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[Vishay Semiconductor/Opto Division](#)
[VSMB2948SL](#)

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www.vishay.com

VSMB2948SL

Vishay Semiconductors

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



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: $\lambda_p = 940$ nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity: $\phi = \pm 25^\circ$
- 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 www.vishay.com/doc?99912



RoHS
COMPLIANT
GREEN
(5-2008)

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

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 INFORMATION

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		P _V	160	mW
Junction temperature		T _j	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

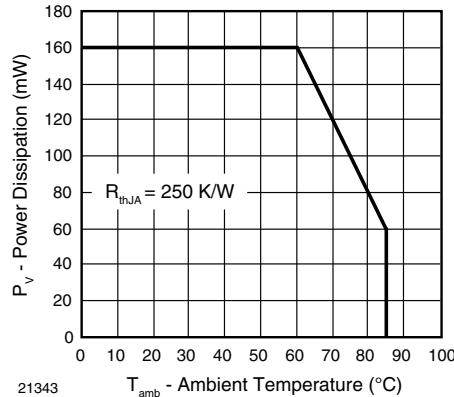


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

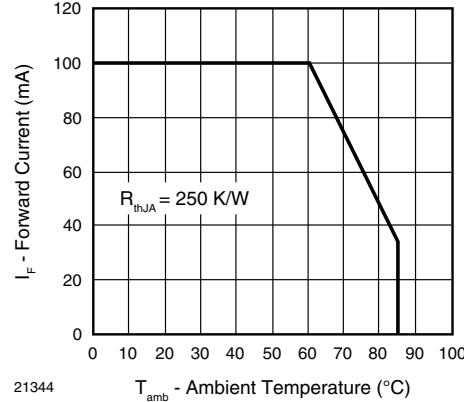


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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	1.15	1.35	1.6	V
	$I_F = 500$ mA, $t_p = 100$ μ s	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	μ A
Junction capacitance	$V_R = 0$ V, $f = 1$ MHz, $E = 0$ mW/cm ²	C_J		21		pF
Radiant intensity	$I_F = 100$ mA, $t_p = 20$ ms	I_e	10	20	30	mW/sr
	$I_F = 500$ mA, $t_p = 100$ μ s	I_e		90		mW/sr
Radiant power	$I_F = 100$ mA, $t_p = 20$ ms	ϕ_e		40		mW
Temperature coefficient of radiant power	$I_F = 1$ mA	$TK\phi_e$		- 1.1		%/K
Angle of half intensity		ϕ		± 25		deg
Peak wavelength	$I_F = 30$ mA	λ_p	920	940	960	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		23		MHz

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

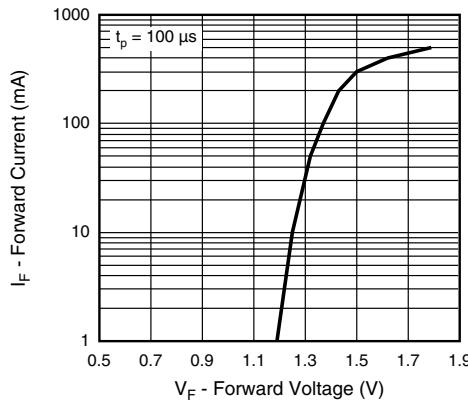


Fig. 3 - Forward Current vs. Forward Voltage

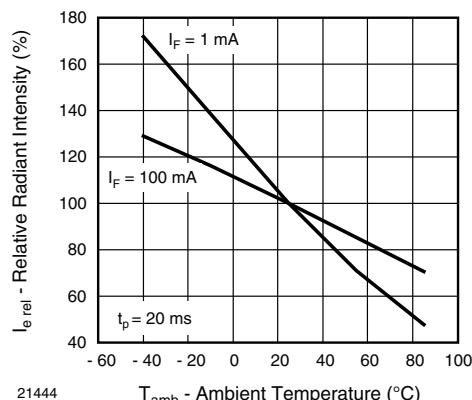


Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature

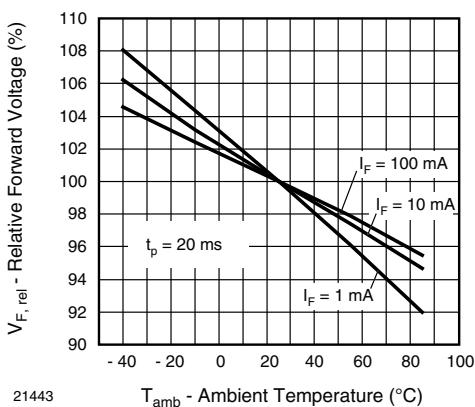


Fig. 4 - Relative Forward Voltage vs. Ambient Temperature

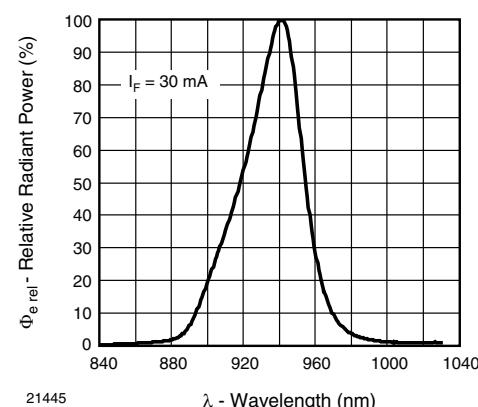


Fig. 7 - Relative Radiant Power vs. Wavelength

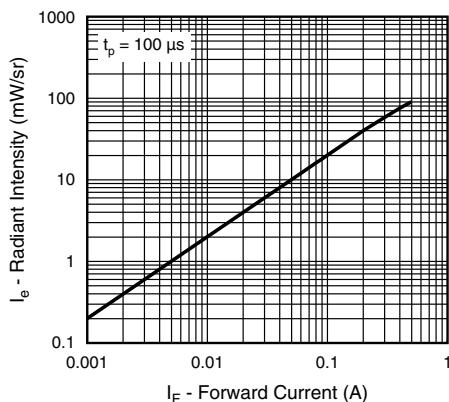


Fig. 5 - Radiant Intensity vs. Forward Current

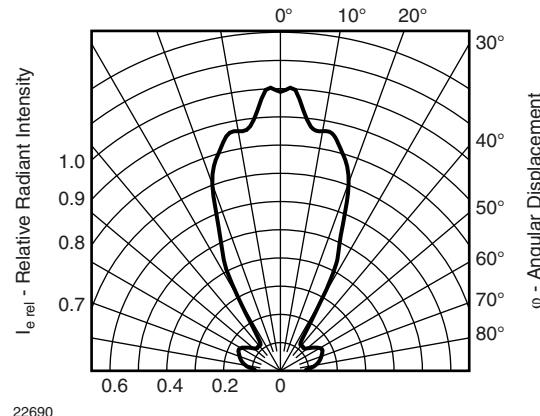


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

SOLDER PROFILE

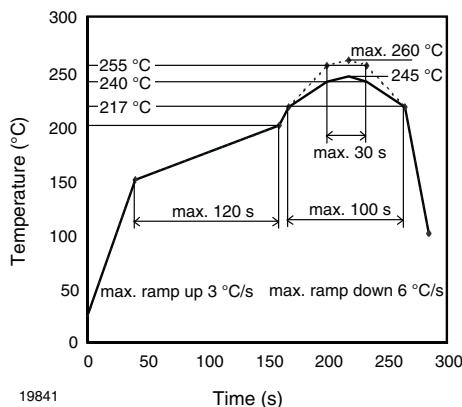


Fig. 9 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020

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

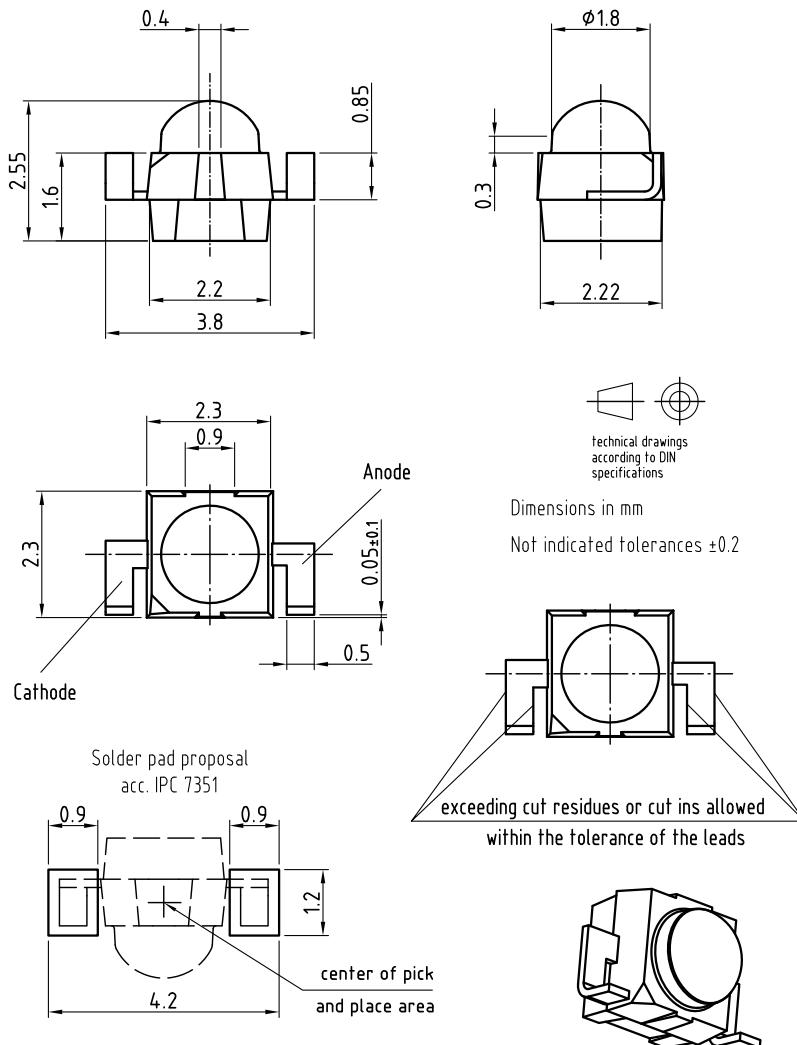
Conditions: $T_{amb} < 30^{\circ}\text{C}$, RH < 60 %

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 ($+ 5^{\circ}\text{C}$), RH < 5 %.

PACKAGE DIMENSIONS in millimeters: **VSMB2948SL**



Drawing refers to following types: VSMB2943SLX01

VSMF2893SLX01

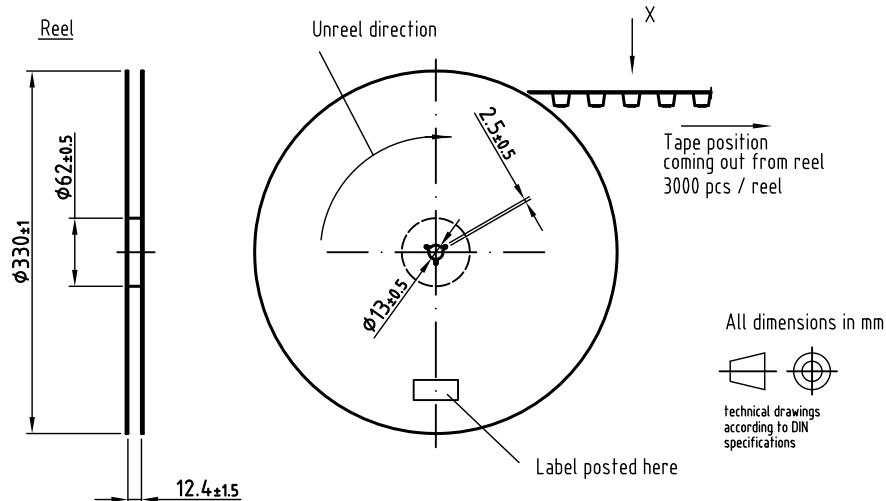
Drawing-No.: 6.544-5410.02-4

VSMB2948SL

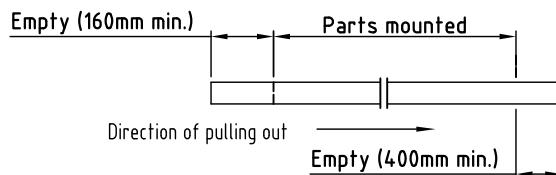
Issue: prel. 03.08.12

VEMD2x23SLX01

TAPING AND REEL DIMENSIONS in millimeters: **VSMB2948SL**

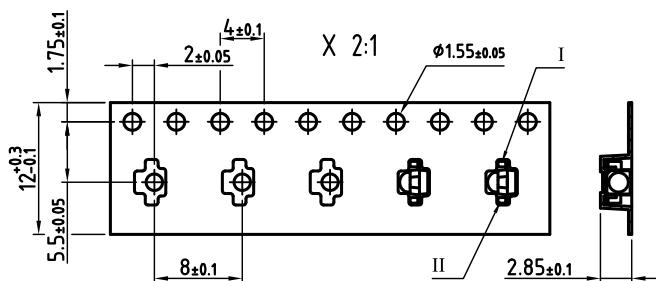


Leader and trailer tape:



Terminal position in tape

Device	Lead I	Lead II
VSMB2943SLX01		
VSMF2893SLX01	Cathode	Anode
VSMB2948SL		
VEMD2023SLX01		
VEMD2523SLX01		
VEMT2023SLX01	Collector	Emitter
VEMT2523SLX01		
VSMY2853SL	Anode	Cathode



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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Vishay

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