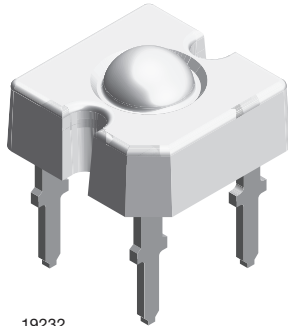




High Speed Infrared Emitting Diode, 940 nm, GaAlAs, MQW



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



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 ($T_{amb} = 25\text{ }^{\circ}\text{C}$, 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 mm from body preheat temperature 100 $^{\circ}\text{C}/30\text{ s}$	T_{sd}	260	$^{\circ}\text{C}$
Thermal resistance junction/ambient		R_{thJA}	200	K/W

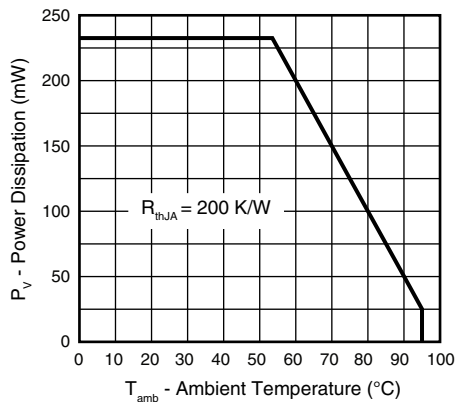


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

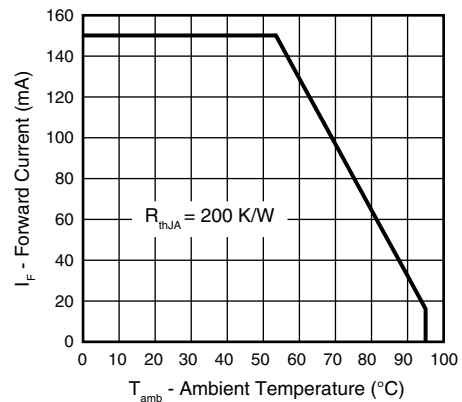


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, 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	μA
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	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	ϕ_e		40		mW
Temperature coefficient of ϕ_e	$I_F = 150\text{ mA}$	TK_{ϕ_e}		- 0.42		%/K
Angle of half intensity, vertical		ϕ_v		± 18		deg
Angle of half intensity, horizontal		ϕ_h		± 36		deg
Peak wavelength	$I_F = 30\text{ mA}$	λ_p		940		nm
Spectral bandwidth	$I_F = 30\text{ mA}$	$\Delta\lambda$		25		nm
Temperature coefficient of λ_p	$I_F = 30\text{ mA}$	TK_{λ_p}		0.25		nm/K
Rise time	$I_F = 100\text{ mA}$, 20 % to 80 %	t_r		15		ns
Fall time	$I_F = 100\text{ mA}$, 20 % 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)

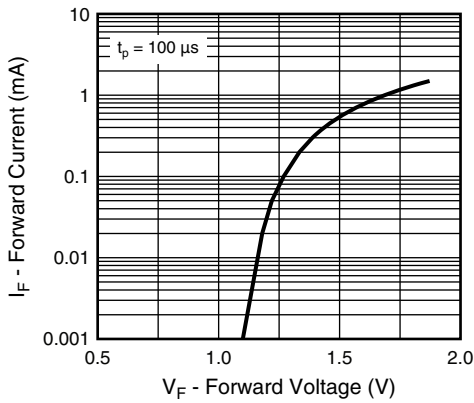


Fig. 3 - Forward Current vs. Forward Voltage

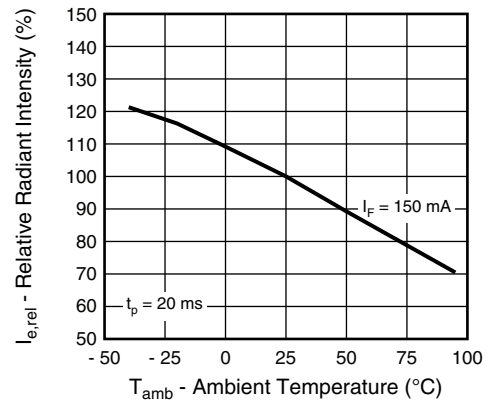


Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature

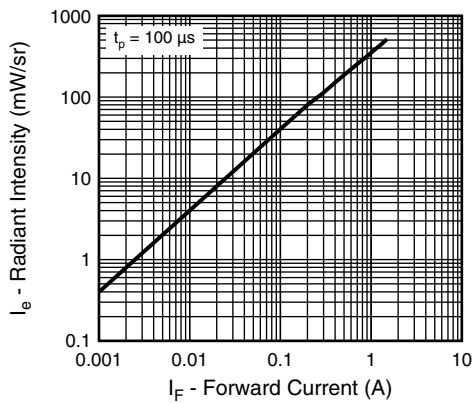


Fig. 4 - Radiant Intensity vs. Forward Current

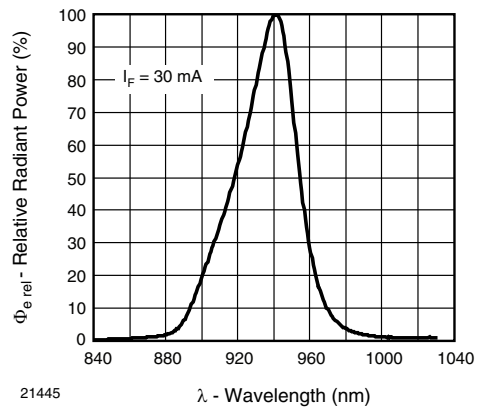


Fig. 7 - Relative Radiant Power vs. Wavelength

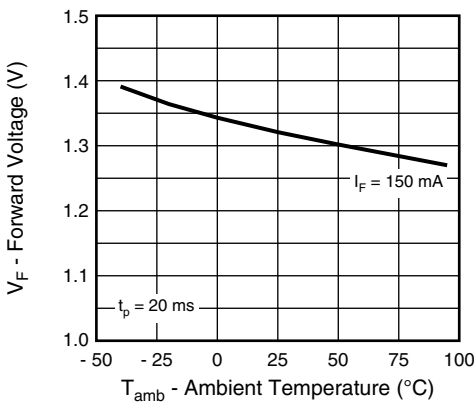


Fig. 5 - Forward Voltage vs. Ambient Temperature

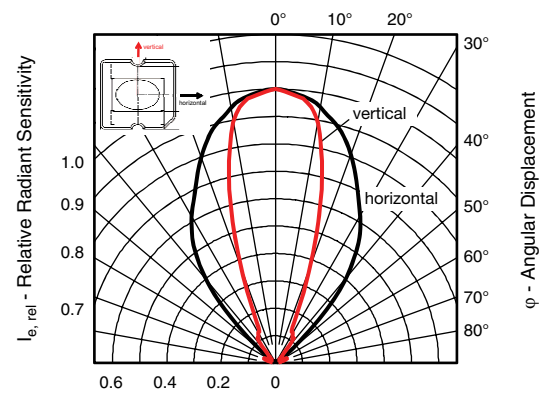
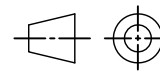
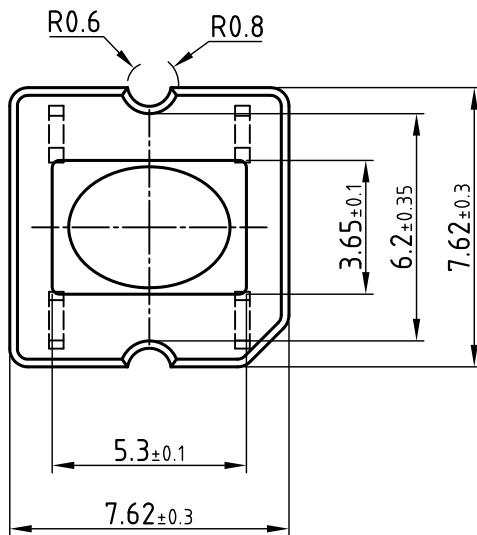
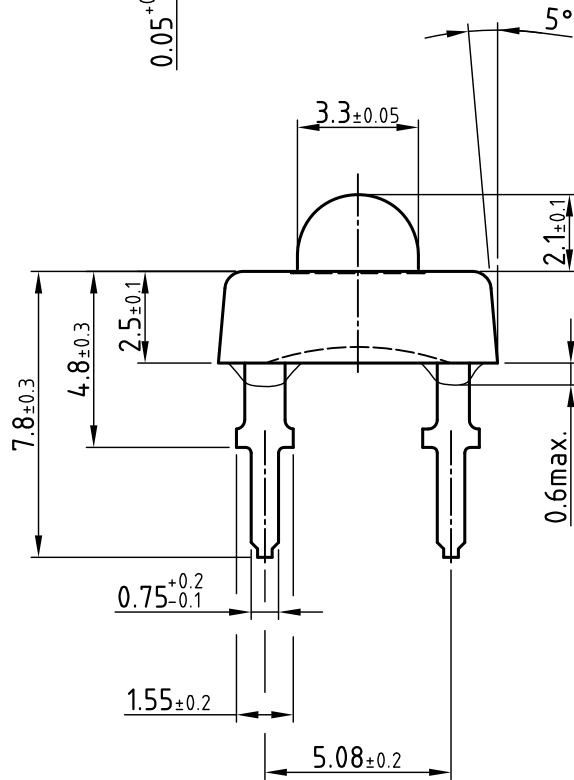
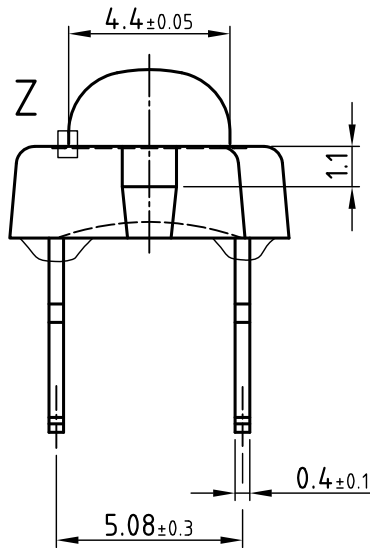
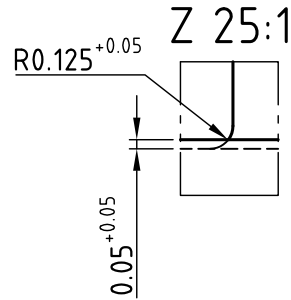
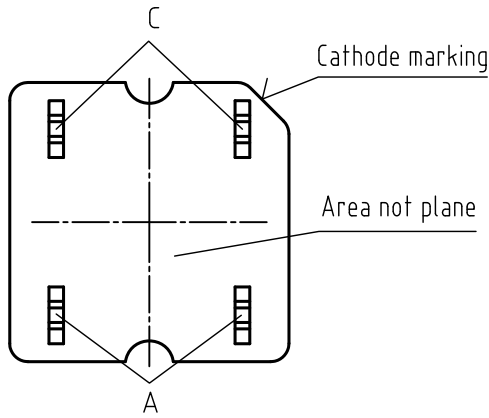


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



technical drawings
according to DIN
specifications

All dimensions in mm
Not indicated tolerances ±0.1

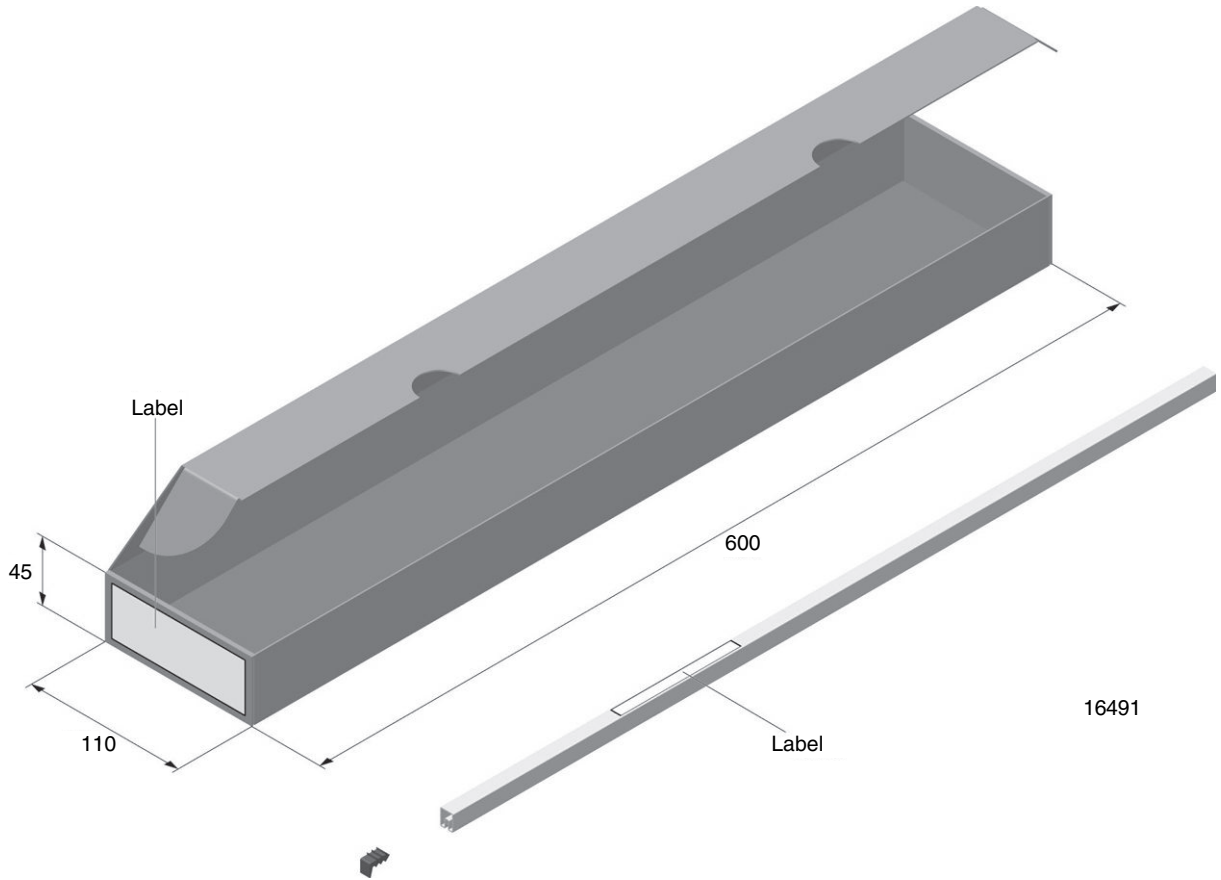
Drawing refers to following types: VSLB 9530S

Drawing-No.: 6.544-5395.03-4

Issue: 2; 28.09.12



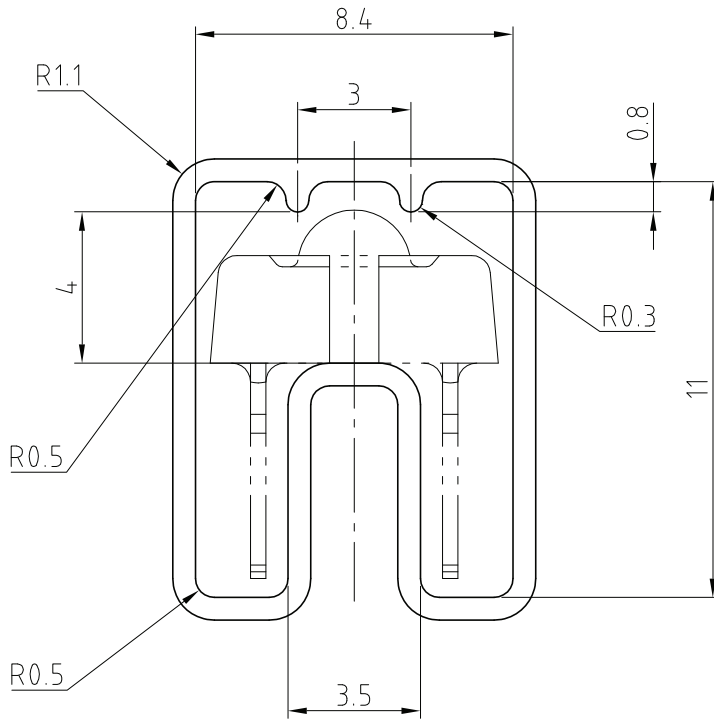
FAN FOLD BOX DIMENSIONS in millimeters



TUBE WITH BAR CODE LABEL DIMENSIONS in millimeters

"X"

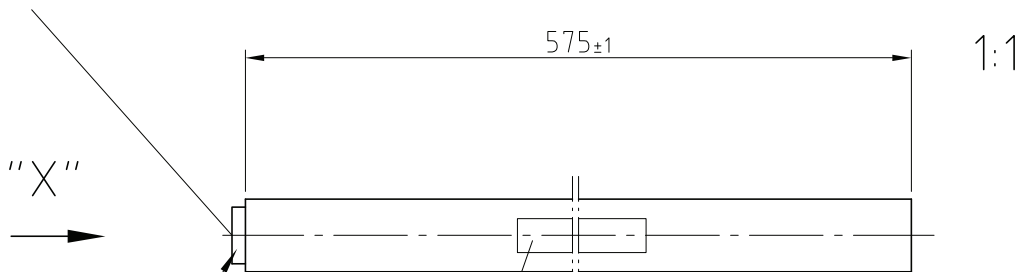
90° gedreht / 90° turned



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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