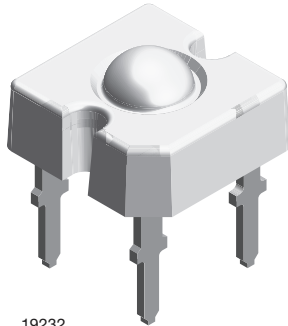




# High Speed Infrared Emitting Diode, 940 nm, GaAlAs, MQW



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	$I_e \text{ (mW/sr)}$	$\phi_v \text{ (deg)}$	$\phi_h \text{ (deg)}$	$\lambda_p \text{ (nm)}$	$t_r \text{ (ns)}$
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

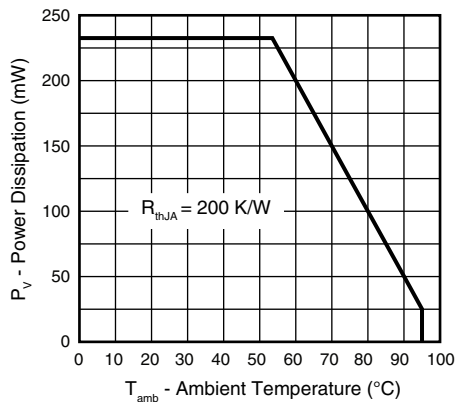


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

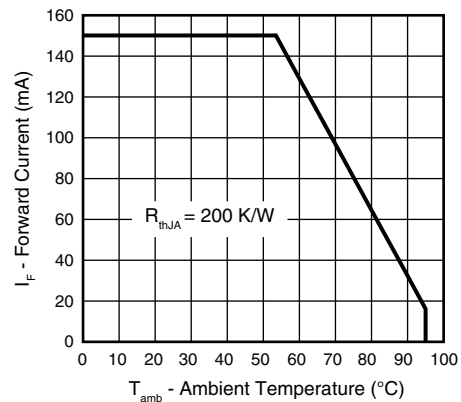


Fig. 2 - Forward Current Limit vs. Ambient Temperature

<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)

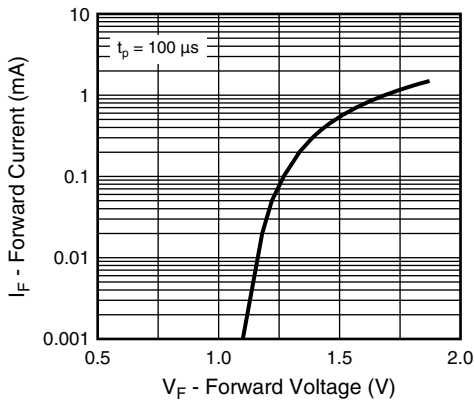


Fig. 3 - Forward Current vs. Forward Voltage

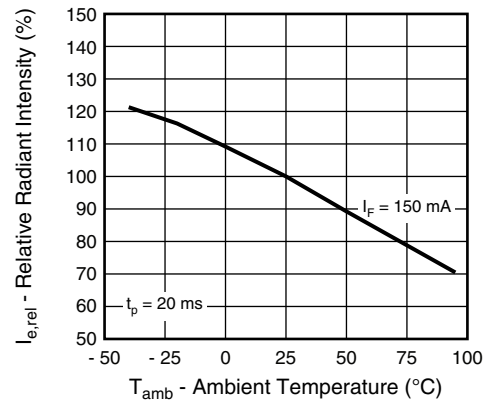


Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature

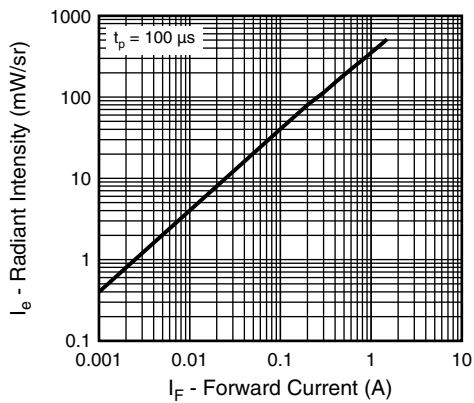


Fig. 4 - Radiant Intensity vs. Forward Current

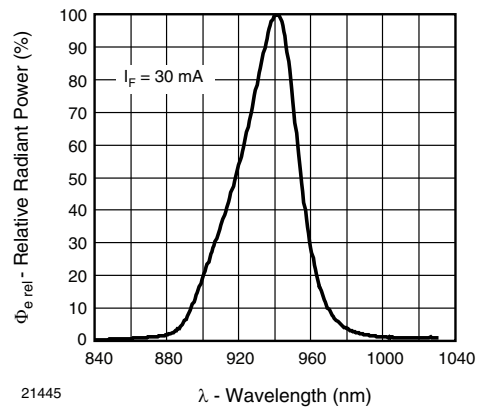


Fig. 7 - Relative Radiant Power vs. Wavelength

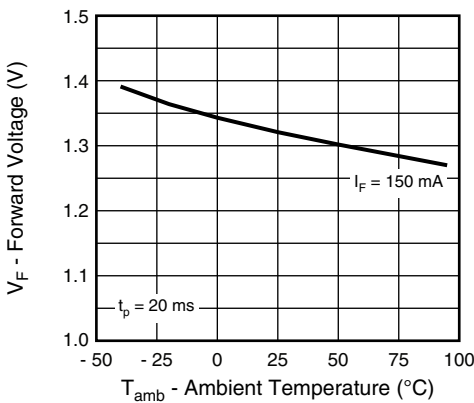


Fig. 5 - Forward Voltage vs. Ambient Temperature

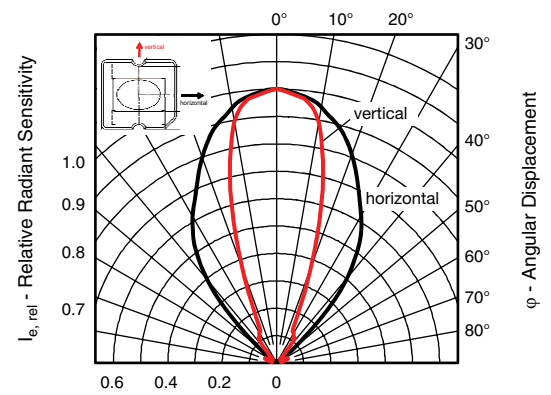
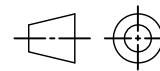
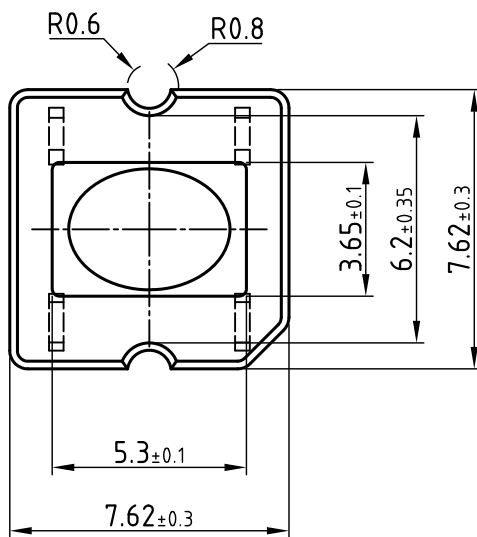
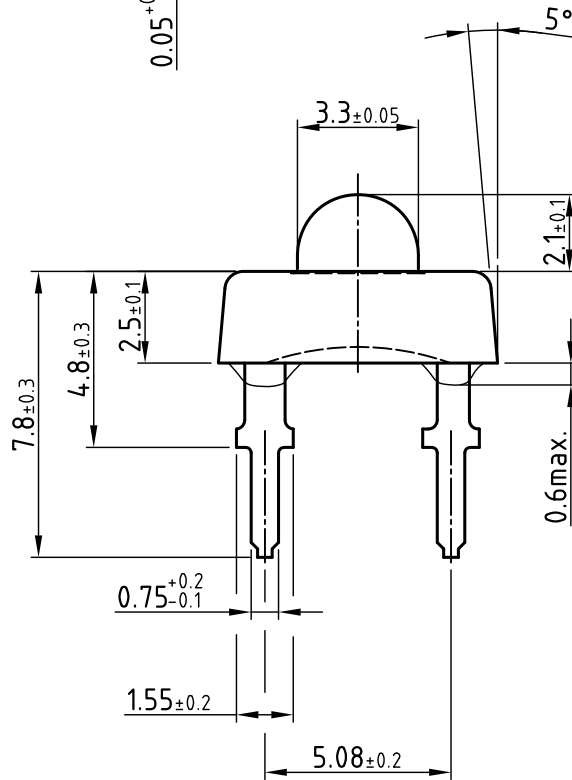
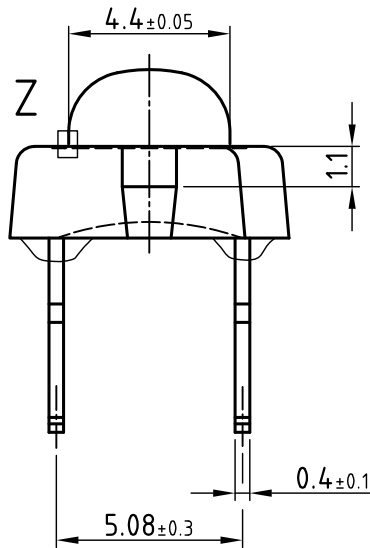
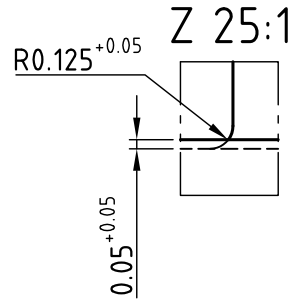
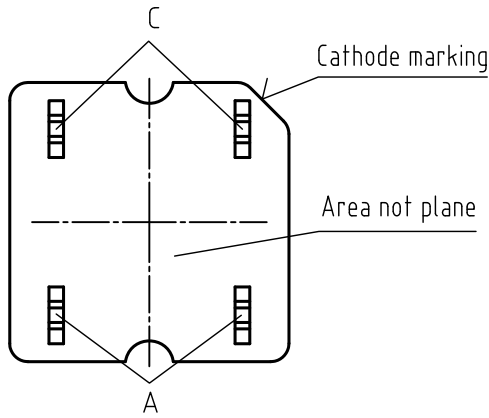


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

**PACKAGE DIMENSIONS** in millimeters



technical drawings  
according to DIN  
specifications

All dimensions in mm  
Not indicated tolerances ±0.1

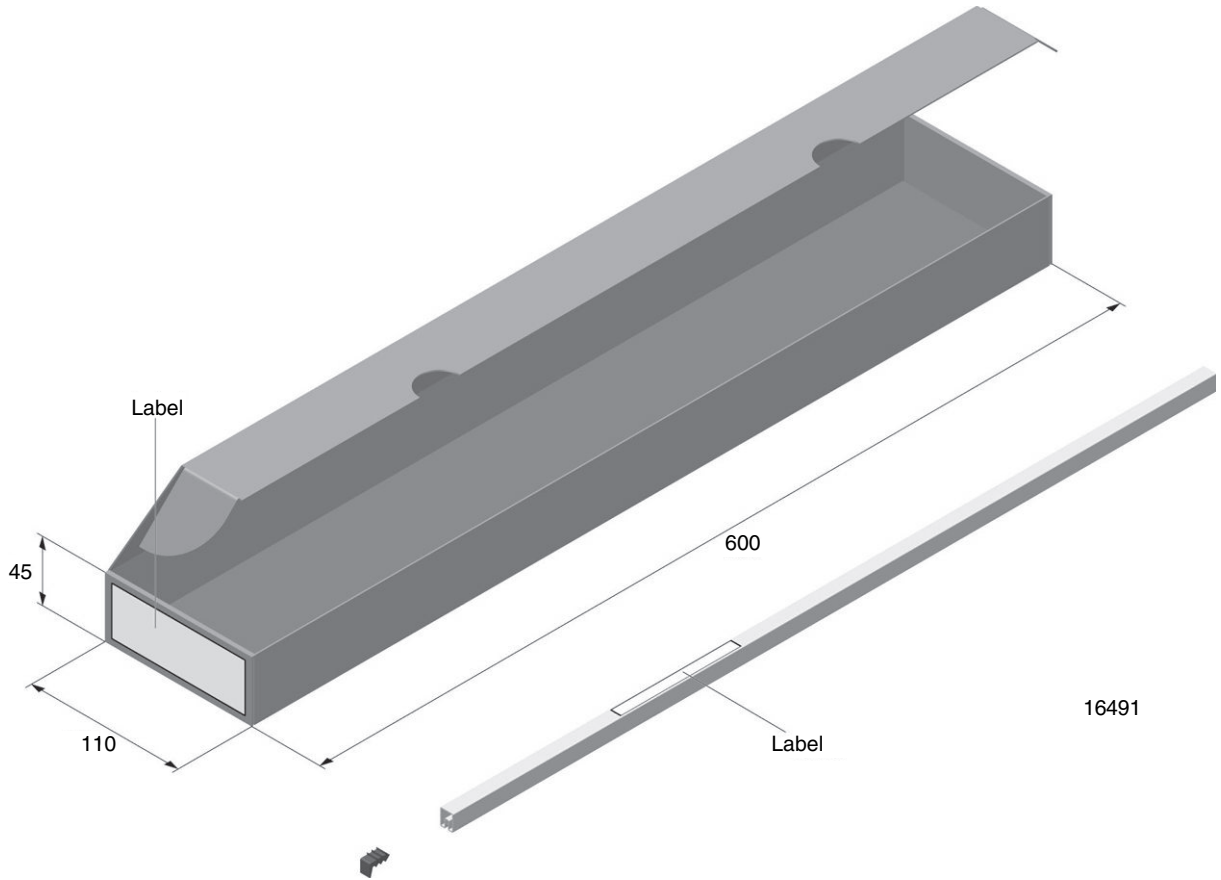
Drawing refers to following types: VSLB 9530S

Drawing-No.: 6.544-5395.03-4

Issue: 2; 28.09.12



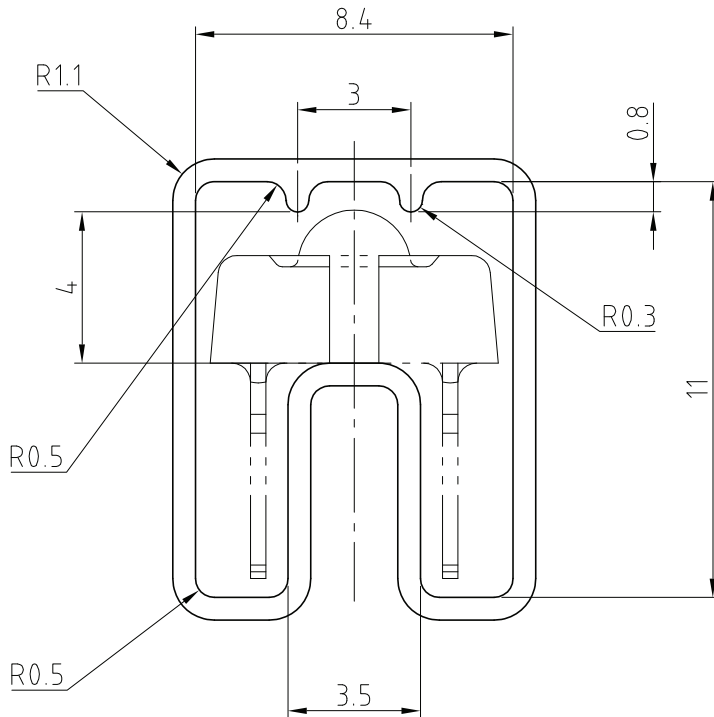
FAN FOLD BOX DIMENSIONS in millimeters



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

"X"

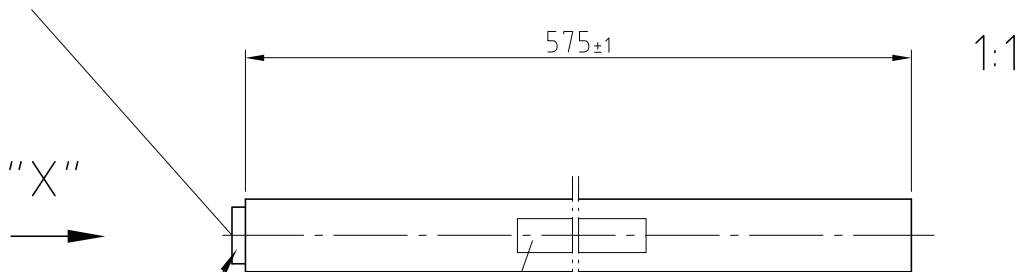
90° gedreht / 90° turned



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



## **Disclaimer**

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

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 in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

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

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Vishay:](#)

[VSLB9530S](#)