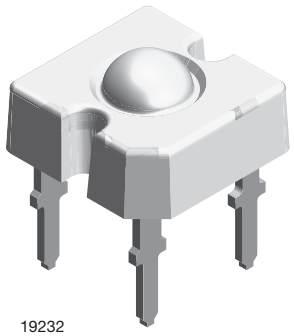
High Speed Infrared Emitting Diode, 940 nm, GaAlAs, MQW



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FEATURES

- Package type: leaded
- Package form: TELUX
- Dimensions (L x W x H in mm): 7.62 x 7.62 x 4.6
- Peak wavelength: λ_p = 940 nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity, vertical: φ_v = ± 18°
- Angle of half intensity, horizontal: φ_h = ± 36°
- Low forward voltage
- Suitable for high pulse current operation
- High modulation bandwidth: f_c = 24 MHz
- Good spectral matching with Si photodetectors
- Compatible with wave solder processes according to CECC 00802
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

DESCRIPTION

VSLB59530S, is an infrared, 940 nm emitting diode in GaAlAs multi-quantum well (MQW) technology with high radiant power and high speed. It is molded in a clear high power TELUX package with an oval lens resulting in angle of half intensities in vertical direction of ± 18° and in horizontal direction of ± 36°.

APPLICATIONS

- Emitter source for gesture recognition applications
- Emitter source for 3D TV
- Emitter source for mid range proximity detection
- Emitter source for object/presence detection

PRODUCT SUMMARY

COMPONENT	I_e (mW/sr)	φ_v (deg)	φ_h (deg)	λ_p (nm)	t_r (ns)
VSLB9530S	60	± 18	± 36	940	15

Note

- Test conditions see table “Basic Characteristics“

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
VSLB9530S	Tube	MOQ: 2100 pcs, 70 pcs/tube	TELUX

Note

- MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	**TEST CONDITION**	**SYMBOL**	**VALUE**	**UNIT**
Reverse voltage		V_R	5	V
Forward current		I_F	150	mA
Peak forward current	t_p/T = 0.5, t_p = 100 µs	I_{FM}	300	mA
Surge forward current	t_p = 100 µs	I_{FSM}	1.5	A
Power dissipation		P_V	232.5	mW
Junction temperature		T_j	100	°C
Operating temperature range		T_{amb}	- 40 to + 95	°C
Storage temperature range		T_{stg}	- 40 to + 100	°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		R_{thJA}	200	K/W

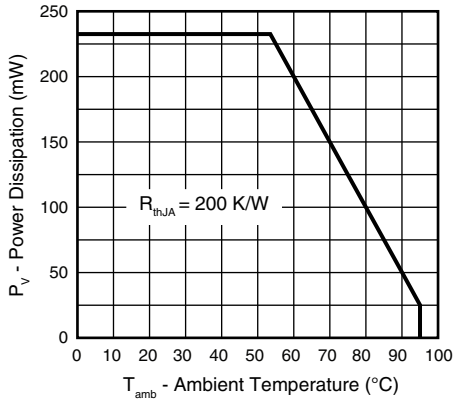


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

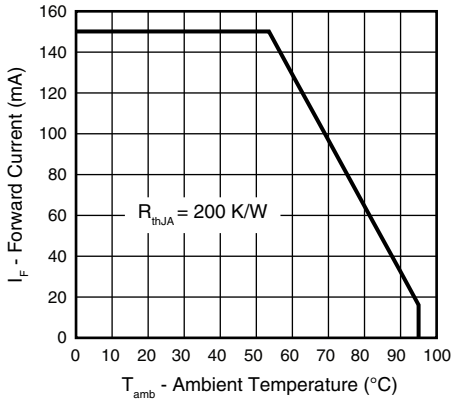


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Forward voltage	I_F = 100 mA, t_p = 20 ms	V_F	1.05	1.28	1.5	V
	I_F = 150 mA, t_p = 20 ms	V_F		1.31	1.55	V
	I_F = 1.5 A, t_p = 100 µs	V_F		1.9		V
Temperature coefficient of V_F	I_F = 150 mA	TK_{VF}		- 0.89		mV/K
Reverse current	V_R = 5 V	I_R			10	µA
Junction capacitance	V_R = 0 V, f = 1 MHz, E = 0 mW/cm²	C_J		86		pF
Radiant intensity	I_F = 150 mA, t_p = 20 ms	I_e	40	60	95	mW/sr
	I_F = 1.5 A, t_p = 100 µs	I_e		520		mW/sr
Radiant power	I_F = 100 mA, t_p = 20 ms	ϕ_e		40		mW
Temperature coefficient of ϕ_e	I_F = 150 mA	$TK\phi_e$		- 0.42		%/K
Angle of half intensity, vertical		φ_v		± 18		deg
Angle of half intensity, horizontal		φ_h		± 36		deg
Peak wavelength	I_F = 30 mA	λ_p		940		nm
Spectral bandwidth	I_F = 30 mA	$\Delta\lambda$		25		nm
Temperature coefficient of λ_p	I_F = 30 mA	$TK\lambda_p$		0.25		nm/K
Rise time	I_F = 100 mA, 20 % to 80 %	t_r		15		ns
Fall time	I_F = 100 mA, 20 % to 80 %	t_f		15		ns
Cut-off frequency	I_{DC} = 70 mA, I_{AC} = 30 mA pp	f_c		24		MHz

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

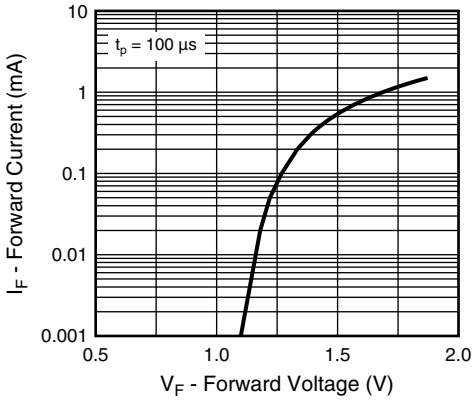


Fig. 3 - Forward Current vs. Forward Voltage

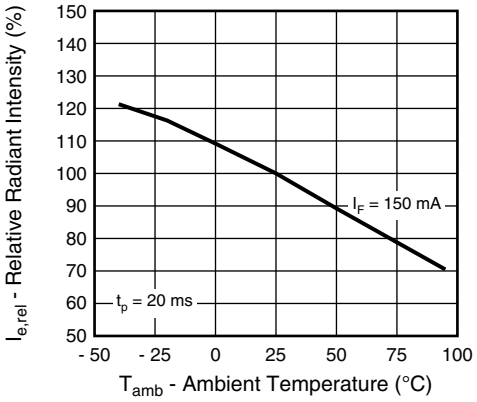


Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature

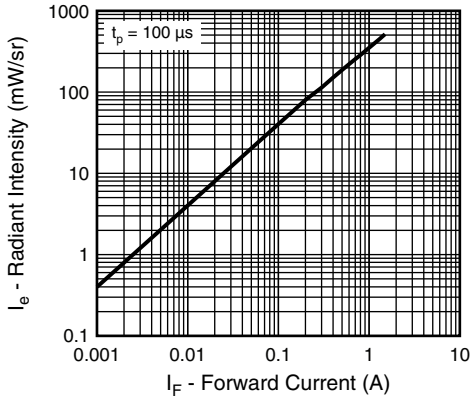


Fig. 4 - Radiant Intensity vs. Forward Current

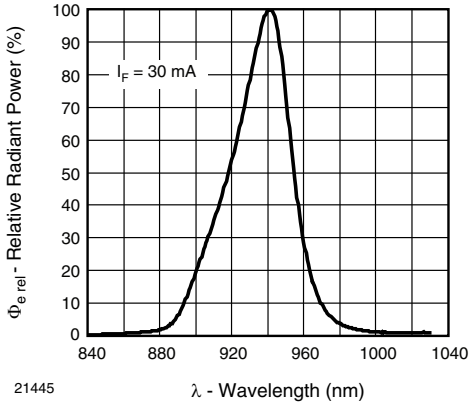


Fig. 7 - Relative Radiant Power vs. Wavelength

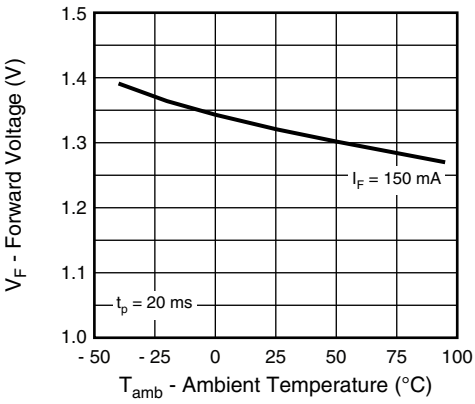


Fig. 5 - Forward Voltage vs. Ambient Temperature

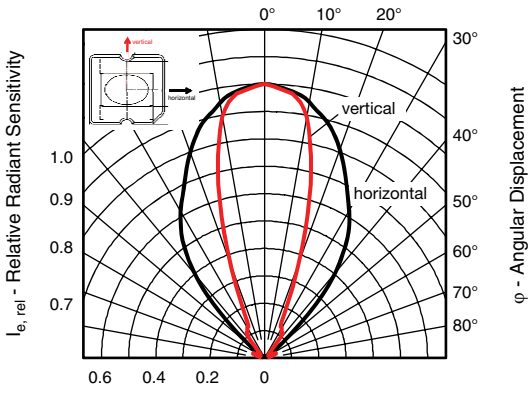
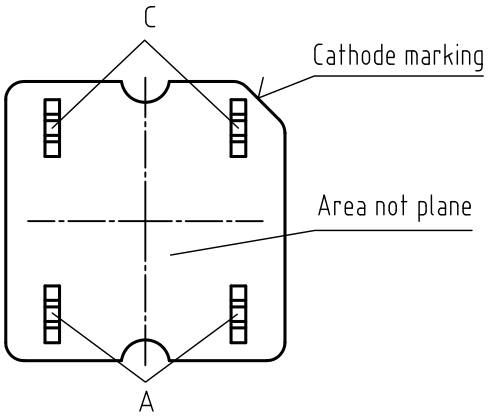
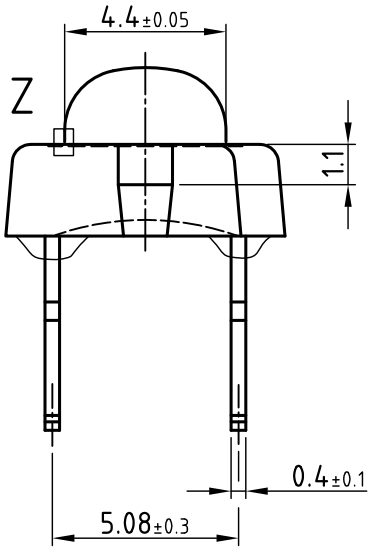
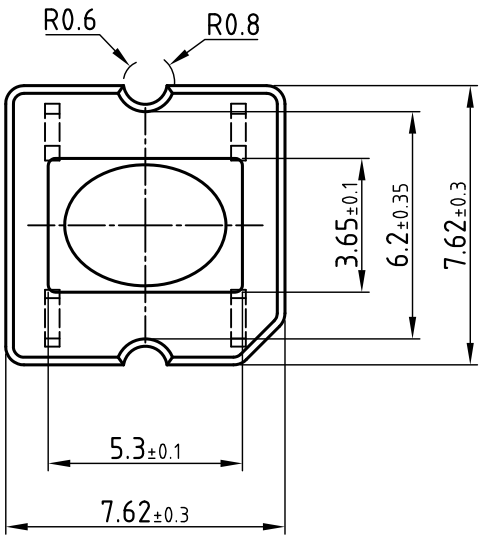


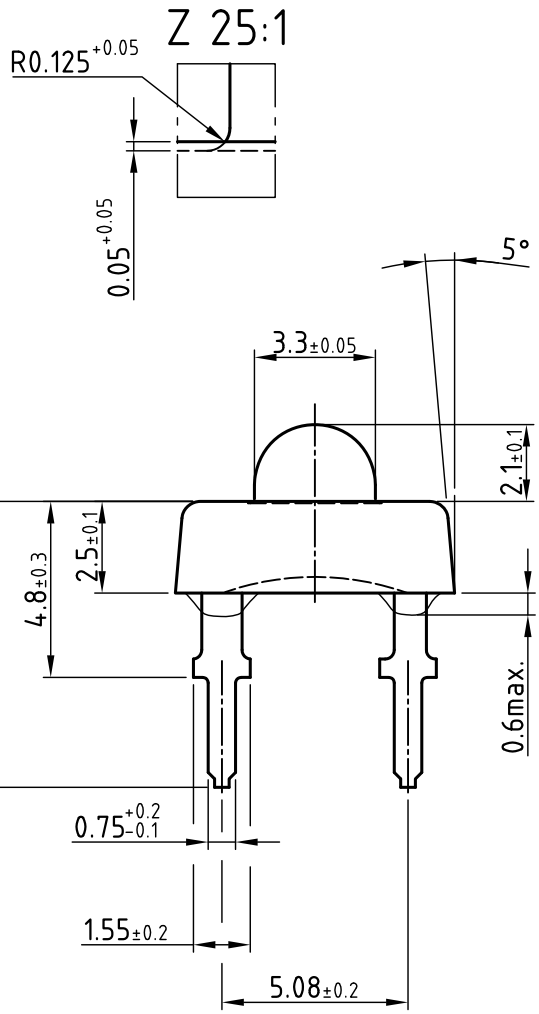
Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters









technical drawings according to DIN specifications

All dimensions in mm

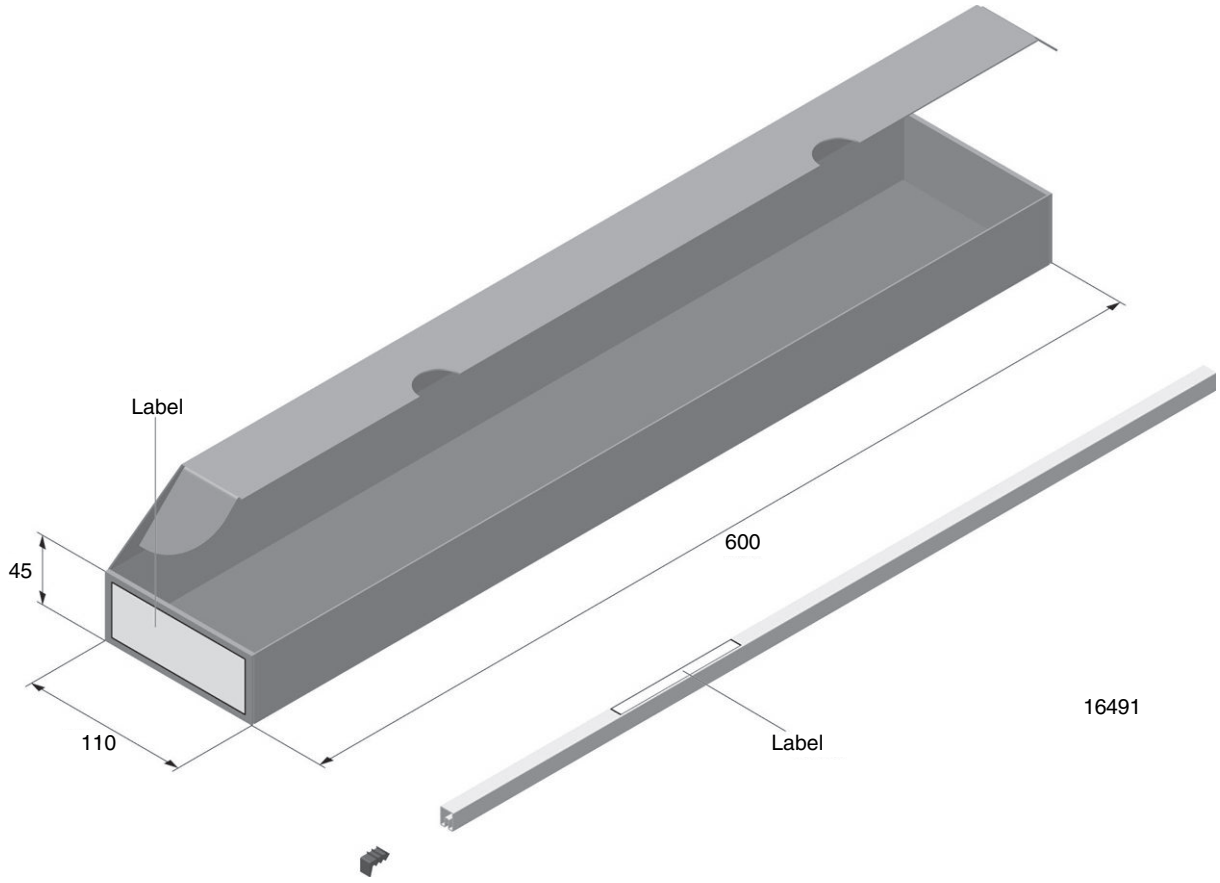
Not indicated tolerances ±0.1

Drawing refers to following types: VSLB 9530S

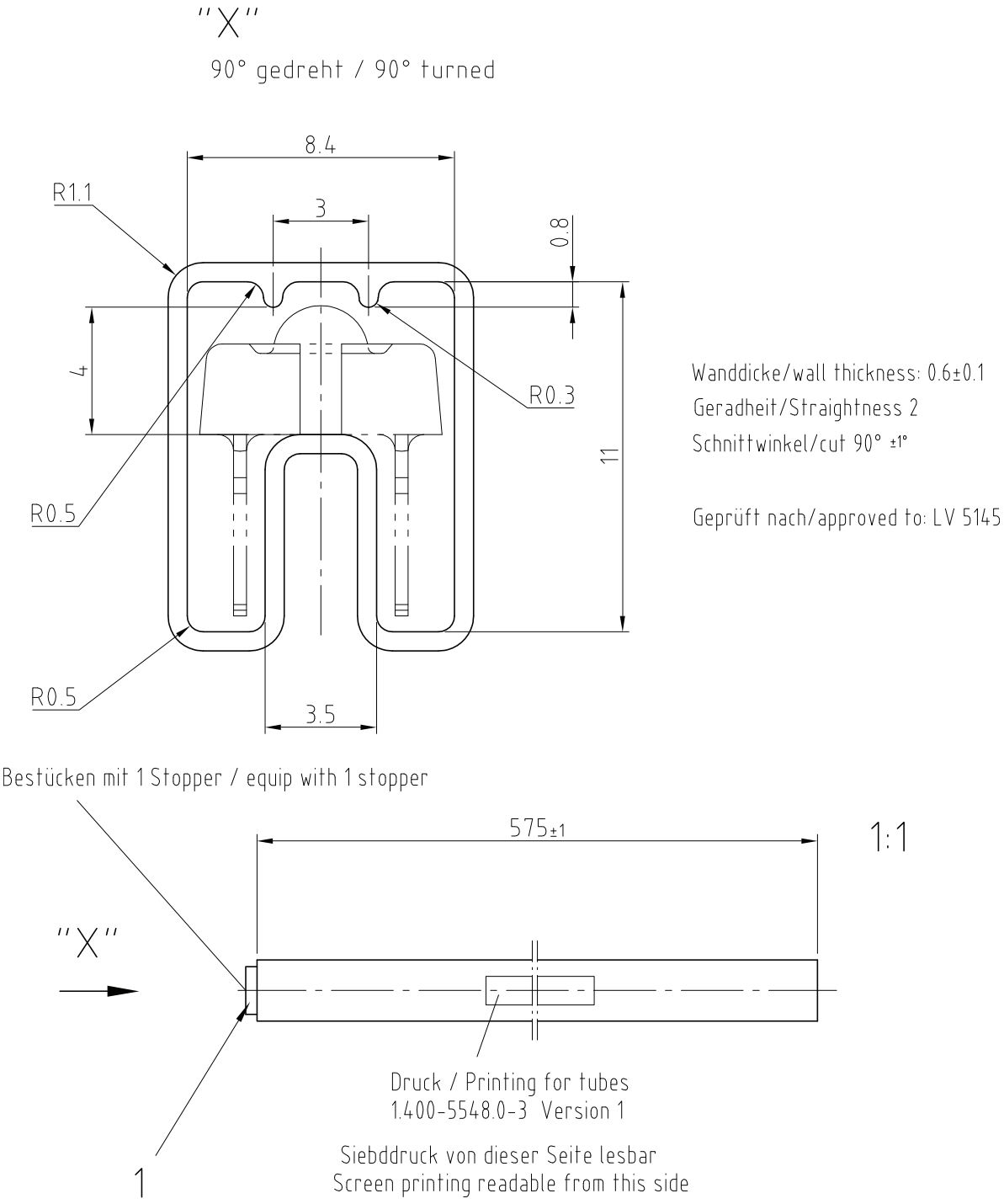
Drawing-No.: 6.544-5395.03-4

Issue: 2; 28.09.12

FAN FOLD BOX DIMENSIONS in millimeters



TUBE WITH BAR CODE LABEL DIMENSIONS in millimeters



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