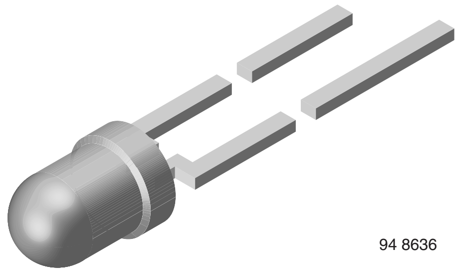
High Speed Infrared Emitting Diode, 850 nm, Surface Emitter Technology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DESCRIPTION

As part of the SurfLight[TM] 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: λ_p = 850 nm
- High speed
- High radiant power
- High radiant intensity
- Angle of half intensity: $\varphi = \pm 18°$
- 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

Pb-free
e2
RoHS COMPLIANT
HALOGEN FREE
GREEN (5-2008)

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 (deg)	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 °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	°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

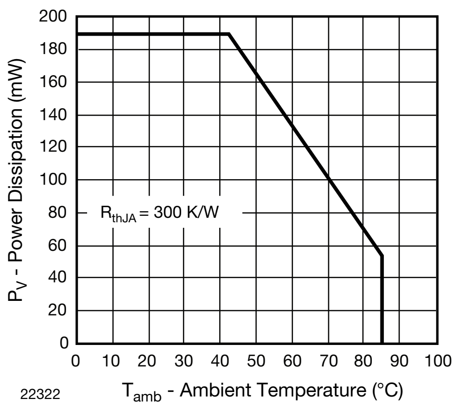


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

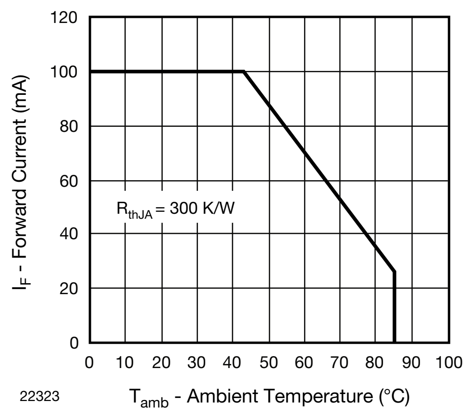


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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	-	1.65	1.9	V
	I_F = 1 A, t_p = 100 μs	V_F	-	2.9	-	V
Temperature coefficient of V_F	I_F = 1 mA	TK_{VF}	-	-1.45	-	mV/K
	I_F = 10 mA	TK_{VF}	-	-1.25	-	mV/K
Reverse current		I_R	Not designed for reverse operation			μA
Junction capacitance	V_R = 0 V, f = 1 MHz, E = 0 mW/cm^2	C_J	-	125	-	pF
Radiant intensity	I_F = 100 mA, t_p = 20 ms	I_e	35	70	105	mW/sr
	I_F = 1 A, t_p = 100 μs	I_e	-	600	-	mW/sr
Radiant power	I_F = 100 mA, t_p = 20 ms	ϕe	-	55	-	mW
Temperature coefficient of radiant power	I_F = 1 mA	$TK_{\varphi e}$	-	-0.35	-	%/K
Angle of half intensity		φ	-	± 18	-	deg
Peak wavelength	I_F = 30 mA	λ_p	840	850	870	nm
Spectral bandwidth	I_F = 30 mA	$\Delta\lambda$	-	30	-	nm
Temperature coefficient of l_p	I_F = 30 mA	$TK_{\lambda p}$	-	0.25	-	nm
Rise time	I_F = 100 mA, 20 % to 80 %	t_r	-	10	-	ns
Fall time	I_F = 100 mA, 20 % to 80 %	t_f	-	10	-	ns

BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

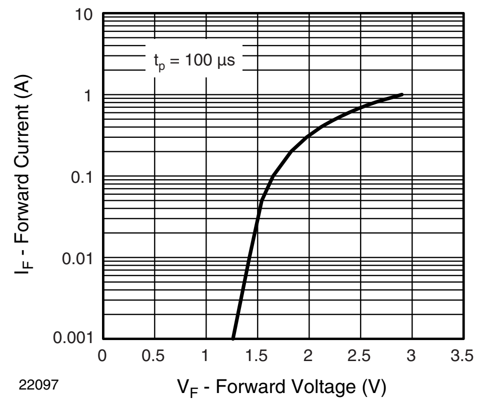


Fig. 3 - Forward Current vs. Forward Voltage

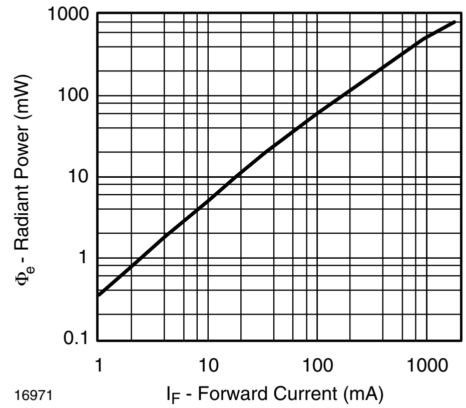


Fig. 6 - Radiant Power vs. Forward Current

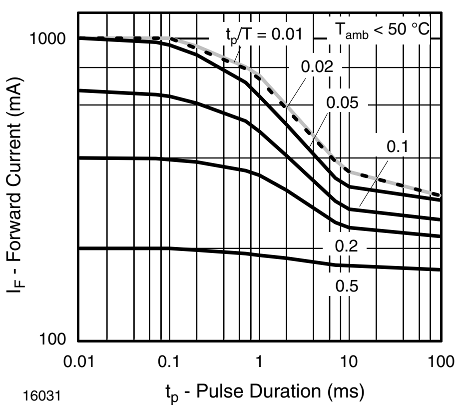


Fig. 4 - Pulse Forward Current vs. Pulse Duration

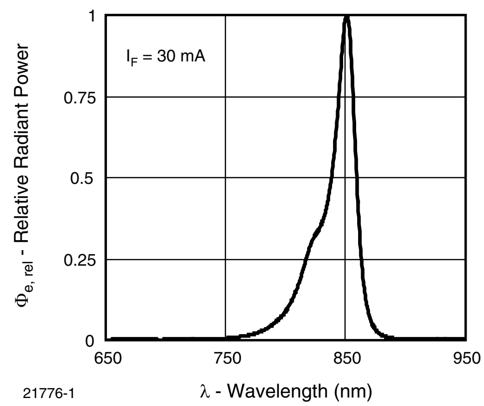


Fig. 7 - Relative Radiant Power vs. Wavelength

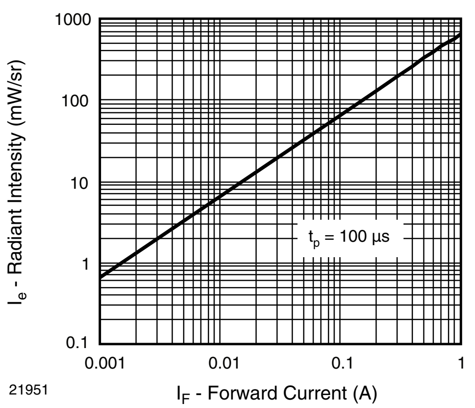


Fig. 5 - Radiant Intensity vs. Forward Current

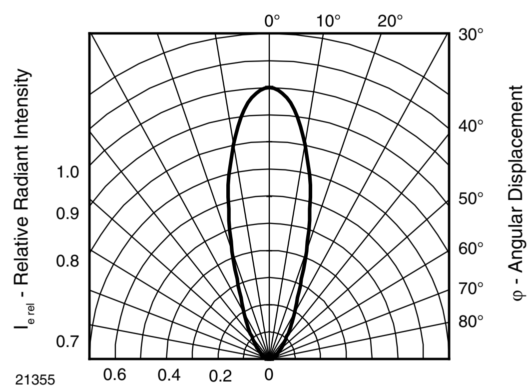
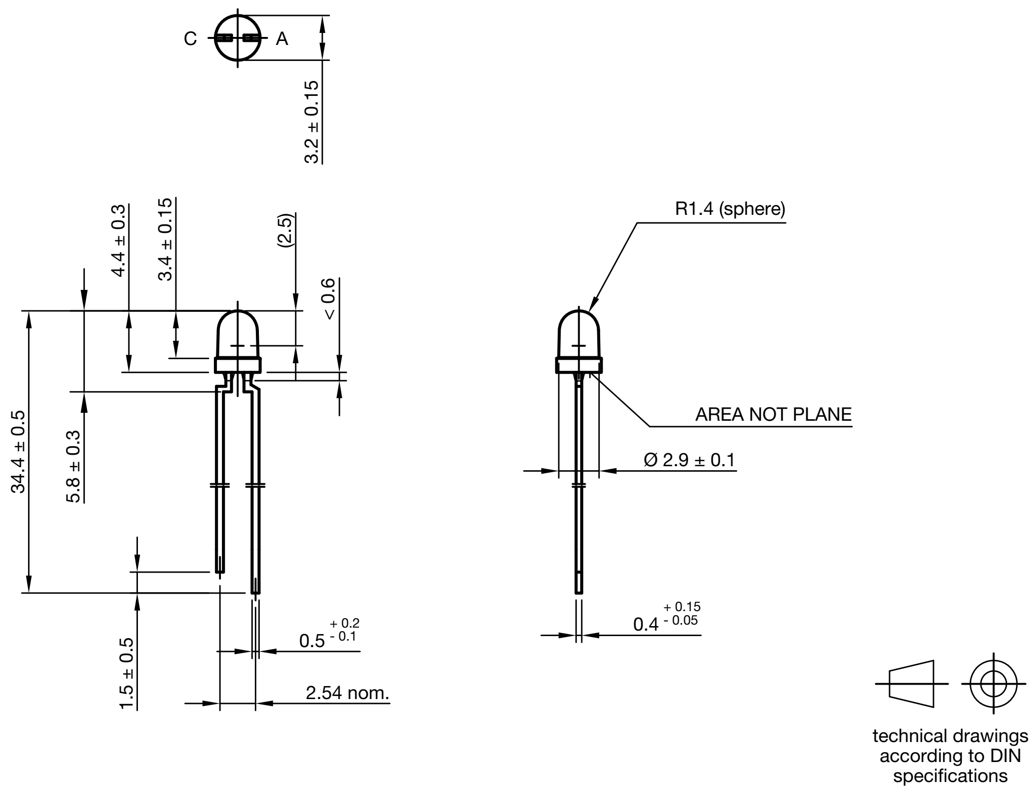


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



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