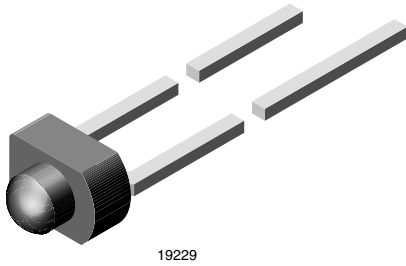




## Universal LED, Ø 1.8 mm Tinted Diffused Miniplast Package



### FEATURES

- Three colors
- For DC and pulse operation
- Luminous intensity categorized
- End-to-end stackable in center-to-center spacing of 0.1" (2.54 mm)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 1.8 mm (miniplast)
- Product series: standard
- Angle of half intensity: ± 20°

### 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.		
TLUO2400 <sup>(1)</sup>	Red	1.6	11	-	10	612	618	625	10	-	2	3	20	GaAsP on GaP
TLUO2401	Red	4	10	20	10	612	618	625	10	-	2	3	20	GaAsP on GaP
TLUY2400	Yellow	1	8	-	10	581	586	594	10	-	2.4	3	20	GaAsP on GaP
TLUY2401	Yellow	2.5	6	12.5	10	581	586	594	10	-	2.4	3	20	GaAsP on GaP
TLUY2401-AS12 <sup>(1)</sup>	Yellow	2.5	6	12.5	10	581	586	594	10	-	2.4	3	20	GaAsP on GaP
TLUG2400	Green	1.6	10	-	10	562	568	575	10	-	2.4	3	20	GaP on GaP
TLUG2401	Green	4	12	20	10	562	568	575	10	-	2.4	3	20	GaP on GaP

#### Note

<sup>(1)</sup> Not for new designs

ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified)					
TLUO240., TLUY240., TLUG240.					
PARAMETER	TEST CONDITION	PART	SYMBOL	VALUE	UNIT
Reverse voltage			V <sub>R</sub>	6	V
DC forward current		TLUO240.	I <sub>F</sub>	30	mA
		TLUY240.	I <sub>F</sub>	30	mA
		TLUG240.	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> ≤ 55 °C	TLUO240.	P <sub>V</sub>	100	mW
		TLUY240.	P <sub>V</sub>	100	mW
		TLUG240.	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 ≤ 3 s, 2 mm from body		T <sub>sd</sub>	260	°C
	t ≤ 5 s, 4 mm from body		T <sub>sd</sub>	260	°C
Thermal resistance junction/ambient		TLUO240.	R <sub>thJA</sub>	450	K/W
		TLUY240.	R <sub>thJA</sub>	450	K/W
		TLUG240.	R <sub>thJA</sub>	450	K/W

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**TLUO240., RED**

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>(1)</sup>	$I_F = 10\text{ mA}$	TLUO2400 <sup>(2)</sup>	$I_V$	1.6	11	-	mcd
		TLUO2401	$I_V$	4	10	20	mcd
Dominant wavelength	$I_F = 10\text{ mA}$		$\lambda_d$	612	618	625	nm
Peak wavelength	$I_F = 10\text{ mA}$		$\lambda_p$	-	630	-	nm
Angle of half intensity	$I_F = 10\text{ mA}$		$\phi$	-	$\pm 20$	-	$^{\circ}$
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

**Notes**

- (1) In one packing unit  $I_{Vmin.}/I_{Vmax.} \leq 0.5$   
(2) Not for new designs

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**TLUY240., YELLOW**

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>(1)</sup>	$I_F = 10\text{ mA}$	TLUY2400	$I_V$	1	8	-	mcd
		TLUY2401	$I_V$	2.5	6	12.5	mcd
Dominant wavelength	$I_F = 10\text{ mA}$		$\lambda_d$	581	586	594	nm
Peak wavelength	$I_F = 10\text{ mA}$		$\lambda_p$	-	585	-	nm
Angle of half intensity	$I_F = 10\text{ mA}$		$\phi$	-	$\pm 20$	-	$^{\circ}$
Forward voltage	$I_F = 20\text{ mA}$		$V_F$	-	2.4	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

**Note**

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

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**TLUG240., GREEN**

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>(1)</sup>	$I_F = 10\text{ mA}$	TLUG2400	$I_V$	1.6	10	-	mcd
		TLUG2401	$I_V$	4	12	20	mcd
Dominant wavelength	$I_F = 10\text{ mA}$		$\lambda_d$	562	568	575	nm
Peak wavelength	$I_F = 10\text{ mA}$		$\lambda_p$	-	565	-	nm
Angle of half intensity	$I_F = 10\text{ mA}$		$\phi$	-	$\pm 20$	-	$^{\circ}$
Forward voltage	$I_F = 20\text{ mA}$		$V_F$	-	2.4	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

**Note**

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



LUMINOUS INTENSITY CLASSIFICATION		
GROUP	LIGHT INTENSITY (mcd)	
	STANDARD	
	MIN.	MAX.
L	1	2
M	1.6	3.2
N	2.5	5
P	4	8
Q	6.3	12.5
R	10	20
S	16	32

**Note**

- Luminous intensity is tested at a current pulse duration of 25 ms and an accuracy of  $\pm 11\%$ .  
These 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

GROUP	DOM. WAVELENGTH (nm)			
	YELLOW		GREEN	
	MIN.	MAX.	MIN.	MAX.
1	581	584	-	-
2	583	586	-	-
3	585	588	562	565
4	587	590	564	567
5	589	592	566	569
6	591	594	568	571
7	-	-	570	573
8	-	-	572	575

**Note**

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

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

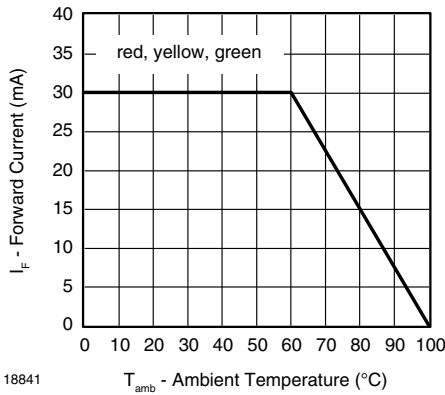


Fig. 1 - Forward Current vs. Ambient Temperature

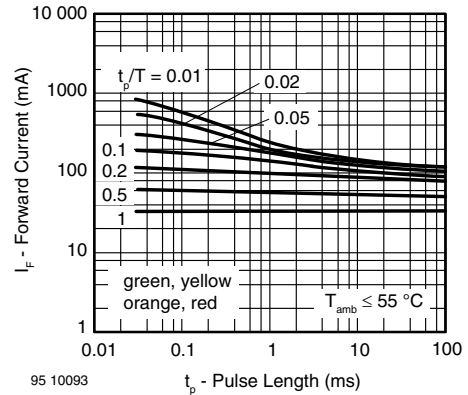


Fig. 2 - Forward Current vs. Pulse Length

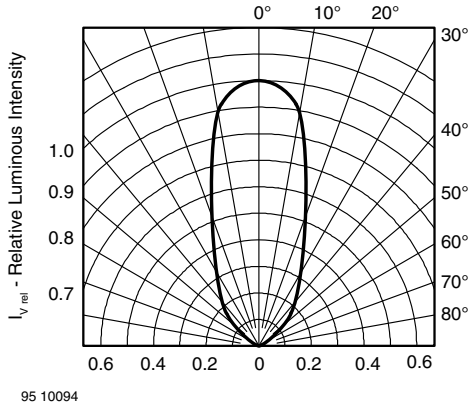


Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

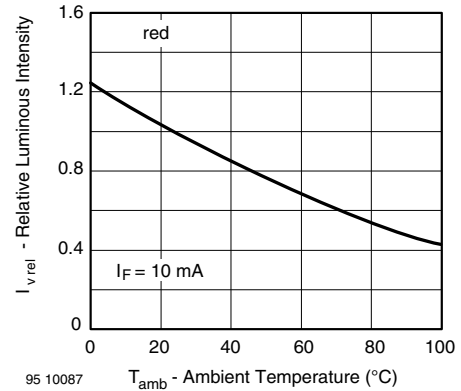


Fig. 6 - Relative Luminous Intensity vs. Ambient Temperature

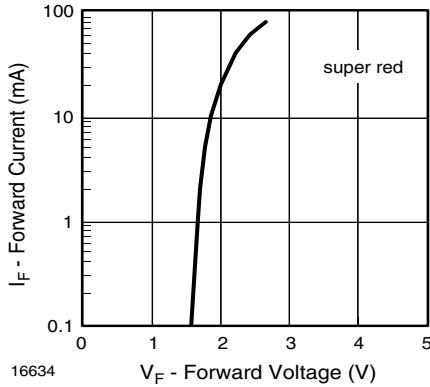


Fig. 4 - Forward Current vs. Forward Voltage

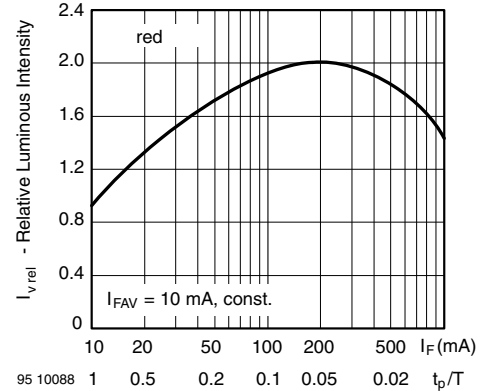


Fig. 7 - Relative Luminous Intensity vs. Forward Current/Duty Cycle

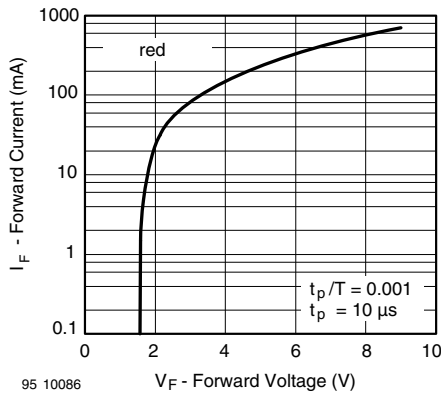


Fig. 5 - Forward Current vs. Forward Voltage

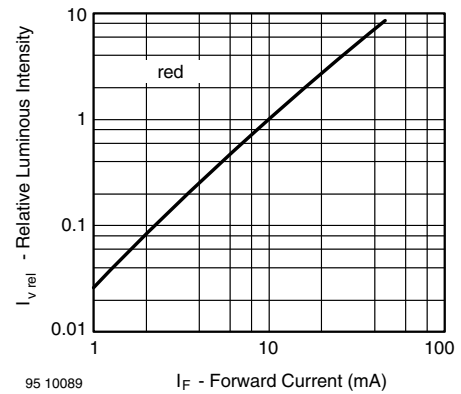


Fig. 8 - Relative Luminous Intensity vs. Forward Current

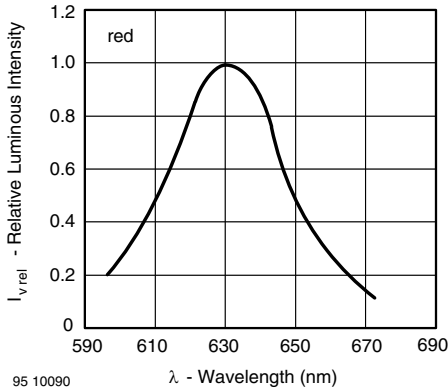


Fig. 9 - Relative Intensity vs. Wavelength

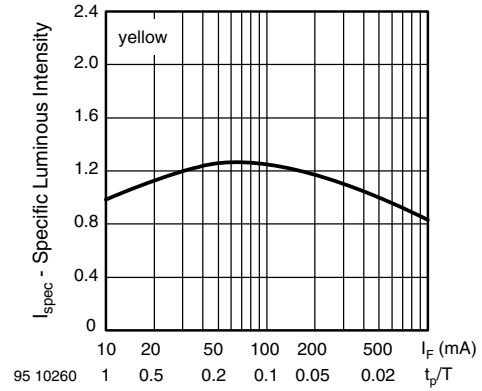


Fig. 12 - Relative Luminous Intensity vs. Forward Current/Duty Cycle

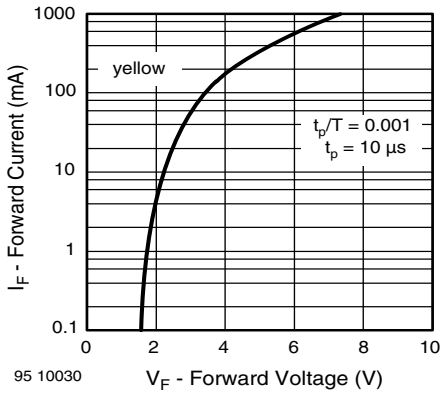


Fig. 10 - Forward Current vs. Forward Voltage

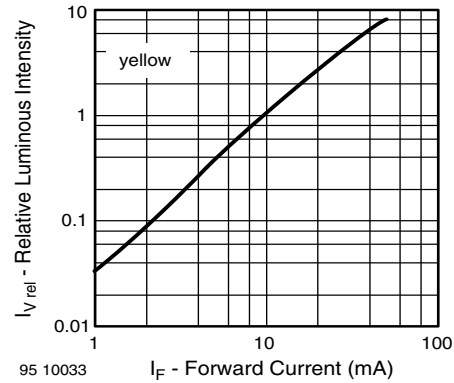


Fig. 13 - Relative Luminous Intensity vs. Forward Current

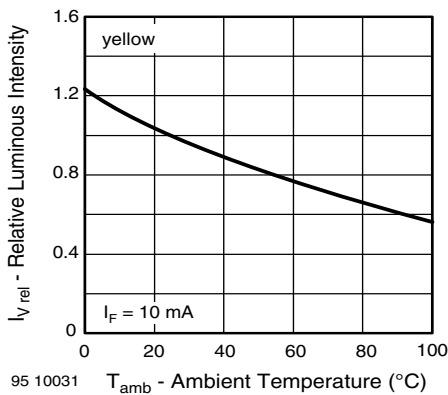


Fig. 11 - Relative Luminous Intensity vs. Ambient Temperature

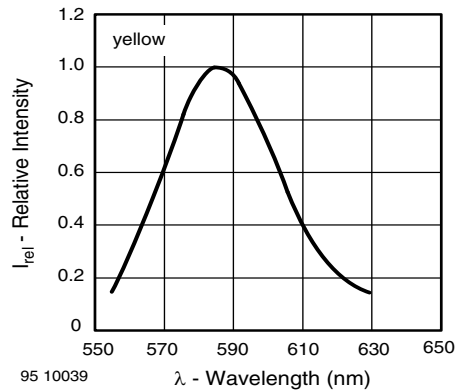


Fig. 14 - Relative Intensity vs. Wavelength

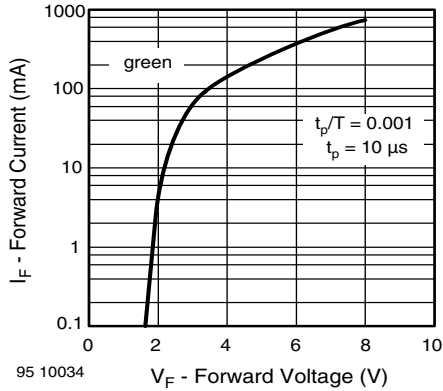


Fig. 15 - Forward Current vs. Forward Voltage

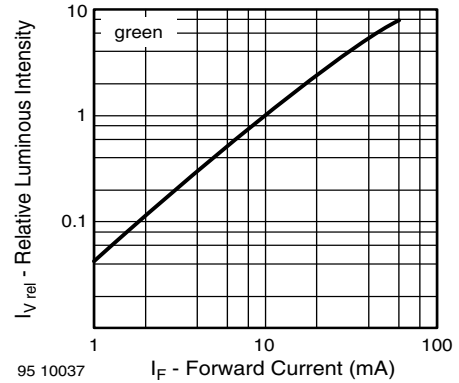


Fig. 18 - Relative Luminous Intensity vs. Forward Current

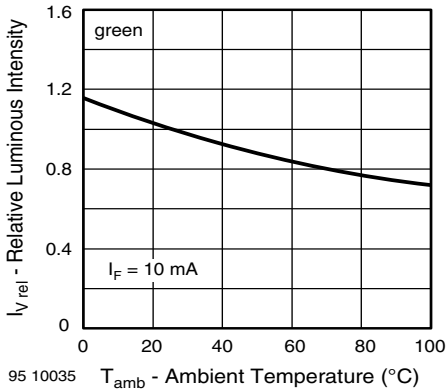


Fig. 16 - Relative Luminous Intensity vs. Ambient Temperature

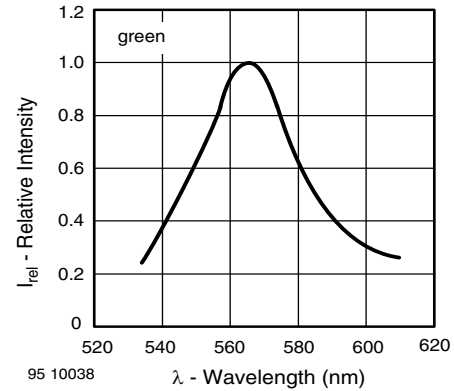


Fig. 19 - Relative Intensity vs. Wavelength

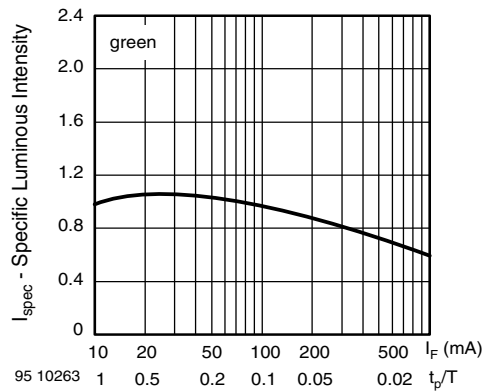
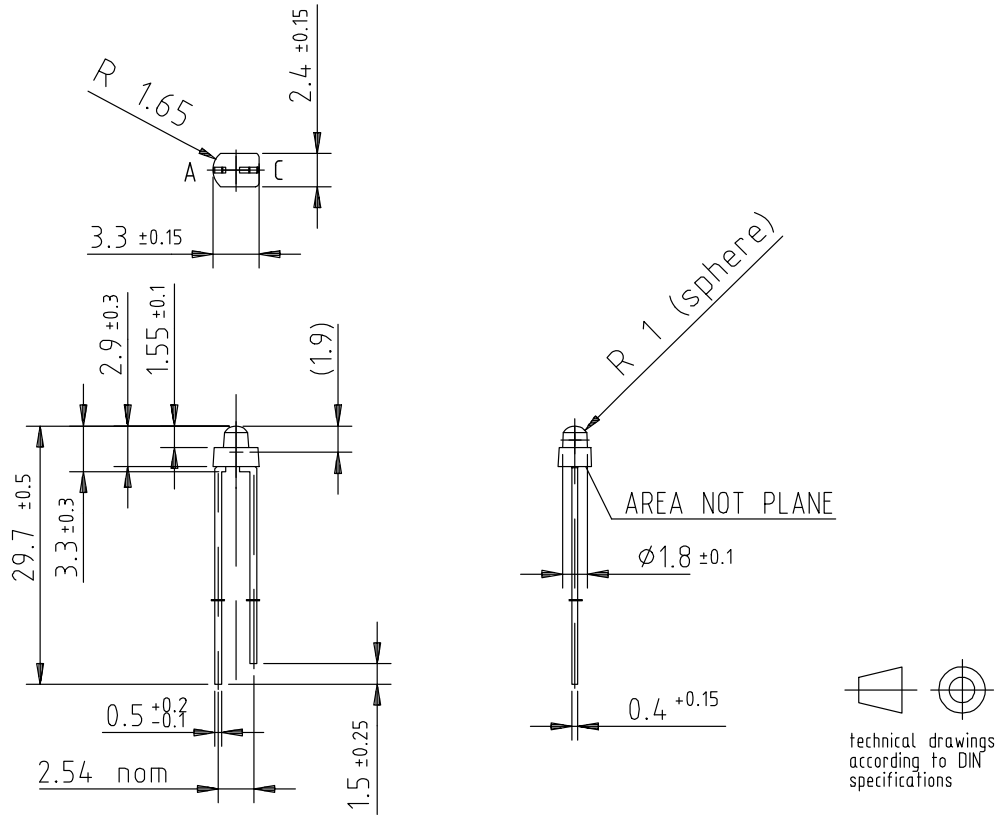


Fig. 17 - Specific Luminous Intensity vs. Forward Current

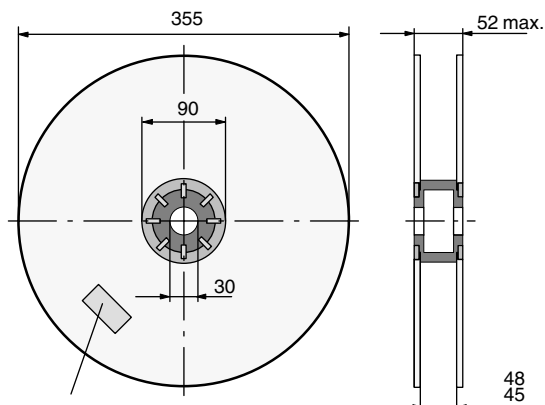


## PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5052.01-4  
 Issue: 1; 12.10.95  
 95 11262

## REEL DIMENSIONS in millimeters

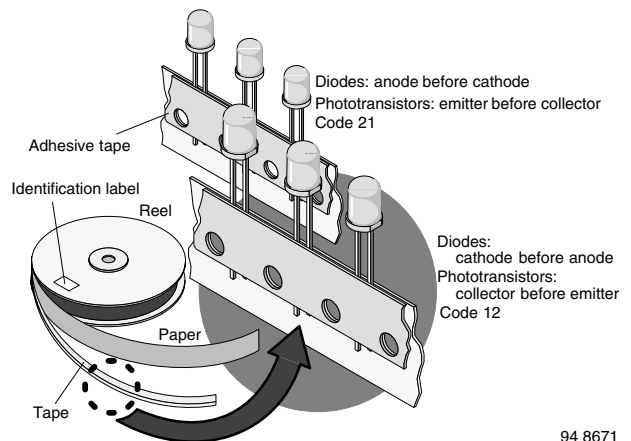


Identification label:  
 Vishay/type/group/tape code/production code/quantity

948641

Fig. 20 - Reel

## TAPE

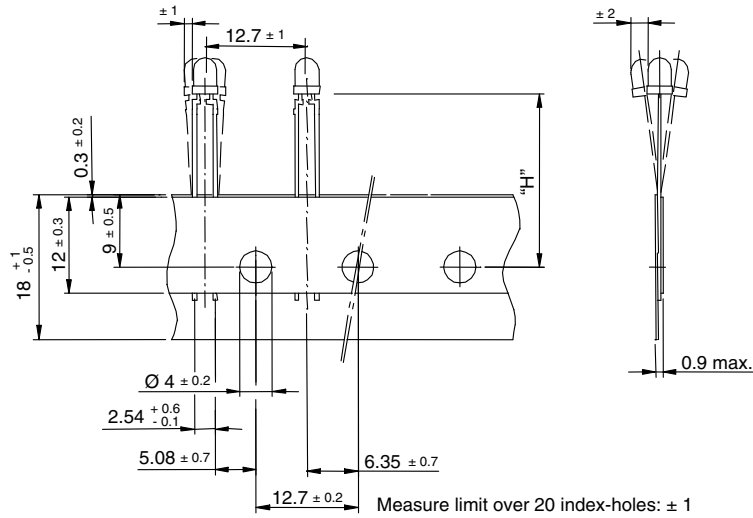


94 8671

Fig. 21 - LED in Tape



**TAPE DIMENSIONS** in millimeters



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

94 8171

Option	Dim. "H" ± 0.5 mm
AS	17.3

<b>PACKING</b>	
Packing	Quantity
Tape and reel	5 x 2000
Bulk	1 x 5000





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