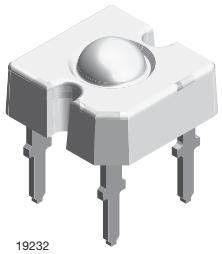
TLWR8900, TLWR8901, TLWR8902, TLWR8903, TLWY8900

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 AlInGaP 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: ± 45°

FEATURES

- High luminous flux
- Supreme heat dissipation: R_{thJP} is 90 K/W
- High operating temperature: T_{amb} = -40 °C to +110 °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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

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)			at I_F (mA)	FORWARD VOLTAGE (V)			at I_F (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
TLWR8900	Red	2000	3700	-	70	611	616	634	70	1.83	2.2	2.67	70	AlInGaP on GaAs
TLWR8901	Red	2000	3700	4800	70	611	616	634	70	1.83	2.2	2.67	70	AlInGaP on GaAs
TLWR8902	Red	3000	3900	4800	70	611	616	634	70	1.95	2.2	2.67	70	AlInGaP on GaAs
TLWR8903	Red	2500	3500	4200	70	611	616	634	70	1.83	2.2	2.67	70	AlInGaP on GaAs
TLWY8900	Yellow	2000	3200	-	70	585	591	597	70	1.83	2.1	2.67	70	AlInGaP on GaAs

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)
TLWR8900, TLWR8901, TLWR8902, TLWR8903, TLWY8900

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage (1)	I_R = 100 µA	V_R	10	V
DC forward current	$T_{amb} \leq 85$ °C	I_F	70	mA
Surge forward current	$t_p \leq 10$ µs	I_{FSM}	1	A
Power dissipation		P_V	187	mW
Junction temperature		T_j	125	°C
Operating temperature range		T_{amb}	-40 to +110	°C
Storage temperature range		T_{stg}	-55 to +110	°C
Soldering temperature	t ≤ 5 s, 1.5 mm from body preheat temperature 100 °C / 30 s	T_{sd}	260	°C
Thermal resistance junction / ambient	With cathode heatsink of 70 mm²	R_{thJA}	200	K/W
Thermal resistance junction / pin		R_{thJP}	90	K/W

Note

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

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
TLWR8900, TLWR8901, TLWR8902, TLWR8903, RED

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Total flux	I_F = 70 mA, R_{thJA} = 200 K/W	TLWR8900	ϕ_V	2000	3700	-	mlm
	I_F = 70 mA, R_{thJA} = 200 K/W	TLWR8901	ϕ_V	2000	3700	4800	mlm
	I_F = 70 mA, R_{thJA} = 200 K/W	TLWR8902	ϕ_V	3000	3900	4800	mlm
	I_F = 70 mA, R_{thJA} = 200 K/W	TLWR8903	ϕ_V	2500	3500	4200	mlm
Luminous intensity/total flux			I_V/ϕ_V	-	0.7	-	mcd/mlm
Dominant wavelength			λ_d	611	616	634	nm
Peak wavelength			λ_p	-	624	-	nm
Angle of half intensity			φ	-	± 45	-	deg
Total included angle	90 % of total flux captured		$\varphi_{0.9\ V}$	-	100	-	deg
Forward voltage	I_F = 70 mA, R_{thJA} = 200 K/W	TLWR8900	V_F	1.83	2.2	2.67	V
	I_F = 70 mA, R_{thJA} = 200 K/W	TLWR8901	V_F	1.83	2.2	2.67	V
	I_F = 70 mA, R_{thJA} = 200 K/W	TLWR8902	V_F	1.95	2.2	2.67	V
	I_F = 70 mA, R_{thJA} = 200 K/W	TLWR8903	V_F	1.83	2.2	2.67	V
Reverse voltage	I_R = 10 µA		V_R	10	20	-	V
Junction capacitance	V_R = 0 V, f = 1 MHz		C_j	-	17	-	pF

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
TLWY8900, YELLOW

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Total flux	I_F = 70 mA, R_{thJA} = 200 K/W	ϕ_V	2000	3200	-	mlm
Luminous intensity/total flux	I_F = 70 mA, R_{thJA} = 200 K/W	I_V/ϕ_V	-	0.7	-	mcd/mlm
Dominant wavelength	I_F = 70 mA, R_{thJA} = 200 K/W	λ_d	585	591	597	nm
Peak wavelength	I_F = 70 mA, R_{thJA} = 200 K/W	λ_p	-	594	-	nm
Angle of half intensity	I_F = 70 mA, R_{thJA} = 200 K/W	φ	-	± 45	-	deg
Total included angle	90 % of total flux captured	$\varphi_{0.9\ V}$	-	100	-	deg
Forward voltage	I_F = 70 mA, R_{thJA} = 200 K/W	V_F	1.83	2.1	2.67	V
Reverse voltage	I_R = 10 µA	V_R	10	15	-	V
Junction capacitance	V_R = 0 V, f = 1 MHz	C_j	-	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

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

Note

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

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

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

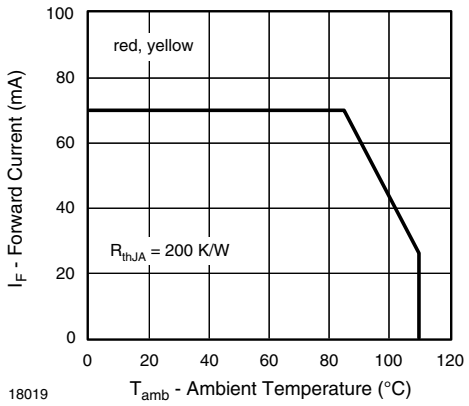


Fig. 1 - Forward Current vs. Ambient Temperature

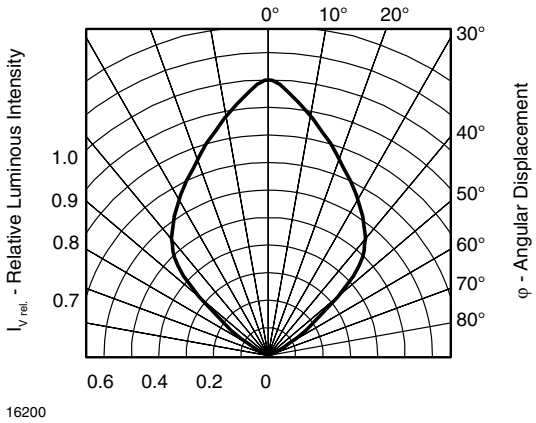


Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

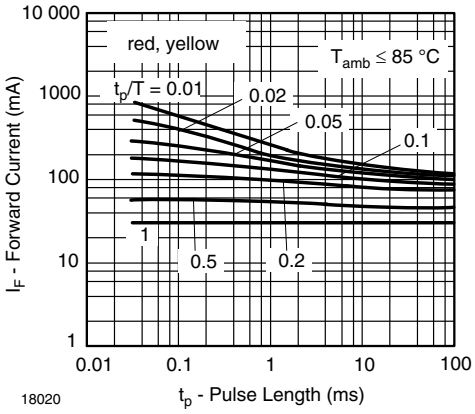


Fig. 2 - Forward Current vs. Pulse Length

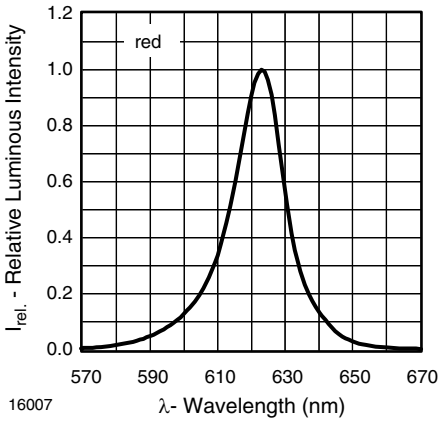


Fig. 4 - Relative Intensity vs. Wavelength

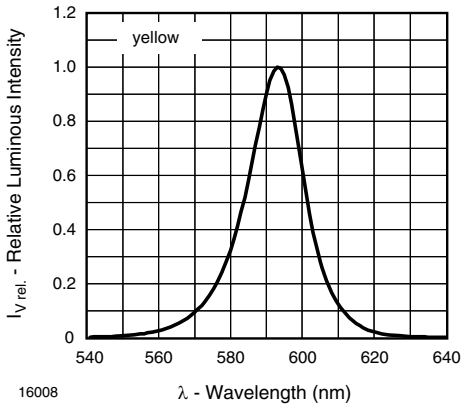


Fig. 5 - Relative Intensity vs. Wavelength

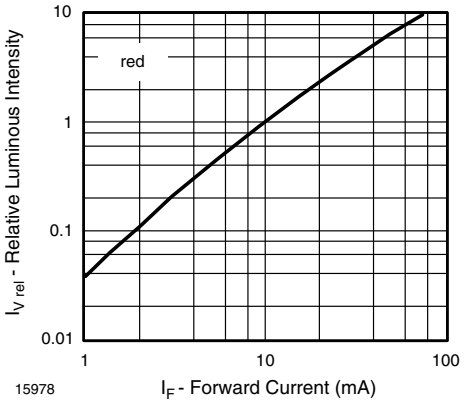


Fig. 8 - Relative Luminous Flux vs. Forward Current

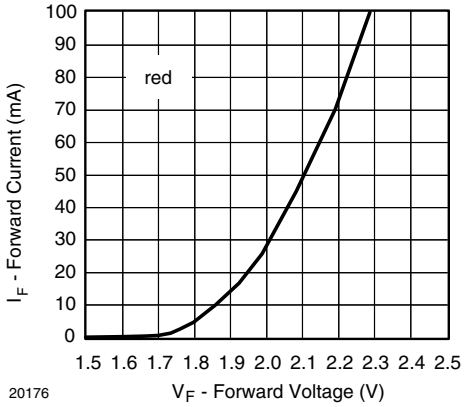


Fig. 6 - Forward Current vs. Forward Voltage

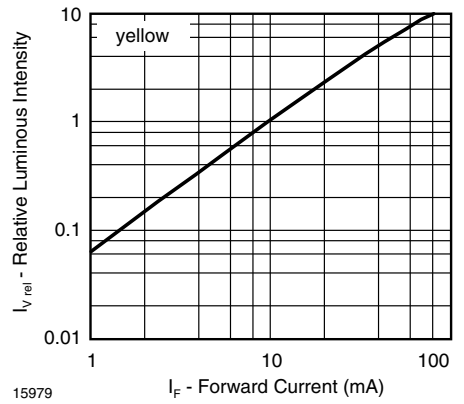


Fig. 9 - Relative Luminous Flux vs. Forward Current

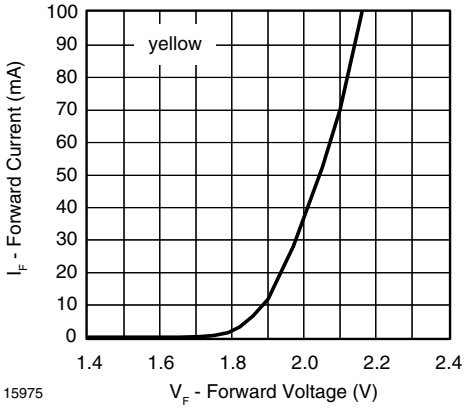


Fig. 7 - Forward Current vs. Forward Voltage

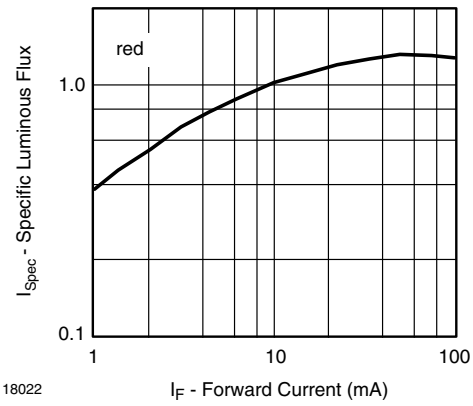


Fig. 10 - Specific Luminous Flux vs. Forward Current

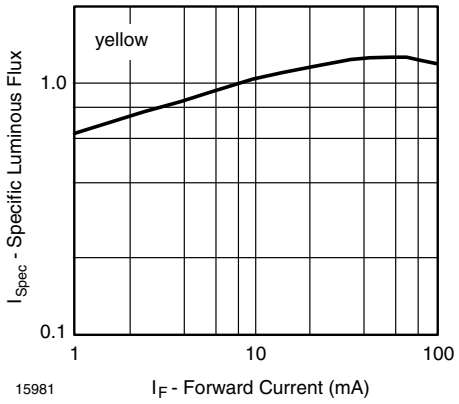


Fig. 11 - Specific Luminous Flux vs. Forward Current

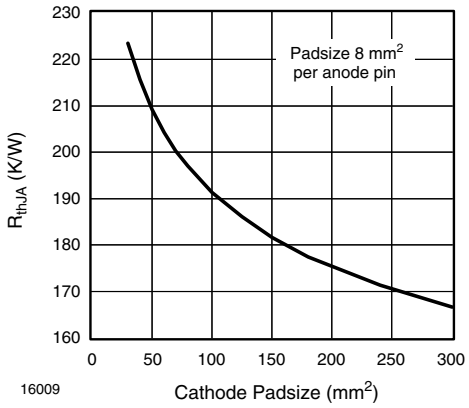


Fig. 14 - Thermal Resistance Junction Ambient vs. Cathode Padsize

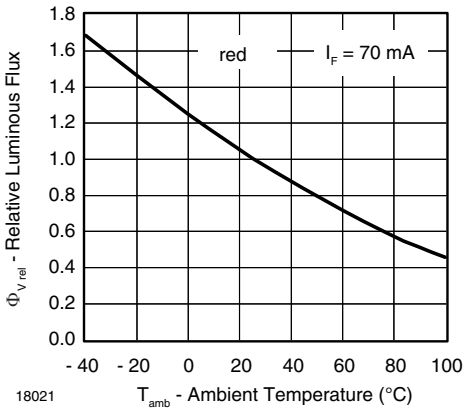


Fig. 12 - Relative Luminous Flux vs. Ambient Temperature

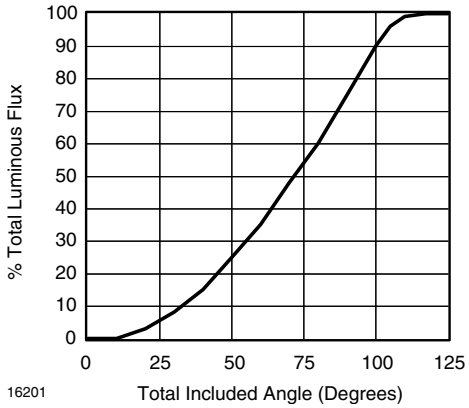


Fig. 15 - Percentage Total Luminous Flux vs. Total Included Angle for 90° Emission Angle

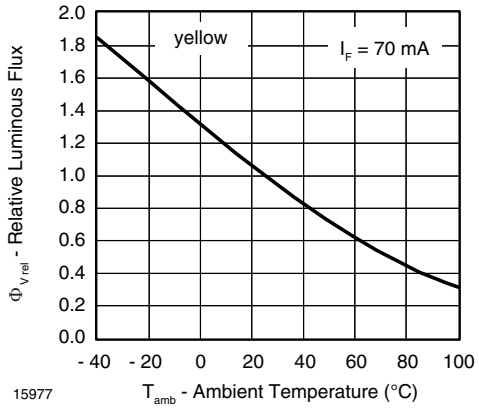
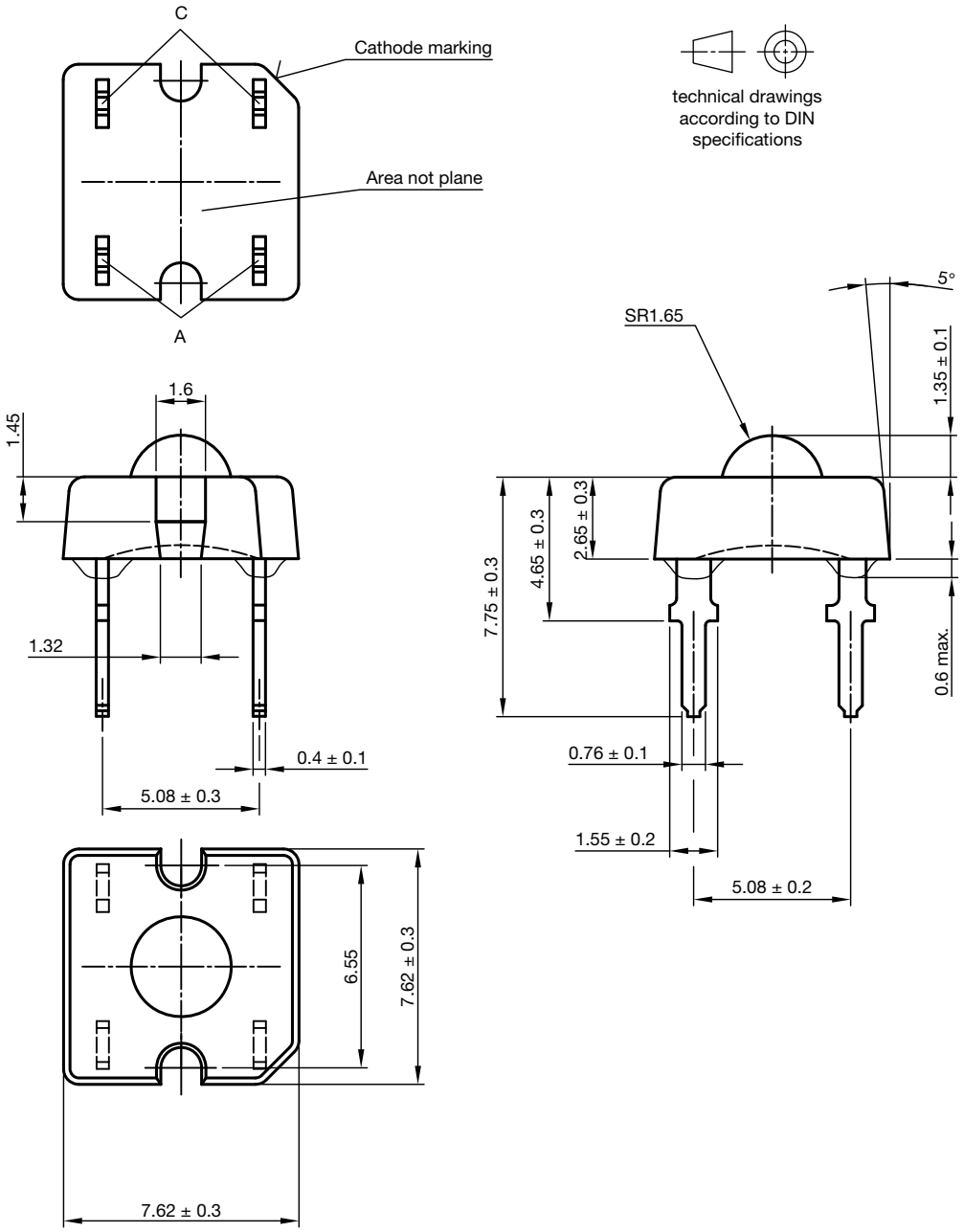


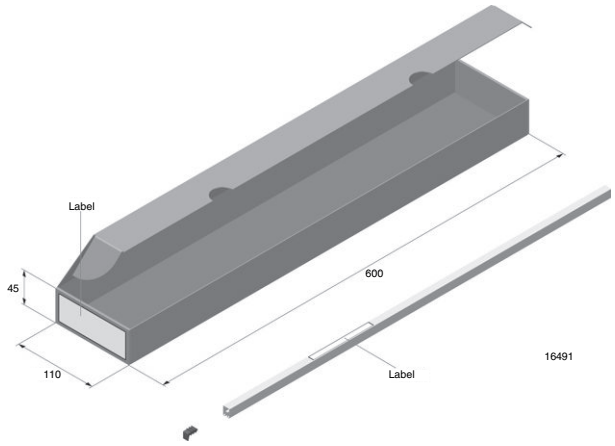
Fig. 13 - Relative Luminous Flux vs. Ambient Temperature

PACKAGE DIMENSIONS in millimeters

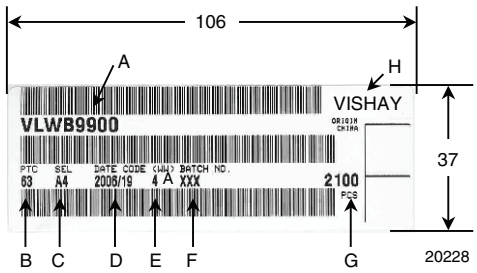


Drawing-No.: 6.544-5321.01-4
Issue: 5; 25.07.14

FAN FOLD BOX DIMENSIONS in millimeters

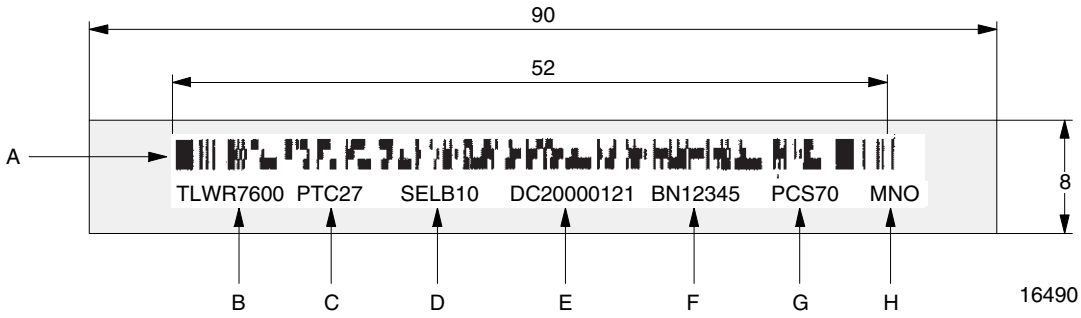


LABEL OF FAN FOLD BOX (example)



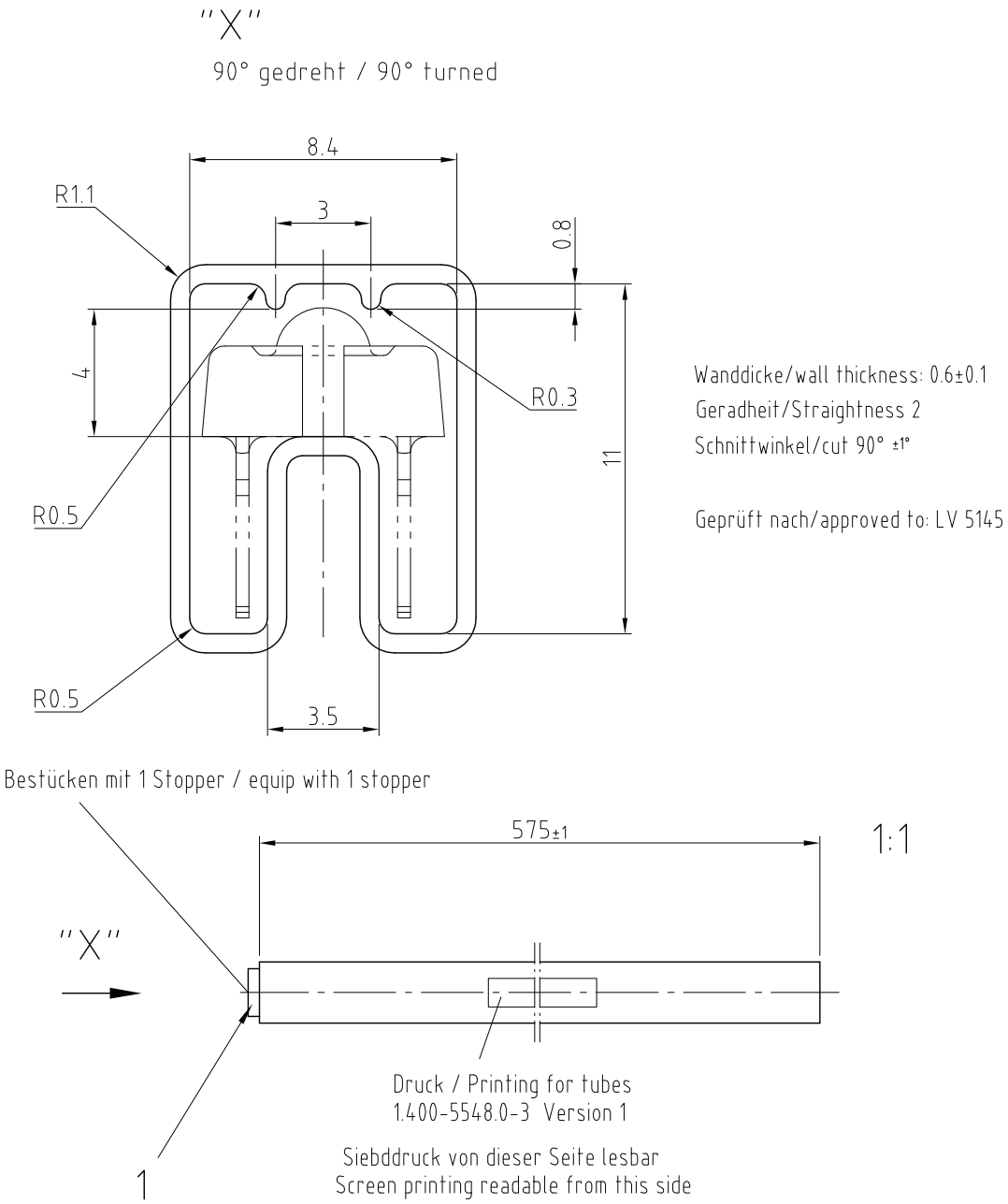
A. Type of component
B. Manufacturing plant
C. SEL - selection code (bin):
e.g.: A = code for luminous intensity group
4 = code for color group
D. Date code year / week
E. Day code (e.g. 4: Thursday, A: early shift)
F. Batch: no.
G. Total quantity
H. Company code

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



Drawing-No.: 9.700-5223.0-4
Rev. 2; Date: 23.08.99
20438

Drawing Proportions not Scaled

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