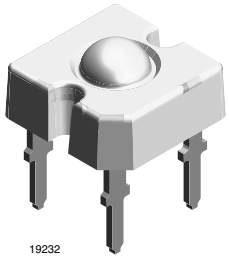
TELUX™



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
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Compatible with wave solder processes acc. to CECC 00802 and J-STD-020
- ESD-withstand voltage: up to 2 kV according to JESD22-A114-B
- AEC-Q101 qualified
- Find out more about Vishay's Automotive Grade Product requirements at: www.vishay.com/applications

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: standard
- Angle of half intensity: ± 30°

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	TECHNOLOGY
TLWR7600	Red, ϕ_V = 2100 mlm (typ.)	AlInGaP on GaAs
TLWO7600	Soft orange, ϕ_V = 2100 mlm (typ.)	AlInGaP on GaAs
TLWY7600	Yellow, ϕ_V = 1400 mlm (typ.)	AlInGaP on GaAs

** Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)
TLWR7600, TLWO7600, TLWY7600

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 mm^2	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)
TLWR7600, RED

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Total flux	I_F = 70 mA, R_{thJA} = 200 °K/W	ϕ_V	1500	2100		mlm
Luminous intensity/total flux	I_F = 70 mA, R_{thJA} = 200 °K/W	I_V/ϕ_V		0.8		mcd/mlm
Dominant wavelength	I_F = 70 mA, R_{thJA} = 200 °K/W	λ_d	611	618	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		± 30		deg
Total included angle	90 % of total flux captured	$\varphi_{0.9V}$		75		deg
Forward voltage	I_F = 70 mA, R_{thJA} = 200 °K/W	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, f = 1 MHz	C_j		17		pF
Temperature coefficient of λ_{dom}	I_F = 50 mA	$TC\lambda_{dom}$		0.05		nm/K

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
TLWO7600, SOFT ORANGE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Total flux	I_F = 70 mA, R_{thJA} = 200 °K/W	ϕ_V	1500	2100		mlm
Luminous intensity/total flux	I_F = 70 mA, R_{thJA} = 200 °K/W	I_V/ϕ_V		0.8		mcd/mlm
Dominant wavelength	I_F = 70 mA, R_{thJA} = 200 °K/W	λ_d	598	605	611	nm
Peak wavelength	I_F = 70 mA, R_{thJA} = 200 °K/W	λ_p		610		nm
Angle of half intensity	I_F = 70 mA, R_{thJA} = 200 °K/W	φ		± 30		deg
Total included angle	90 % of total flux captured	φ		75		deg
Forward voltage	I_F = 70 mA, R_{thJA} = 200 °K/W	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, f = 1 MHz	C_j		17		pF
Temperature coefficient of λ_{dom}	I_F = 50 mA	$TC\lambda_{dom}$		0.06		nm/K

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
TLWY7600, YELLOW

PARAMETER	TEST CONDITION	SYMBOL	MIN	TYP.	MAX	UNIT
Total flux	I_F = 70 mA, R_{thJA} = 200 °K/W	ϕ_V	1000	1400		mlm
Luminous intensity/total flux	I_F = 70 mA, R_{thJA} = 200 °K/W	I_V/ϕ_V		0.8		mcd/mlm
Dominant wavelength	I_F = 70 mA, R_{thJA} = 200 °K/W	λ_d	585	592	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		± 30		deg
Total included angle	90 % of total flux captured	$\varphi_{0.9V}$		75		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, f = 1 MHz	C_j		32		pF
Temperature coefficient of λ_{dom}	I_F = 50 mA	$T_C\lambda_{dom}$		0.1		nm/K

LUMINOUS FLUX CLASSIFICATION

GROUP	LUMINOUS FLUX (mlm)	
STANDARD	MIN.	MAX.
B	1000	1800
C	1500	2400
D	2000	3000
E	2500	3600
F	3000	4200
G	3500	4800
H	4000	6100
I	5000	7300
K	6000	9700

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.

COLOR CLASSIFICATION

GROUP	DOM. WAVELENGTH (nm)					
	YELLOW		RED		SOFT ORANGE	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
0	585	588				
1	587	591	611	618	598	601
2	589	594	614	622	600	603
3	592	597	616	634	602	605
4					604	607
5					606	609
6					608	611

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

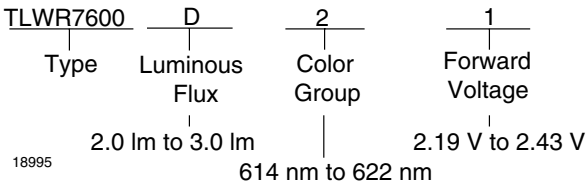


Figure 1.

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

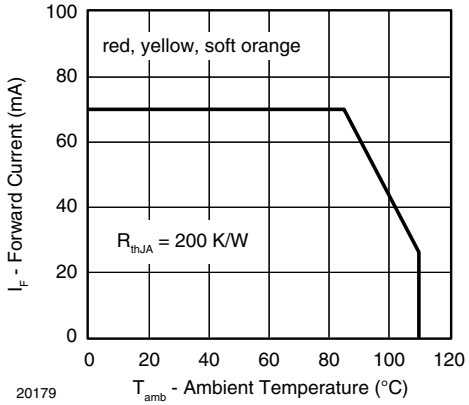


Figure 2. Forward Current vs. Ambient Temperature

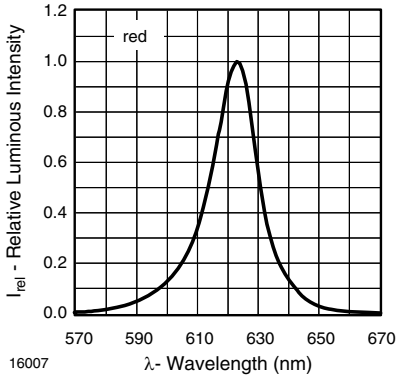


Figure 5. Relative Intensity vs. Wavelength

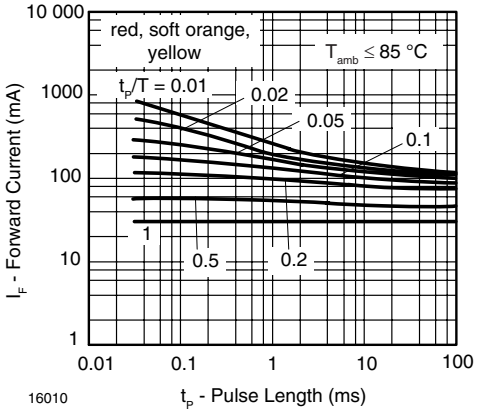


Figure 3. Forward Current vs. Pulse Length

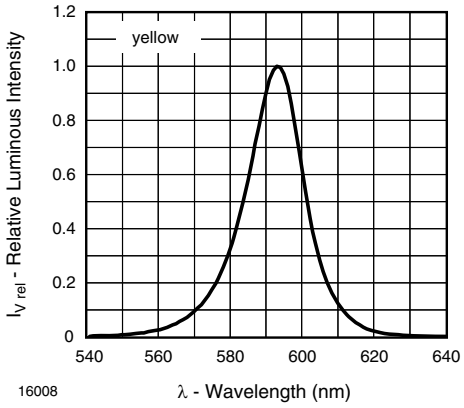


Figure 6. Relative Intensity vs. Wavelength

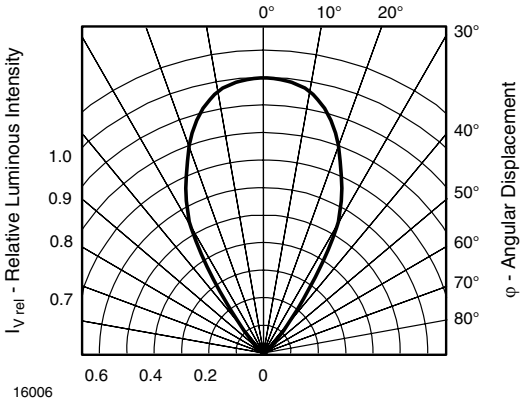


Figure 4. Rel. Luminous Intensity vs. Angular Displacement

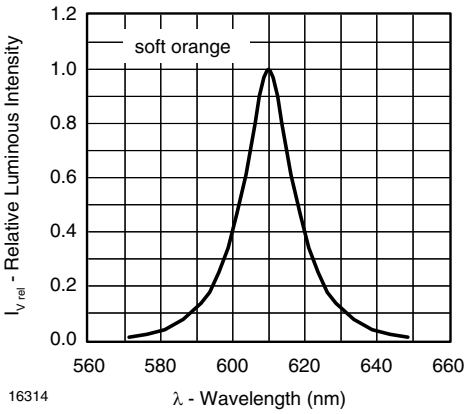


Figure 7. Relative Intensity vs. Wavelength

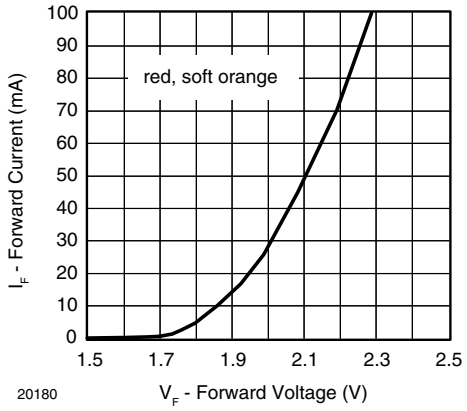


Figure 8. Forward Current vs. Forward Voltage

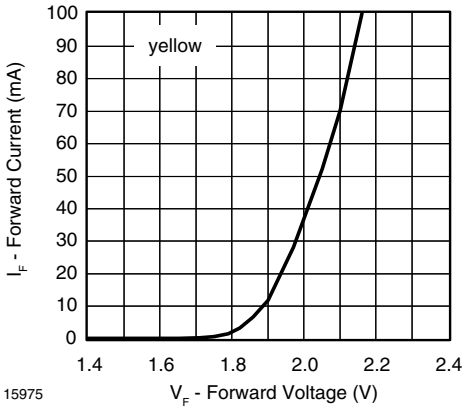


Figure 9. Forward Current vs. Forward Voltage

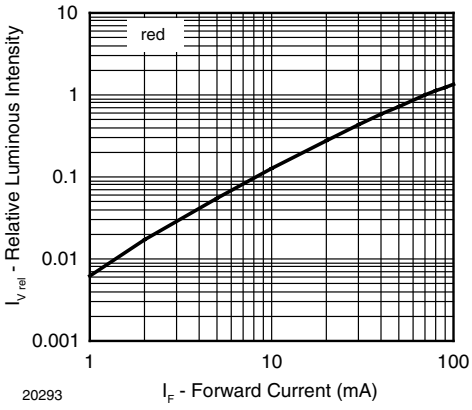


Figure 10. Relative Luminous Intensity vs. Forward Current

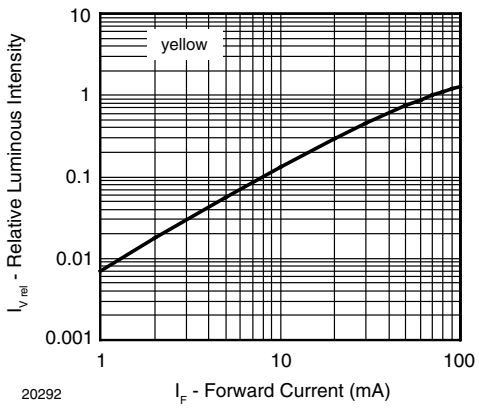


Figure 11. Relative Luminous Intensity vs. Forward Current

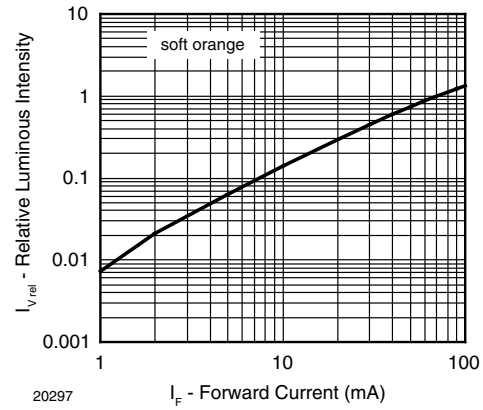


Figure 12. Relative Luminous Intensity vs. Forward Current

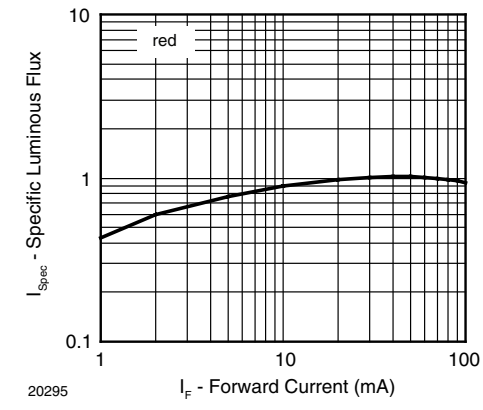


Figure 13. Specific Luminous Flux vs. Forward Current

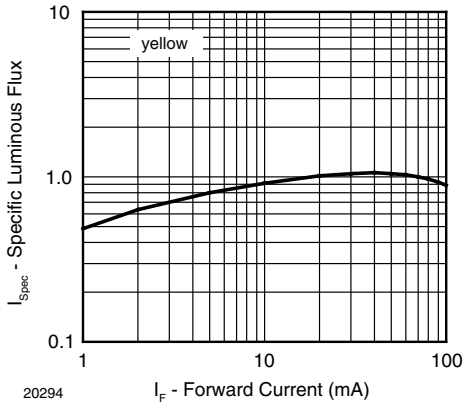


Figure 14. Specific Luminous Flux vs. Forward Current

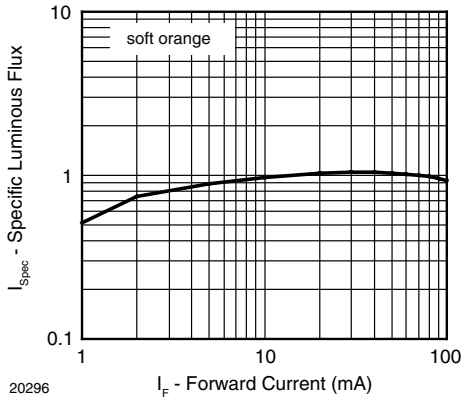


Figure 15. Specific Luminous Flux vs. Forward Current

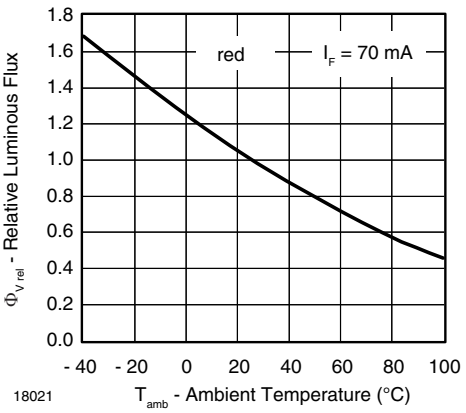


Figure 16. Rel. Luminous Flux vs. Ambient Temperature

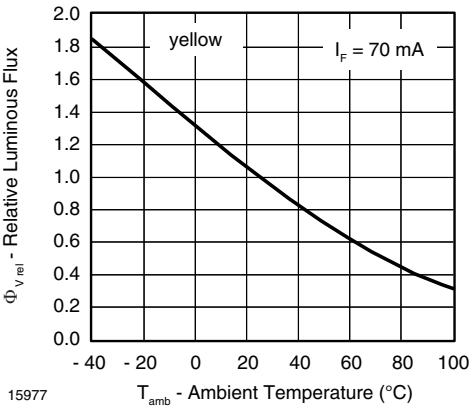


Figure 17. Rel. Luminous Flux vs. Ambient Temperature

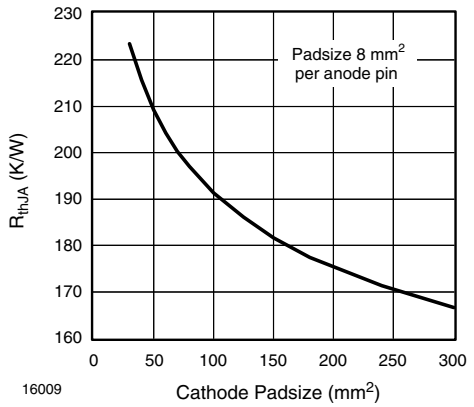


Figure 18. Thermal Resistance Junction Ambient vs. Cathode Padsize

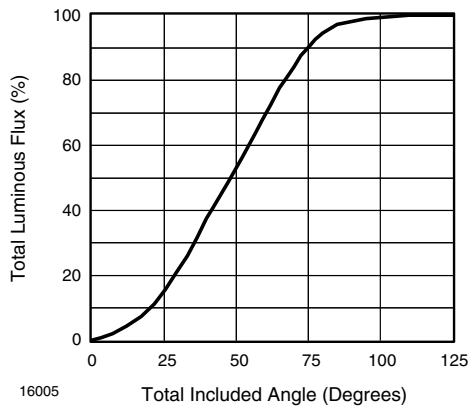
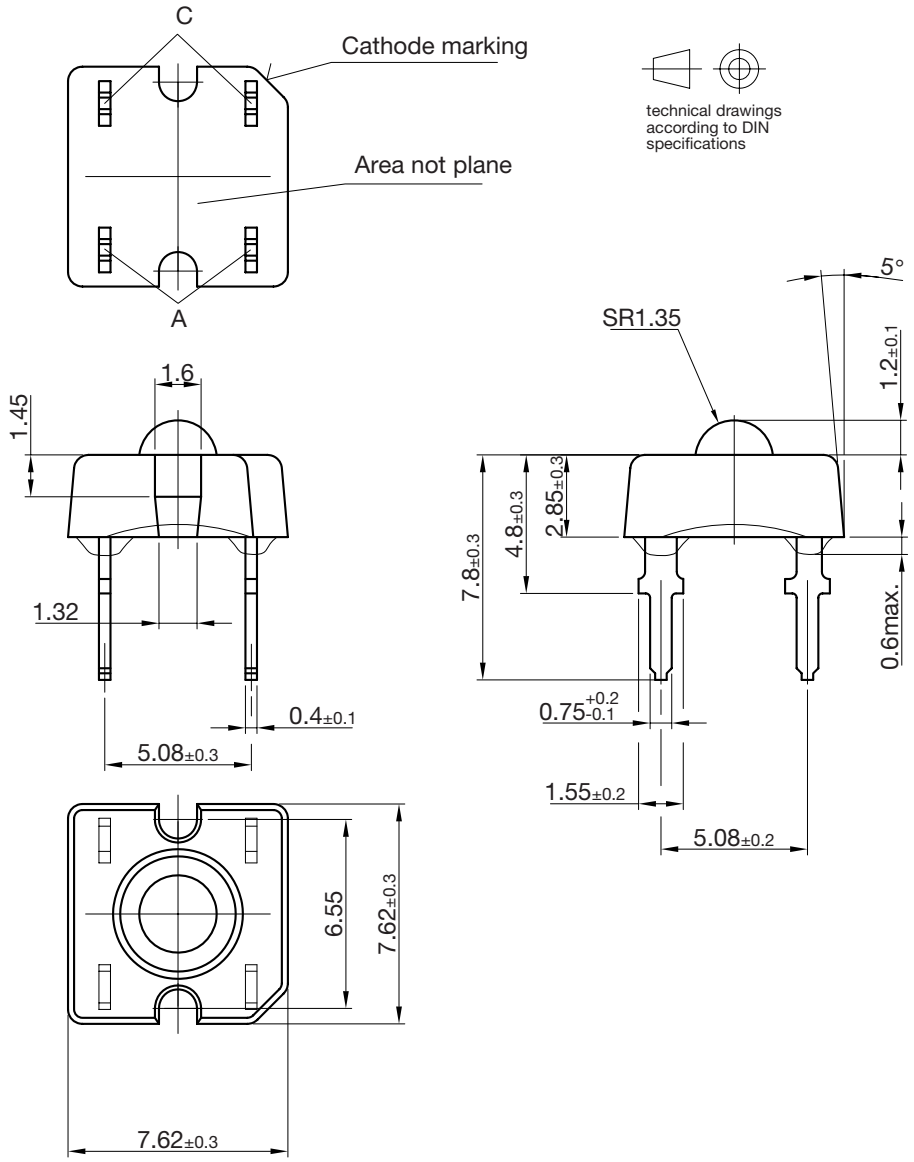


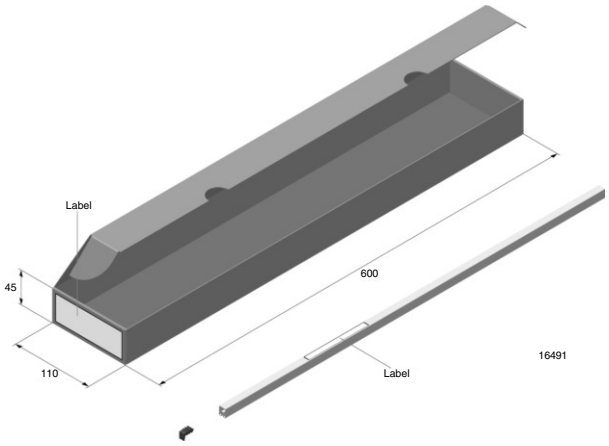
Figure 19. Percentage Total Luminous Flux vs. Total Included Angle for 90° Emission Angle

PACKAGE DIMENSIONS in millimeters

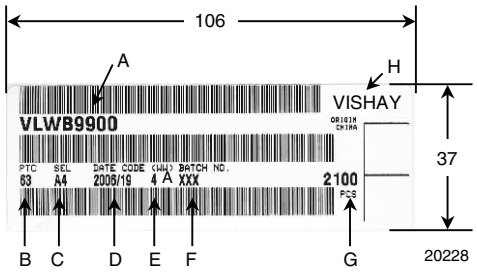


Drawing-No.: 6.544-5321.02-4
Issue: 3; 26.06.06
16004

FAN FOLD BOX Dimensions in millimeters

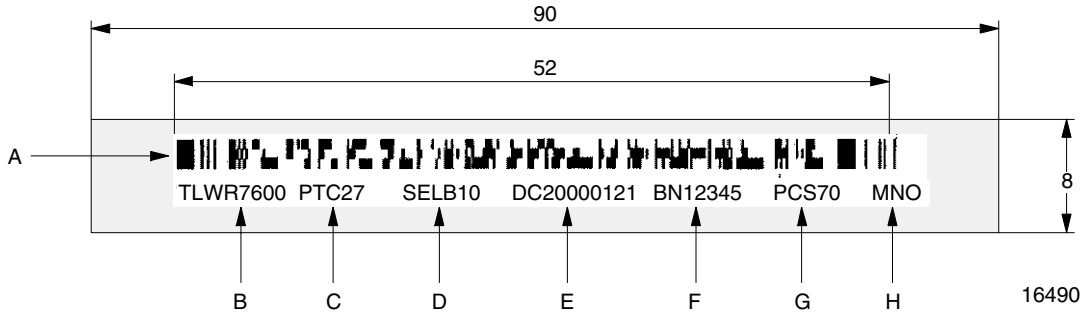


LABEL OF FAN FOLD BOX EXAMPLE:



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

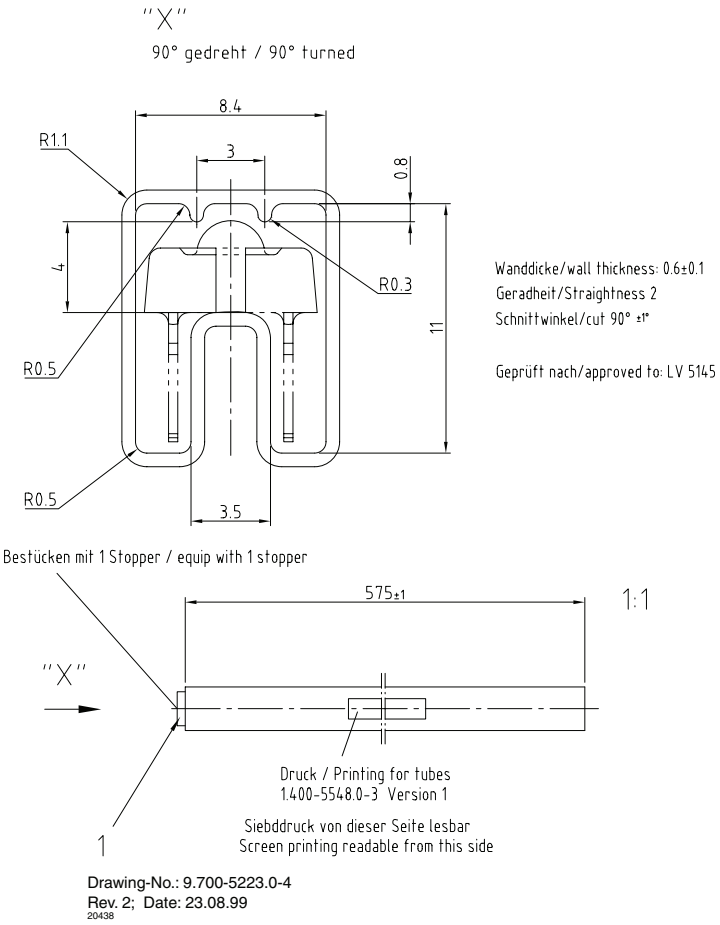


Figure 20. Drawing Proportions not scaled

Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.