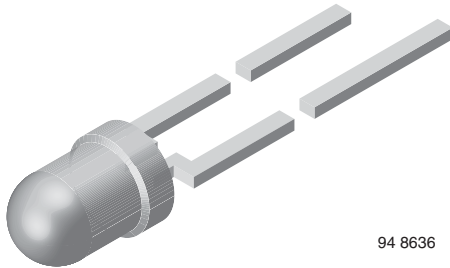


## High Speed Infrared Emitting Diode, 940 nm, Surface Emitter Technology



### DESCRIPTION

As part of the SurfLight™ portfolio, the VSLY3943 is a high speed infrared emitting diode based on surface emitter technology, molded in a blue-gray plastic package.

### FEATURES

- Package type: leaded
- Package form: T-1, clear epoxy
- Dimensions: Ø 3 mm
- Peak wavelength:  $\lambda_p = 940$  nm
- High speed
- High radiant power
- High radiant intensity
- Angle of half intensity:  $\phi = \pm 17^\circ$
- Low forward voltage
- Good spectral matching to Si photodetectors
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### APPLICATIONS

- Infrared remote control units
- Free air transmission systems
- Infrared source for optical counters and card readers

### PRODUCT SUMMARY

COMPONENT	$I_e$ (mW/sr)	$\phi$ (deg)	$\lambda_p$ (nm)	$t_r$ (ns)
VSLY3943	70	$\pm 17$	940	5

#### Note

- Test conditions see table “Basic Characteristics”

### ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
VSLY3943	Bulk	MOQ: 5000 pcs, 5000 pcs/bulk	T-1
VSLY3943-MSZ	Ammopack	MOQ: 10 000 pcs, 2000 pcs/box	T-1

#### 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		$I_F$	70	mA
Peak forward current	$t_p/T = 0.1, t_p = 100$ $\mu$ s	$I_{FM}$	140	mA
Surge forward current	$t_p = 100$ $\mu$ s	$I_{FSM}$	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	$t \leq 5$ s, 2 mm from case	$T_{sd}$	260	°C
Thermal resistance junction-to-ambient	J-STD-051, leads 7 mm, soldered on PCB	$R_{thJA}$	300	K/W

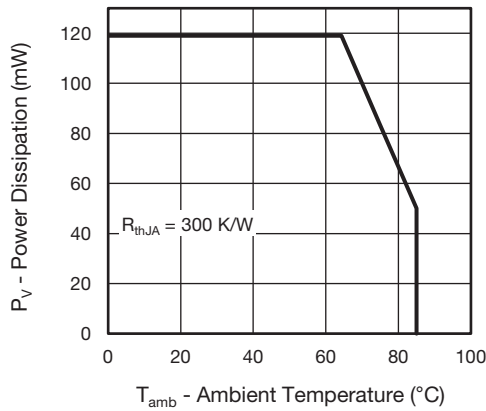


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

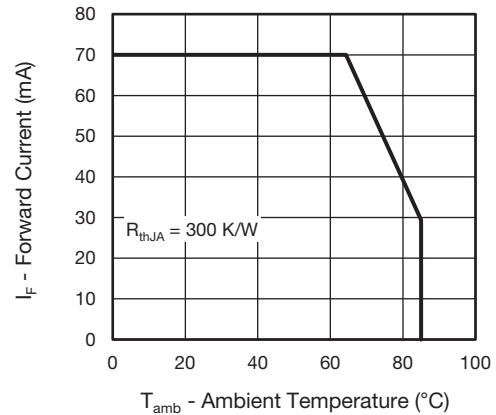


Fig. 2 - Forward Current Limit vs. Ambient Temperature

<b>BASIC CHARACTERISTICS</b> (T <sub>amb</sub> = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	I <sub>F</sub> = 70 mA, t <sub>p</sub> = 20 ms	V <sub>F</sub>	-	1.5	1.7	V
	I <sub>F</sub> = 500 mA, t <sub>p</sub> = 100 μs	V <sub>F</sub>	-	2.6	-	V
Temperature coefficient of V <sub>F</sub>	I <sub>F</sub> = 50 mA	TK <sub>V<sub>F</sub></sub>	-	-0.7	-	mV/K
Reverse current	V <sub>R</sub> = 5 V	I <sub>R</sub>	Not designed for reverse operation			μA
Junction capacitance	V <sub>R</sub> = 0 V, f = 1 MHz, E = 0 mW/cm <sup>2</sup>	C <sub>J</sub>	-	30	-	pF
Radiant intensity	I <sub>F</sub> = 70 mA, t <sub>p</sub> = 20 ms	I <sub>e</sub>	32	70	120	mW/sr
	I <sub>F</sub> = 500 mA, t <sub>p</sub> = 100 μs	I <sub>e</sub>	-	650	-	mW/sr
Radiant power	I <sub>F</sub> = 70 mA, t <sub>p</sub> = 20 ms	φ <sub>e</sub>	-	40	-	mW
Temperature coefficient of radiant power	I <sub>F</sub> = 50 mA	TK <sub>φ<sub>e</sub></sub>	-	-0.2	-	%/K
Angle of half intensity		φ	-	± 17	-	deg
Peak wavelength	I <sub>F</sub> = 50 mA	λ <sub>p</sub>	-	940	-	nm
Spectral bandwidth	I <sub>F</sub> = 70 mA	Δλ	-	55	-	nm
Temperature coefficient of λ <sub>p</sub>	I <sub>F</sub> = 70 mA	TK <sub>λ<sub>p</sub></sub>	-	0.28	-	nm
Rise time	I <sub>F</sub> = 70 mA, 10 % to 90 %	t <sub>r</sub>	-	5	-	ns
Fall time	I <sub>F</sub> = 70 mA, 10 % to 90 %	t <sub>f</sub>	-	6	-	ns

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

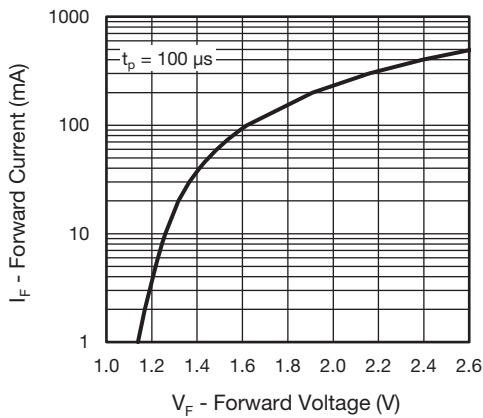


Fig. 3 - Forward Current vs. Forward Voltage

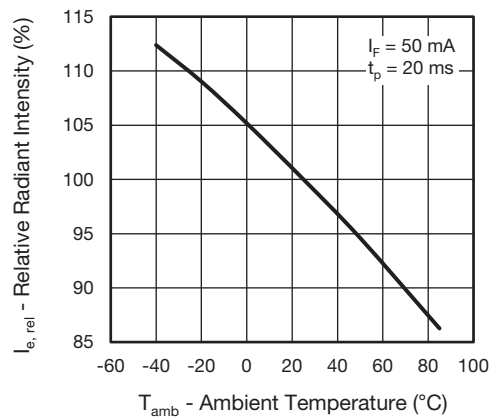


Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature

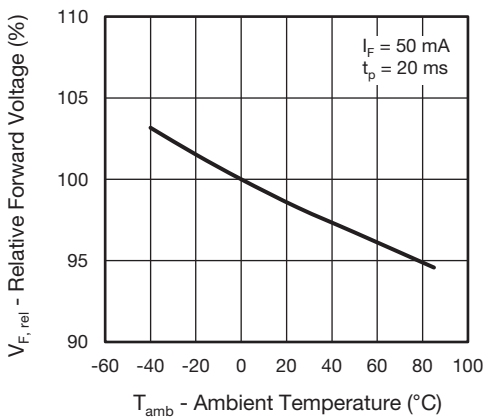


Fig. 4 - Relative Forward Voltage vs. Ambient Temperature

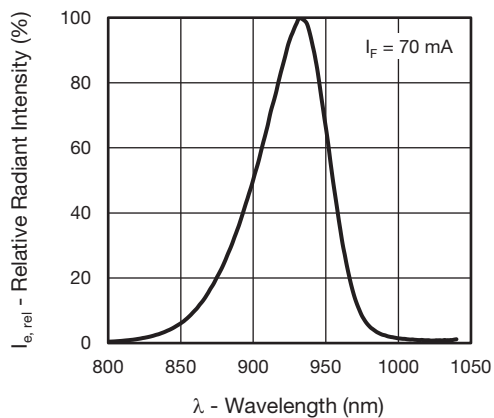


Fig. 7 - Relative Radiant Intensity vs. Wavelength

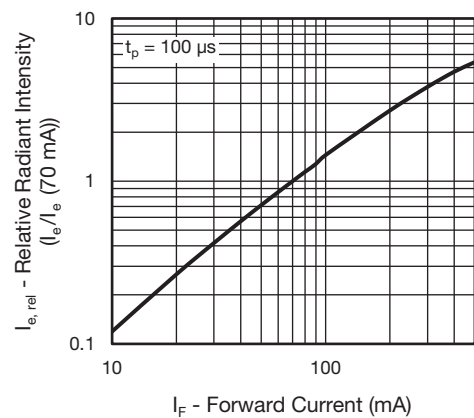


Fig. 5 - Relative Radiant Intensity vs. Forward Current

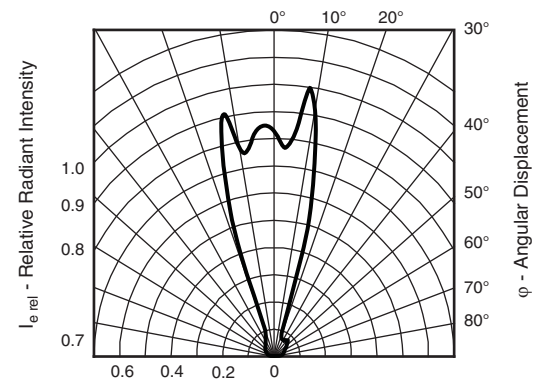
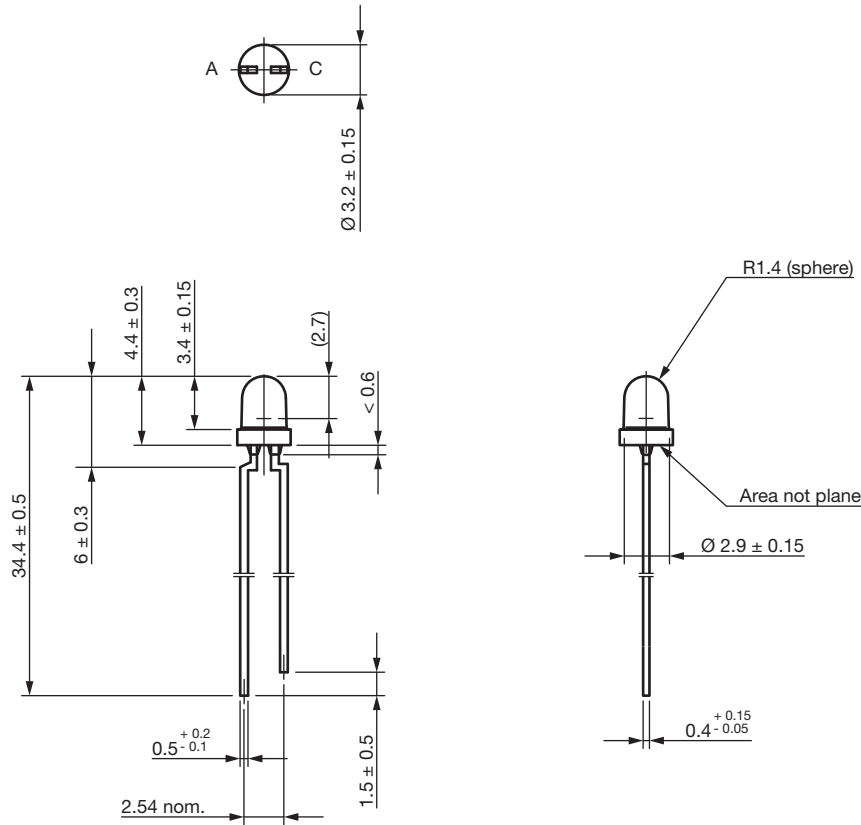
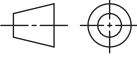


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement



**PACKAGE DIMENSIONS** in millimeters



  
technical drawings  
according to DIN  
specifications

Drawing-No.: 6.541-5118.01-4  
Issue: 1; 13.12.17



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