VSMB2948SL



Vishay Semiconductors

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



DESCRIPTION

VSMB2948SL is an infrared, 940 nm, side looking emitting diode in GaAlAs multi quantum well (MQW) technology with high radiant power and high speed, molded in clear, untinted plastic package (with lens) for surface mounting (SMD).

APPLICATIONS

- Remote control
- IR touch panels

FEATURES

- Package type: surface mount
- Package form: side view
- Dimensions (L x W x H in mm): 2.3 x 2.55 x 2.3
- Peak wavelength: $\lambda_p = 940 \text{ nm}$
- High reliability
- · High radiant power
- · High radiant intensity
- Angle of half intensity: $\varphi = \pm 25^{\circ}$
- · Low forward voltage
- Suitable for high pulse current operation
- Package matches with detector VEMD2023SLX01 and VEMT2023SLX01
- Floor life: 4 weeks, MSL 2a, acc. J-STD-020
- Material categorization: For definitions of compliance please see <u>www.vishay.com/doc?99912</u>

PRODUCT SUMMARY					
COMPONENT	I _e (mW/sr)	φ (deg)	λ _p (nm)	t _r (ns)	
VSMB2948SL	20	± 25	940	15	

Note

• Test conditions see table "Basic Characteristics"

ORDERING INFORMATI	ON			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM	
VSMB2948SL	Tape and reel	MOQ: 3000 pcs, 3000 pcs/reel	Side view	

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	100	mA	
Surge forward current	t _p = 100 μs	I _{FSM}	500	mA	
Power dissipation		Pv	160	mW	
Junction temperature		Tj	100	°C	
Operating temperature range		T _{amb}	- 40 to + 85	°C	
Storage temperature range		T _{stg}	- 40 to + 100	°C	
Soldering temperature	according figure 9, J-STD-020	T _{sd}	260	°C	
Thermal resistance junction/ambient	J-STD-051, leads 7 mm, soldered on PCB	R _{thJA}	250	K/W	

1 For technical questions, contact: <u>emittertechsupport@vishav.com</u> Document Number: 83498

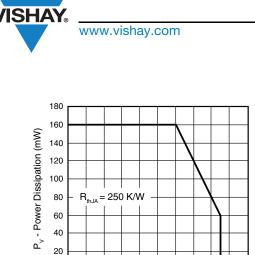


RoHS

COMPLIANT

GREEN (5-2008)





0 10 20 30 40 50 60 70 80 90 100 21343 T_{amb} - Ambient Temperature (°C)

Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

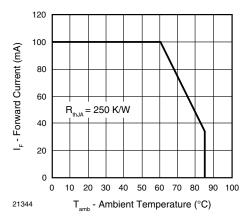


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
	I _F = 100 mA, t _p = 20 ms	V _F	1.15	1.35	1.6	V
Forward voltage	I _F = 500 mA, t _p = 100 μs	V _F		1.8		V
Temperature coefficient of V_F	I _F = 1 mA	TK _{VF}		- 1.5		mV/K
Reverse current	$V_R = 5 V$	I _R			10	μA
Junction capacitance	$V_{R} = 0 V, f = 1 MHz, E = 0 mW/cm^{2}$	CJ		21		pF
Radiant intensity	I _F = 100 mA, t _p = 20 ms	l _e	10	20	30	mW/sr
	I _F = 500 mA, t _p = 100 μs	l _e		90		mW/sr
Radiant power	I _F = 100 mA, t _p = 20 ms	фе		40		mW
Temperature coefficient of radiant power	I _F = 1 mA	ΤKφ _e		- 1.1		%/K
Angle of half intensity		φ		± 25		deg
Peak wavelength	I _F = 30 mA	λρ	920	940	960	nm
Spectral bandwidth	I _F = 30 mA	Δλ		25		nm
Temperature coefficient of λ_p	I _F = 30 mA	ΤΚλρ		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	$I_{DC} = 70 \text{ mA}, I_{AC} = 30 \text{ mA pp}$	f _c		23		MHz





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

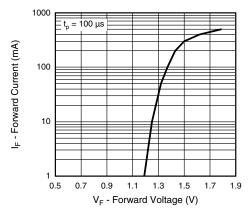


Fig. 3 - Forward Current vs. Forward Voltage

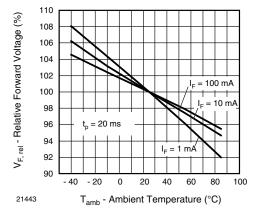


Fig. 4 - Relative Forward Voltage vs. Ambient Temperature

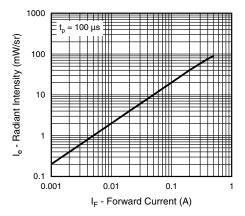


Fig. 5 - Radiant Intensity vs. Forward Current

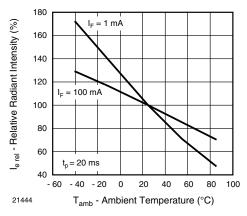
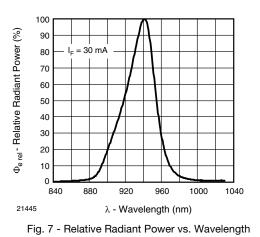


Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature



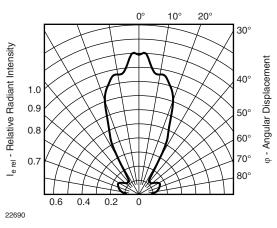


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

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SOLDER PROFILE

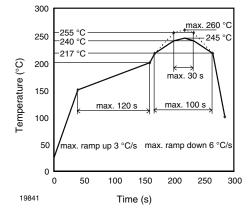


Fig. 9 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020

DRYPACK

Devices are packed in moisture barrier bags (MBB) to prevent the products from moisture absorption during transportation and storage. Each bag contains a desiccant.

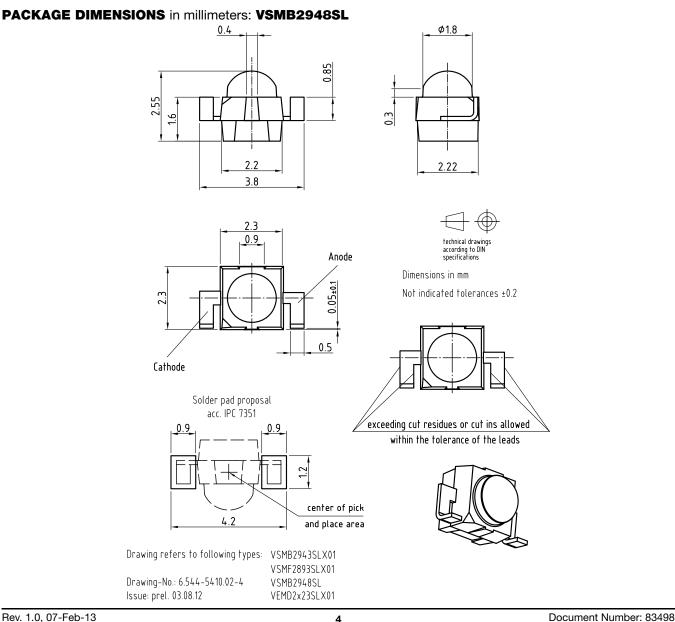
FLOOR LIFE

Floor life (time between soldering and removing from MBB) must not exceed the time indicated on MBB label: Floor life: 4 weeks Conditions: T_{amb} < 30 °C, RH < 60 %

Moisture sensitivity level 2a, acc. to J-STD-020.

DRYING

In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or label. Devices taped on reel dry using recommended conditions 192 h at 40 °C (+ 5 °C), RH < 5 %.



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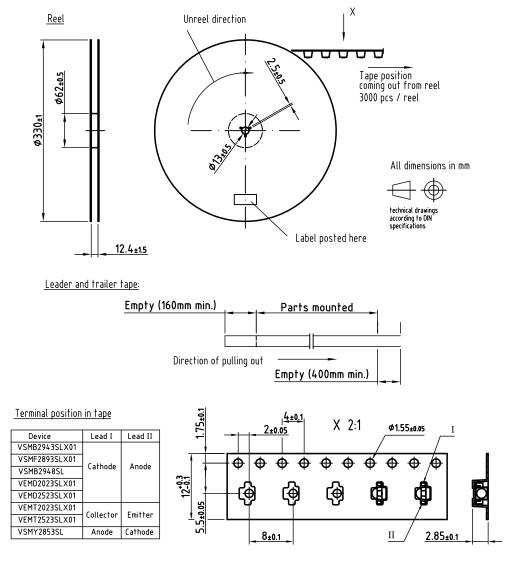
For technical questions, contact: emittertechsupport@vishay.com

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TAPING AND REEL DIMENSIONS in millimeters: VSMB2948SL

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SHA



Drawing refers to following types: see table Reel dimensions and tape Drawing-No.: 9.800-5123.01-4 Issue: prel; 01.02.13



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