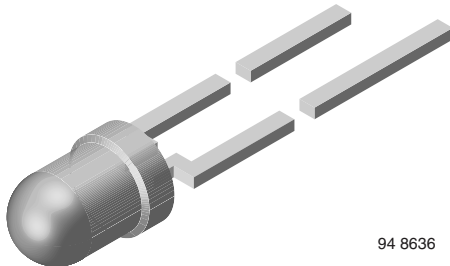


## High Speed Infrared Emitting Diode, 850 nm, Surface Emitter Technology



94 8636

### DESCRIPTION

As part of the [SurfLight™](#) portfolio, the VSLY3850 is an infrared, 850 nm emitting diode based on GaAlAs surface emitter chip technology with extreme high radiant intensity, high optical power and high speed, molded in a clear, untinted T1 plastic package.

### FEATURES

- Package type: leaded
- Package form: T-1, clear epoxy
- Dimensions: Ø 3 mm
- Peak wavelength:  $\lambda_p = 850$  nm
- High speed
- High radiant power
- High radiant intensity
- Angle of half intensity:  $\phi = \pm 18^\circ$
- Suitable for high pulse current operation
- Good spectral matching with CMOS cameras
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### APPLICATIONS

- Infrared radiation source for operation with CMOS cameras
- High speed IR data transmission
- 3D TV application
- Light curtains

### PRODUCT SUMMARY

COMPONENT	$I_e$ (mW/sr)	$\phi$ (deg)	$\lambda_p$ (nm)	$t_r$ (ns)
VSLY3850	70	$\pm 18$	850	10

#### Note

- Test conditions see table “Basic Characteristics”

### ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
VSLY3850	Bulk	MOQ: 5000 pcs, 5000 pcs/bulk	T-1
VSLY3850-ASZ	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		$I_F$	100	mA
Peak forward current	$t_p/T = 0.5$ , $t_p = 100$ $\mu$ s	$I_{FM}$	200	mA
Surge forward current	$t_p = 100$ $\mu$ s	$I_{FSM}$	1	A
Power dissipation		$P_V$	190	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 / ambient	J-STD-051, leads 7 mm, soldered on PCB	$R_{thJA}$	300	K/W

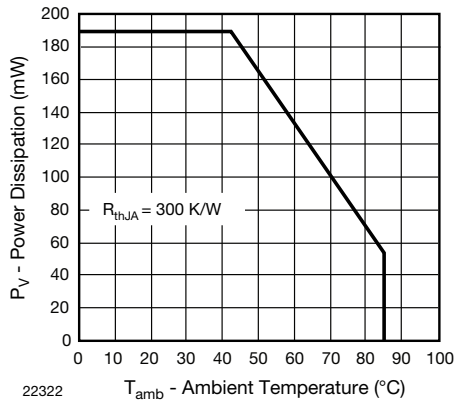


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

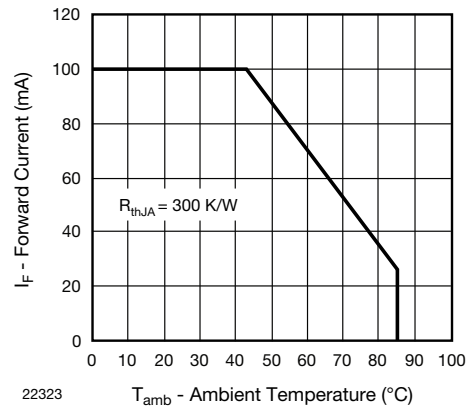


Fig. 2 - Forward Current Limit vs. Ambient Temperature

<b>BASIC CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$V_F$	-	1.65	1.9	V
	$I_F = 1\text{ A}$ , $t_p = 100\text{ }\mu\text{s}$	$V_F$	-	2.9	-	V
Temperature coefficient of $V_F$	$I_F = 1\text{ mA}$	$TK_{V_F}$	-	-1.45	-	mV/K
	$I_F = 10\text{ mA}$	$TK_{V_F}$	-	-1.25	-	mV/K
Reverse current		$I_R$	Not designed for reverse operation			$\mu\text{A}$
Junction capacitance	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0\text{ mW/cm}^2$	$C_J$	-	125	-	pF
Radiant intensity	$I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$I_e$	35	70	105	mW/sr
	$I_F = 1\text{ A}$ , $t_p = 100\text{ }\mu\text{s}$	$I_e$	-	600	-	mW/sr
Radiant power	$I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$\phi_e$	-	55	-	mW
Temperature coefficient of radiant power	$I_F = 1\text{ mA}$	$TK_{\phi_e}$	-	-0.35	-	%/K
Angle of half intensity		$\phi$	-	$\pm 18$	-	deg
Peak wavelength	$I_F = 30\text{ mA}$	$\lambda_p$	840	850	870	nm
Spectral bandwidth	$I_F = 30\text{ mA}$	$\Delta\lambda$	-	30	-	nm
Temperature coefficient of $\lambda_p$	$I_F = 30\text{ mA}$	$TK_{\lambda_p}$	-	0.25	-	nm
Rise time	$I_F = 100\text{ mA}$ , 20 % to 80 %	$t_r$	-	10	-	ns
Fall time	$I_F = 100\text{ mA}$ , 20 % to 80 %	$t_f$	-	10	-	ns

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

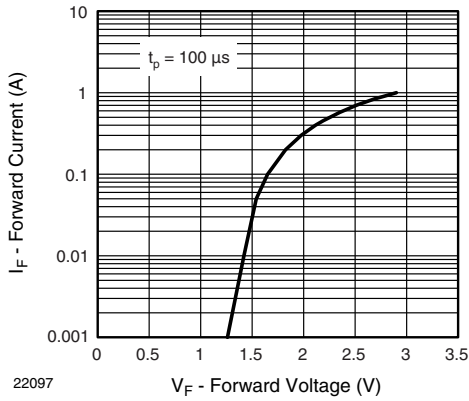


Fig. 3 - Forward Current vs. Forward Voltage

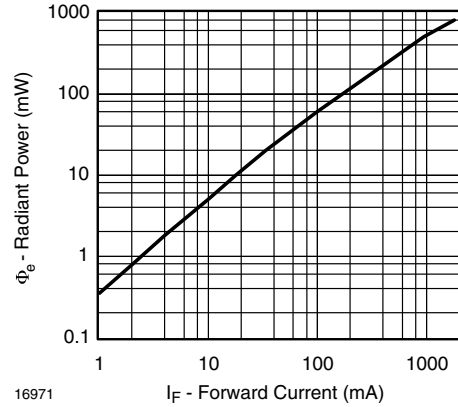


Fig. 6 - Radiant Power vs. Forward Current

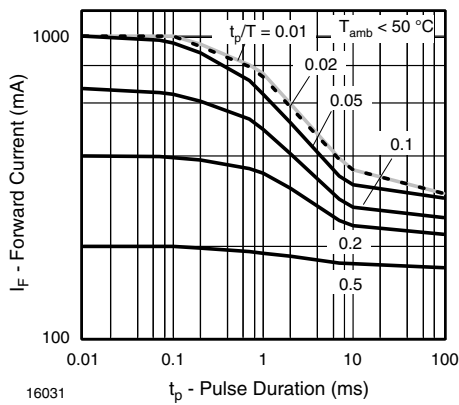


Fig. 4 - Pulse Forward Current vs. Pulse Duration

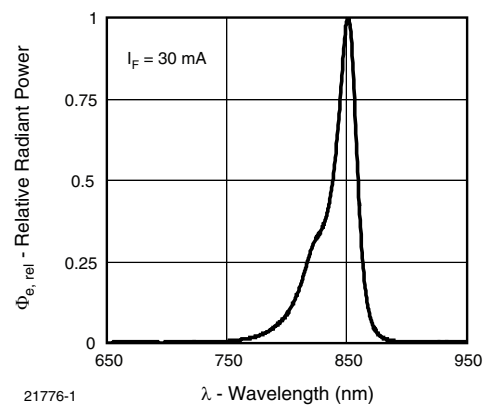


Fig. 7 - Relative Radiant Power vs. Wavelength

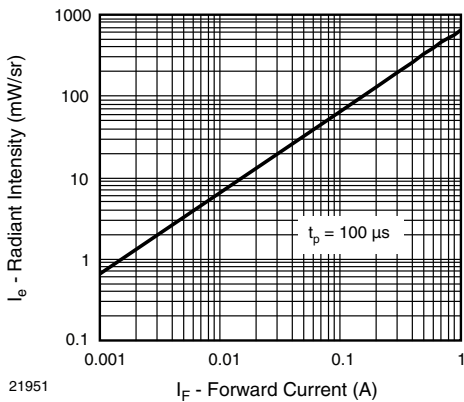


Fig. 5 - Radiant Intensity vs. Forward Current

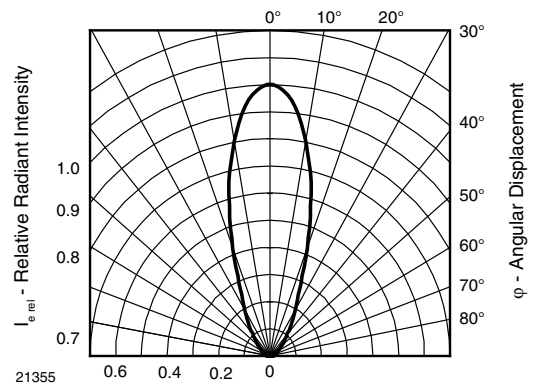
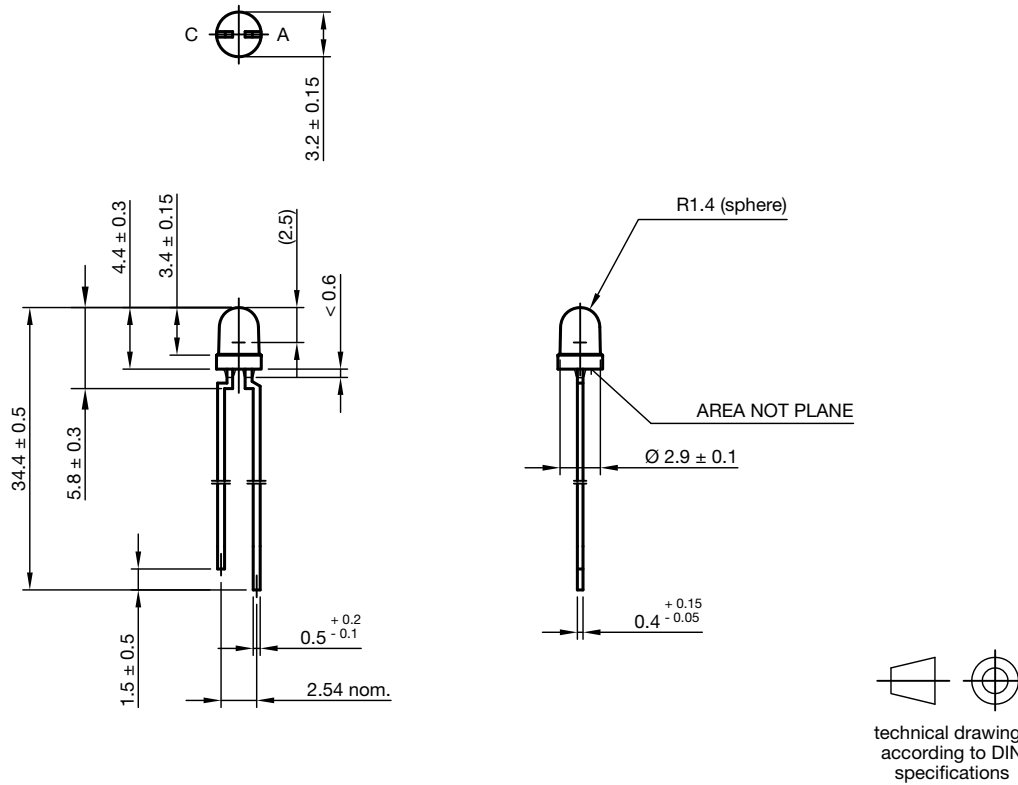


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement



**PACKAGE DIMENSIONS** in millimeters



Drawing-No.: 6.544-5264.01-4  
Issue: 4; 28.07.14



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