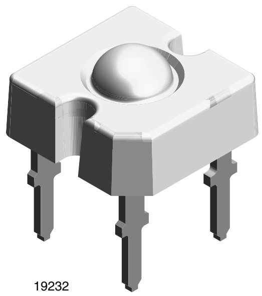
TELUX™ LED



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FEATURES

- Utilizing (AS) AlInGaP and InGaN technologies
- High luminous flux
- Supreme heat dissipation: R_{thJP} is 90 K/W
- High operating temperature: T_j up to + 125 °C
- Type TLWR meets SAE and ECE color requirements
- 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
- TLWR and TLWY types additionally forward voltage categorized
- ESD-withstand voltage: > 2 kV acc. to MIL STD 883 D, Method 3015.7 for AlInGaP, > 1 kV for InGaN
- Lead (Pb)-free device

DESCRIPTION

The TELUX™ series is a clear, non diffused LED for high end applications where supreme luminous flux is required.

It is designed in an industry standard 7.62 mm square package utilizing highly developed (AS) AlInGaP and InGaN technologies.

The supreme heat dissipation of TELUX™ allows applications at high ambient temperatures.

All packing units are binned for luminous flux and color to achieve best homogenous light appearance in application.

APPLICATIONS

- Exterior lighting
- Dashboard illumination
- Tail-, stop- and turn signals of motor vehicles
- Replaces incandescent lamps
- Traffic signals and signs

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: TELUX™
- Product series: standard
- Angle of half intensity: ± 45°

PARTS TABLE

PART	COLOR, LUMINOUS INTENSITY	TECHNOLOGY
TLWR7901	Red, ϕ_V = (1500 to 4200) mlm	AlInGaP on GaAs

ABSOLUTE MAXIMUM RATINGS[1] **TLWR7901**				
PARAMETER	**TEST CONDITION**	**SYMBOL**	**VALUE**	**UNIT**
Reverse voltage	I_R = 10 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	$T_{amb} \leq$ 85 °C	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] T_{amb} = 25 °C, unless otherwise specified

OPTICAL AND ELECTRICAL CHARACTERISTICS[1] **TLWR7901, RED**						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN**	**TYP.**	**MAX**	**UNIT**
Total flux	I_F = 70 mA, R_{thJA} = 200 °K/W	ϕ_V	1500	2100	4200	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	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		± 45		deg
Total included angle	90 % of total flux captured	φ		100		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

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

TYPICAL CHARACTERISTICS

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

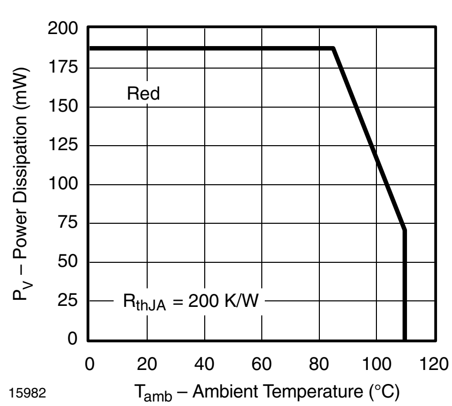


Figure 1. Power Dissipation vs. Ambient Temperature

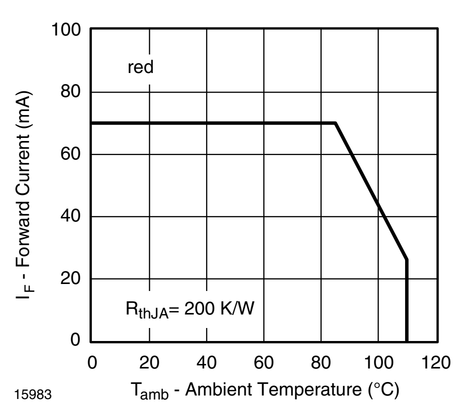


Figure 2. Forward Current vs. Ambient Temperature

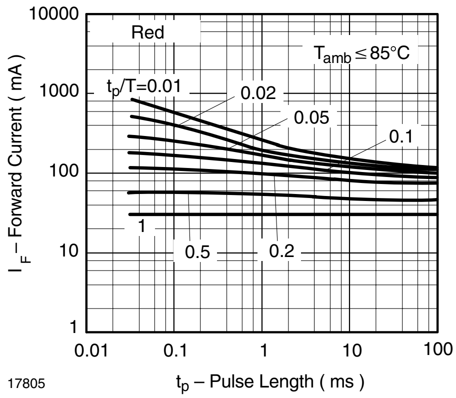


Figure 3. Forward Current vs. Pulse Length

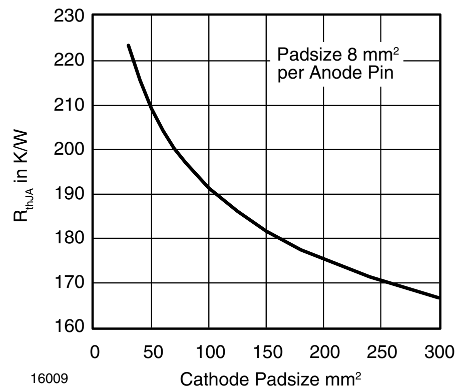


Figure 6. Thermal Resistance Junction Ambient vs. Cathode Padsize

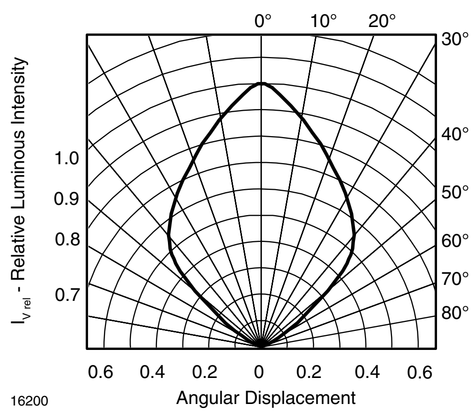


Figure 4. Rel. Luminous Intensity vs. Angular Displacement

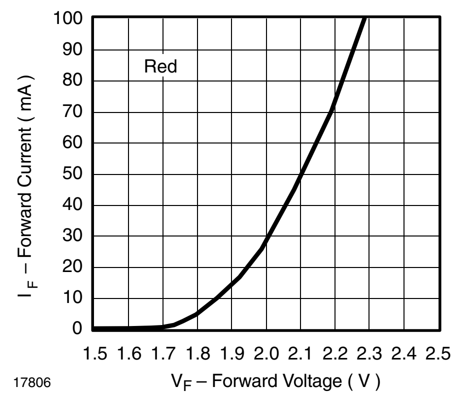


Figure 7. Forward Current vs. Forward Voltage

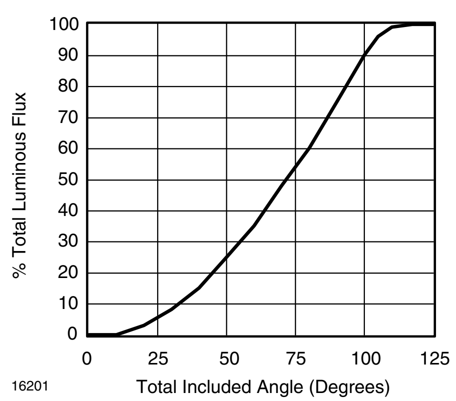


Figure 5. Percentage Total Luminous Flux vs. Total Included Angle for 90 ° emission angle

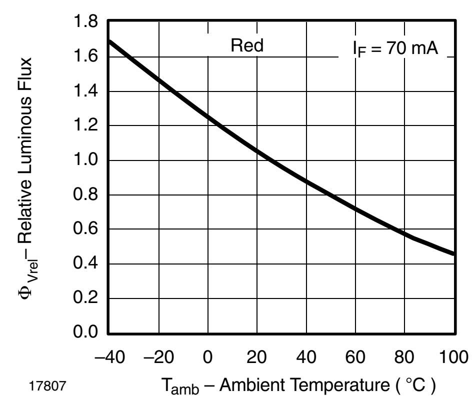


Figure 8. Rel. Luminous Flux vs. Ambient Temperature

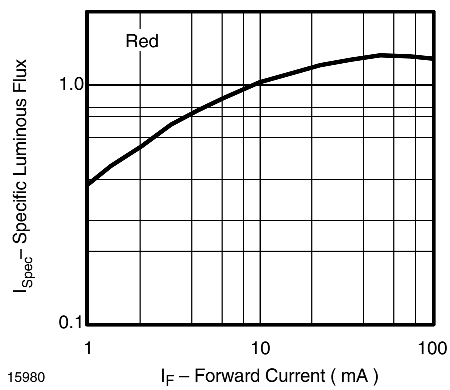


Figure 9. Specific Luminous Flux vs. Forward Current

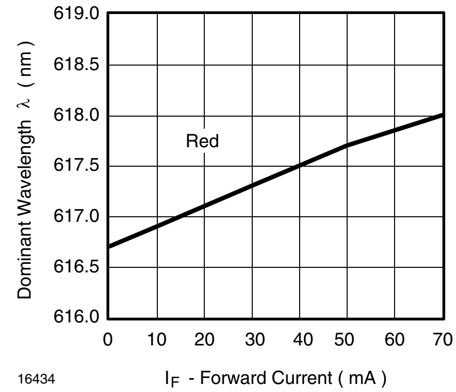


Figure 12. Dominant Wavelength vs. Forward Current

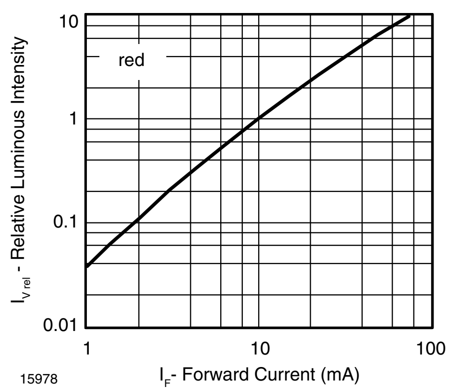


Figure 10. Relative Luminous Flux vs. Forward Current

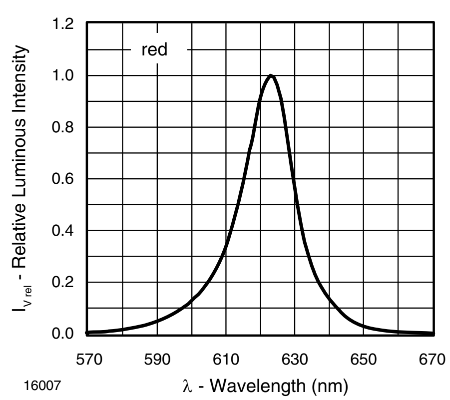
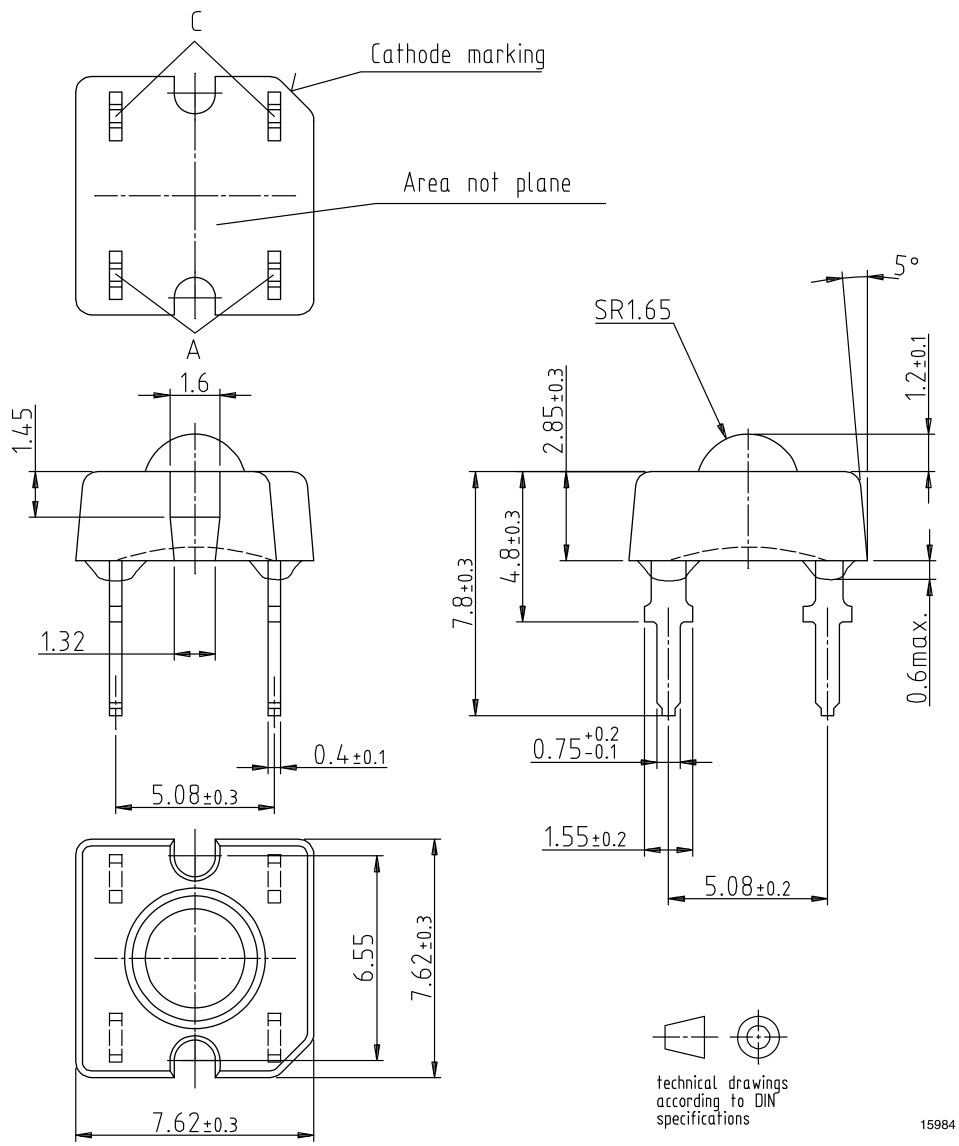


Figure 11. Relative Intensity vs. Wavelength

PACKAGE DIMENSIONS in millimeters



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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