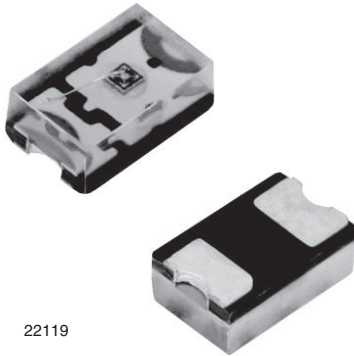


## High Speed Infrared Emitting Diodes, 850 nm, Surface Emitter Technology



22119

### DESCRIPTION

VSMY1850 is an infrared, 850 nm emitting diode based on GaAlAs surface emitter chip technology with high radiant intensity, high optical power and high speed, molded in clear, untinted 0805 plastic package for surface mounting (SMD).

### FEATURES

- Package type: surface mount
- Package form: 0805
- Dimensions (L x W x H in mm): 2 x 1.25 x 0.85
- Peak wavelength:  $\lambda_p = 850$  nm
- High reliability
- High radiant power
- High radiant intensity
- High speed
- Angle of half sensitivity:  $\phi = \pm 60^\circ$
- Suitable for high pulse current operation
- 0805 standard surface-mountable package
- 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



### APPLICATIONS

- IrDA compatible data transmission
- Miniature light barrier
- Photointerrupters
- Optical switch
- Emitter source for proximity sensors
- IR touch panels
- IR Flash
- IR illumination
- 3D TV

### PRODUCT SUMMARY

COMPONENT	$I_e$ (mW/sr)	$\phi$ (deg)	$\lambda_p$ (nm)	$t_r$ (ns)
VSMY1850	10	$\pm 60$	850	10

#### Note

- Test conditions see table "Basic Characteristics"

### ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
VSMY1850	Tape and reel	MOQ: 3000 pcs, 3000 pcs/reel	0805

#### Note

- MOQ: minimum order quantity

\*\* Please see document "Vishay Material Category Policy": [www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		$V_R$	5	V
Forward current		$I_F$	100	mA
Peak forward current	$t_p/T = 0.1$ , $t_p = 100\text{ }\mu\text{s}$	$I_{FM}$	200	mA
Surge forward current	$t_p = 100\text{ }\mu\text{s}$	$I_{FSM}$	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	acc. figure 7, J-STD-020	$T_{sd}$	260	$^{\circ}\text{C}$
Thermal resistance junction/ambient	J-STD-051, leads 7 mm, soldered on PCB	$R_{thJA}$	270	K/W

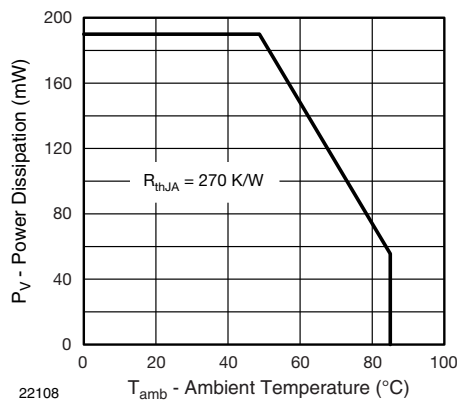


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

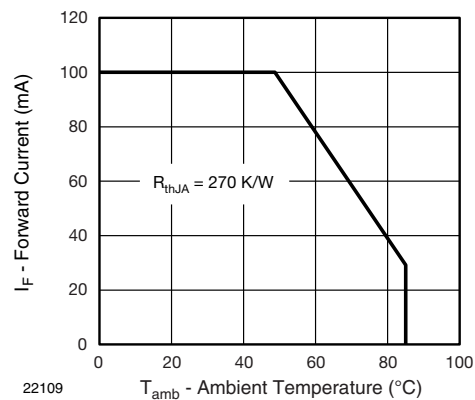


Fig. 2 - Forward Current Limit vs. Ambient Temperature

<b>BASIC CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , 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
	$I_F = 1\text{ A}$ , $t_p = 100\text{ }\mu\text{s}$	$V_F$		2.9		V
Temperature coefficient of $V_F$	$I_F = 1\text{ mA}$	$TK_{V_F}$		- 1.4		mV/K
	$I_F = 10\text{ mA}$	$TK_{V_F}$		- 1.18		mV/K
Reverse current		$I_R$	not designed for reverse operation			$\mu\text{A}$
Junction capacitance	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0\text{ mW/cm}^2$	$C_J$		125		pF
Radiant intensity	$I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$I_e$	5	10	15	mW/sr
	$I_F = 1\text{ A}$ , $t_p = 100\text{ }\mu\text{s}$	$I_e$		85		mW/sr
Radiant power	$I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$\phi_e$		50		mW
Temperature coefficient of radiant power	$I_F = 100\text{ mA}$	$TK_{\phi_e}$		- 0.35		%/K
Angle of half intensity		$\phi$		$\pm 60$		deg
Peak wavelength	$I_F = 100\text{ mA}$	$\lambda_p$	840	850	870	nm
Spectral bandwidth	$I_F = 30\text{ mA}$	$\Delta\lambda$		30		nm
Temperature coefficient of $\lambda_p$	$I_F = 30\text{ mA}$	$TK_{\lambda_p}$		0.25		nm
Rise time	$I_F = 100\text{ mA}$ , 20 % to 80 %	$t_r$		10		ns
Fall time	$I_F = 100\text{ mA}$ , 20 % to 80 %	$t_f$		10		ns
Virtual source diameter		$d$		0.5		mm

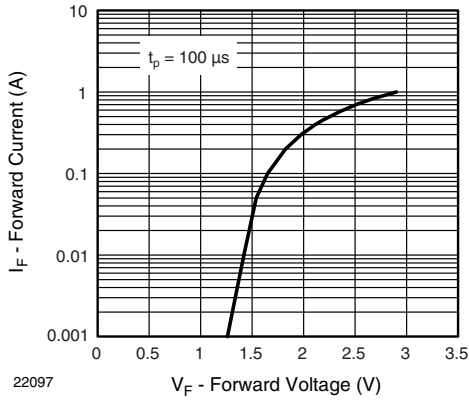
**BASIC CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 3 - Forward Current vs. Forward Voltage

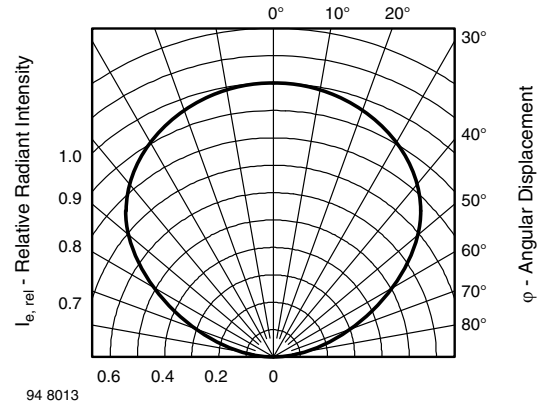


Fig. 6 - Relative Radiant Intensity vs. Angular Displacement

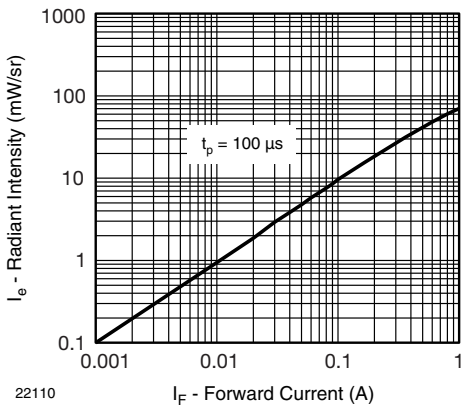


Fig. 4 - Radiant Intensity vs. Forward Current

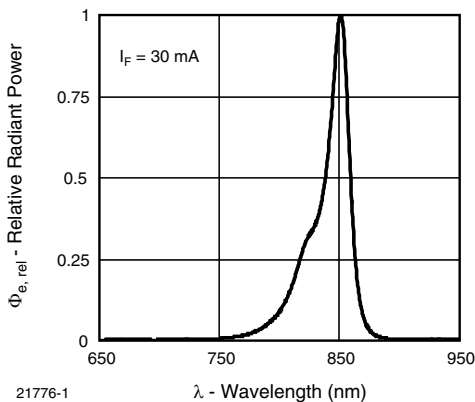


Fig. 5 - Relative Radiant Power vs. Wavelength

**REFLOW SOLDER PROFILE**

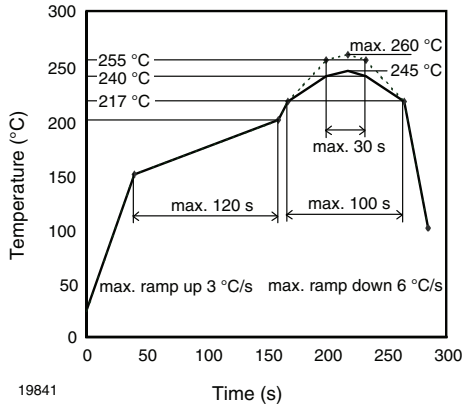


Fig. 7 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020

**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.

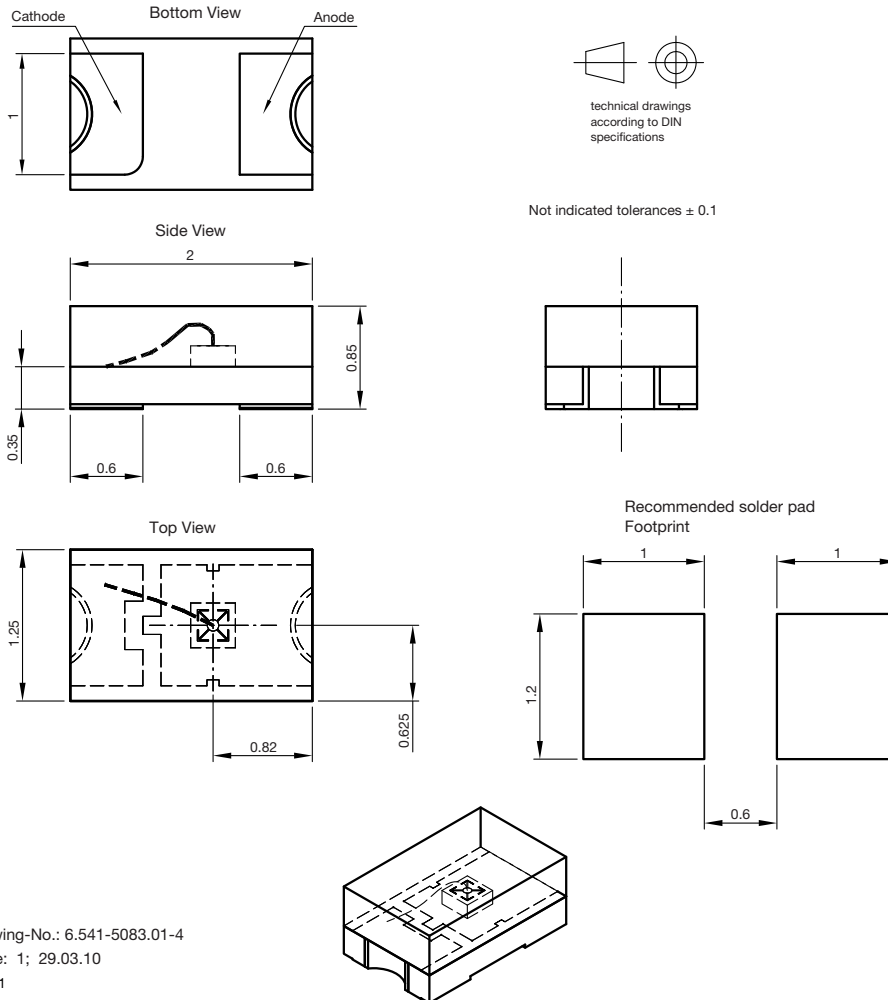
**FLOOR LIFE**

Time between soldering and removing from MBB must not exceed the time indicated in J-STD-020:  
Moisture sensitivity: level 3  
Floor life: 168 h  
Conditions:  $T_{amb} < 30\text{ }^{\circ}\text{C}$ ,  $\text{RH} < 60\%$

**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  $40\text{ }^{\circ}\text{C}$  (+ 5 °C),  $\text{RH} < 5\%$ .

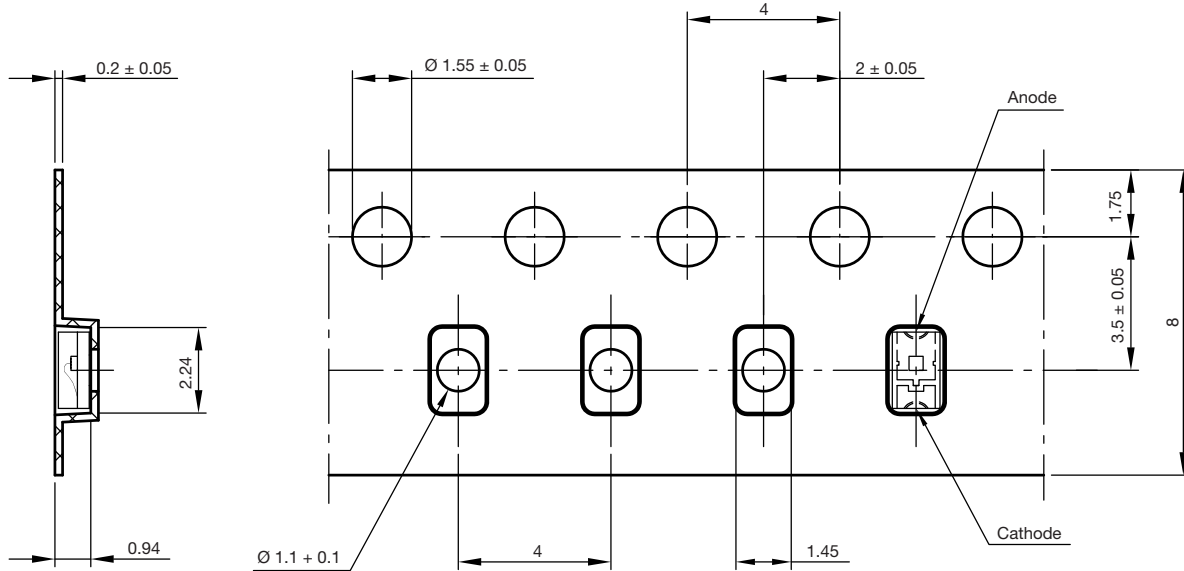
**PACKAGE DIMENSIONS** in millimeters



Drawing-No.: 6.541-5083.01-4  
Issue: 1; 29.03.10  
22111

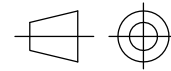


**BLISTER TAPE DIMENSIONS** in millimeters



Not indicated tolerances ±0.1

Reel off direction →



technical drawings according to DIN specifications

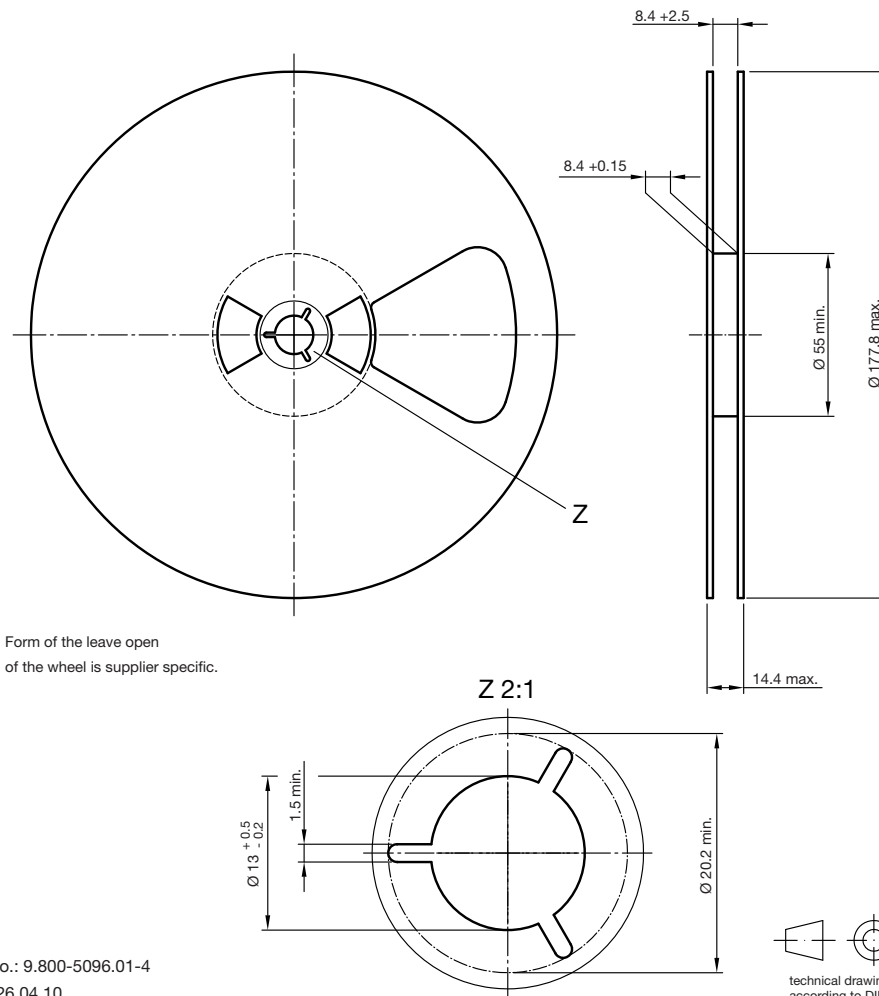
Drawing-No.: 9.700-5352.01-4  
Issue: 1; 13.04.10  
22112

# VSMY1850



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

## REEL DIMENSIONS in millimeters



Drawing-No.: 9.800-5096.01-4  
Issue: 2; 26.04.10  
20875



## Disclaimer

All product specifications and data are subject to change without notice.

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 herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

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.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.