure green	6.3	-	20	10	555	-	565	10	-	2.4	3	20	GaP on GaP

### ABSOLUTE MAXIMUM RATINGS (T<sub>amb</sub> = 25 °C, unless otherwise specified)

#### TLHP42..

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V <sub>R</sub>	6	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>	1	A
Power dissipation	T <sub>amb</sub> ≤ 60 °C	P <sub>V</sub>	100	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



OPTICAL AND ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)							
TLHP42.., PURE GREEN							
PARAMETER	TEST CONDITION	PARTS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>(1)</sup>	$I_F = 10\text{ mA}$	TLHP4200	$I_V$	2.5	7	-	mcd
		TLHP4201	$I_V$	6.3	-	20	mcd
Dominant wavelength	$I_F = 10\text{ mA}$		$\lambda_d$	555	-	565	nm
Peak wavelength	$I_F = 10\text{ mA}$		$\lambda_p$	-	555	-	nm
Angle of half intensity	$I_F = 10\text{ mA}$		$\phi$	-	$\pm 22$	-	deg
Forward voltage	$I_F = 20\text{ mA}$		$V_F$	-	2.4	3	V
Reverse current	$V_R = 6\text{ V}$		$I_R$	-	-	10	$\mu\text{A}$
Junction capacitance	$V_R = 0\text{ V}, f = 1\text{ MHz}$		$C_j$	-	50	-	pF

**Note**

<sup>(1)</sup> In one packing unit  $I_{Vmax}/I_{Vmin} \leq 1.6$ .

LUMINOUS INTENSITY CLASSIFICATION			
GROUP	LIGHT INTENSITY (mcd)		
	STANDARD	MIN.	MAX.
NA	2.5	4	
NB	3.2	5	
PA	4	6.3	
PB	5	8	
QA	6.3	10	
QB	8	12.5	
RA	10	16	
RB	12.5	20	

COLOR CLASSIFICATION			
GROUP	PURE GREEN		
	DOM. WAVELENGTH (nm)		
	MIN.		MAX.
0	555		559
1	558		561
2	560		563
3	562		565

**Note**

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

**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)

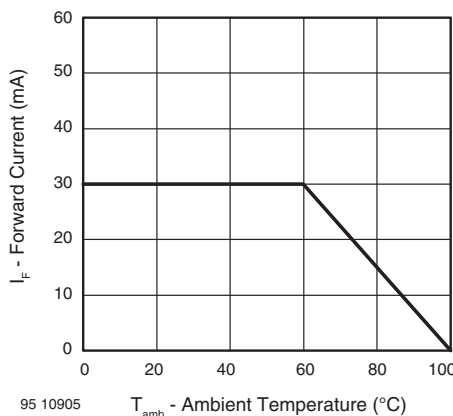


Fig. 1 - Forward Current vs. Ambient Temperature

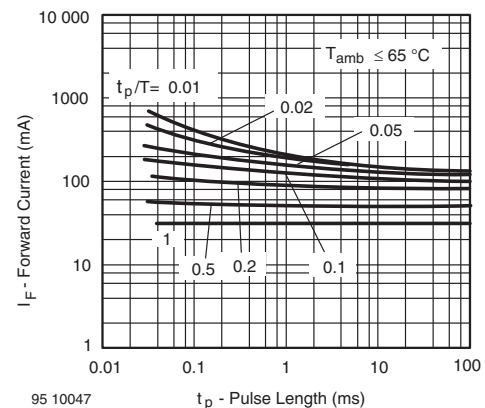


Fig. 2 - Forward Current vs. Pulse Length

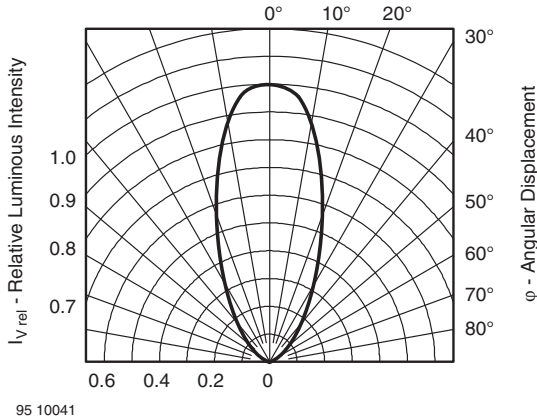


Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

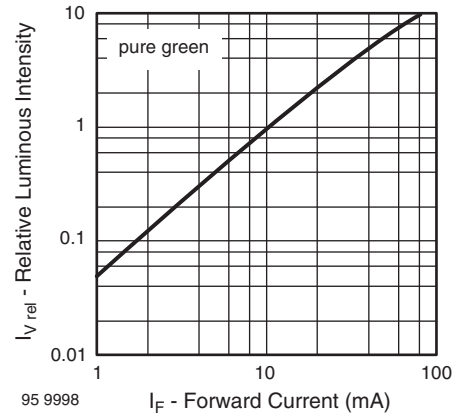


Fig. 6 - Relative Luminous Intensity vs. Forward Current

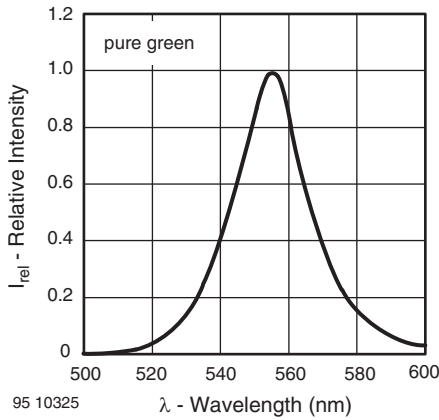


Fig. 4 - Relative Intensity vs. Wavelength

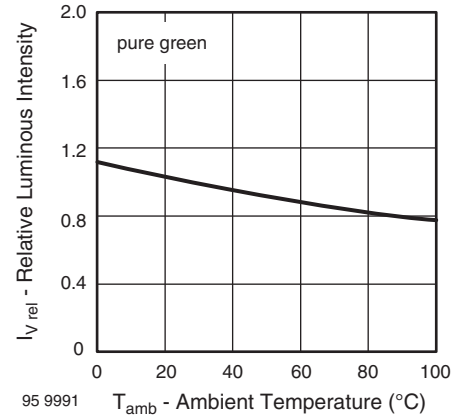


Fig. 7 - Relative Luminous Intensity vs. Ambient Temperature

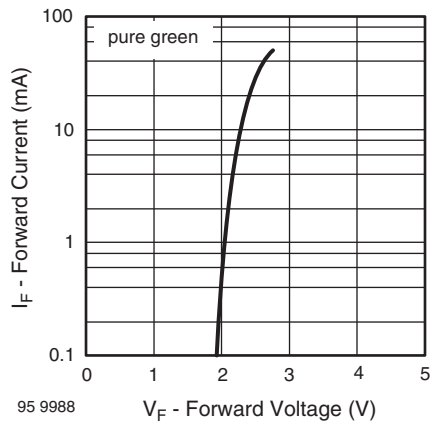


Fig. 5 - Forward Current vs. Forward Voltage

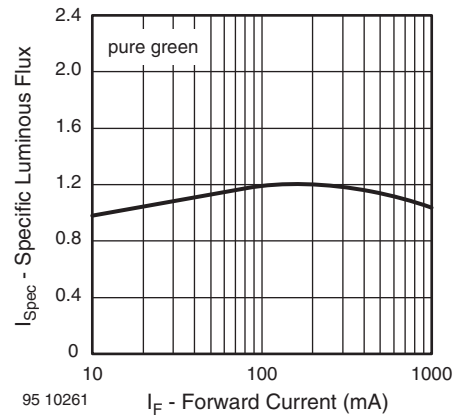
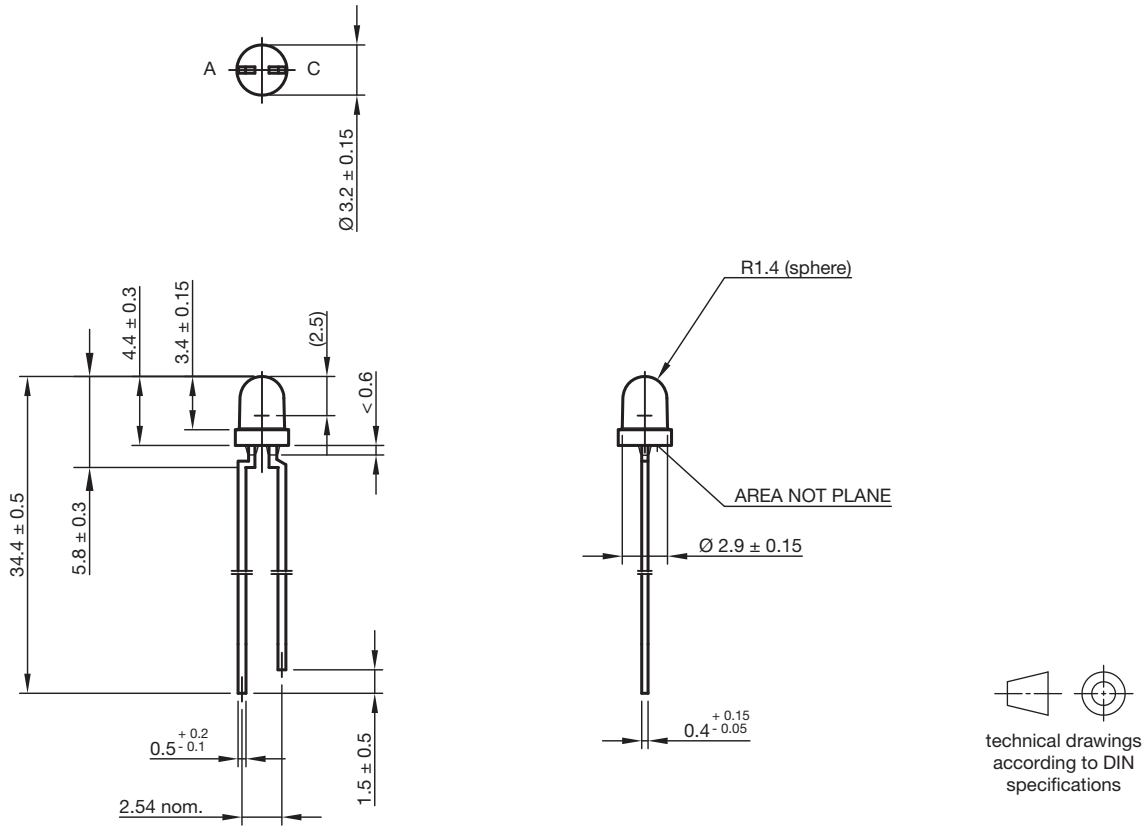


Fig. 8 - Specific Luminous Flux vs. Forward Current

**PACKAGE DIMENSIONS** in millimeters



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

**AMMOPACK**

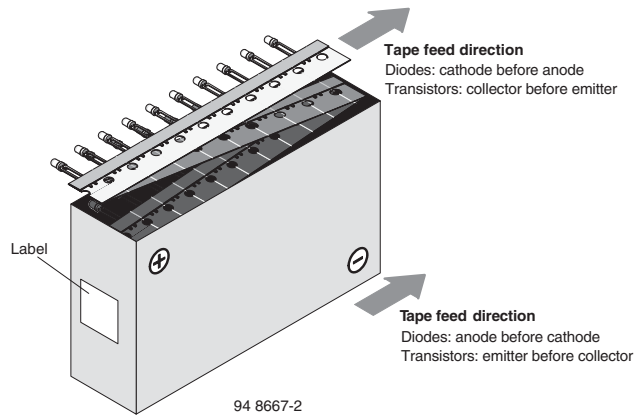


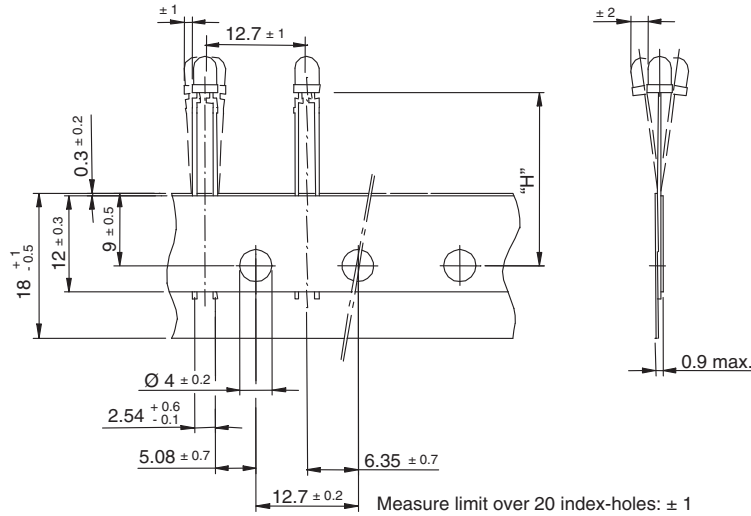
Fig. 9 - Tape Direction

**Note**

- The new nomenclature for ammopack 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

94 8171

Option	Dim. "H" ± 0.5 mm
AS	17.3
MS	25.5



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