

Vishay Semiconductors

AUTOMOTIVE

ROHS

HALOGEN

FREE

GREEN

(5-2008)

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: ± 45°

FEATURES

- High luminous flux
- Supreme heat dissipation: R_{thJP} is 90 K/W
- High operating temperature: $T_{amb} = -40 \, ^{\circ}\text{C}$ to +110 $^{\circ}\text{C}$
- 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
- Material categorization: for definitions of compliance please see <u>www.vishav.com/doc?99912</u>

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 WA		WAVELENGTH (nm)		at I _F	FORWARD VOLTAGE (V)		at I _F	TECHNOLOGY		
		MIN.	TYP.	MAX.	(IIIA)	MIN.	TYP.	MAX.	(mA)	MIN.	TYP.	MAX.	(IIIA)	
TLWR8900	Red	2000	3700	-	70	611	616	634	70	1.83	2.2	2.67	70	AllnGaP on GaAs
TLWR8901	Red	2000	3700	4800	70	611	616	634	70	1.83	2.2	2.67	70	AllnGaP on GaAs
TLWR8902	Red	3000	3900	4800	70	611	616	634	70	1.95	2.2	2.67	70	AllnGaP on GaAs
TLWY8900	Yellow	2000	3200	-	70	585	591	597	70	1.83	2.1	2.67	70	AllnGaP on GaAs

ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified) TLWR8900, TLWR8901, TLWR8902, TLWY8900						
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT		
Reverse voltage (1)	I _R = 100 μA	V _R	10	V		
DC forward current	T _{amb} ≤ 85 °C	I _F	70	mA		
Surge forward current	t _p ≤ 10 μs	I _{FSM}	1	Α		
Power dissipation		P _V	187	mW		
Junction temperature		Tj	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-to-ambient	With cathode heatsink of 70 mm ²	R _{thJA}	200	K/W		
Thermal resistance junction-to-pin		R_{thJP}	90	K/W		

Note

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

TLWR8900, TLWR8901, TLWR8902, TLWY8900

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OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25$ °C, unless otherwise specified) TLWR8900, TLWR8901, TLWR8902, RED								
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT	
	$I_F = 70 \text{ mA}, R_{thJA} = 200 \text{ K/W}$	TLWR8900	φ _V	2000	3700	-	mlm	
Total flux	$I_F = 70 \text{ mA}, R_{thJA} = 200 \text{ K/W}$	TLWR8901	φ _V	2000	3700	4800	mlm	
	$I_F = 70 \text{ mA}, R_{thJA} = 200 \text{ K/W}$	TLWR8902	φ _V	3000	3900	4800	mlm	
Luminous intensity/total flux			l _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	-	0	
Total included angle	90 % of total flux captured		Φ0.9 V	-	100	-	0	
	$I_F = 70 \text{ mA}, R_{thJA} = 200 \text{ K/W}$	TLWR8900	V _F	1.83	2.2	2.67	V	
Forward voltage	$I_F = 70 \text{ mA}, R_{thJA} = 200 \text{ K/W}$	TLWR8901	V_{F}	1.83	2.2	2.67	V	
	$I_F = 70 \text{ mA}, R_{thJA} = 200 \text{ K/W}$	TLWR8902	V_{F}	1.95	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		Cj	-	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	$I_F = 70 \text{ mA}, R_{thJA} = 200 \text{ K/W}$	φv	2000	3200	-	mlm	
Luminous intensity/total flux	$I_F = 70 \text{ mA}, R_{thJA} = 200 \text{ K/W}$	l _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	$I_F = 70 \text{ mA}, R_{thJA} = 200 \text{ K/W}$	λ_{p}	-	594	-	nm	
Angle of half intensity	$I_F = 70 \text{ mA}, R_{thJA} = 200 \text{ K/W}$	φ	-	± 45	-	0	
Total included angle	90 % of total flux captured	Φ0.9 V	-	100	-	0	
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)					
GROOP	MIN.	MAX.				
D	2000	3000				
E	2500	3600				
F	3000	4200				
G	3500	4800				
Н	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

TLWR8900, TLWR8901, TLWR8902, TLWY8900

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COLOR CLASSIFICATION							
	DOM. WAVELENGTH (nm)						
GROUP	YEL	LOW	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)					
GROOP	MIN.	MAX.				
Υ	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

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

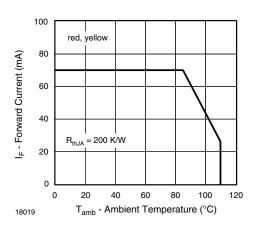


Fig. 1 - Forward Current vs. Ambient Temperature

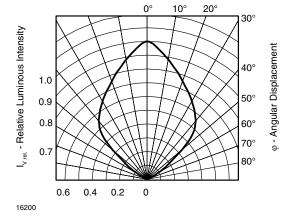


Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

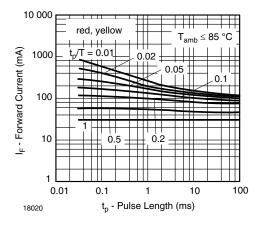


Fig. 2 - Forward Current vs. Pulse Length

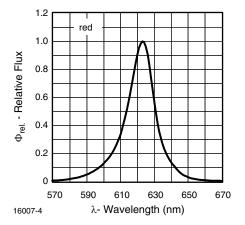


Fig. 4 - Relative Flux vs. Wavelength

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

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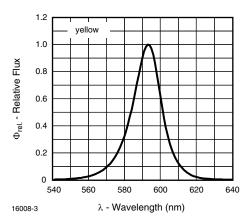


Fig. 5 - Relative Flux vs. Wavelength

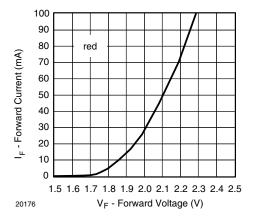


Fig. 6 - Forward Current vs. Forward Voltage

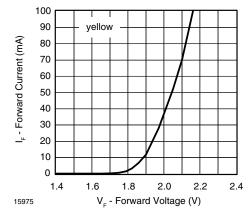


Fig. 7 - Forward Current vs. Forward Voltage

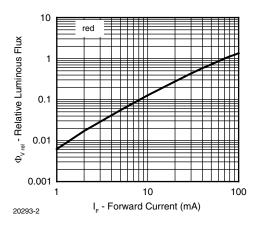


Fig. 8 - Relative Luminous Flux vs. Forward Current

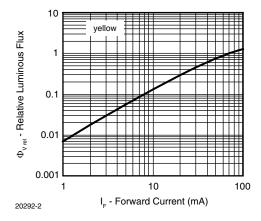


Fig. 9 - Relative Luminous Flux vs. Forward Current

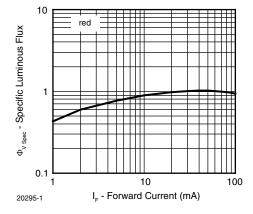


Fig. 10 - Specific Luminous Flux vs. Forward Current

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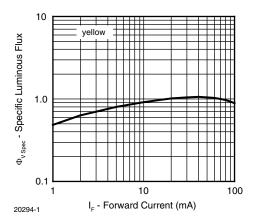


Fig. 11 - Specific Luminous Flux vs. Forward Current

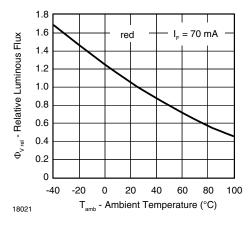


Fig. 12 - Relative Luminous Flux vs. Ambient Temperature

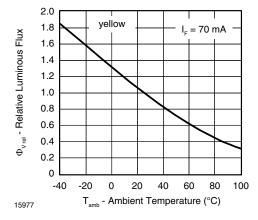


Fig. 13 - Relative Luminous Flux vs. Ambient Temperature

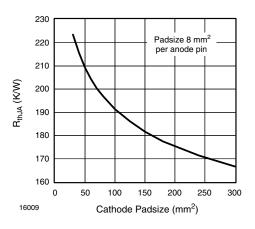


Fig. 14 - Thermal Resistance Junction Ambient vs. Cathode Padsize

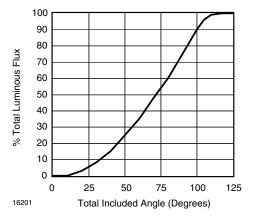
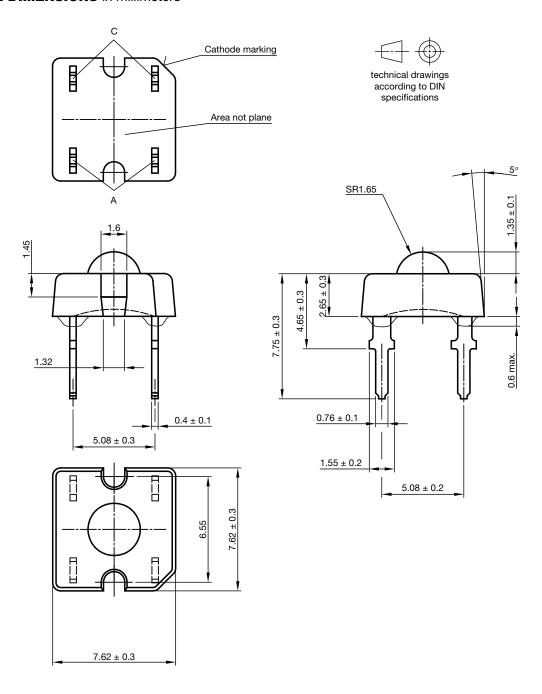


Fig. 15 - Percentage Total Luminous Flux vs. Total Included Angle for 90° Emission Angle

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PACKAGE DIMENSIONS in millimeters

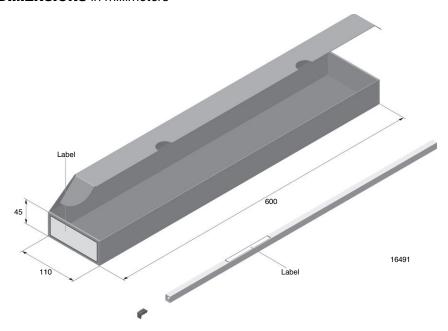


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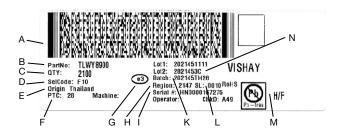
Issue: 5; 25.07.14

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FAN FOLD BOX DIMENSIONS in millimeters



LABEL OF FAN FOLD BOX (example)

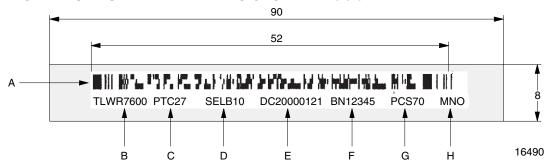


- A. 2D barcode
- B. Part No: Vishay part number
- C. QTY: quantity
- d. SelCode: selection bin code
- e. Country of origin
- f. PTC: production plant code
- g. Termination finish
- h. Region code
- i. Serial#: serial number
- j. Batch number: year, week, country code, plant code
- k. SL: storage location
- I. Environmental symbols: RoHS, lead (Pb)-free, halogen-free
- m. Lot numbers

TLWR8900, TLWR8901, TLWR8902, TLWY8900

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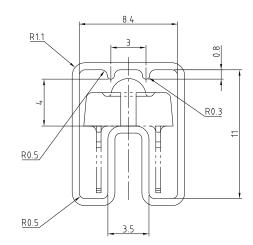
EXAMPLE FOR TELUX TUBE LABEL DIMENSIONS in millimeters



- 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

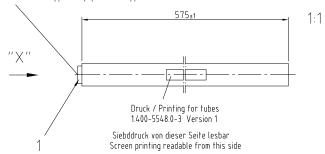
90° gedreht / 90° turned



Wanddicke/wall thickness: 0.6±0.1 Geradheit/Straightness 2 Schnittwinkel/cut 90° ±1°

Geprüft nach/approved to: LV 5145

Bestücken mit 1 Stopper / equip with 1 stopper



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

Drawing Proportions not Scaled



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