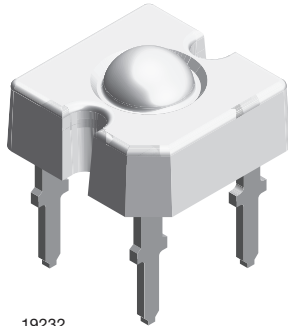




# High Speed Infrared Emitting Diode, 940 nm, GaAlAs, MQW



19232

## 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  $\pm 18^\circ$  and in horizontal direction of  $\pm 36^\circ$ .

## 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:  $\lambda_p = 940 \text{ nm}$
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity, vertical:  $\phi_v = \pm 18^\circ$
- Angle of half intensity, horizontal:  $\phi_h = \pm 36^\circ$
- Low forward voltage
- Suitable for high pulse current operation
- High modulation bandwidth:  $f_c = 24 \text{ MHz}$
- 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](http://www.vishay.com/doc?99912)



## 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)	$\phi_v$ (deg)	$\phi_h$ (deg)	$\lambda_p$ (nm)	$t_r$ (ns)
VSLB9530S	60	$\pm 18$	$\pm 36$	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

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		$V_R$	5	V
Forward current		$I_F$	150	mA
Peak forward current	$t_p/T = 0.5, t_p = 100\text{ }\mu\text{s}$	$I_{FM}$	300	mA
Surge forward current	$t_p = 100\text{ }\mu\text{s}$	$I_{FSM}$	1.5	A
Power dissipation		$P_V$	232.5	mW
Junction temperature		$T_j$	100	$^{\circ}\text{C}$
Operating temperature range		$T_{amb}$	- 40 to + 95	$^{\circ}\text{C}$
Storage temperature range		$T_{stg}$	- 40 to + 100	$^{\circ}\text{C}$
Soldering temperature	$t \leq 5\text{ s}, 1.5\text{ mm from body preheat temperature } 100\text{ }^{\circ}\text{C}/30\text{ s}$	$T_{sd}$	260	$^{\circ}\text{C}$
Thermal resistance junction/ambient		$R_{thJA}$	200	K/W

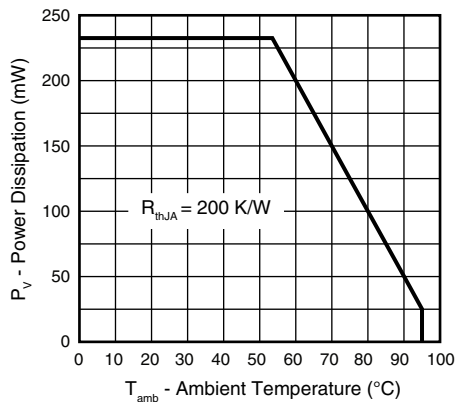


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

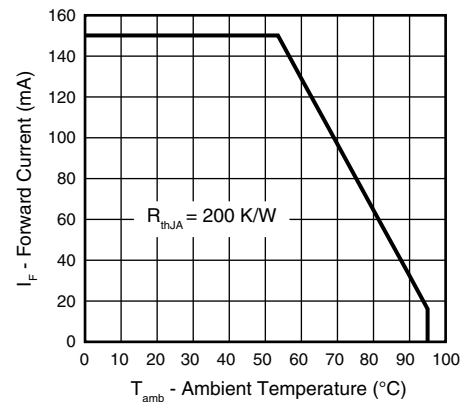


Fig. 2 - Forward Current Limit vs. Ambient Temperature

<b>BASIC CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100\text{ mA}, t_p = 20\text{ ms}$	$V_F$	1.05	1.28	1.5	V
	$I_F = 150\text{ mA}, t_p = 20\text{ ms}$	$V_F$		1.31	1.55	V
	$I_F = 1.5\text{ A}, t_p = 100\text{ }\mu\text{s}$	$V_F$		1.9		V
Temperature coefficient of $V_F$	$I_F = 150\text{ mA}$	$TK_{V_F}$		- 0.89		mV/K
Reverse current	$V_R = 5\text{ V}$	$I_R$			10	$\mu\text{A}$
Junction capacitance	$V_R = 0\text{ V}, f = 1\text{ MHz}, E = 0\text{ mW}/\text{cm}^2$	$C_J$		86		pF
Radiant intensity	$I_F = 150\text{ mA}, t_p = 20\text{ ms}$	$I_e$	40	60	95	mW/sr
	$I_F = 1.5\text{ A}, t_p = 100\text{ }\mu\text{s}$	$I_e$		520		mW/sr
Radiant power	$I_F = 100\text{ mA}, t_p = 20\text{ ms}$	$\phi_e$		40		mW
Temperature coefficient of $\phi_e$	$I_F = 150\text{ mA}$	$TK_{\phi_e}$		- 0.42		%/K
Angle of half intensity, vertical		$\phi_v$		$\pm 18$		deg
Angle of half intensity, horizontal		$\phi_h$		$\pm 36$		deg
Peak wavelength	$I_F = 30\text{ mA}$	$\lambda_p$		940		nm
Spectral bandwidth	$I_F = 30\text{ mA}$	$\Delta\lambda$		25		nm
Temperature coefficient of $\lambda_p$	$I_F = 30\text{ mA}$	$TK_{\lambda_p}$		0.25		nm/K
Rise time	$I_F = 100\text{ mA}, 20\% \text{ to } 80\%$	$t_r$		15		ns
Fall time	$I_F = 100\text{ mA}, 20\% \text{ to } 80\%$	$t_f$		15		ns
Cut-off frequency	$I_{DC} = 70\text{ mA}, I_{AC} = 30\text{ mA pp}$	$f_c$		24		MHz

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

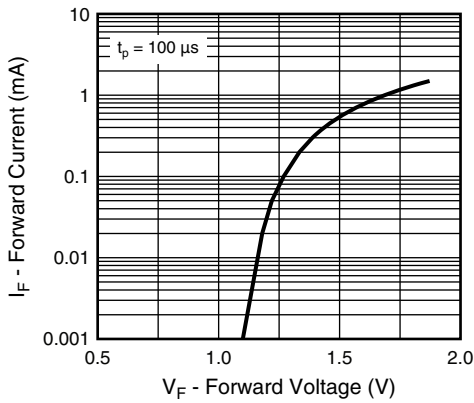


Fig. 3 - Forward Current vs. Forward Voltage

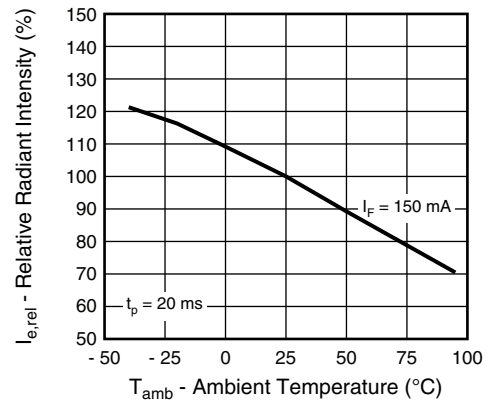


Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature

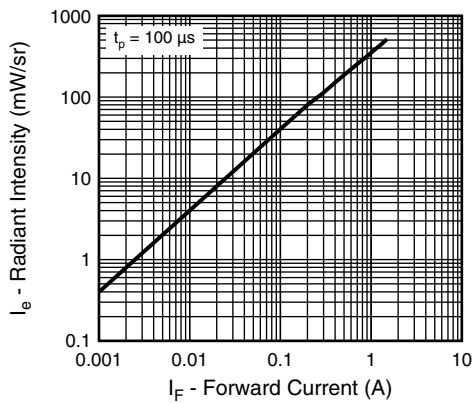


Fig. 4 - Radiant Intensity vs. Forward Current

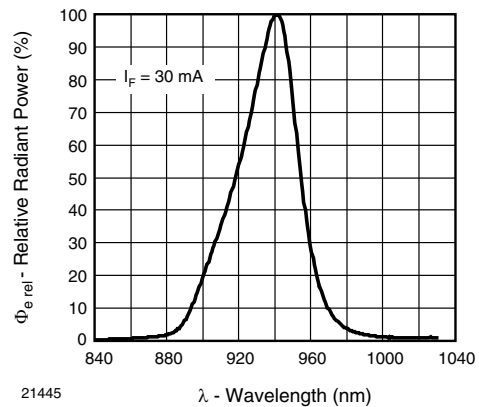


Fig. 7 - Relative Radiant Power vs. Wavelength

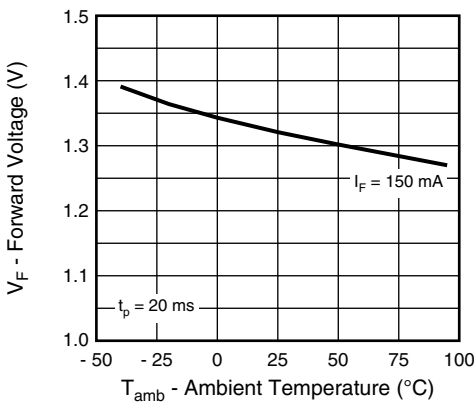


Fig. 5 - Forward Voltage vs. Ambient Temperature

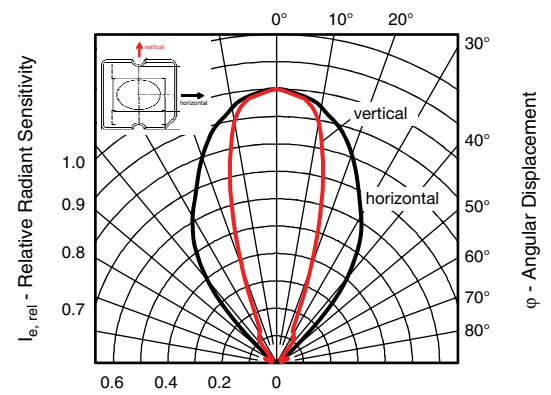
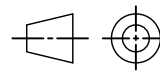
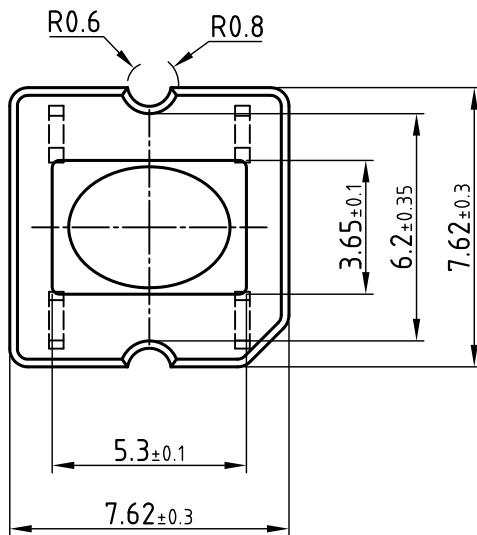
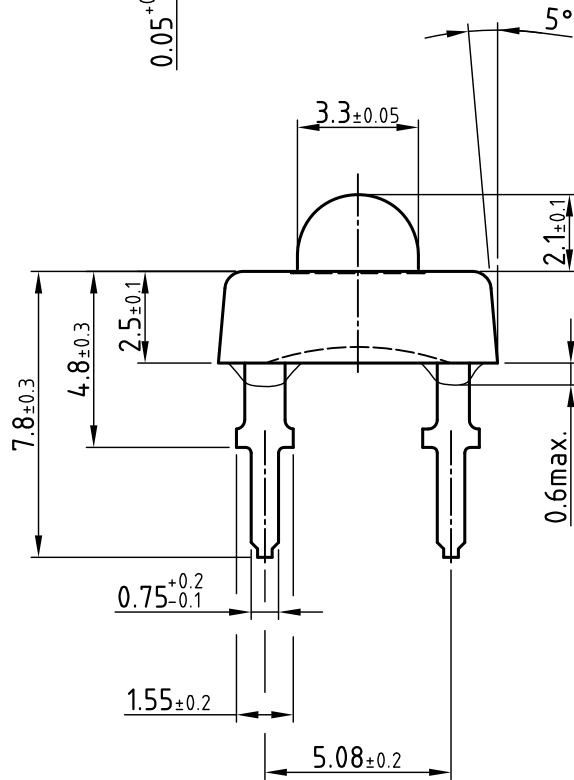
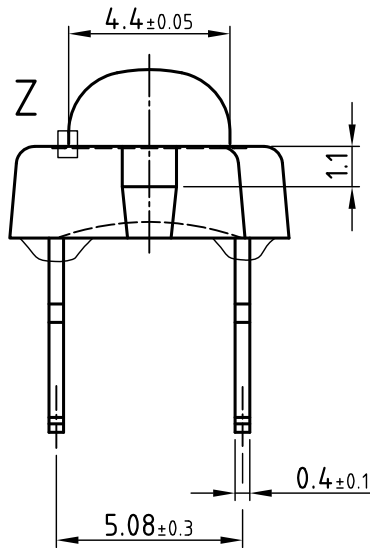
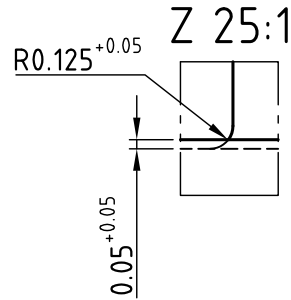
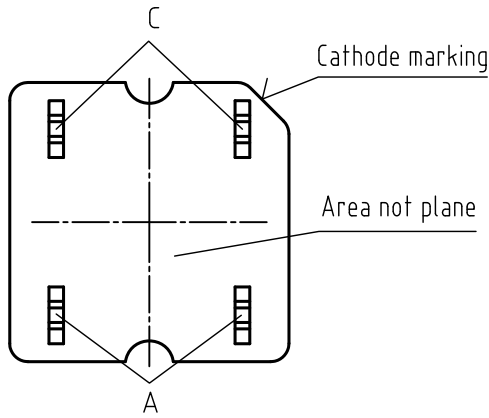


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement



PACKAGE DIMENSIONS in millimeters



technical drawings according to DIN specifications

All dimensions in mm  
Not indicated tolerances  $\pm 0.1$

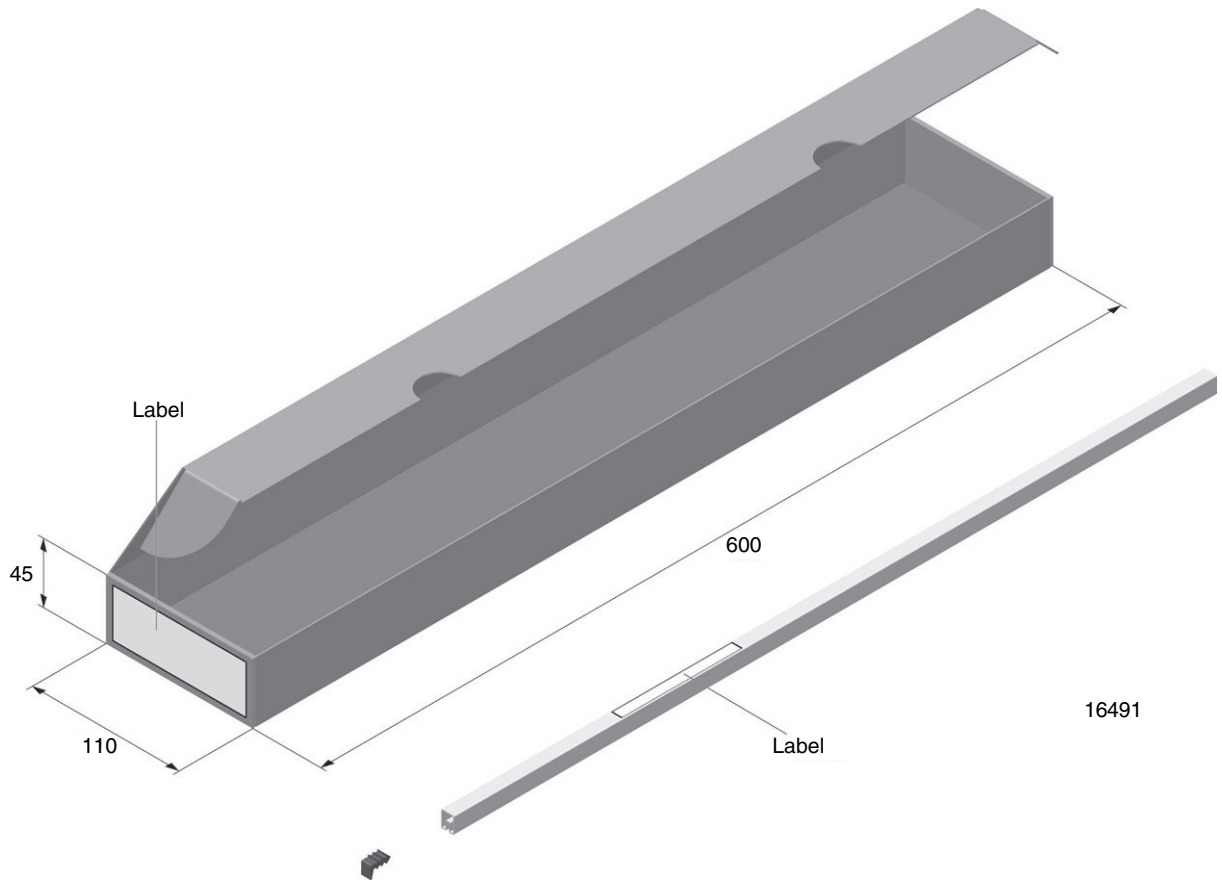
Drawing refers to following types: VSLB 9530S

Drawing-No.: 6.544-5395.03-4

Issue: 2; 28.09.12



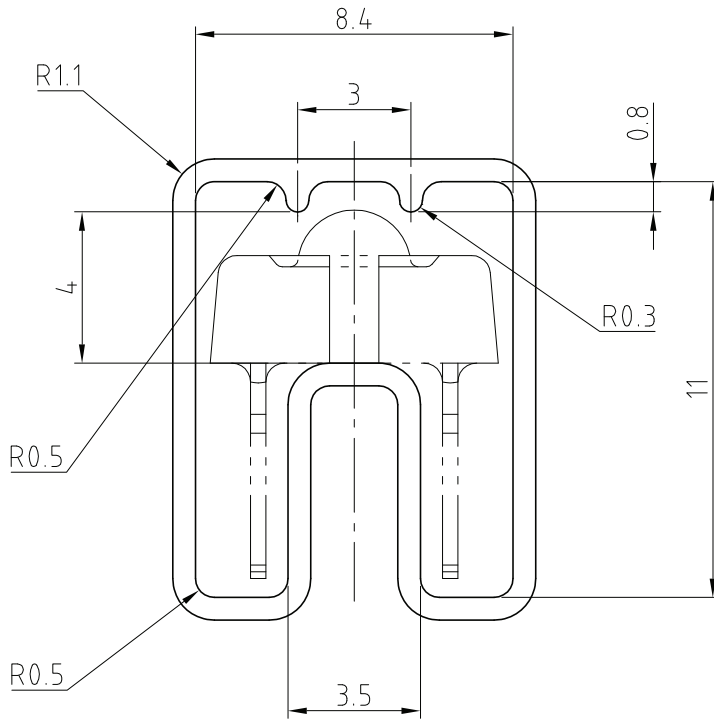
FAN FOLD BOX DIMENSIONS in millimeters



**TUBE WITH BAR CODE LABEL DIMENSIONS** in millimeters

"X"

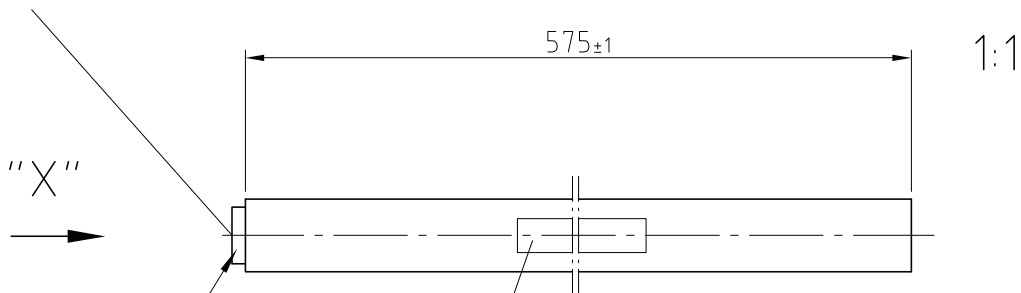
90° gedreht / 90° turned



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



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



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