VSMY294310SL



Vishay Semiconductors

High Speed Infrared Emitting Diodes, 940 nm, Surface Emitter Technology



DESCRIPTION

As part of the <u>SurfLightTM</u> portfolio, the VSMY294310SL is an infrared, 940 nm, side looking emitting diode based on GaAlAs surface emitter chip technology with extreme high radiant intensities, high optical power and high speed, molded in clear, untinted plastic packages (with lens) for surface mounting (SMD).

APPLICATIONS

- Miniature light barrier
- Photointerrupters
- Optical switch
- Emitter source for proximity sensors
- IR illumination
- Remote control

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
- · Very high radiant intensity
- Angle of half intensity: $\phi = \pm 25^{\circ}$
- Suitable for high pulse current operation
- Package matches with detector VEMD2xx3SLX01 and VEMT2xx3SLX01 series
- 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	l _e (mW/sr)	φ (deg)	λ _P (nm)	t _r (ns)	
VSMY294310SL	25	± 25	940	10	

Note

• Test conditions see table "Basic Characteristics"

ORDERING INFORMATION					
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM		
VSMY294310SL	Tape and reel	MOQ: 3000 pcs, 3000 pcs/reel	Side view		

Note

• MOQ: minimum order quantity



RoHS

COMPLIANT

<u>GREEN</u>

(5-2008)



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	70	mA
Surge forward current	t _p = 100 μs	I _{FSM}	1	A
Power dissipation		Pv	140	mW
Junction temperature		Тj	100	°C
Operating temperature range		T _{amb}	-40 to +85	°C
Storage temperature range		T _{stg}	-40 to +100	°C
Soldering temperature	acc. figure 10, J-STD-020	T _{sd}	260	°C
Thermal resistance junction/ambient	J-STD-051, soldered on PCB	R _{thJA}	250	K/W



Fig. 1 - Power Dissipation Limit vs. Ambient Temperature





PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	I _F = 70 mA, t _p = 20 ms	V _F	-	1.5	2.0	V
	I _F = 1 A, t _p = 100 μs	V _F	-	2.5	-	V
Temperature coefficient of V_F	$I_F = 20 \text{ mA}$	TK _{VF}	-	-1.7	-	mV/K
Reverse current		I _R	not designed for reverse operation		μA	
Junction capacitance	$V_{\rm R} = 0 \text{ V}, \text{ f} = 1 \text{ MHz}, \text{ E} = 0 \text{ mW/cm}^2$	CJ	-	5	-	pF
Radiant intensity	$I_F = 70 \text{ mA}, t_p = 20 \text{ ms}$	l _e	12	25	45	mW/sr
	I _F = 1 A, t _p = 100 μs	l _e	-	260	-	mW/sr
Radiant power	I _F = 70 mA, t _p = 20 ms	φ _e	-	40	-	mW
Temperature coefficient of radiant power	I _F = 70 mA	TK¢e	-	-0.2	-	%/K
Angle of half intensity		φ	-	± 25	-	deg
Peak wavelength	I _F = 20 mA	λρ	920	940	960	nm
Spectral bandwidth	I _F = 20 mA	Δλ	-	35	-	nm
Temperature coefficient of λ_p	I _F = 20 mA	ΤΚλ _ρ	-	0.25	-	nm/K
Rise time	I _F = 70 mA, 20 % to 80 %	t _r	-	10	-	ns
Fall time	I _F = 70 mA, 20 % to 80 %	t _f	-	10	-	ns

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BASIC CHARACTERISTICS (Tamb = 25 °C, unless otherwise specified)



Fig. 3 - Forward Current vs. Forward Voltage



Fig. 4 - Forward Voltage vs. Ambient Temperature



Fig. 5 - Relative Forward Voltage vs. Ambient Temperature



Fig. 6 - Radiant Intensity vs. Forward Current



Fig. 7 - Relative Radiant Intensity vs. Ambient Temperature



Fig. 8 - Relative Radiant Intensity vs. Wavelength

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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 %.



SOLDER PROFILE



Fig. 10 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020







PACKAGE DIMENSIONS in millimeters: VSMY294310SL



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TAPING AND REEL DIMENSIONS in millimeters: VSMY294310SL

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Terminal position in tape

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Device	Lead I	Lead II	
VSMB2943SLX01			
VSMF2893SLX01			
VSMB2948SL	Cathode	Anode	
VEMD2023SLX01			
VEMD2523SLX01			
VEMT2023SLX01	Collector	Emitter	
VEMT2523SLX01	Collector		
VSMY2853SL			
VSMY2943SL	Anode	Cathode	
VSMY294310SL			

Drawing-No.: 9.800-5123.01-4 Issue: 4; 02.10.15



Empty (400 mm min.)

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