



High Speed Infrared Emitting Diode, 890 nm, GaAlAs, DH



DESCRIPTION

VSMF2893SLX01 is an infrared, 890 nm, side looking emitting diode in GaAlAs (DH) technology with high radiant power and high speed, molded in clear, untinted plastic package (with lens) for surface mounting (SMD).

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
- AEC-Q101 qualified
- Peak wavelength: $\lambda_p = 890$ 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 VEMD2xx3SSLX01 and VEMT2xx3SLX01 series
- Floor life: 4 weeks, MSL 2a, acc. J-STD-020
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE
GRADE

RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

APPLICATIONS

- IrDA compatible data transmission
- 3D TV
- IR touch panels
- Miniature light barrier
- Photointerrupters
- Optical switch
- Shaft encoders
- IR emitter source for proximity applications

PRODUCT SUMMARY

COMPONENT	I_e (mW/sr)	ϕ (deg)	λ_p (nm)	t_r (ns)
VSMF2893SLX01	20	± 25	890	30

Note

- Test conditions see table "Basic Characteristics"

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
VSMF2893SLX01	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
Peak forward current	t _p /T = 0.5, t _p = 100 μs	I _{FM}	200	mA
Surge forward current	t _p = 100 μs	I _{FSM}	1	A
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	Acc. 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

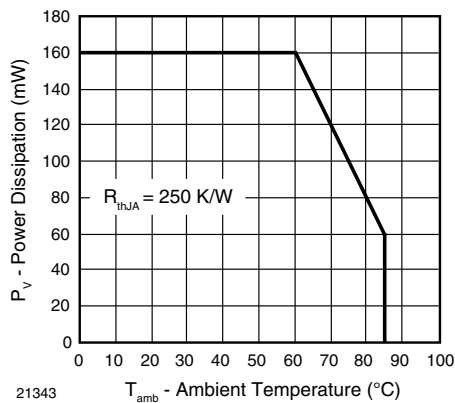


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

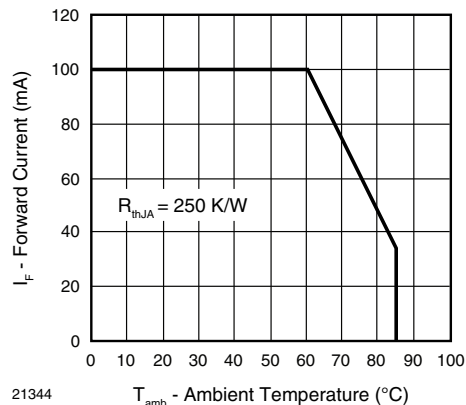


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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	1.25	1.4	1.6	V
	I _F = 1 A, t _p = 100 μs	V _F		2.3		V
Temperature coefficient of V _F	I _F = 1 mA	TK _{V_F}		- 1.8		mV/K
	I _F = 100 mA	TK _{V_F}		- 1.1		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	C _J		125		pF
Radiant intensity	I _F = 100 mA, t _p = 20 ms	I _e	10	20	30	mW/sr
	I _F = 1 A, t _p = 100 μs	I _e		180		mW/sr
Radiant power	I _F = 100 mA, t _p = 20 ms	φ _e		40		mW
Temperature coefficient of φ _e	I _F = 100 mA	TK _{φ_e}		- 0.35		%/K
Angle of half intensity		φ		± 25		deg
Peak wavelength	I _F = 30 mA	λ _p	870	890	910	nm
Spectral bandwidth	I _F = 30 mA	Δλ		40		nm
Temperature coefficient of λ _p	I _F = 30 mA	TK _{λ_p}		0.25		nm/K
Rise time	I _F = 100 mA, 20 % to 80 %	t _r		30		ns
Fall time	I _F = 100 mA, 20 % to 80 %	t _f		30		ns
Cut-off frequency	I _{DC} = 70 mA, I _{AC} = 30 mA pp	f _c		12		MHz



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

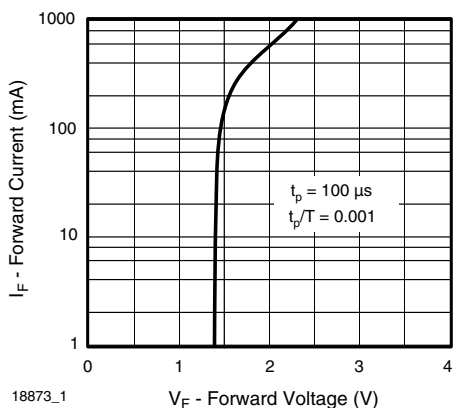


Fig. 3 - Forward Current vs. Forward Voltage

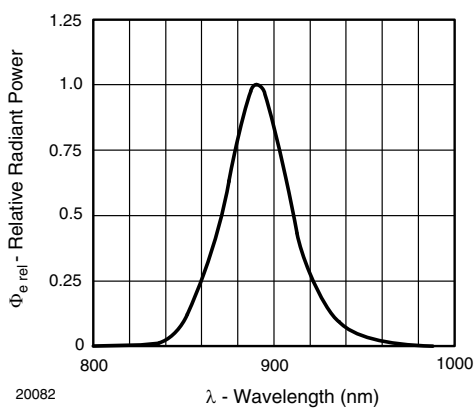


Fig. 6 - Relative Radiant Power vs. Wavelength

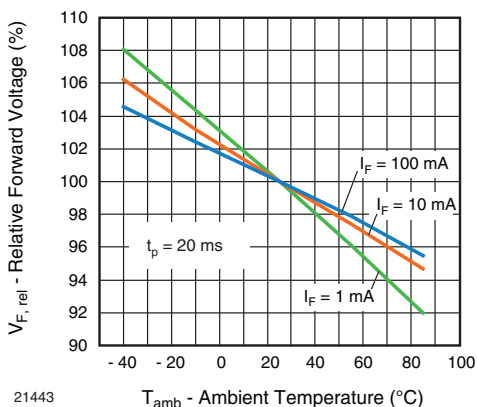


Fig. 4 - Relative Forward Voltage vs. Ambient Temperature

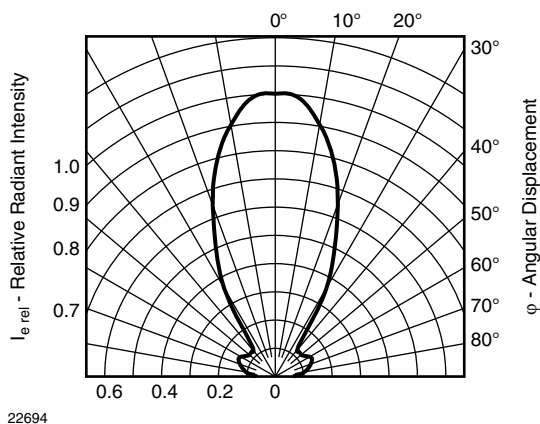


Fig. 7 - Relative Radiant Intensity vs. Angular Displacement

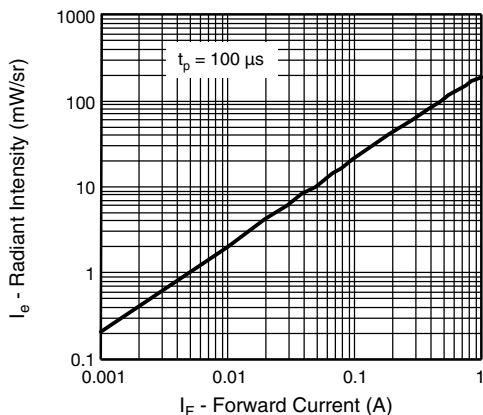


Fig. 5 - Radiant Intensity vs. Forward Current

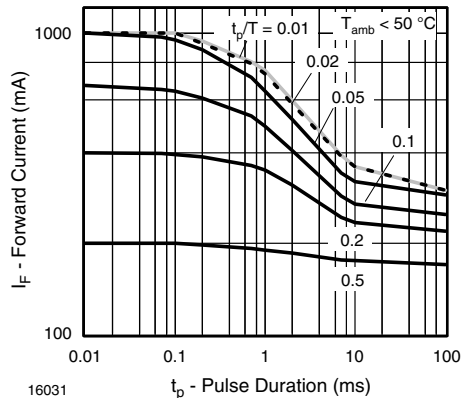


Fig. 8 - Pulse Forward Current vs. Pulse Duration



SOLDER PROFILE

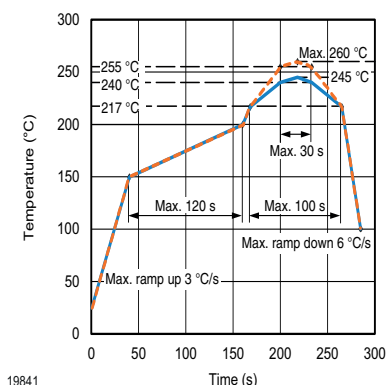


Fig. 9 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020

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: $T_{amb} < 30\text{ °C}$, $RH < 60\%$

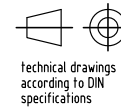
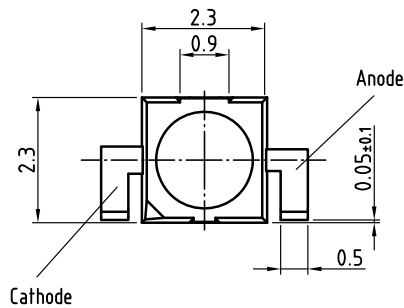
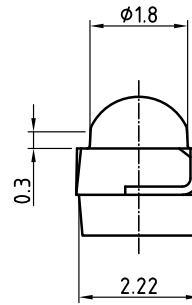
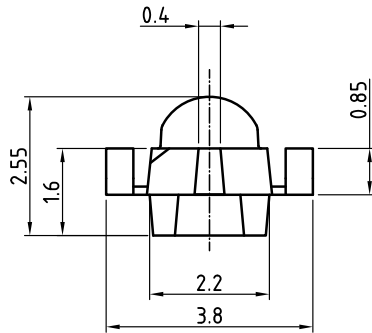
Moisture sensitivity level 2a, acc. to J-STD-020.

DRYING

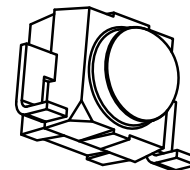
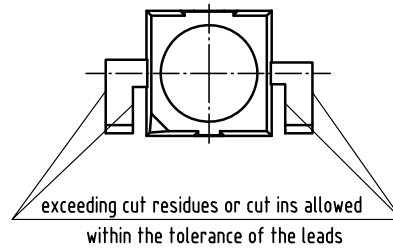
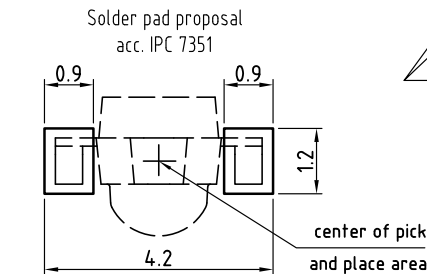
In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or label. Devices taped on reel dry using recommended conditions 192 h at 40 °C ($\pm 5\text{ °C}$), $RH < 5\%$.



PACKAGE DIMENSIONS in millimeters: **VSMF2893SLX01**



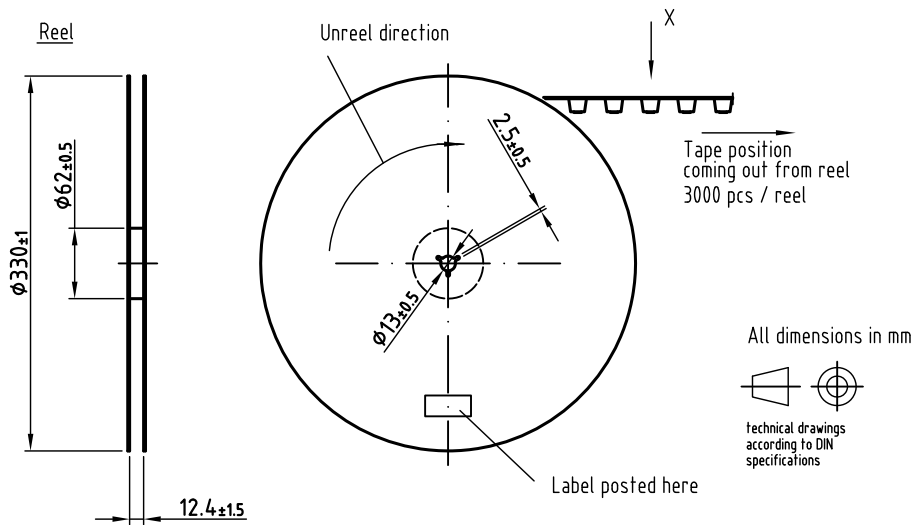
Dimensions in mm
Not indicated tolerances ± 0.2



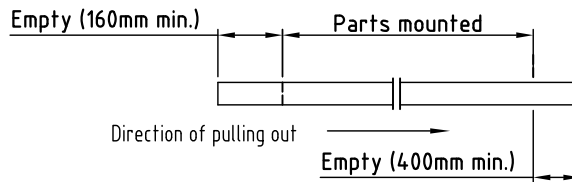
Drawing refers to following types: VSMB2943SLX01
VSMF2893SLX01
Drawing-No.: 6.544-5410.02-4 VSMB2948SL
Issue: prel. 03.08.12 VEMD2x23SLX01



TAPING AND REEL DIMENSIONS in millimeters: VSMF2893SLX01

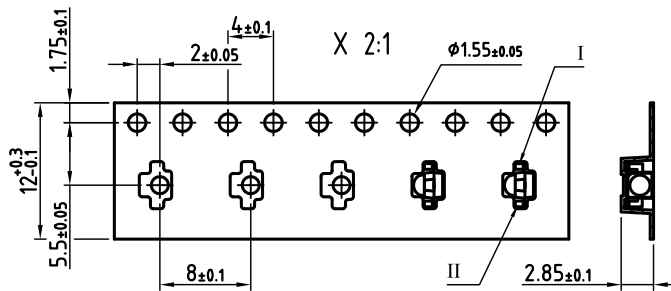


Leader and trailer tape:



Terminal position in tape

Device	Lead I	Lead II
V SMB294.3SLX01	Cathode	Anode
V SMF2893SLX01		
V SMB294.8SL		
V EMD2023SLX01		
V EMD2523SLX01	Collector	Emitter
V EMT2023SLX01		
V EMT2523SLX01	Anode	Cathode
V SMY2853SL		



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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