COMPLIANT

GREEN

(5-2008)



Vishay Semiconductors

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



VSLY5850 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 plastic package, with a parabolic lens.

FEATURES

Package type: leaded
Package form: T-1¾
Dimensions (in mm): Ø 5
Leads with stand-off

• Peak wavelength: $\lambda_p = 850 \text{ nm}$

• High reliability

• High radiant power

· High radiant intensity

• Narrow angle of half intensity: $\phi = \pm 3^{\circ}$

• 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

APPLICATIONS

- Infrared radiation source for operation with CMOS cameras
- High speed IR data transmission
- Smoke-automatic fire detectors
- IR Flash

PRODUCT SUMMARY					
COMPONENT	I _e (mW/sr)	φ (deg)	λ _p (nm)	t _r (ns)	
VSLY5850	600	± 3	850	10	
	•	•	•	•	

Note

DESCRIPTION

• Test conditions see table "Basic Characteristics"

ORDERING INFORMATION				
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM	
VSLY5850	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1¾	

Note

· MOQ: minimum order quantity

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 μs	I _{FSM}	1	Α
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	$t \le 5$ s, 2 mm from case	T _{sd}	260	°C
Thermal resistance junction/ambient	J-STD-051, leads 7 mm, soldered on PCB	R _{thJA}	230	K/W

^{**} Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

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



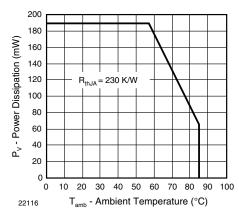


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

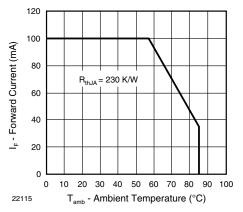


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	V _F		1.65	1.9	V
	$I_F = 1 \text{ A}, t_p = 100 \mu\text{s}$	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	Cj		125		pF
Radiant intensity	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	l _e	300	600	900	mW/sr
	$I_F = 1 \text{ A}, t_p = 100 \mu\text{s}$	l _e		5100		mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	фе		55		mW
Temperature coefficient of φ _e	I _F = 100 mA	TKφ _e		- 0.35		%/K
Angle of half intensity		φ		± 3		deg
Peak wavelength	I _F = 100 mA	λρ	840	850	870	nm
Spectral bandwidth	I _F = 100 mA	Δλ		30		nm
Temperature coefficient of λ_p	I _F = 100 mA	TKλ _p		0.25		nm/K
Rise time	I _F = 100 mA	t _r		10		ns
Fall time	I _F = 100 mA	t _f		10		ns



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

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

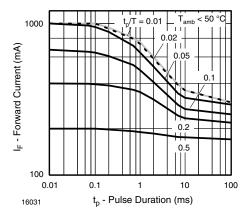


Fig. 3 - Pulse Forward Current vs. Pulse Duration

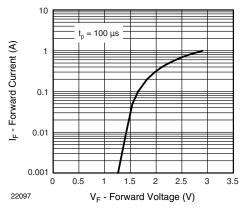


Fig. 4 - Forward Current vs. Forward Voltage

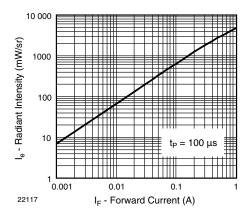


Fig. 5 - Radiant Intensity vs. Forward Current

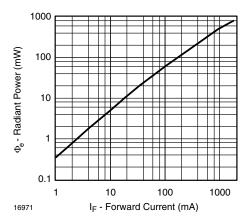


Fig. 6 - Radiant Power vs. Forward Current

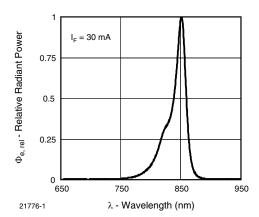


Fig. 7 - Relative Radiant Power vs. Wavelength

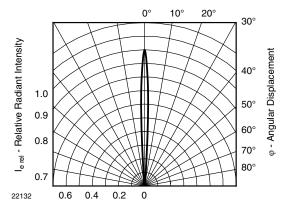
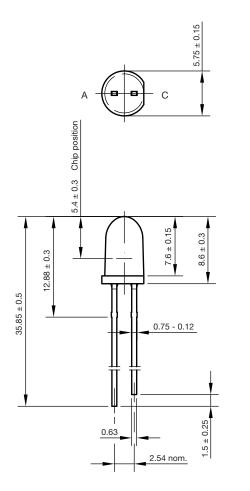


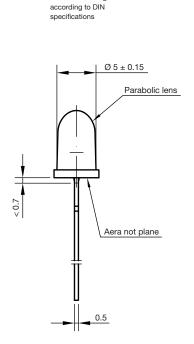
Fig. 8 - Relative Radiant Intensity vs. Angular Displacement

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



PACKAGE DIMENSIONS in millimeters





Drawing-No.: 6.544-5385.01-4

Issue: 2; 08.03.10

20531



Legal Disclaimer Notice

Vishay

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk and agree to fully indemnify and hold Vishay and its distributors harmless from and against any and all claims, liabilities, expenses and damages arising or resulting in connection with such use or sale, including attorneys fees, even if such claim alleges that Vishay or its distributor was negligent regarding the design or manufacture of the part. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.