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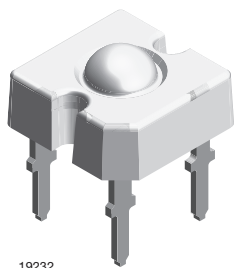
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## TELUX LED



19232

### DESCRIPTION

The VLWTG9600 is a clear, non diffused LED for applications where high luminous flux is required.

It is designed in an industry standard 7.62 mm square package utilizing highly developed InGaN technology.

The supreme heat dissipation of VLWTG9600 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.

### PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: TELUX
- Product series: power
- Angle of half intensity:  $\pm 30^\circ$

### FEATURES

- High luminous flux
- Supreme heat dissipation:  $R_{thJP}$  is 90 K/W
- High operating temperature:  
 $T_{amb} = -40^\circ\text{C}$  to  $+110^\circ\text{C}$
- Packed in tubes for automatic insertion
- Luminous flux 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 and J-STD-020
- ESD-withstand voltage: Up to 1 kV according to JESD22-A114-B
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

AUTOMOTIVE  
GRADE

**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

### APPLICATIONS

- Exterior lighting
- 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.		
VLWTG9600	True green	2000	2500	-	50	509	523	535	50	-	3.9	4.7	50	InGaN on SiC

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^\circ\text{C}$ , unless otherwise specified) VLWTG9600

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage	$I_R = 10 \mu\text{A}$	$V_R$	5	V
DC forward current	$T_{amb} \leq 50^\circ\text{C}$	$I_F$	50	mA
Surge forward current	$t_p \leq 10 \mu\text{s}$	$I_{FSM}$	0.1	A
Power dissipation		$P_V$	230	mW
Junction temperature		$T_j$	100	$^\circ\text{C}$
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 $70 \text{ mm}^2$	$R_{thJA}$	200	K/W
Thermal resistance junction/pin		$R_{thJP}$	90	K/W

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**VLWTG9600, TRUE GREEN**

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Total flux	$I_F = 50\text{ mA}$ , $R_{thJA} = 200\text{ K/W}$	$\phi_V$	2000	2500	-	mlm
Luminous intensity/total flux	$I_F = 50\text{ mA}$ , $R_{thJA} = 200\text{ K/W}$	$I_V/\phi_V$	-	0.8	-	mcd/mlm
Dominant wavelength	$I_F = 50\text{ mA}$ , $R_{thJA} = 200\text{ K/W}$	$\lambda_d$	509	523	535	nm
Peak wavelength	$I_F = 50\text{ mA}$ , $R_{thJA} = 200\text{ K/W}$	$\lambda_p$	-	518	-	nm
Angle of half intensity	$I_F = 50\text{ mA}$ , $R_{thJA} = 200\text{ K/W}$	$\varphi$	-	$\pm 30$	-	deg
Total included angle	90 % of total flux captured	$\varphi_{0.9V}$	-	75	-	deg
Forward voltage	$I_F = 50\text{ mA}$ , $R_{thJA} = 200\text{ K/W}$	$V_F$	-	3.9	4.7	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$	$V_R$	5	10	-	V
Junction capacitance	$V_R = 0$ , $f = 1\text{ MHz}$	$C_j$	-	50	-	pF
Temperature coefficient of $< \lambda_{dom}$	$I_F = 30\text{ mA}$	$T_C\lambda_{dom}$	-	0.02	-	nm/K

**LUMINOUS FLUX CLASSIFICATION**

GROUP	LUMINOUS FLUX (mlm)	
	MIN.	MAX.
D	2000	3000
E	2500	3600
F	3000	4200

**Note**

- Luminous flux is tested at a current pulse duration of 25 ms and an accuracy of  $\pm 11\%$ .  
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 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)	
	MIN.	MAX.
2	509	517
3	515	523
4	521	529
5	527	535

**Note**

- Wavelengths are tested at a current pulse duration of 25 ms and an accuracy of  $\pm 1\text{ nm}$ .

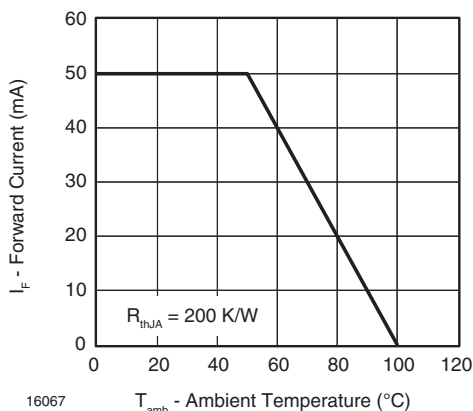
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Forward Current vs. Ambient Temperature for InGaN

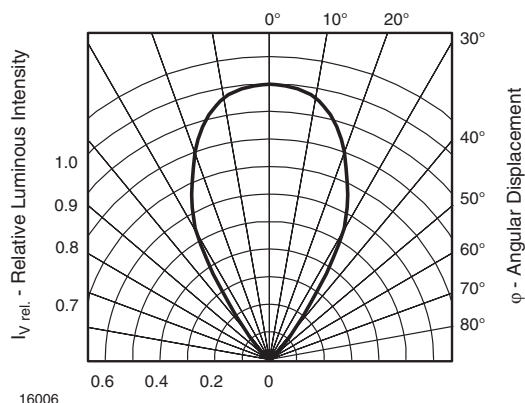


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement



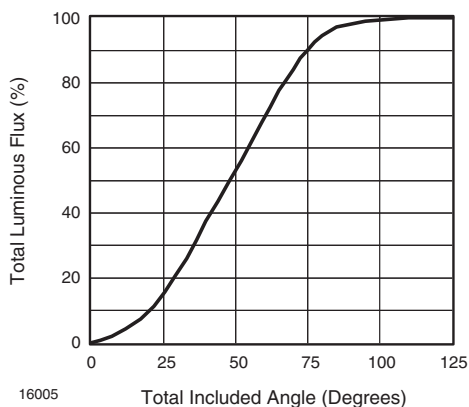


Fig. 3 - Percentage Total Luminous Flux vs. Total Included Angle for 90° Emission Angle

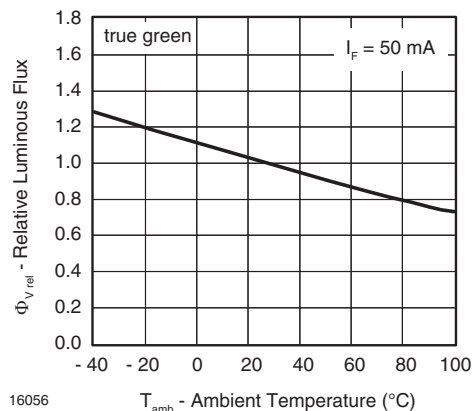


Fig. 6 - Relative Luminous Flux vs. Ambient Temperature

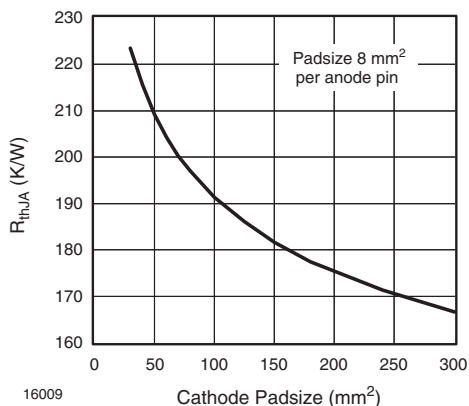


Fig. 4 - Thermal Resistance Junction Ambient vs. Cathode Padsize

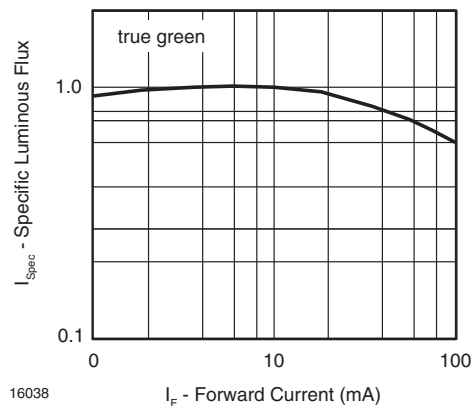


Fig. 7 - Specific Luminous Flux vs. Forward Current

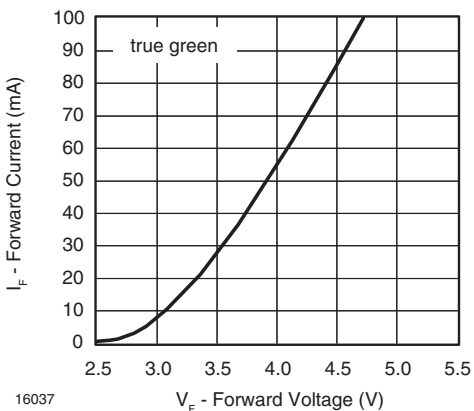


Fig. 5 - Forward Current vs. Forward Voltage

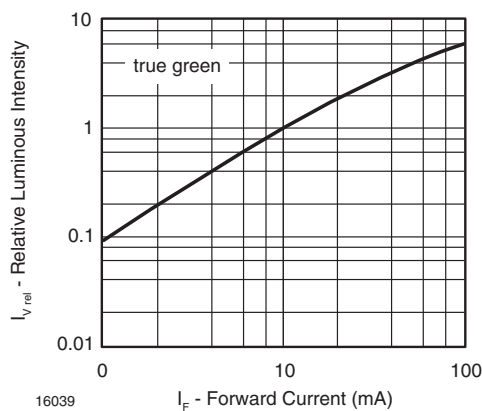


Fig. 8 - Relative Luminous Intensity vs. Forward Current

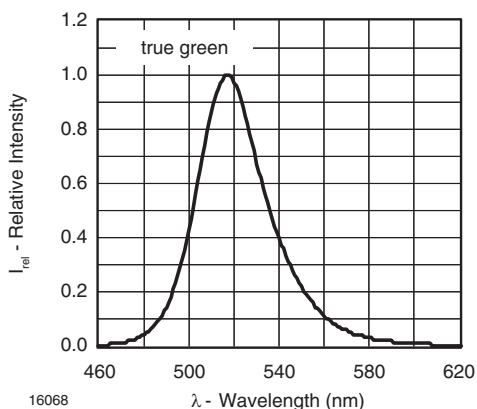


Fig. 9 - Relative Intensity vs. Wavelength

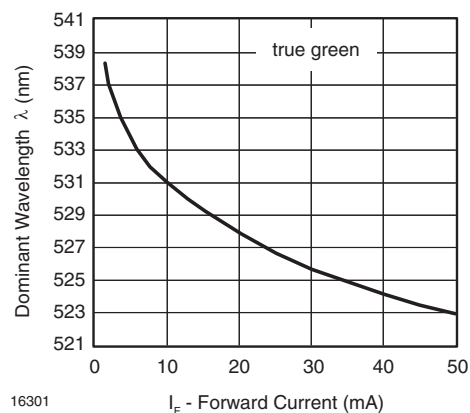
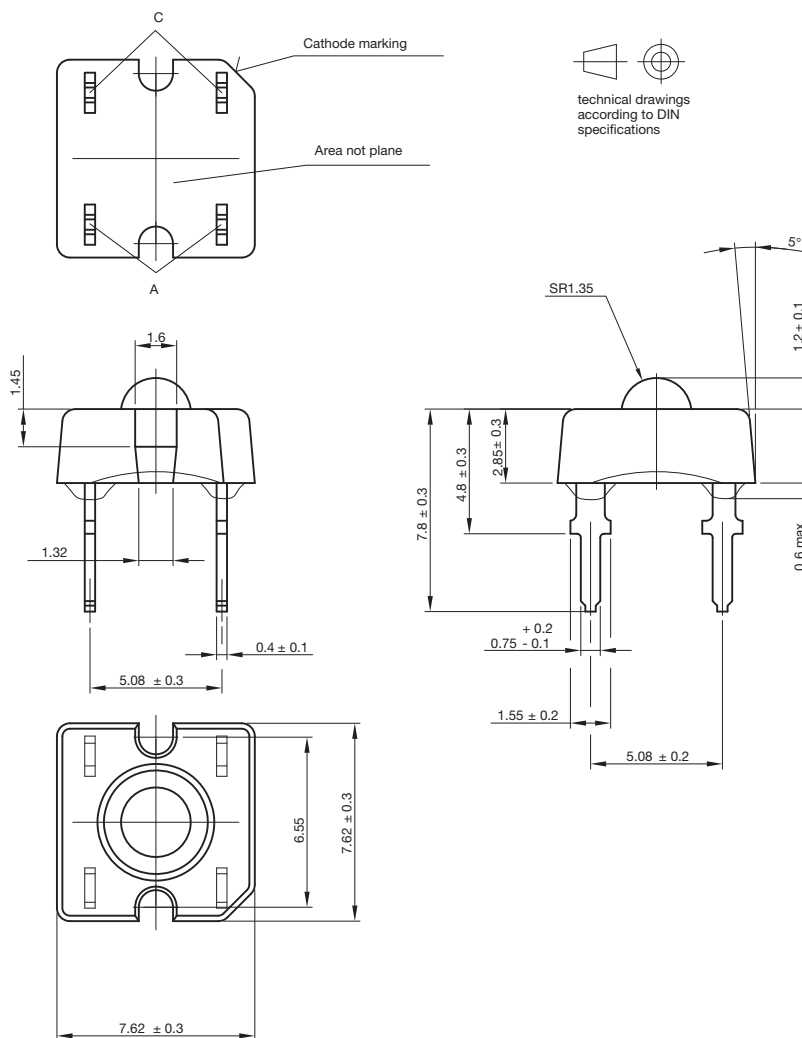
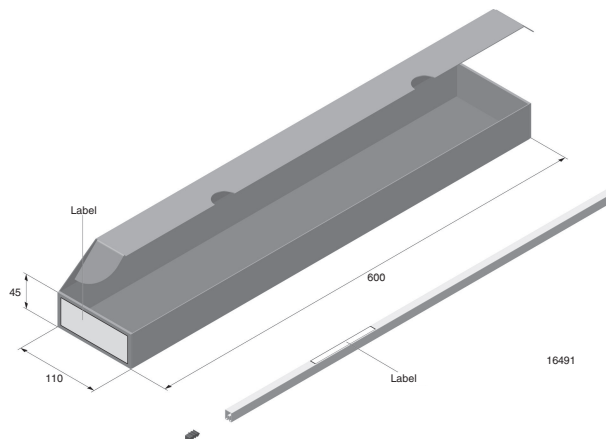
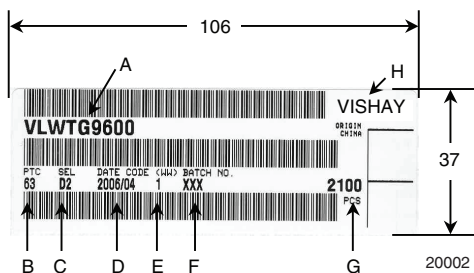


Fig. 10 - Dominant Wavelength vs. Forward Current

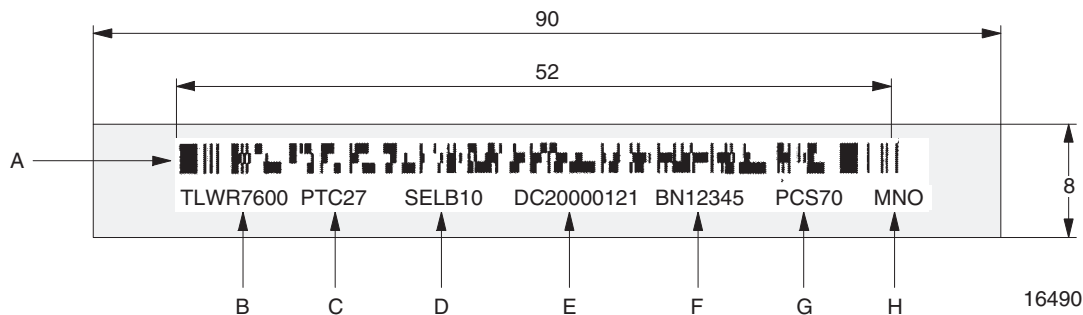
### PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5321.02-4  
Issue: 3; 26.06.06  
16004

**FAN FOLD BOX DIMENSIONS** in millimeters

**LABEL OF FAN FOLD BOX**


- A. Type of component
- B. Manufacturing plant
- C. SEL - selection code (bin):  
e.g.: D = code for luminous intensity group  
2 = code for color group
- D. Date code year/week
- E. Day code (e.g. 1: Monday)
- F. Batch: no.
- G. Total quantity
- H. Company code

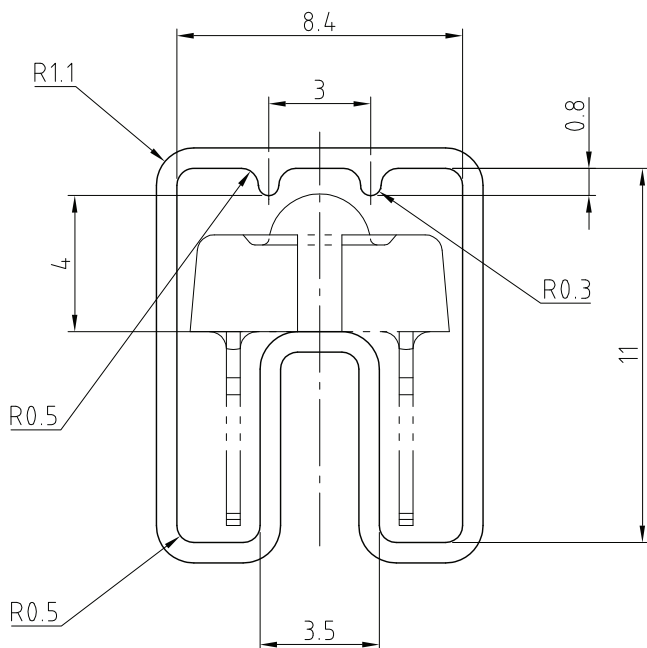
**EXAMPLE FOR TELUX TUBE LABEL DIMENSIONS** in millimeters


- 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

"X"

90° gedreht / 90° turned



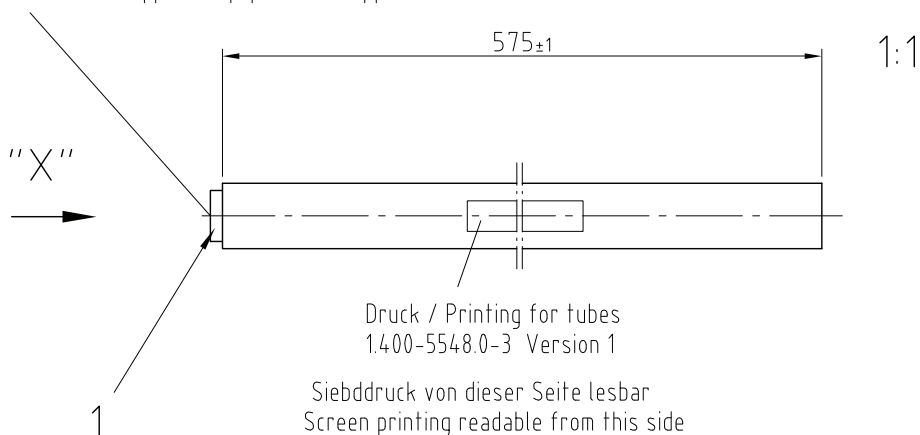
Wanddicke/wall thickness:  $0.6 \pm 0.1$

Geradheit/Straightness 2

Schnittwinkel/cut  $90^\circ \pm 1^\circ$

Geprüft nach/approved to: LV 5145

Bestücken mit 1 Stopper / equip with 1 stopper



Druck / Printing for tubes  
1.400-5548.0-3 Version 1

Siebdruck von dieser Seite lesbar  
Screen printing readable from this side

Drawing-No.: 9.700-5223.0-4

Rev. 2; Date: 23.08.99

20438

Drawing Proportions not Scaled



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