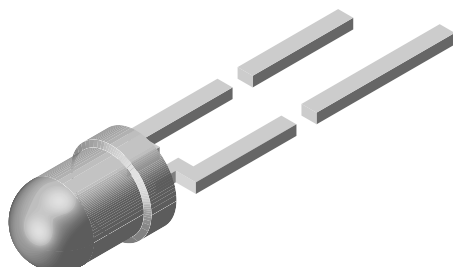


High Speed Infrared Emitting Diode, 850 nm, Surface Emitter Technology



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



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)	ϕ (°)	λ_p (nm)	t_r (ns)
VSLY3850	70	± 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 ($T_{amb} = 25^\circ\text{C}$, 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	190	mW
Junction temperature		T_j	100	$^\circ\text{C}$
Operating temperature range		T_{amb}	-40 to +85	$^\circ\text{C}$
Storage temperature range		T_{stg}	-40 to +100	$^\circ\text{C}$
Soldering temperature	$t \leq 5$ s, 2 mm from case	T_{sd}	260	$^\circ\text{C}$
Thermal resistance junction / ambient	J-STD-051, leads 7 mm, soldered on PCB	R_{thJA}	300	K/W

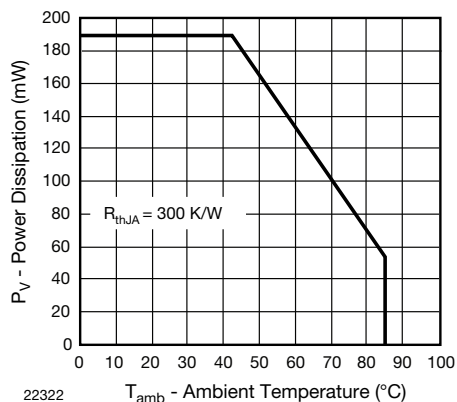


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

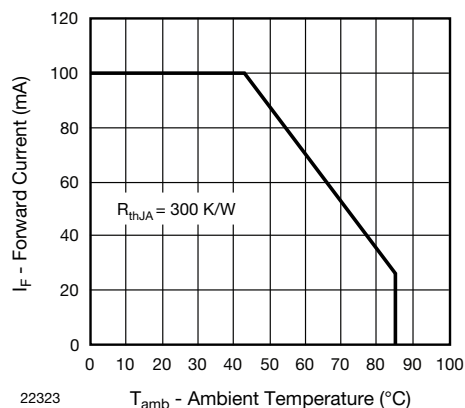


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, 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_{VF}	-	-1.45	-	mV/K
	$I_F = 10\text{ mA}$	TK_{VF}	-	-1.25	-	mV/K
Reverse current		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	-	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	$I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	ϕ_e	-	55	-	mW
Temperature coefficient of radiant power	$I_F = 1\text{ mA}$	TK_{ϕ_e}	-	-0.35	-	%/K
Angle of half intensity		ϕ	-	± 18	-	$^{\circ}$
Peak wavelength	$I_F = 30\text{ mA}$	λ_p	840	850	870	nm
Spectral bandwidth	$I_F = 30\text{ mA}$	$\Delta\lambda$	-	30	-	nm
Temperature coefficient of I_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

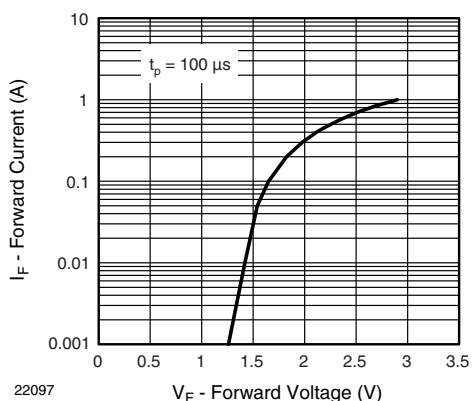
BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 3 - Forward Current vs. Forward Voltage

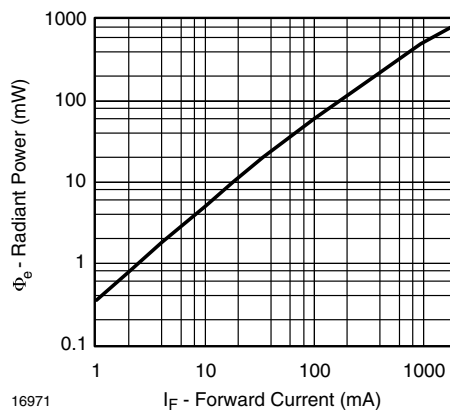


Fig. 6 - Radiant Power vs. Forward Current

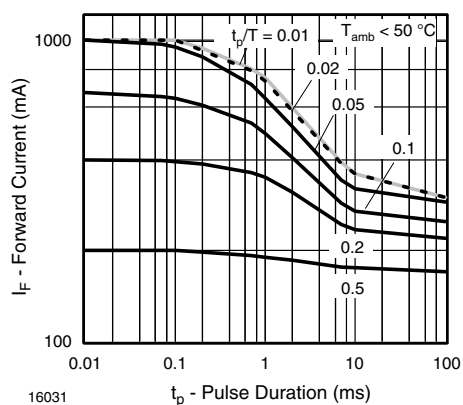


Fig. 4 - Pulse Forward Current vs. Pulse Duration

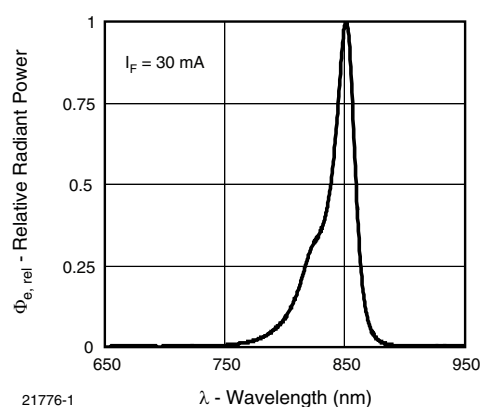


Fig. 7 - Relative Radiant Power vs. Wavelength

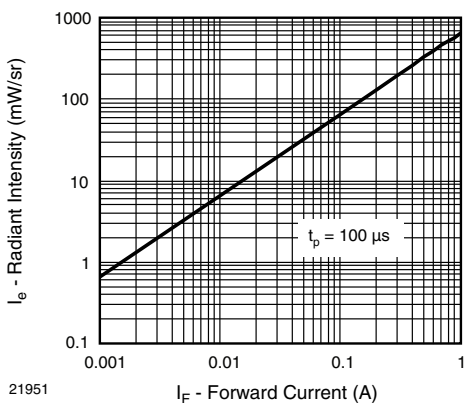


Fig. 5 - Radiant Intensity vs. Forward Current

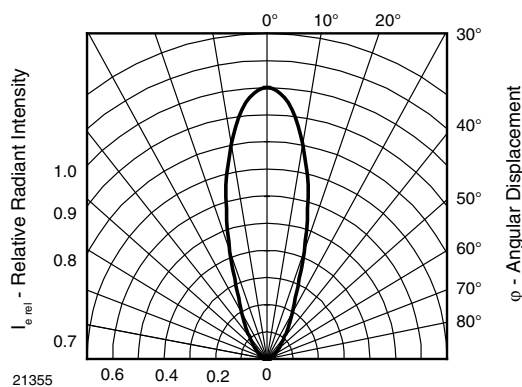
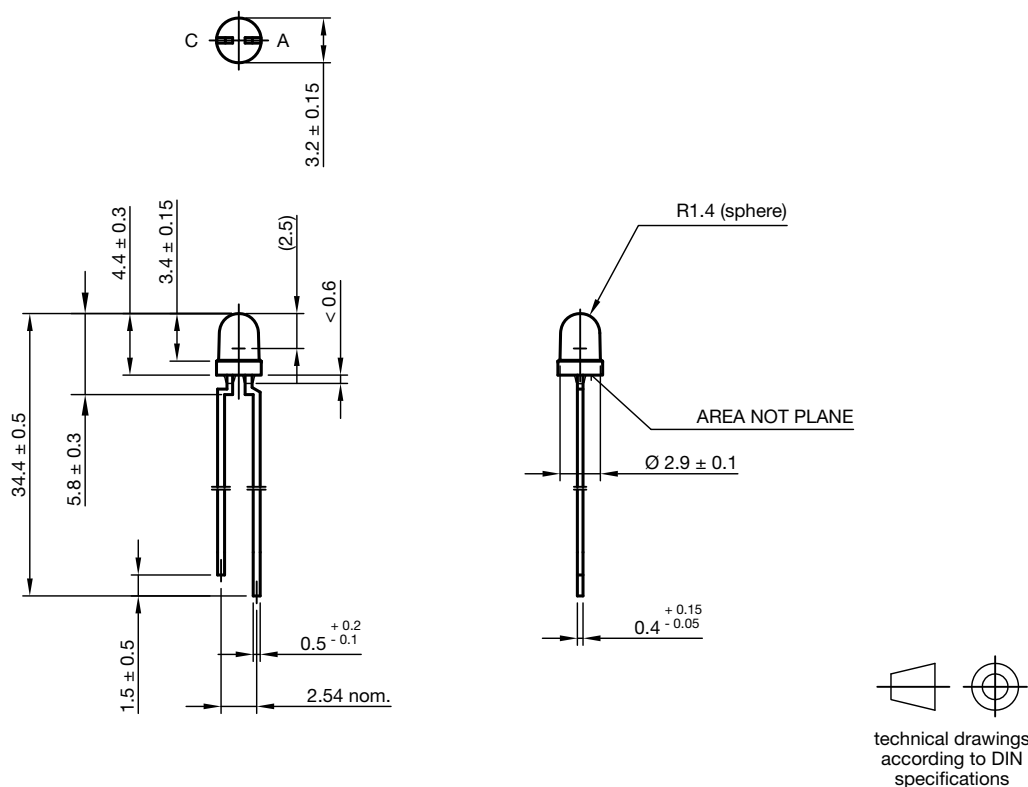


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters


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



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