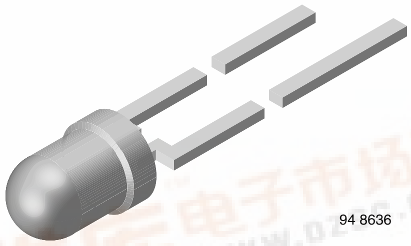
High Speed Infrared Emitting Diode, 850 nm, Surface Emitter Technology



DESCRIPTION

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
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition

Pb-free
e2
RoHS
COMPLIANT
HALOGEN
FREE

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 °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

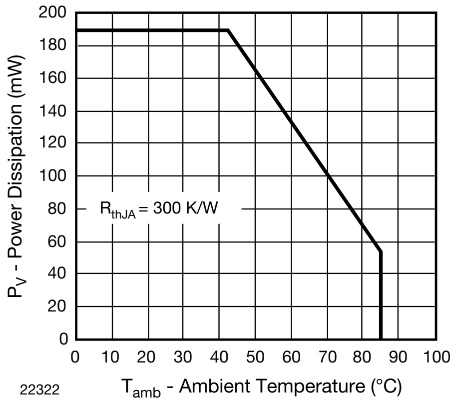


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

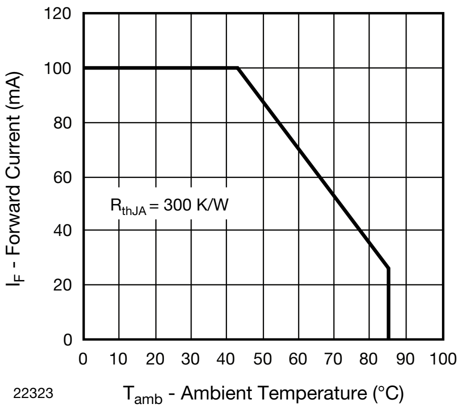


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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 λ_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

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

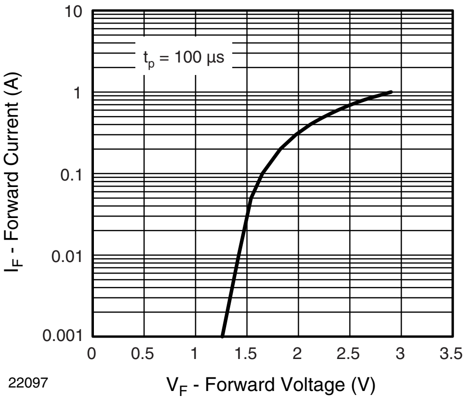


Fig. 3 - Forward Current vs. Forward Voltage

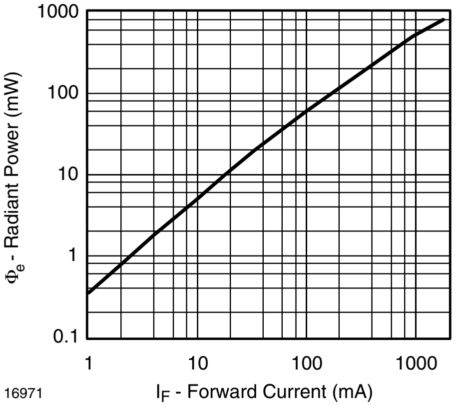


Fig. 6 - Radiant Power vs. Forward Current

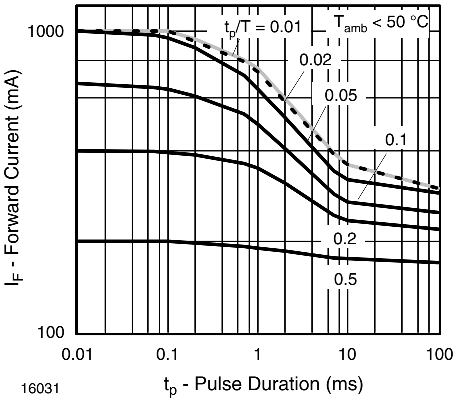


Fig. 4 - Pulse Forward Current vs. Pulse Duration

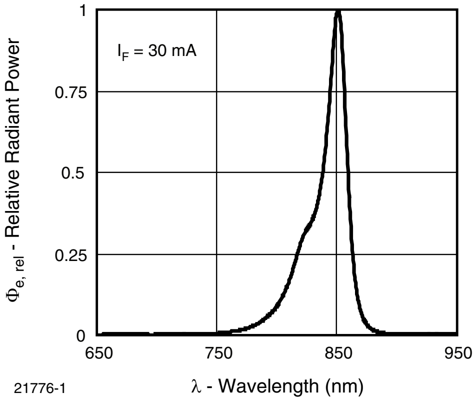


Fig. 7 - Relative Radiant Power vs. Wavelength

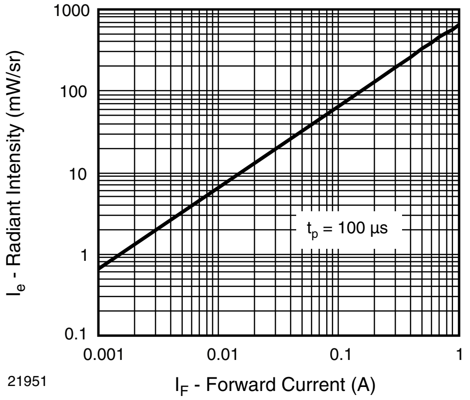


Fig. 5 - Radiant Intensity vs. Forward Current

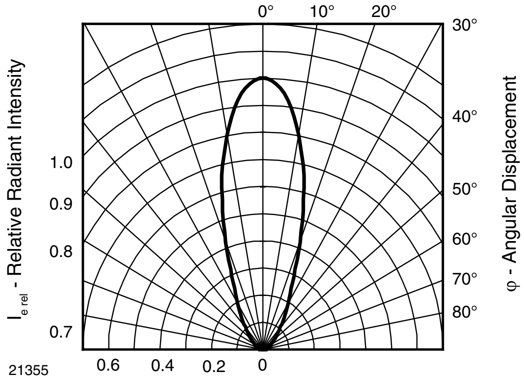
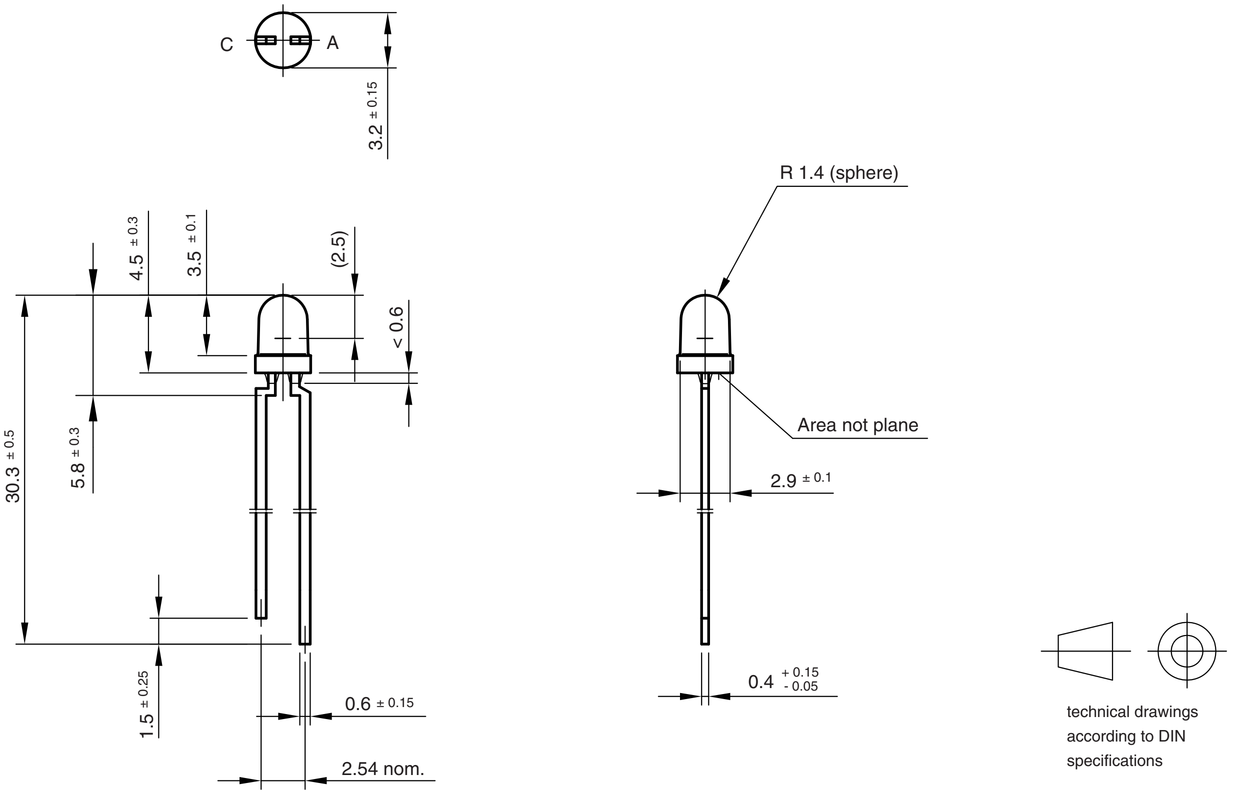


Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



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