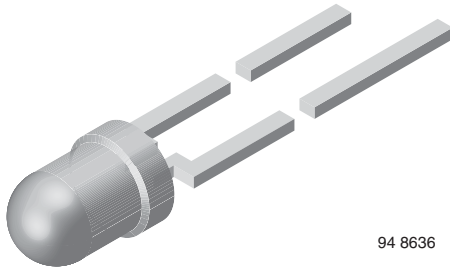


High Speed Infrared Emitting Diode, 940 nm, Surface Emitter Technology



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



APPLICATIONS

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

PRODUCT SUMMARY

COMPONENT	I_e (mW/sr)	ϕ (deg)	λ_p (nm)	t_r (ns)
VSLY3943	70	± 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	$t_p/T = 0.1, t_p = 100$ μ s	I_{FM}	140	mA
Surge forward current	$t_p = 100$ μ 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

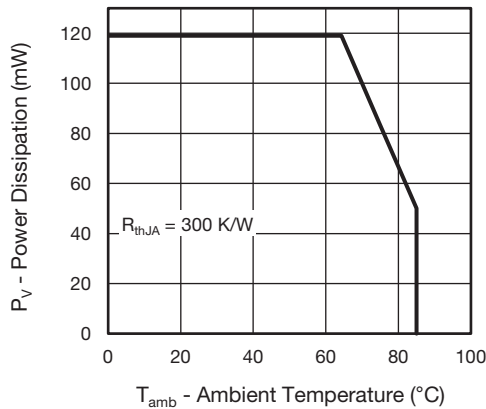


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

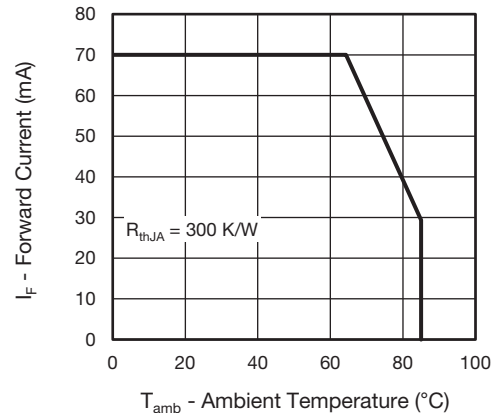


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 70\text{ mA}$, $t_p = 20\text{ ms}$	V_F	-	1.5	1.7	V
	$I_F = 500\text{ mA}$, $t_p = 100\text{ }\mu\text{s}$	V_F	-	2.6	-	V
Temperature coefficient of V_F	$I_F = 50\text{ mA}$	TK_{V_F}	-	-0.7	-	mV/K
Reverse current	$V_R = 5\text{ V}$	I_R	Not designed for reverse operation			μA
Junction capacitance	$V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0\text{ mW/cm}^2$	C_J	-	30	-	pF
Radiant intensity	$I_F = 70\text{ mA}$, $t_p = 20\text{ ms}$	I_e	32	70	120	mW/sr
	$I_F = 500\text{ mA}$, $t_p = 100\text{ }\mu\text{s}$	I_e	-	650	-	mW/sr
Radiant power	$I_F = 70\text{ mA}$, $t_p = 20\text{ ms}$	ϕ_e	-	40	-	mW
Temperature coefficient of radiant power	$I_F = 50\text{ mA}$	TK_{ϕ_e}	-	-0.2	-	%/K
Angle of half intensity		ϕ	-	± 17	-	deg
Peak wavelength	$I_F = 50\text{ mA}$	λ_p	-	940	-	nm
Spectral bandwidth	$I_F = 70\text{ mA}$	$\Delta\lambda$	-	55	-	nm
Temperature coefficient of I_p	$I_F = 70\text{ mA}$	TK_{λ_p}	-	0.28	-	nm
Rise time	$I_F = 70\text{ mA}$, 10 % to 90 %	t_r	-	5	-	ns
Fall time	$I_F = 70\text{ mA}$, 10 % to 90 %	t_f	-	6	-	ns

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

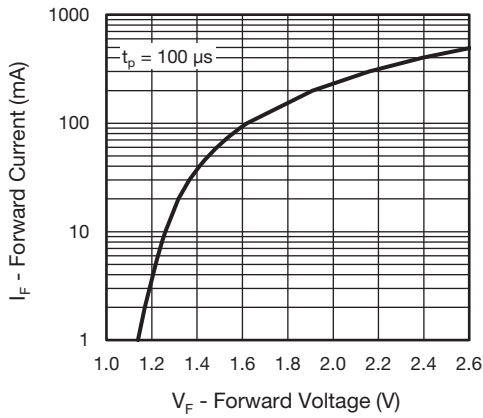


Fig. 3 - Forward Current vs. Forward Voltage

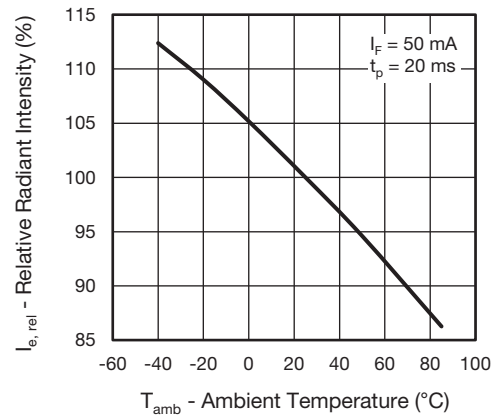


Fig. 6 - Relative Radiant Intensity vs. Ambient Temperature

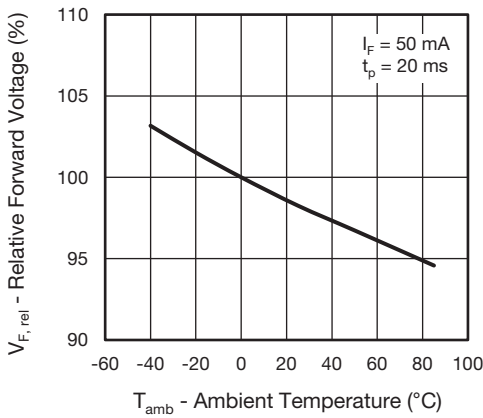


Fig. 4 - Relative Forward Voltage vs. Ambient Temperature

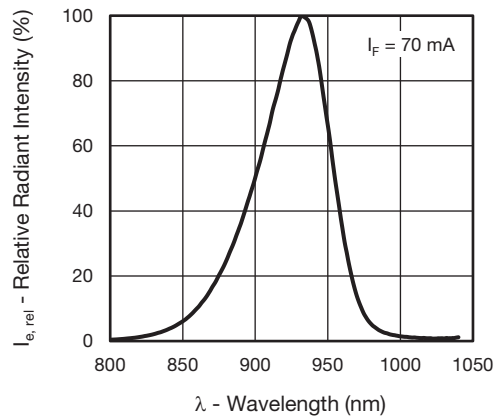


Fig. 7 - Relative Radiant Intensity vs. Wavelength

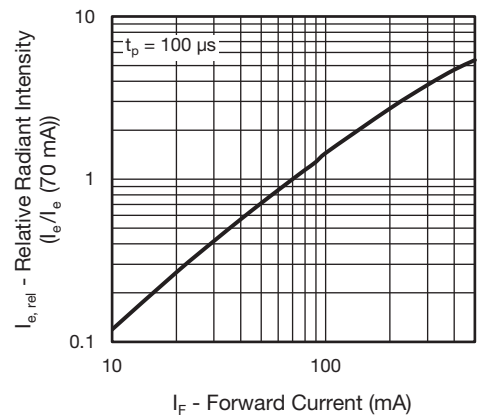


Fig. 5 - Relative Radiant Intensity vs. Forward Current

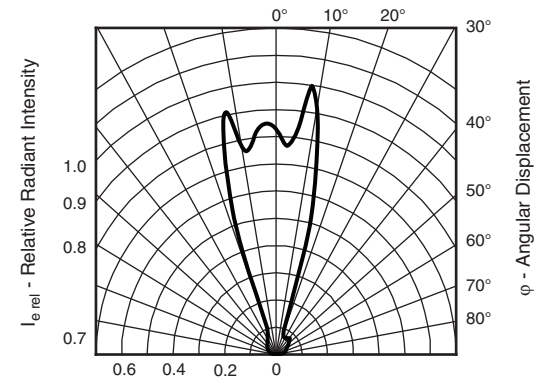
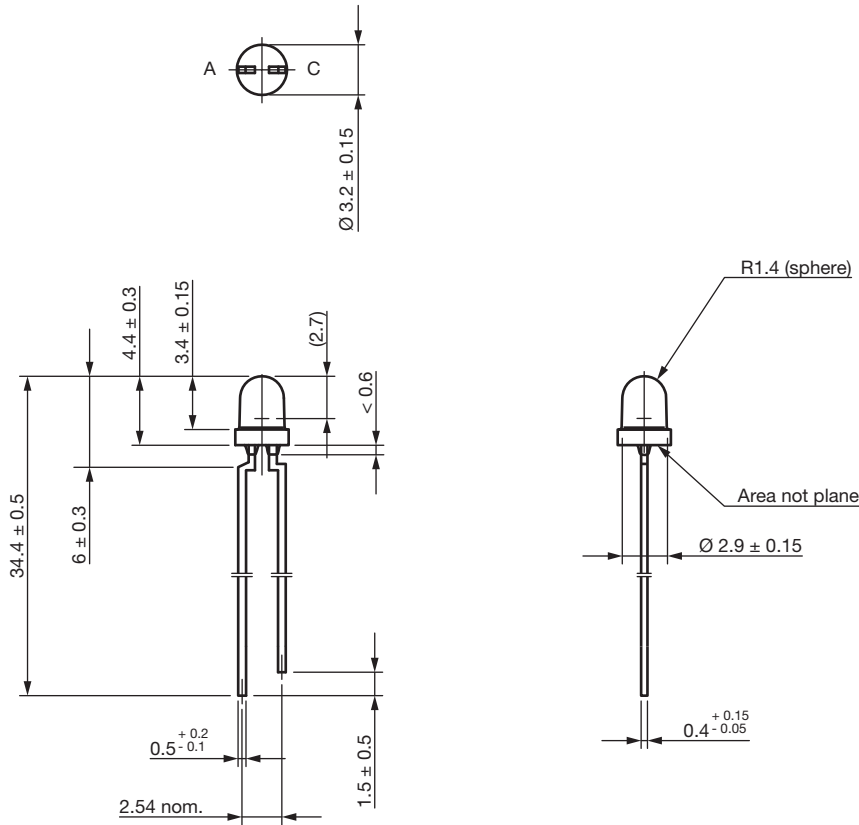
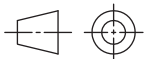


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement



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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