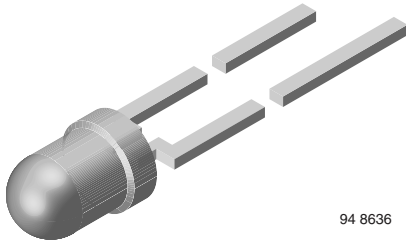




High Speed Infrared Emitting Diode, 850 nm, Surface Emitter Technology



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



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.

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

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	$t_p/T = 0.5, t_p = 100 \mu\text{s}$	I_{FM}	200	mA
Surge forward current	$t_p = 100 \mu\text{s}$	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

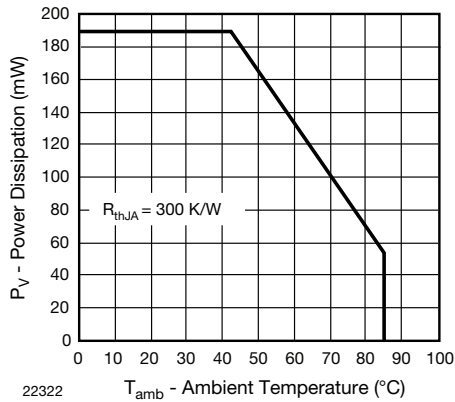


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

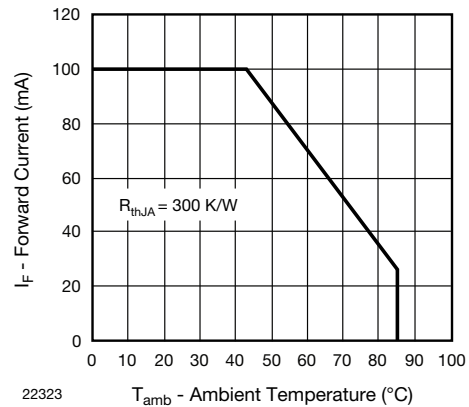


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T _{amb} = 25 °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 _{V_F}		- 1.45		mV/K
	I _F = 10 mA	TK _{V_F}		- 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	φ _e		55		mW
Temperature coefficient of radiant power	I _F = 1 mA	TK _{φ_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	Δλ		30		nm
Temperature coefficient of I _p	I _F = 30 mA	TK _{λ_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 ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

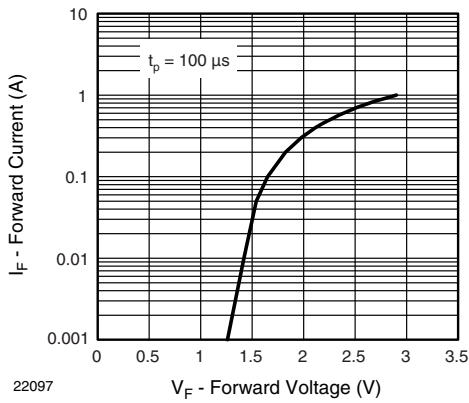


Fig. 3 - Forward Current vs. Forward Voltage

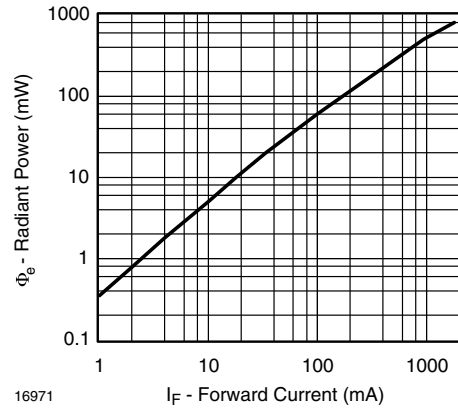


Fig. 6 - Radiant Power vs. Forward Current

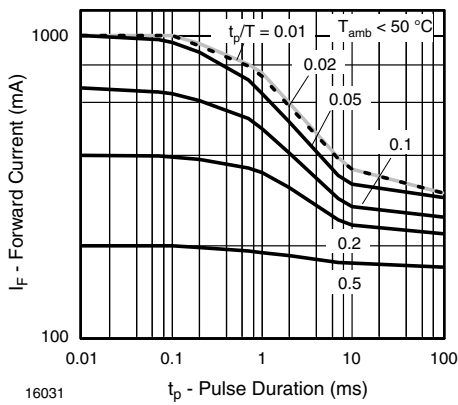


Fig. 4 - Pulse Forward Current vs. Pulse Duration

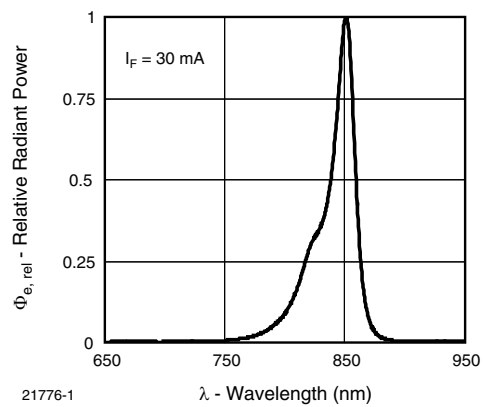


Fig. 7 - Relative Radiant Power vs. Wavelength

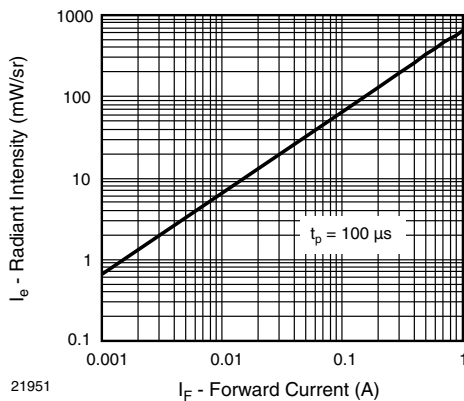


Fig. 5 - Radiant Intensity vs. Forward Current

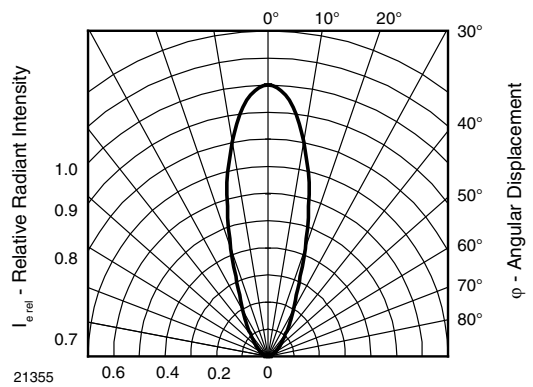
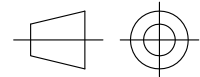
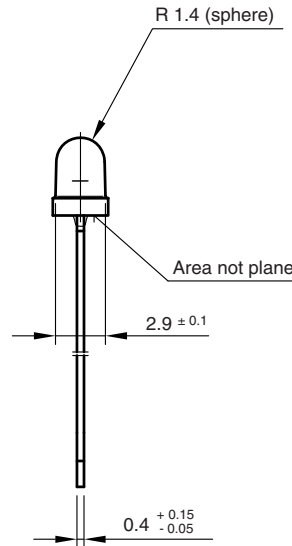
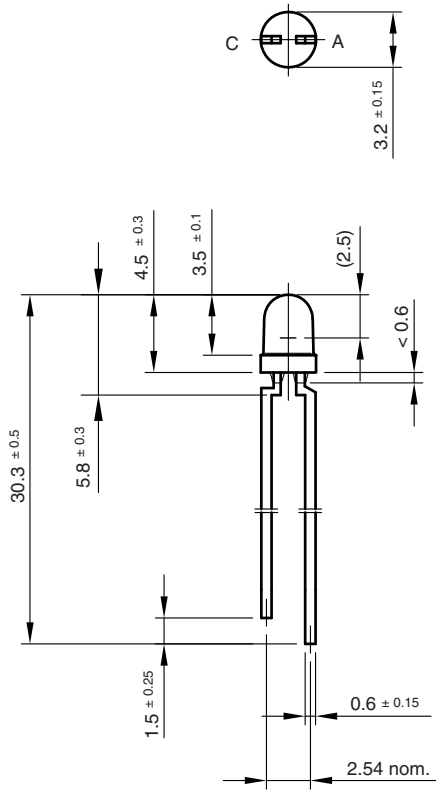


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement



PACKAGE DIMENSIONS in millimeters



technical drawings according to DIN specifications

Drawing-No.: 6.544-5264.01-4

Issue: 2; 23.04.98

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