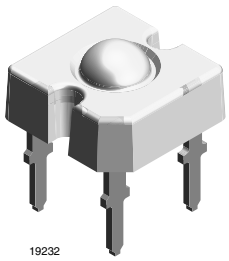
TELUX™



FEATURES

- High luminous flux
- Supreme heat dissipation: R_{thJP} is 90 K/W
- High operating temperature: T_{amb} = - 40 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
- Lead (Pb)-free device
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC
- ESD-withstand voltage: up to 2 kV according to JESD22-A114-B
- Compatible with wave solder processes acc. to CECC 00802 and J-STD-020C
- Automotive qualified

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 with super bright, AlInGaP.

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.

APPLICATIONS

- Exterior lighting
- Tail-, Stop - and Turn Signals of motor vehicles
- Replaces small incandescent lamps
- Traffic signals and signs

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: TELUX™
- Product series: power
- Angle of half intensity: 40° x 90°

PARTS TABLE

PART	COLOR, LUMINOUS FLUX	TECHNOLOGY
TLWR95FH	Red, ϕ_V = (3000 to 6100) mlm	AlInGaP on GaAs

ABSOLUTE MAXIMUM RATINGS[1] TLWR95FH				
PARAMETER	**TEST CONDITION**	**SYMBOL**	**VALUE**	**UNIT**
Reverse voltage[2]	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}	0.1	A
Power dissipation		P_V	212	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 mm^2	R_{thJA}	200	K/W
Thermal resistance junction/pin		R_{thJP}	90	K/W

Note:
[1] T_{amb} = 25 °C, unless otherwise specified
[2] Driving the LED in reverse direction is suitable for a short term application

OPTICAL AND ELECTRICAL CHARACTERISTICS[1] TLWR95FH, RED							
PARAMETER	**TEST CONDITION**	**PART**	**SYMBOL**	**MIN**	**TYP.**	**MAX**	**UNIT**
Total flux	I_F = 70 mA, R_{thJA} = 200 °K/W	TLWR95FH	ϕ_V	3000		6100	mlm
Dominant wavelength	I_F = 70 mA, R_{thJA} = 200 °K/W		λ_d	611	615	634	nm
Peak wavelength	I_F = 70 mA, R_{thJA} = 200 °K/W		λ_p		624		nm
Angle of half intensity	I_F = 70 mA, R_{thJA} = 200 °K/W		φ		40 x 90		deg
Forward voltage	I_F = 70 mA, R_{thJA} = 200 °K/W		V_F	1.83	2.5	3.03	V
Reverse voltage			V_R	10	20		V
Temperature coefficient < λ_d	I_F = 70 mA		$TC\lambda_d$		0.05		nm/K
Temperature coefficient V_F	I_F = 70 mA, T > - 25 °C		TC_{VF}		- 2.0		mV/K

Note:
[1] T_{amb} = 25 °C, unless otherwise specified

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
4	2.55	2.79
5	2.67	2.91
6	2.79	3.03

COLOR CLASSIFICATION		
GROUP	DOMINANT WAVELENGTH (NM)	
	MIN	MAX
1	611	618
2	614	622
3	616	634

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

LUMINOUS FLUX CLASSIFICATION		
GROUP	LUMINOUS FLUX (MLM)	
	MIN	MAX
F	3000	4200
G	3500	4800
H	4000	6100

Note:
Luminous flux is tested at a current pulse duration of 25 ms and an accuracy of ± 11 %.
The above 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 be not 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.

TYPICAL CHARACTERISTICS

T_{amb} = 25 °C, unless otherwise specified

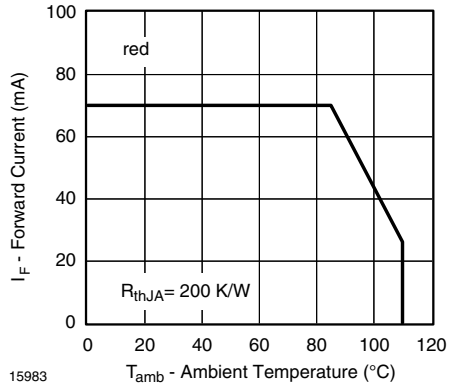


Figure 1. Forward Current vs. Ambient Temperature

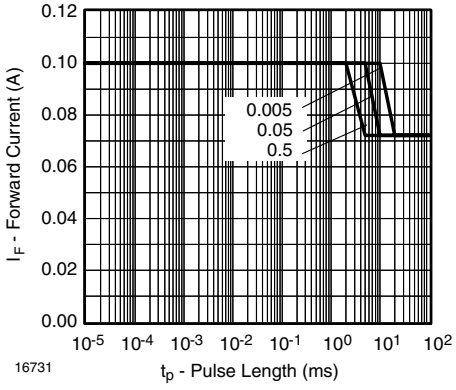


Figure 2. Forward Current vs. Pulse Length

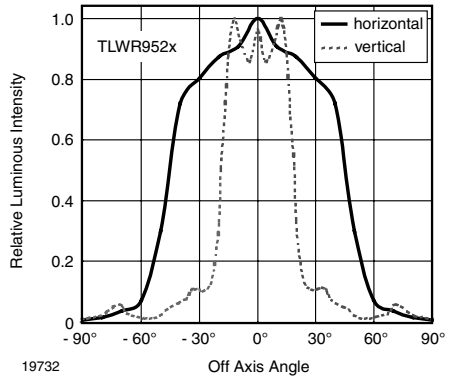


Figure 3. Rel. Luminous Intensity vs. Off Axis

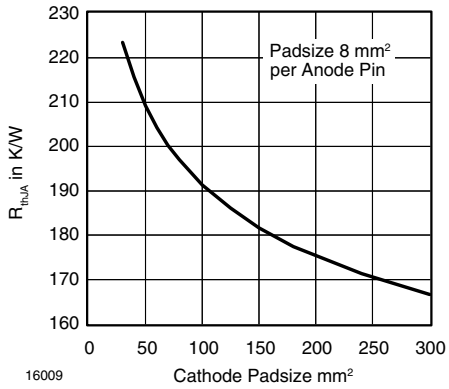


Figure 6. Thermal Resistance Junction Ambient vs. Cathode Padsize

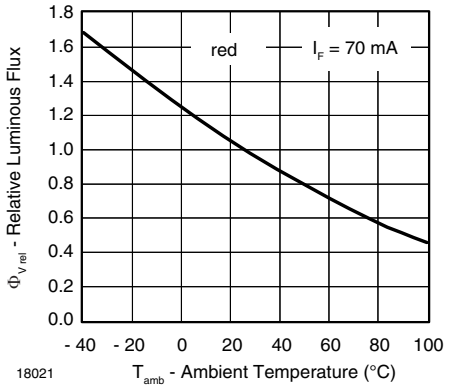


Figure 4. Rel. Luminous Flux vs. Ambient Temperature

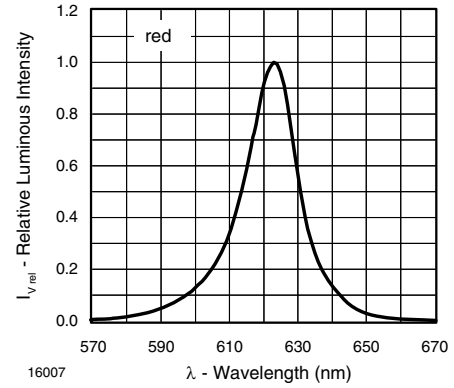
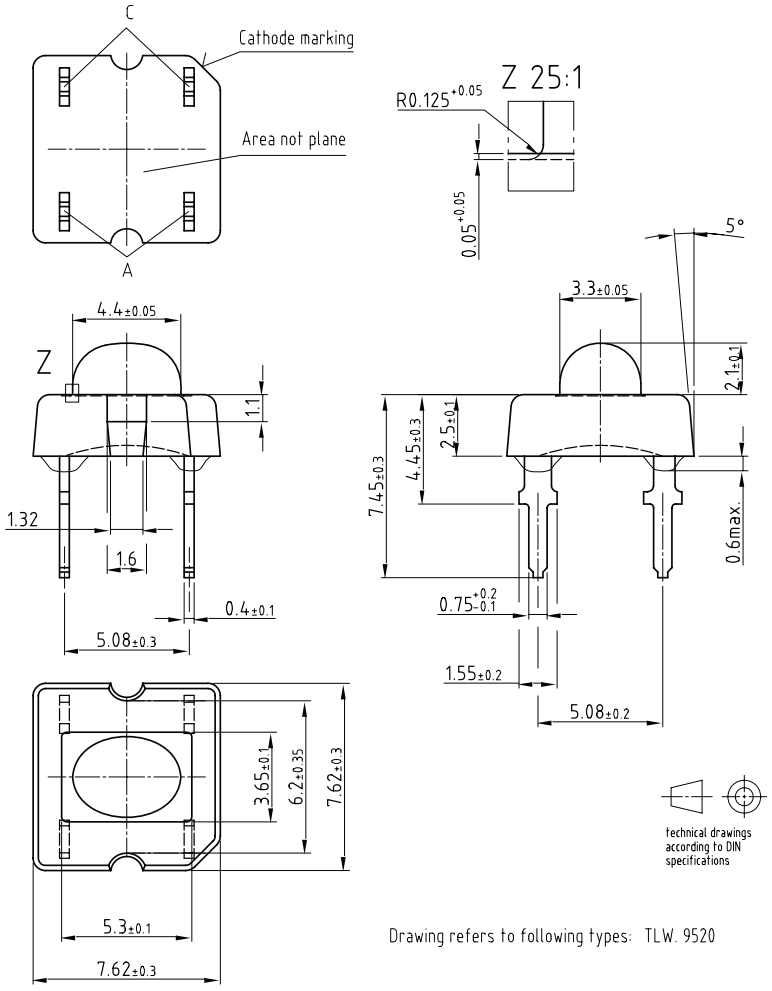


Figure 5. Relative Intensity vs. Wavelength

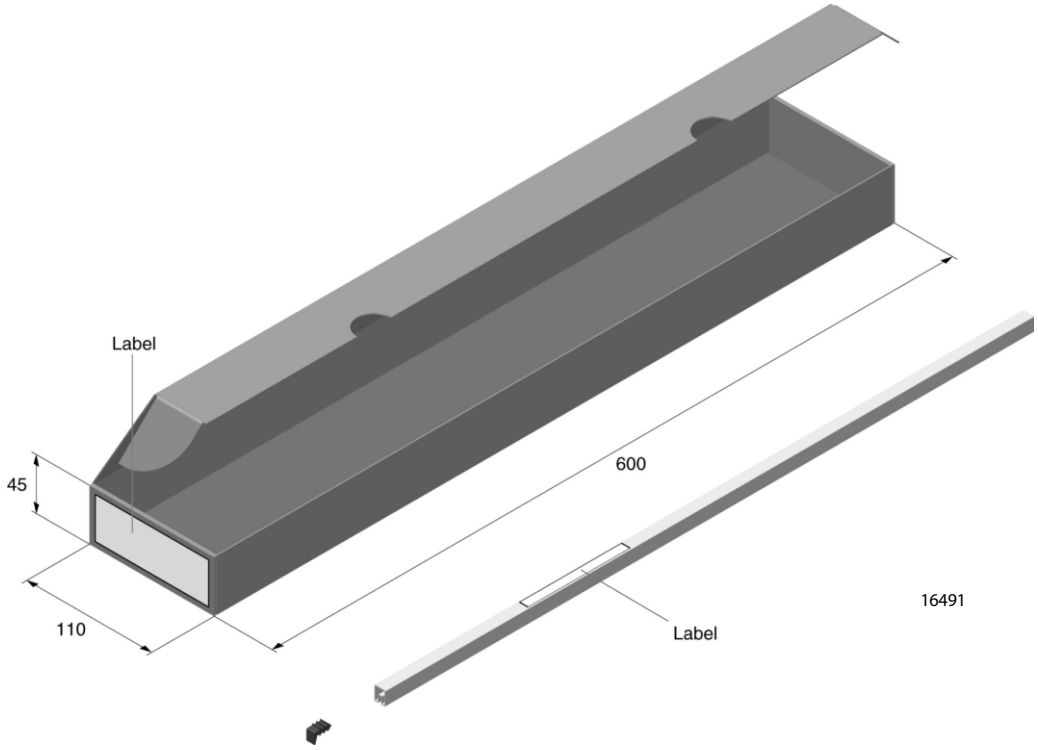
PACKAGE DIMENSIONS in millimeters



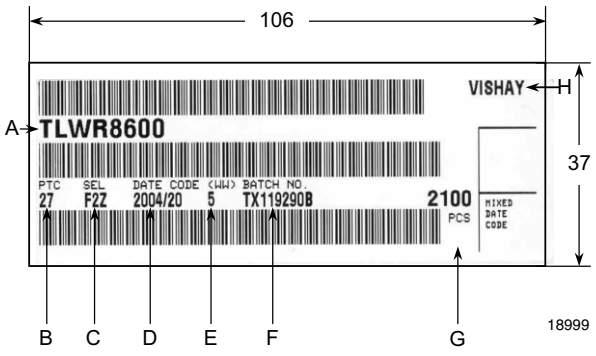
Drawing refers to following types: TLW. 9520

Drawing-No.: 6.544-5372.02-4
Issue: 1; 23.09.05
19734

FAN FOLD BOX Dimensions in millimeters



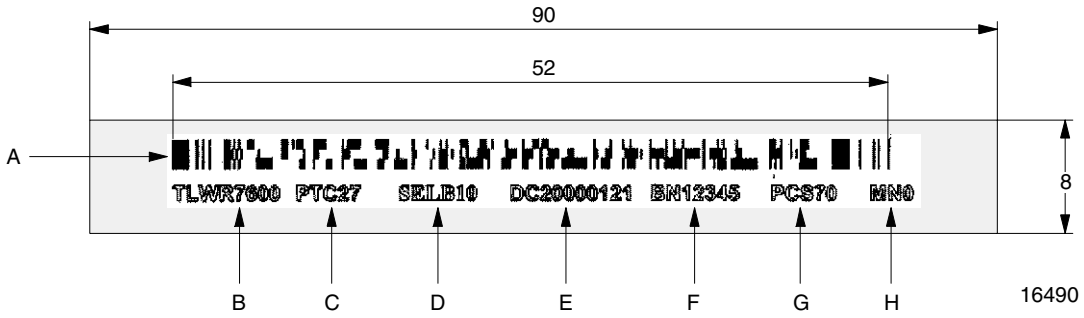
LABEL OF FAN FOLD BOX EXAMPLE:



A) Type of component
B) Manufacturing plant
C) 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
D) Date code year/week
E) Day code (e.g. 5: Friday)
F) Batch no.
G) Total quantity
H) Company code

Note: Any distance between bar code and character is more than 1 mm.

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

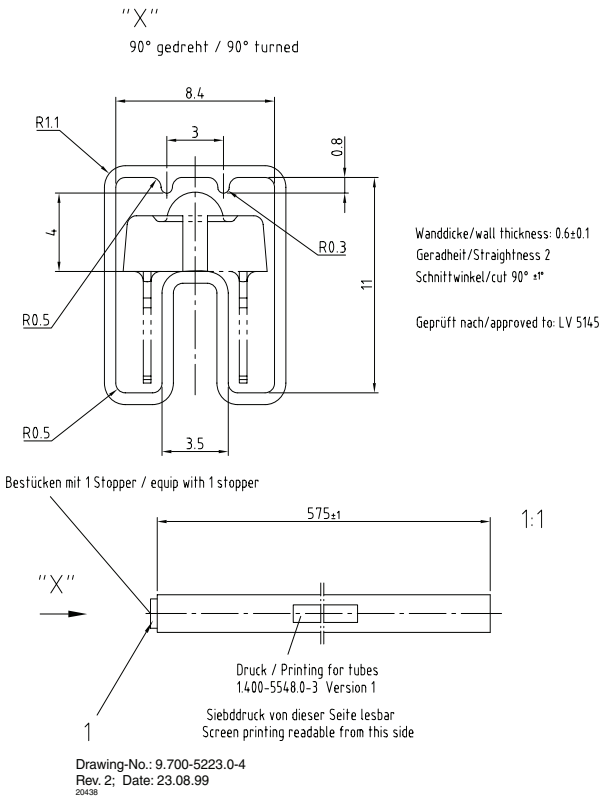


Figure 7. Drawing proportions not scaled

OZONE DEPLETING SUBSTANCES POLICY STATEMENT

It is the policy of Vishay Semiconductor GmbH to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany

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