

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



## 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:  $\varphi = \pm 25^\circ$
- 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](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
**GREEN**  
(5-2008)

## 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).

## 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)	$\varphi$ (deg)	$\lambda_p$ (nm)	$t_r$ (ns)
VSMF2893SLX01	20	$\pm 25$	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

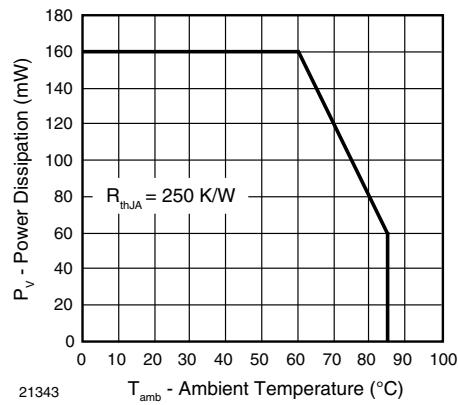


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

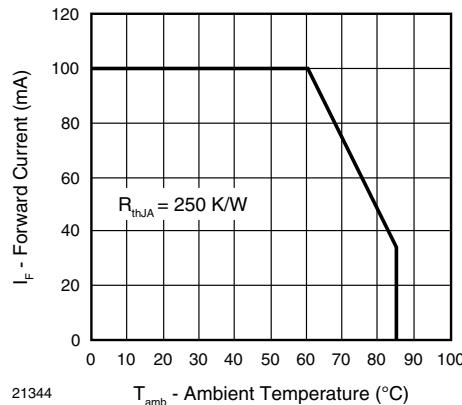


Fig. 2 - Forward Current Limit vs. Ambient Temperature

**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	$TK_{VF}$		- 1.8		mV/K
	$I_F = 100$ mA	$TK_{VF}$		- 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 <sup>2</sup>	$C_J$		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	$\phi_e$		40		mW
Temperature coefficient of $\phi_e$	$I_F = 100$ mA	$TK\phi_e$		- 0.35		%/K
Angle of half intensity		$\varphi$		± 25		deg
Peak wavelength	$I_F = 30$ mA	$\lambda_p$	870	890	910	nm
Spectral bandwidth	$I_F = 30$ mA	$\Delta\lambda$		40		nm
Temperature coefficient of $\lambda_p$	$I_F = 30$ mA	$TK\lambda_p$		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

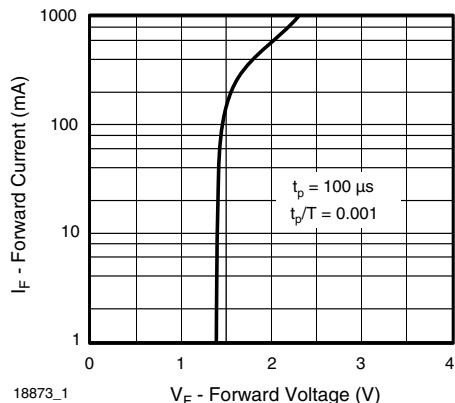
**BASIC CHARACTERISTICS** ( $T_{amb} = 25^{\circ}\text{C}$ , unless otherwise specified)


Fig. 3 - Forward Current vs. Forward Voltage

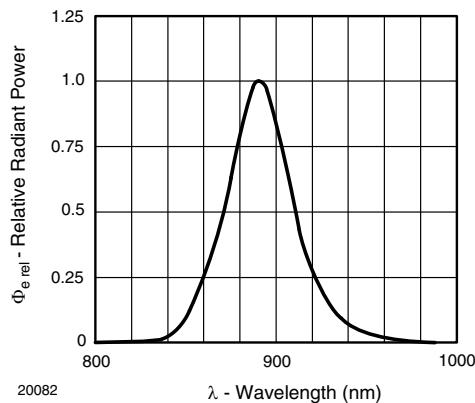


Fig. 6 - Relative Radiant Power vs. Wavelength

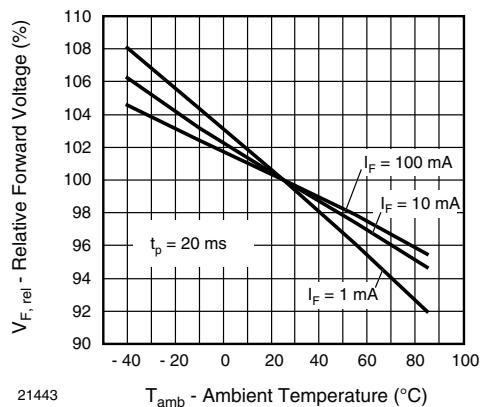


Fig. 4 - Relative Forward Voltage vs. Ambient Temperature

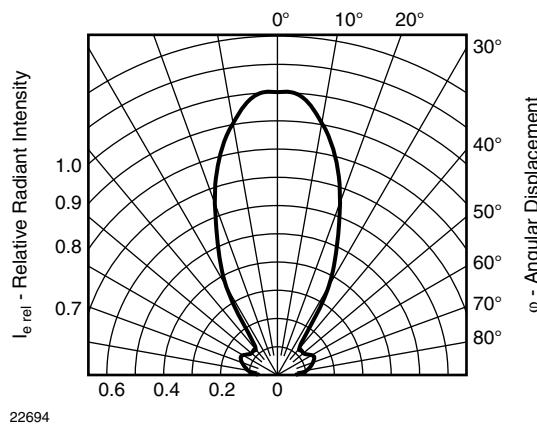


Fig. 7 - Relative Radiant Intensity vs. Angular Displacement

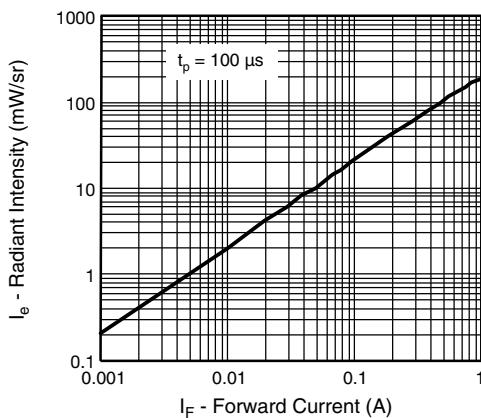


Fig. 5 - Radiant Intensity vs. Forward Current

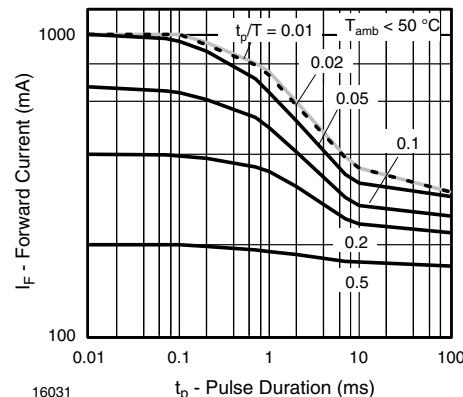
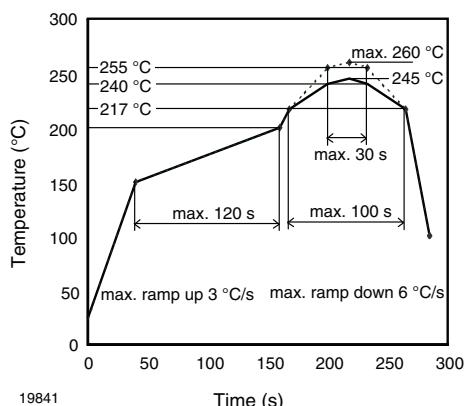
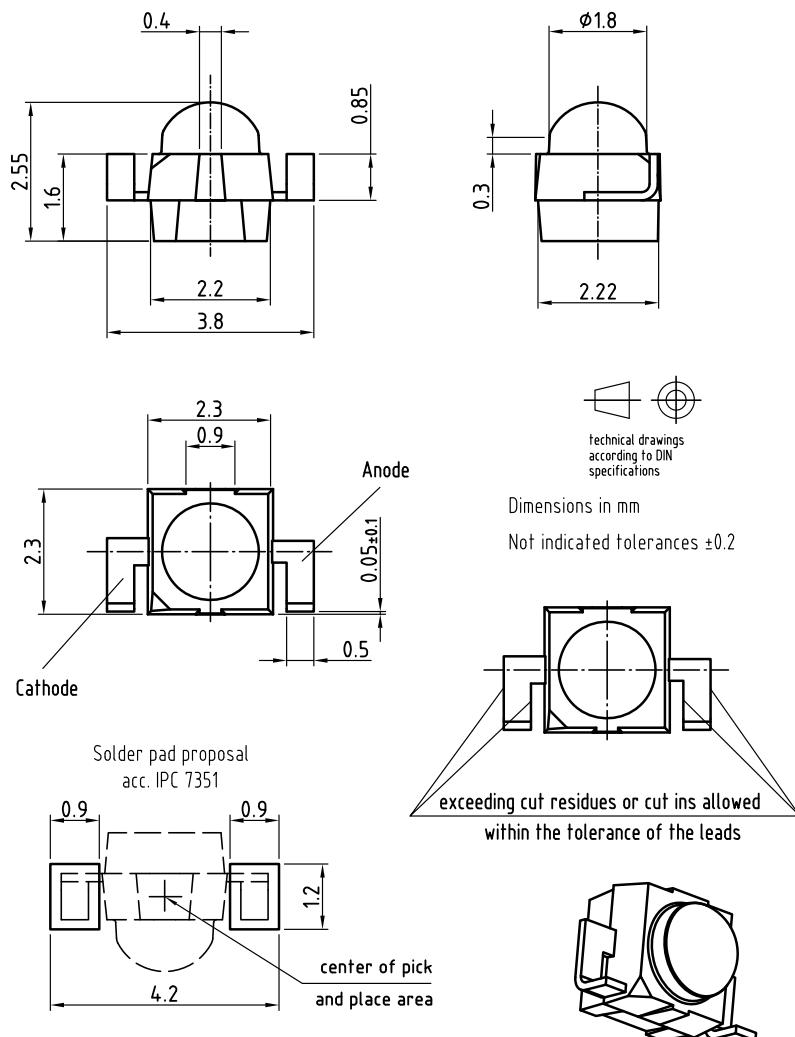


Fig. 8 - Pulse Forward Current vs. Pulse Duration

**SOLDER PROFILE**

**PACKAGE DIMENSIONS** in millimeters: **VSMF2893SLX01**


Drawing refers to following types: VSMB2943SLX01

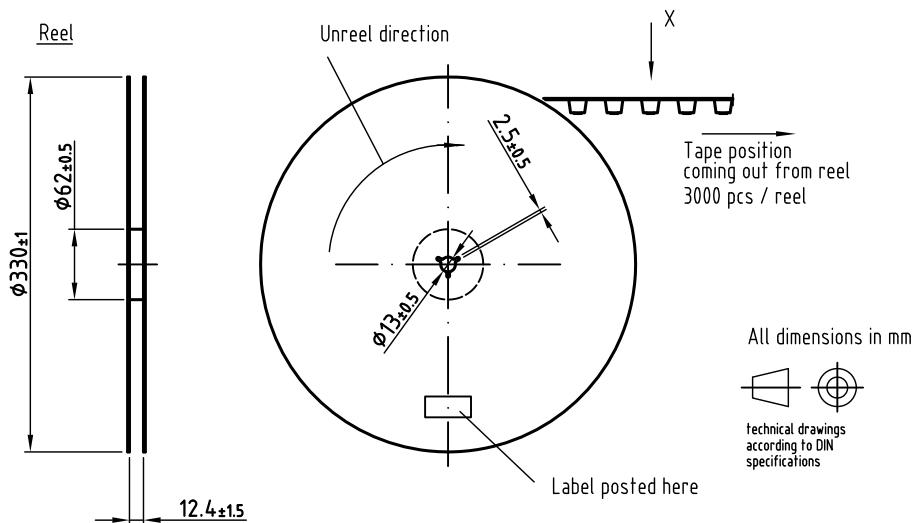
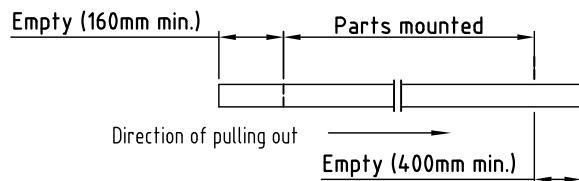
VSMF2893SLX01

Drawing-No.: 6.544-5410.02-4

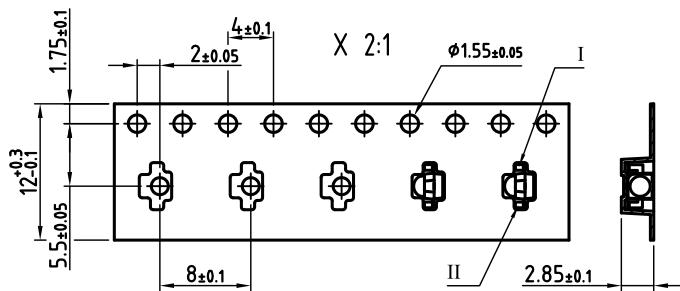
VSMB2948SL

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
VSMF2893SLX01		
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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