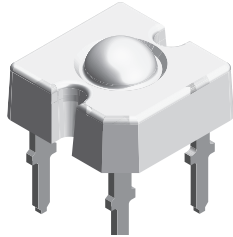


## TELUX LED



### DESCRIPTION

The TELUX series is a clear, non diffused LED for applications where supreme luminous flux is required. It is designed in an industry standard 7.62 mm square package utilizing highly developed AllnGaP technology. The supreme heat dissipation of TELUX™ allows applications at high ambient temperatures. All packing units are binned for luminous flux, forward voltage and color to achieve the most homogenous light appearance in application. SAE and ECE color requirements for automobile application are available for color red.

### PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: TELUX
- Product series: power
- Angle of half intensity:  $\pm 45^\circ$

### FEATURES

- High luminous flux
- Supreme heat dissipation:  $R_{thJP}$  is 90 K/W
- High operating temperature:  
 $T_{amb} = -40\text{ }^\circ\text{C to } +110\text{ }^\circ\text{C}$
- Meets SAE and ECE color requirements for the automobile industry for color red
- Packed in tubes for automatic insertion
- Luminous flux, forward voltage and color categorized for each tube
- Small mechanical tolerances allow precise usage of external reflectors or lightguides
- Compatible with wave solder processes according to CECC 00802
- ESD-withstand voltage: up to 2 kV according to JESD22-A114-B
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



### APPLICATIONS

- Exterior lighting
- Dashboard illumination
- Tail-, stop- and turn signals of motor vehicles
- Replaces small incandescent lamps
- Traffic signals and signs

### PARTS TABLE

PART	COLOR	LUMINOUS FLUX (mlm)			at $I_F$ (mA)	WAVELENGTH (nm)			FORWARD VOLTAGE (V)			TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
TLWR8900	Red	2000	3000	-	70	611	615	634	1.83	2.2	2.67	AllnGaP on GaAs
TLWR8901	Red	2000	3000	4800	70	611	615	634	1.83	2.2	2.67	AllnGaP on GaAs
TLWR8902	Red	3000	-	4800	70	611	615	634	1.95	2.2	2.67	AllnGaP on GaAs
TLWR8903	Red	2500	-	4200	70	611	615	634	1.83	2.2	2.67	AllnGaP on GaAs
TLWY8900	Yellow	2000	3000	-	70	585	590	597	1.83	2.1	2.67	AllnGaP on GaAs

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25\text{ }^\circ\text{C}$ , unless otherwise specified) TLWR8900, TLWR8901, TLWR8902, TLWR8903, TLWY8900

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage <sup>(1)</sup>	$I_R = 100\text{ }\mu\text{A}$	$V_R$	10	V
DC forward current	$T_{amb} \leq 85\text{ }^\circ\text{C}$	$I_F$	70	mA
Surge forward current	$t_p \leq 10\text{ }\mu\text{s}$	$I_{FSM}$	1	A
Power dissipation		$P_V$	187	mW
Junction temperature		$T_j$	125	$^\circ\text{C}$
Operating temperature range		$T_{amb}$	-40 to +110	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	-55 to +110	$^\circ\text{C}$
Soldering temperature	$t \leq 5\text{ s}$ , 1.5 mm from body preheat temperature 100 $^\circ\text{C}/30\text{ s}$	$T_{sd}$	260	$^\circ\text{C}$
Thermal resistance junction/ambient	With cathode heatsink of 70 mm <sup>2</sup>	$R_{thJA}$	200	K/W
Thermal resistance junction/pin		$R_{thJP}$	90	K/W

#### Note

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

\*\* Please see document "Vishay Material Category Policy": [www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)



OPTICAL AND ELECTRICAL CHARACTERISTICS (T <sub>amb</sub> = 25 °C, unless otherwise specified) TLWR8900, TLWR8901, TLWR8902, TLWR8903, RED							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Total flux	I <sub>F</sub> = 70 mA, R <sub>thJA</sub> = 200 K/W	TLWR8900	φ <sub>V</sub>	2000	3000	-	mlm
	I <sub>F</sub> = 70 mA, R <sub>thJA</sub> = 200 K/W	TLWR8901	φ <sub>V</sub>	2000	3000	4800	mlm
	I <sub>F</sub> = 70 mA, R <sub>thJA</sub> = 200 K/W	TLWR8902	φ <sub>V</sub>	3000	-	4800	mlm
	I <sub>F</sub> = 70 mA, R <sub>thJA</sub> = 200 K/W	TLWR8903	φ <sub>V</sub>	2500	-	4200	mlm
Luminous intensity/total flux			I <sub>V</sub> /φ <sub>V</sub>	-	0.7	-	mcd/mlm
Dominant wavelength			λ <sub>d</sub>	611	615	634	nm
Peak wavelength			λ <sub>p</sub>	-	624	-	nm
Angle of half intensity			φ	-	± 45	-	deg
Total included angle	90 % of total flux captured		φ <sub>0.9 V</sub>	-	100	-	deg
Forward voltage	I <sub>F</sub> = 70 mA, R <sub>thJA</sub> = 200 K/W	TLWR8900	V <sub>F</sub>	1.83	2.2	2.67	V
	I <sub>F</sub> = 70 mA, R <sub>thJA</sub> = 200 K/W	TLWR8901	V <sub>F</sub>	1.83	2.2	2.67	V
	I <sub>F</sub> = 70 mA, R <sub>thJA</sub> = 200 K/W	TLWR8902	V <sub>F</sub>	1.95	2.2	2.67	V
	I <sub>F</sub> = 70 mA, R <sub>thJA</sub> = 200 K/W	TLWR8903	V <sub>F</sub>	1.83	2.2	2.67	V
Reverse voltage	I <sub>R</sub> = 10 μA		V <sub>R</sub>	10	20	-	V
Junction capacitance	V <sub>R</sub> = 0, f = 1 MHz		C <sub>j</sub>	-	17	-	pF

OPTICAL AND ELECTRICAL CHARACTERISTICS (T <sub>amb</sub> = 25 °C, unless otherwise specified) TLWY8900, YELLOW							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Total flux	I <sub>F</sub> = 70 mA, R <sub>thJA</sub> = 200 K/W		φ <sub>V</sub>	2000	3000	-	mlm
Luminous intensity/total flux	I <sub>F</sub> = 70 mA, R <sub>thJA</sub> = 200 K/W		I <sub>V</sub> /φ <sub>V</sub>	-	0.7	-	mcd/mlm
Dominant wavelength	I <sub>F</sub> = 70 mA, R <sub>thJA</sub> = 200 K/W		λ <sub>d</sub>	585	590	597	nm
Peak wavelength	I <sub>F</sub> = 70 mA, R <sub>thJA</sub> = 200 K/W		λ <sub>p</sub>	-	594	-	nm
Angle of half intensity	I <sub>F</sub> = 70 mA, R <sub>thJA</sub> = 200 K/W		φ	-	± 45	-	deg
Total included angle	90 % of total flux captured		φ <sub>0.9 V</sub>	-	100	-	deg
Forward voltage	I <sub>F</sub> = 70 mA, R <sub>thJA</sub> = 200 K/W		V <sub>F</sub>	1.83	2.1	2.67	V
Reverse voltage	I <sub>R</sub> = 10 μA		V <sub>R</sub>	10	15	-	V
Junction capacitance	V <sub>R</sub> = 0, f = 1 MHz		C <sub>j</sub>	-	17	-	pF

LUMINOUS FLUX CLASSIFICATION		
GROUP	LUMINOUS FLUX (mlm)	
	MIN.	MAX.
D	2000	3000
E	2500	3600
F	3000	4200
G	3500	4800
H	4000	6100
I	5000	7300
K	6000	9700
L	7000	12 200
M	8000	15 000

**Note**

- Luminous flux is tested at a current pulse duration of 25 ms and an accuracy of ± 11 %.  
These type numbers represent the order groups which include only a few brightness groups. Only one group will be shipped on each tube (there will be no mixing of two groups on each tube).

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 in any one tube.

In order to ensure availability, single wavelength groups will not be orderable.



COLOR CLASSIFICATION				
GROUP	DOM. WAVELENGTH (nm)			
	YELLOW		RED	
	MIN.	MAX.	MIN.	MAX.
0	585	588		
1	587	591	611	618
2	589	594	614	622
3	592	597	616	634

FORWARD VOLTAGE CLASSIFICATION		
GROUP	FORWARD VOLTAGE (V)	
	MIN.	MAX.
Y	1.83	2.07
Z	1.95	2.19
0	2.07	2.31
1	2.19	2.43
2	2.31	2.55
3	2.43	2.67

**Note**

- Wavelengths are tested at a current pulse duration of 25 ms and an accuracy of ± 1 nm.

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

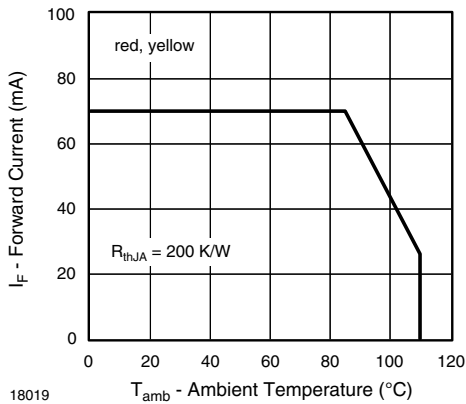


Fig. 1 - Forward Current vs. Ambient Temperature

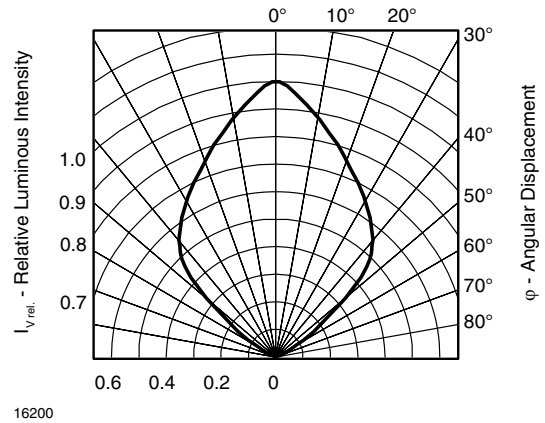


Fig. 3 - Rel. Luminous Intensity vs. Angular Displacement

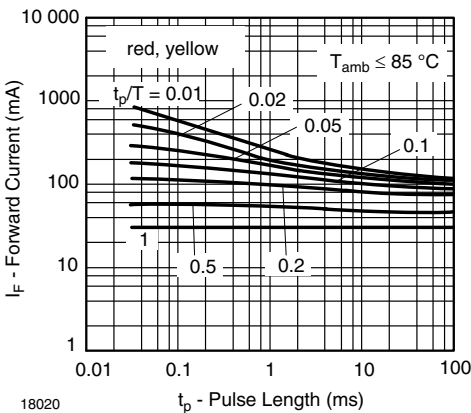


Fig. 2 - Forward Current vs. Pulse Length

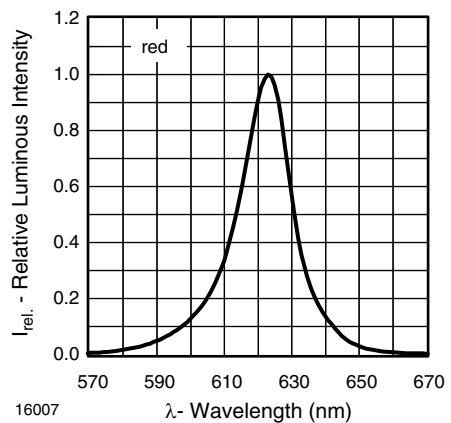


Fig. 4 - Relative Intensity vs. Wavelength

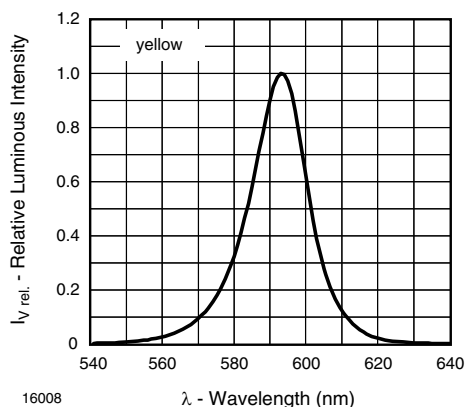


Fig. 5 - Relative Intensity vs. Wavelength

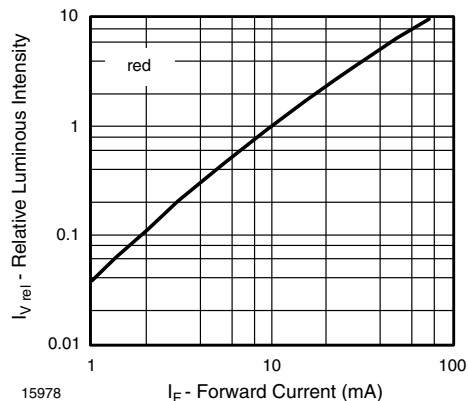


Fig. 8 - Relative Luminous Flux vs. Forward Current

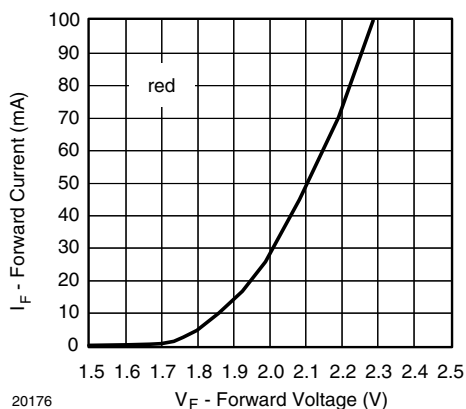


Fig. 6 - Forward Current vs. Forward Voltage

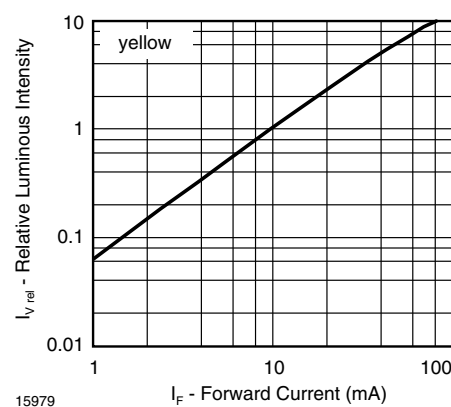


Fig. 9 - Relative Luminous Flux vs. Forward Current

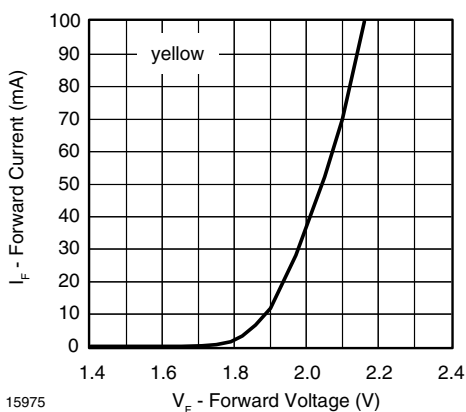


Fig. 7 - Forward Current vs. Forward Voltage

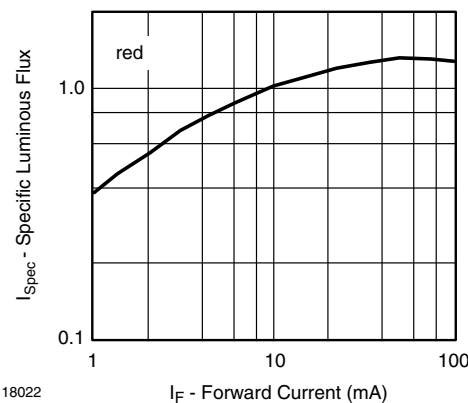


Fig. 10 - Specific Luminous Flux vs. Forward Current

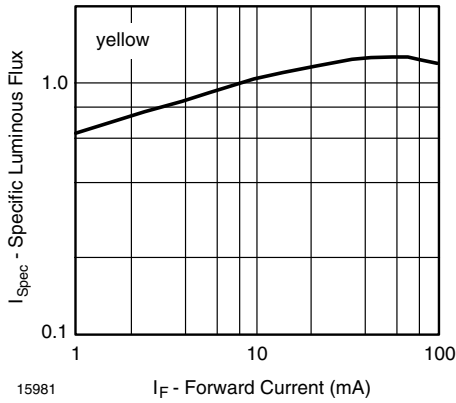


Fig. 11 - Specific Luminous Flux vs. Forward Current

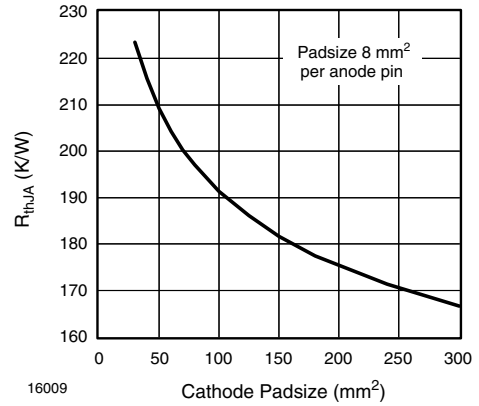


Fig. 14 - Thermal Resistance Junction Ambient vs. Cathode Padsizes

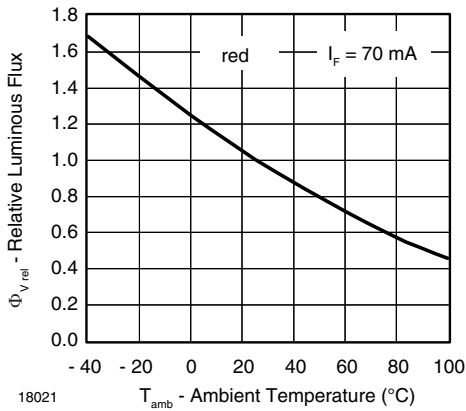


Fig. 12 - Rel. Luminous Flux vs. Ambient Temperature

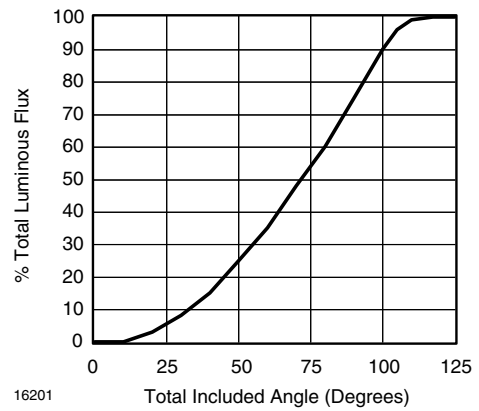


Fig. 15 - Percentage Total Luminous Flux vs. Total Included Angle for 90° Emission Angle

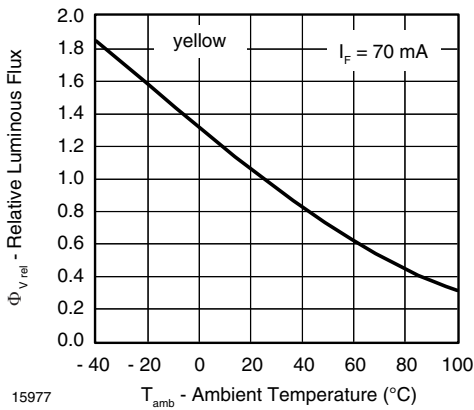
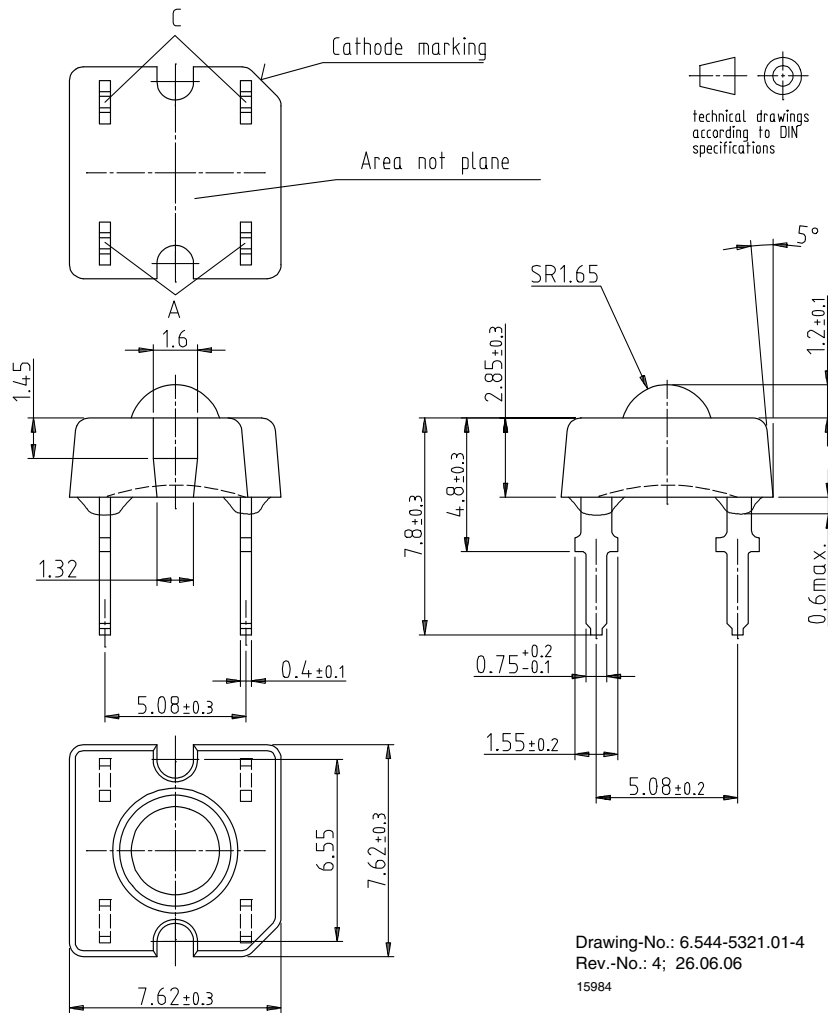
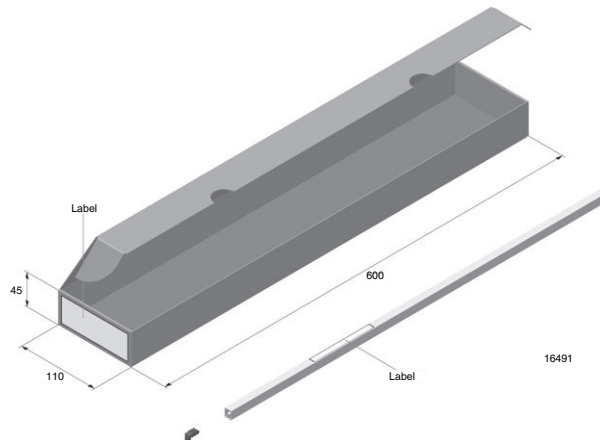


Fig. 13 - Rel. Luminous Flux vs. Ambient Temperature

**PACKAGE DIMENSIONS** in millimeters

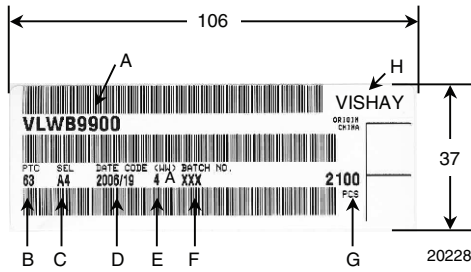


**FAN FOLD BOX DIMENSIONS** in millimeters



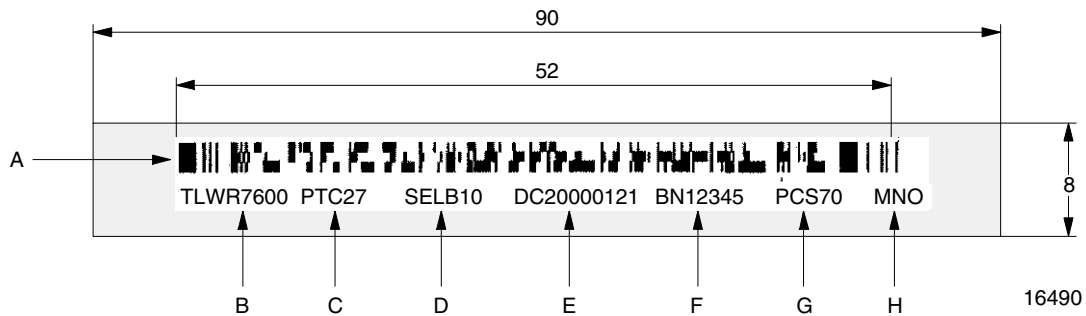


### LABEL OF FAN FOLD BOX (EXAMPLE)



- A. Type of component
- B. Manufacturing plant
- C. SEL - selection code (bin):  
e.g.: A = code for luminous intensity group  
4 = code for color group
- D. Date code year/week
- E. Day code (e.g. 4: Thursday, A: early shift)
- F. Batch no.
- G. Total quantity
- H. Company code

### EXAMPLE FOR TELUX TUBE LABEL DIMENSIONS in millimeters



- A. Bar code
- B. Type of component
- C. Manufacturing plant
- D. SEL - selection code (bin):  
digit 1 - code for luminous flux group  
digit 2 - code for dominant wavelength group  
digit 3 - code for forward voltage group
- E. Date code
- F. Batch no.
- G. Total quantity
- H. Company code

**TUBE WITH BAR CODE LABEL DIMENSIONS** in millimeters

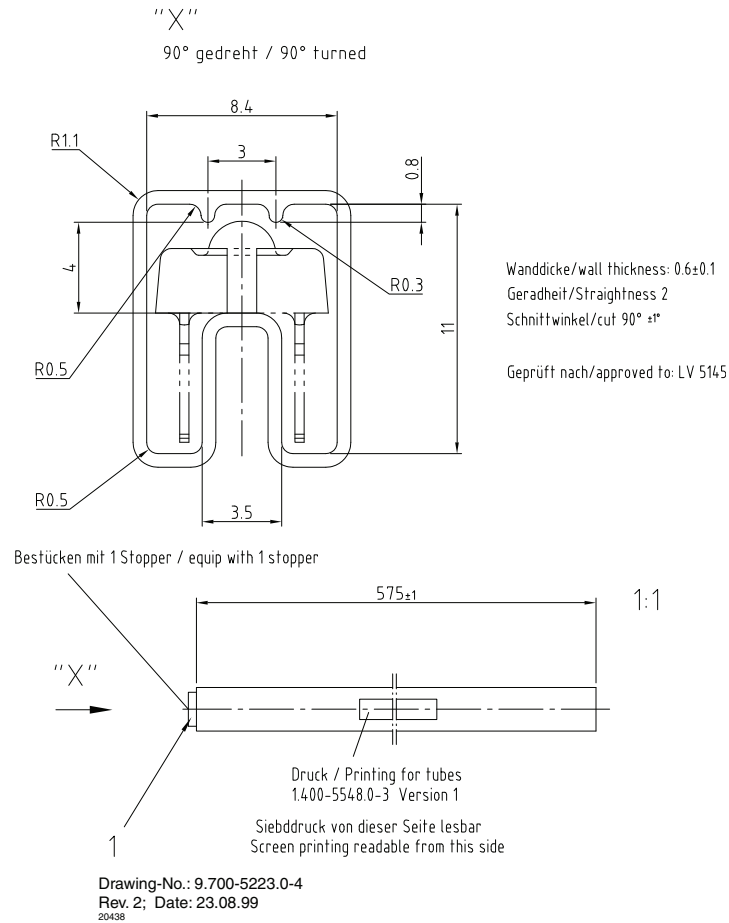


Fig. 16 - Drawing Proportions not Scaled





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