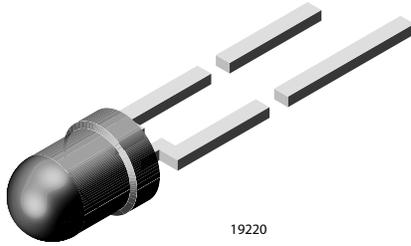




### Universal LED in Ø 3 mm Tinted Diffused Package



#### FEATURES

- For DC and pulse operation
- Luminous intensity categorized
- Standard Ø 3 mm (T-1) package
- ESD-withstand voltage: up to 2 kV 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)

#### PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 3 mm
- Product series: standard
- Angle of half intensity: ± 30°

#### APPLICATIONS

- General indicating and lighting purposes

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.		
TLUR4400	Red	4	15	-	10	-	630	-	10	-	2	3	20	GaAsP on GaP
TLUR4400-AS12	Red	4	15	-	10	-	630	-	10	-	2	3	20	GaAsP on GaP
TLUR4401	Red	4	-	32	10	-	630	-	10	-	2	3	20	GaAsP on GaP
TLUR4401-AS12Z	Red	4	-	32	10	-	630	-	10	-	2	3	20	GaAsP on GaP

ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified) TLUR4400, TLUR4401				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage <sup>(1)</sup>		V <sub>R</sub>	6	V
DC forward current		I <sub>F</sub>	20	mA
Surge forward current	t <sub>p</sub> ≤ 10 μs	I <sub>FSM</sub>	0.5	A
Power dissipation		P <sub>V</sub>	60	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 to ambient		R <sub>thJA</sub>	500	K/W

#### Note

<sup>(1)</sup> Driving the LED in reverse direction is suitable for a short term application

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**TLUR4400, TLUR4401, RED**

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity	$I_F = 10\text{ mA}$	TLUR4400	$I_V$	4	15	-	mcd
		TLUR4401	$I_V$	4	-	32	mcd
Dominant wavelength	$I_F = 10\text{ mA}$		$\lambda_d$	-	630	-	nm
Peak wavelength	$I_F = 10\text{ mA}$		$\lambda_p$	-	640	-	nm
Angle of half intensity	$I_F = 10\text{ mA}$		$\phi$	-	$\pm 30$	-	$^{\circ}$
Forward voltage	$I_F = 20\text{ mA}$		$V_F$	-	2	3	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$		$V_R$	6	15	-	V
Junction capacitance	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$		$C_j$	-	50	-	pF

**LUMINOUS INTENSITY CLASSIFICATION**

GROUP	LIGHT INTENSITY (mcd)		
	STANDARD	MIN.	MAX.
P		4	8
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.

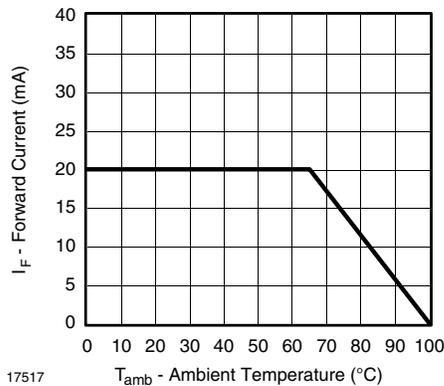
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Forward Current vs. Ambient Temperature

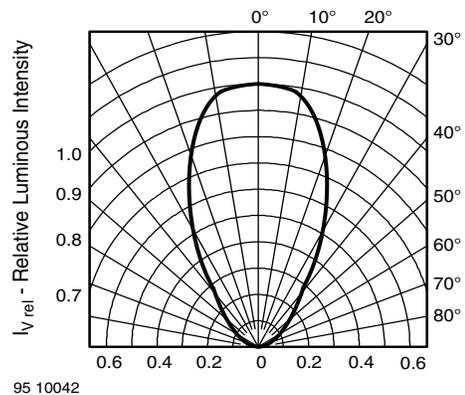


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

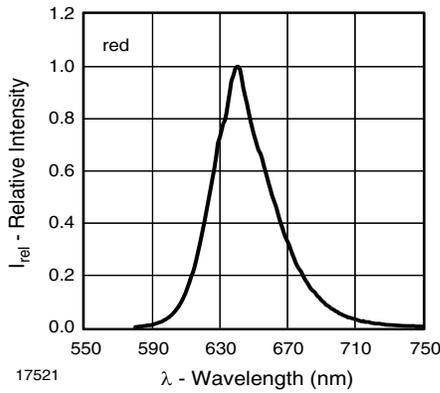


Fig. 3 - Relative Intensity vs. Wavelength

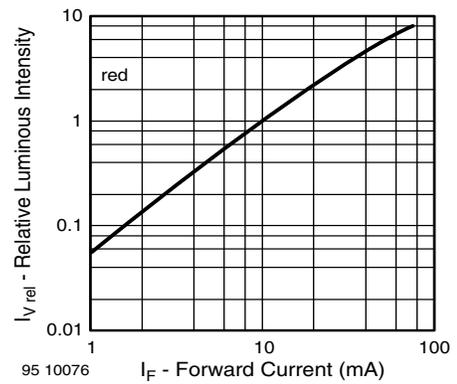


Fig. 5 - Relative Luminous Intensity vs. Forward Current

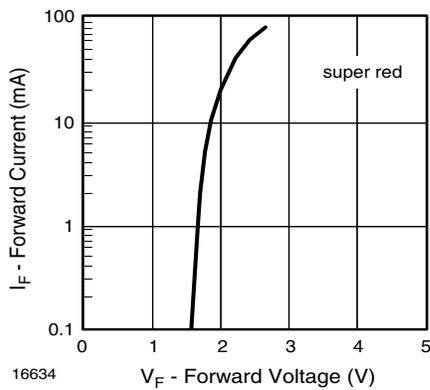


Fig. 4 - Forward Current vs. Forward Voltage

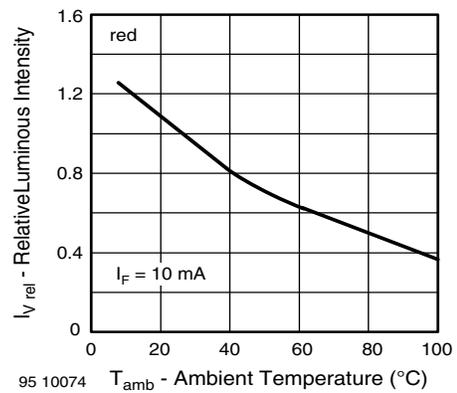
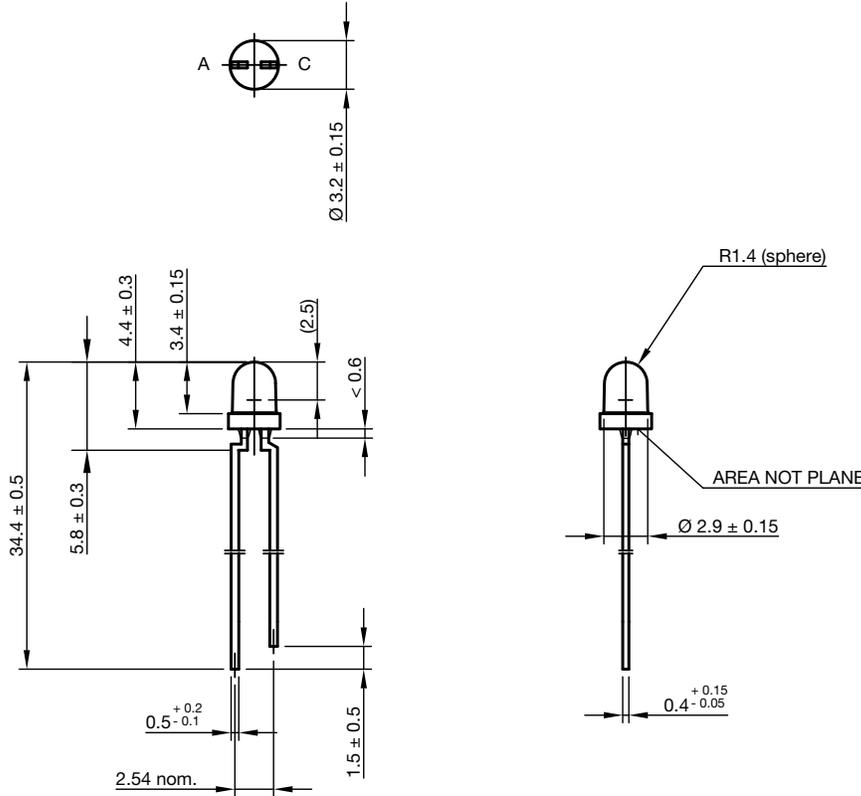


Fig. 6 - Relative Luminous Intensity vs. Ambient Temperature



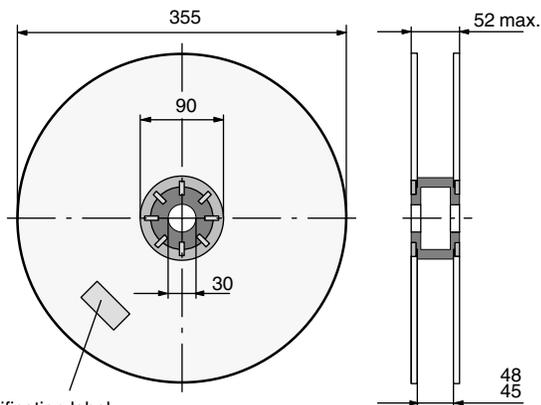
### PACKAGE DIMENSIONS in millimeters



technical drawings according to DIN specifications

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

### REEL DIMENSIONS in millimeters



Identification label:  
Vishay/type/group/tape code/production code/quantity

948641

Fig. 7 - Reel Dimensions

AS12 = cathode leaves tape first  
AS21 = anode leaves tape first

### AMMOPACK

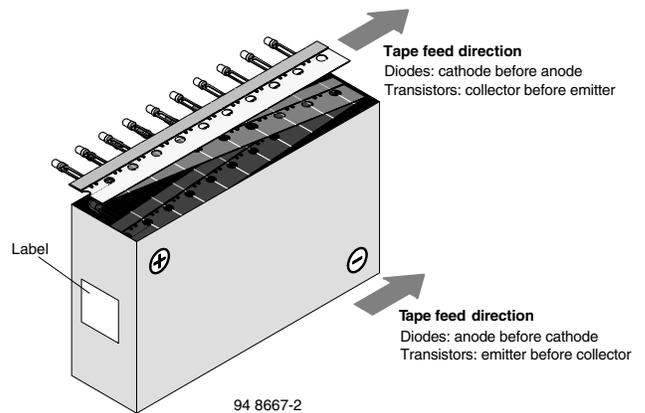
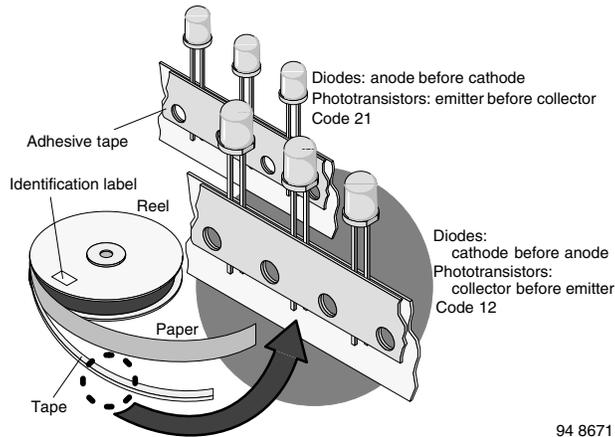


Fig. 8 - Tape Direction

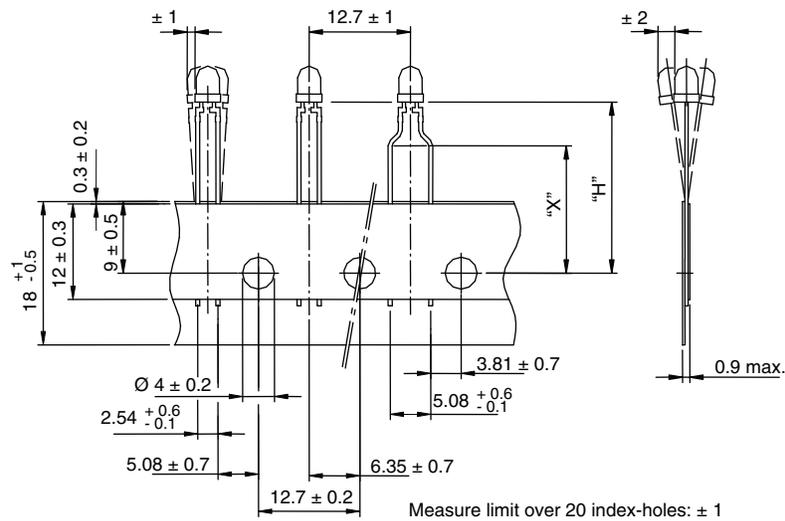
#### Note

- 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**


94 8671

Fig. 9 - LED in Tape

**TAPE DIMENSIONS** in millimeters


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

21885

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

<b>PACKING INFORMATION</b>			
PART	BULK	TAPE AND REEL	AMMOPACK
TLUR440x	5000	-	-
TLUR4400-AS12	-	5 x 2000	-
TLUR4401-AS12Z	-	-	5 x 2000



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