GREEN (5-2008)**



Vishay Semiconductors

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



DESCRIPTION

VSMY3850 is an infrared, 850 nm emitting diode based on surface emitter technology with high radiant intensity, high optical power and high speed, molded in a PLCC-2 package for surface mounting (SMD).

FEATURES

- Package type: surface mount
- Package form: PLCC-2
- Dimensions (L x W x H in mm): 3.5 x 2.8 x 1.75
- Peak wavelength: λ_p = 850 nm
- High reliability
- High radiant power
- High radiant intensity
- Angle of half intensity: $\varphi = \pm 60^{\circ}$
- Suitable for high pulse current operation
- Floor life: 168 h, MSL 3, acc. J-STD-020
- Lead (Pb)-free reflow soldering
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Note

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

RELEASED FOR APPLICATIONS

Infrared radiation source for operation with CMOS cameras (illumination)

- High speed IR data transmission
- IR touch panels
- 3D TV
- · Light curtain

PRODUCT SUMMARY					
COMPONENT	I _e (mW/sr)	φ (deg)	λ _P (nm)	t _r (ns)	
VSMY3850	17	± 60	850	10	

Note

· Test conditions see table "Basic Characteristics"

ORDERING INFORMATION					
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM		
VSMY3850-GS08	Tape and reel	MOQ: 7500 pcs, 1500 pcs/reel	PLCC-2		
VSMY3850-GS18	Tape and reel	MOQ: 8000 pcs, 8000 pcs/reel	PLCC-2		

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	
Pulse 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	A	
Power dissipation		P _V	200	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	acc. figure 7, J-STD-020	T _{sd}	260	°C	
Thermal resistance junction/ambient	J-STD-051, soldered on PCB	R _{thJA}	250	K/W	



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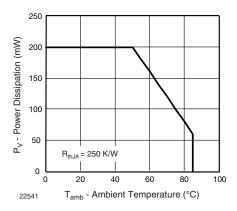


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

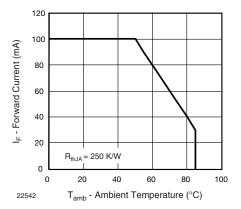


Fig. 2 - Forward Current Limit vs. Ambient Temperature

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	V _F		1.6	2.0	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}		- 1.2		mV/K
Reverse current		I _R	not designed for reverse operation			μΑ
Junction capacitance	V _R = 0 V, f = 1 MHz, E = 0	Cj		125		pF
Radiant intensity	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	I _e	12	17	25	mW/sr
	$I_F = 1 \text{ A}, t_p = 100 \mu\text{s}$	I _e		150		mW/sr
Radiant power	$I_F = 100 \text{ mA}, t_p = 20 \text{ ms}$	фe		55		mW
Temperature coefficient of φ _e	I _F = 100 mA	TKφ _e		- 0.35		%/K
Angle of half intensity		φ		± 60		deg
Peak wavelength	I _F = 100 mA	λρ	840	850	870	nm
Spectral bandwidth	I _F = 30 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
Virtual source diameter		d		0.44		mm

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

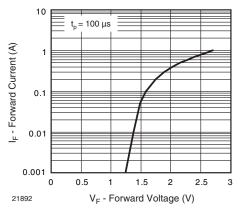


Fig. 3 - Forward Current vs. Forward Voltage

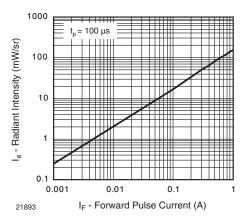


Fig. 4 - Radiant Intensity vs. Forward Current

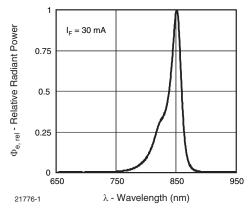


Fig. 5 - Relative Radiant Power vs. Wavelength

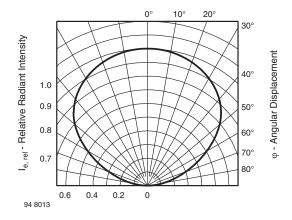
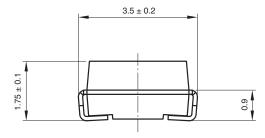


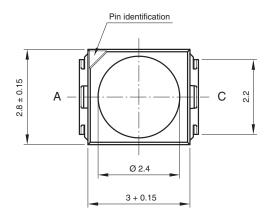
Fig. 6 - Relative Radiant Intensity vs. Angular Displacement

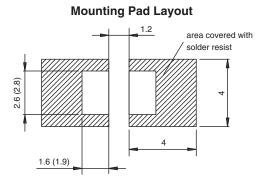
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PACKAGE DIMENSIONS in millimeters









Drawing-No.: 6.541-5067.02-4

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SOLDER PROFILE

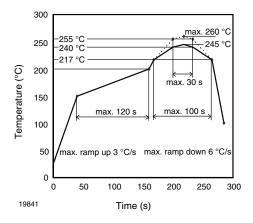


Fig. 7 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020

DRYPACK

Devices are packed in moisture barrier bags (MBB) to prevent the products from moisture absorption during transportation and storage. Each bag contains a desiccant.

FLOOR LIFE

Floor life (time between soldering and removing from MBB) must not exceed the time indicated on MBB label:

Floor life: 168 h

Conditions: T_{amb} < 30 °C, RH < 60 %

Moisture sensitivity level 3, acc. to J-STD-020.

DRYING

In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-020 or label. Devices taped on reel dry using recommended conditions 192 h at 40 $^{\circ}$ C (+ 5 $^{\circ}$ C), RH < 5 $^{\circ}$ M.

TAPE AND REEL

PLCC-2 components are packed in antistatic blister tape (DIN IEC (CO) 564) for automatic component insertion. Cavities of blister tape are covered with adhesive tape.

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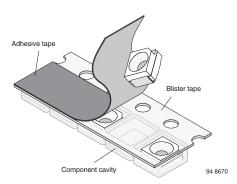


Fig. 8 - Blister Tape

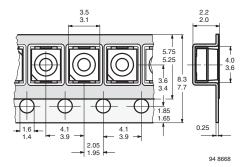


Fig. 9 - Tape Dimensions in mm for PLCC-2

MISSING DEVICES

A maximum of 0.5 % of the total number of components per reel may be missing, exclusively missing components at the beginning and at the end of the reel. A maximum of three consecutive components may be missing, provided this gap is followed by six consecutive components.

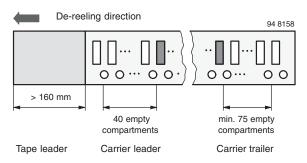


Fig. 10 - Beginning and End of Reel

The tape leader is at least 160 mm and is followed by a carrier tape leader with at least 40 empty compartments. The tape leader may include the carrier tape as long as the cover tape is not connected to the carrier tape. The least component is followed by a carrier tape trailer with a least 75 empty compartments and sealed with cover tape.

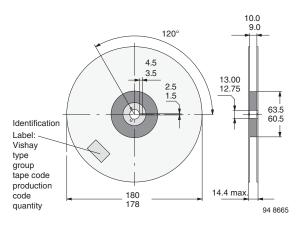


Fig. 11 - Dimensions of Reel-GS08

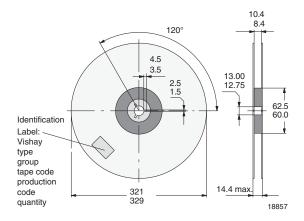


Fig. 12 - Dimensions of Reel-GS18

COVER TAPE REMOVAL FORCE

The removal force lies between 0.1 N and 1.0 N at a removal speed of 5 mm/s. In order to prevent components from popping out of the blisters, the cover tape must be pulled off at an angle of 180° with regard to the feed direction.



Legal Disclaimer Notice

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