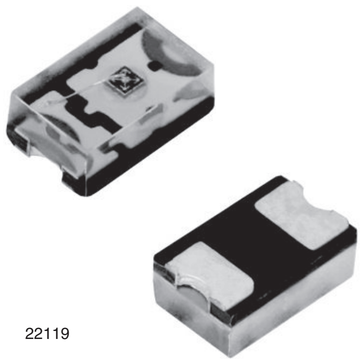
High Speed Infrared Emitting Diodes, 850 nm, Surface Emitter Technology



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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: λ_p = 850 nm
- High reliability
- High radiant power
- High radiant intensity
- High speed
- Angle of half sensitivity: $\varphi = \pm 60°$
- 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

Pb-free
e4
RoHS
COMPLIANT
GREEN (5-2008)**

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)	φ (deg)	λ_p (nm)	t_r (ns)
VSMY1850	10	± 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

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	$t_p/T = 0.1$, t_p = 100 μs	I_{FM}	200	mA
Surge forward current	t_p = 100 μs	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	acc. figure 7, J-STD-020	T_{sd}	260	°C
Thermal resistance junction/ambient	J-STD-051, leads 7 mm, soldered on PCB	R_{thJA}	270	K/W

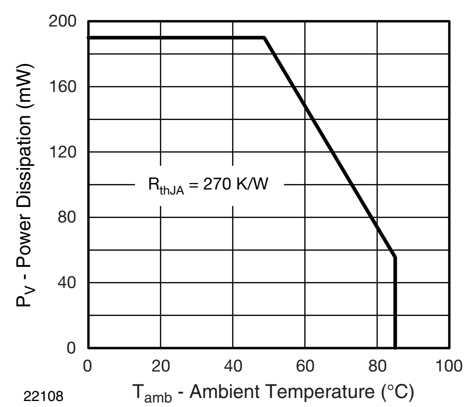


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

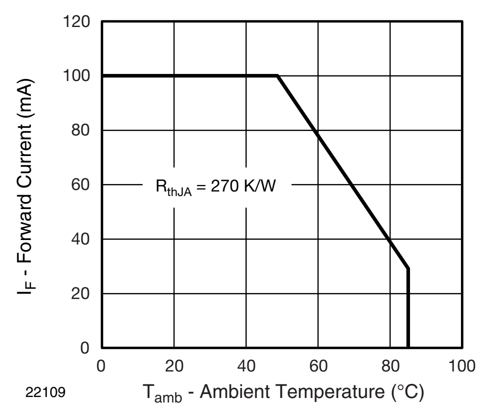


Fig. 2 - Forward Current Limit vs. Ambient Temperature

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}		- 1.4		mV/K
	I_F = 10 mA	TK_{VF}		- 1.18		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	5	10	15	mW/sr
	I_F = 1 A, t_p = 100 μs	I_e		85		mW/sr
Radiant power	I_F = 100 mA, t_p = 20 ms	ϕe		50		mW
Temperature coefficient of radiant power	I_F = 100 mA	$TK\phi_e$		- 0.35		%/K
Angle of half intensity		φ		± 60		deg
Peak wavelength	I_F = 100 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
Virtual source diameter		d		0.5		mm

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

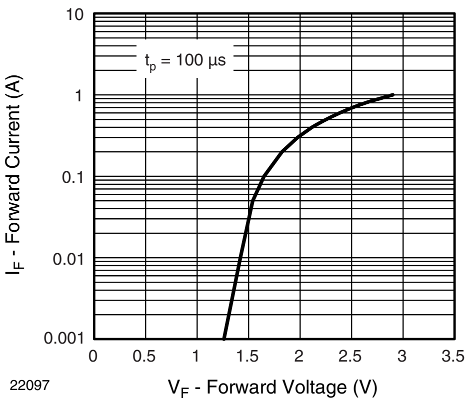


Fig. 3 - Forward Current vs. Forward Voltage

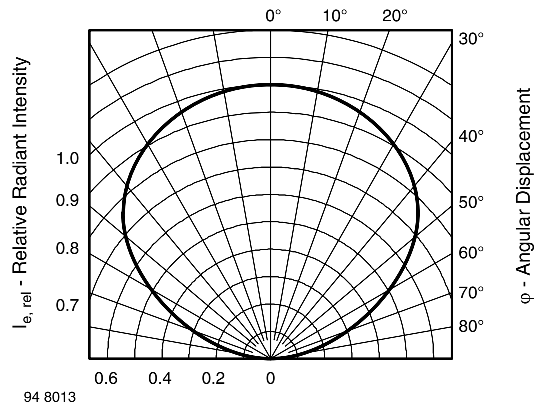


Fig. 6 - Relative Radiant Intensity vs. Angular Displacement

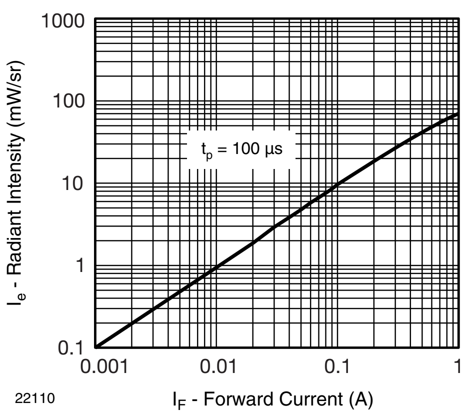


Fig. 4 - Radiant Intensity vs. Forward Current

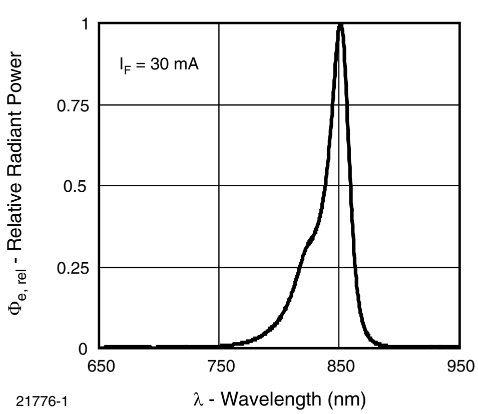


Fig. 5 - Relative Radiant Power vs. Wavelength

REFLOW SOLDER PROFILE

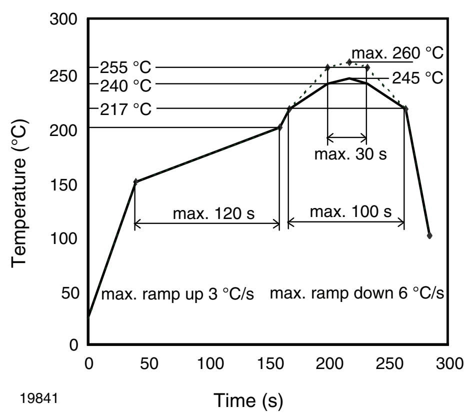


Fig. 7 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020

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.

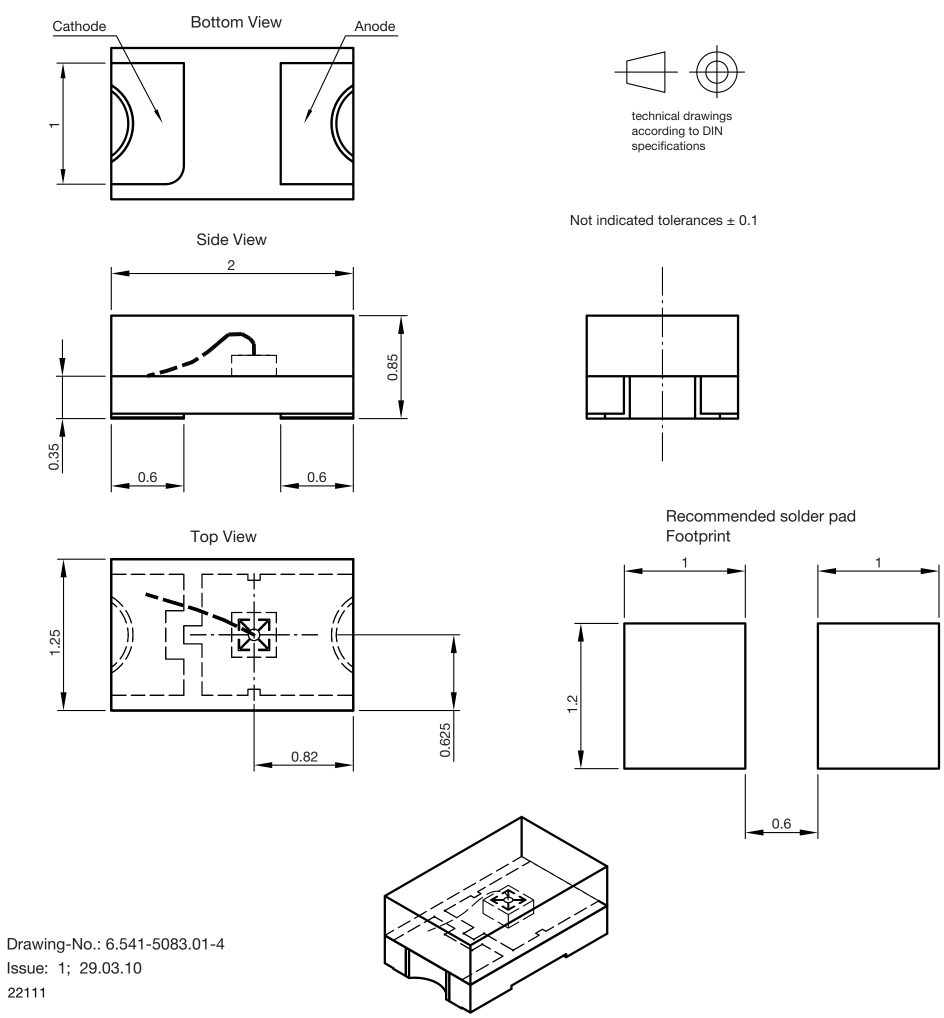
FLOOR LIFE

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 °C, RH < 60 %

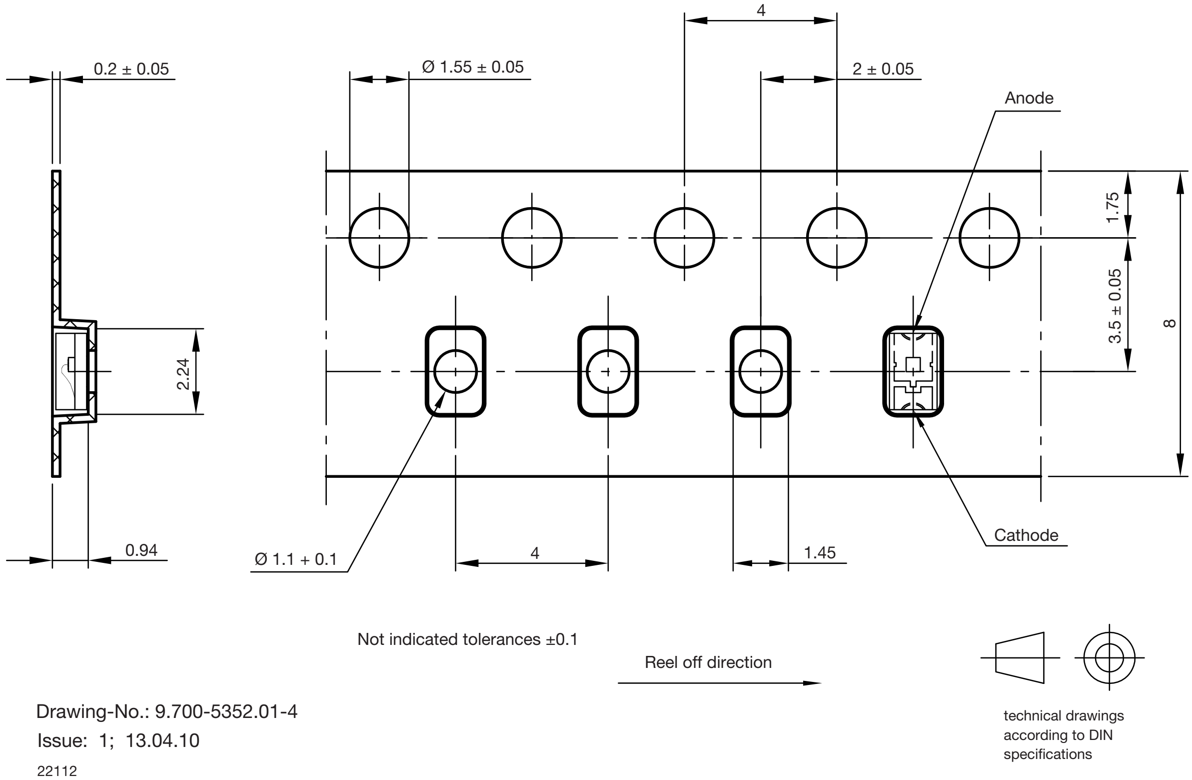
DRYING

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 °C (+ 5 °C), RH < 5 %.

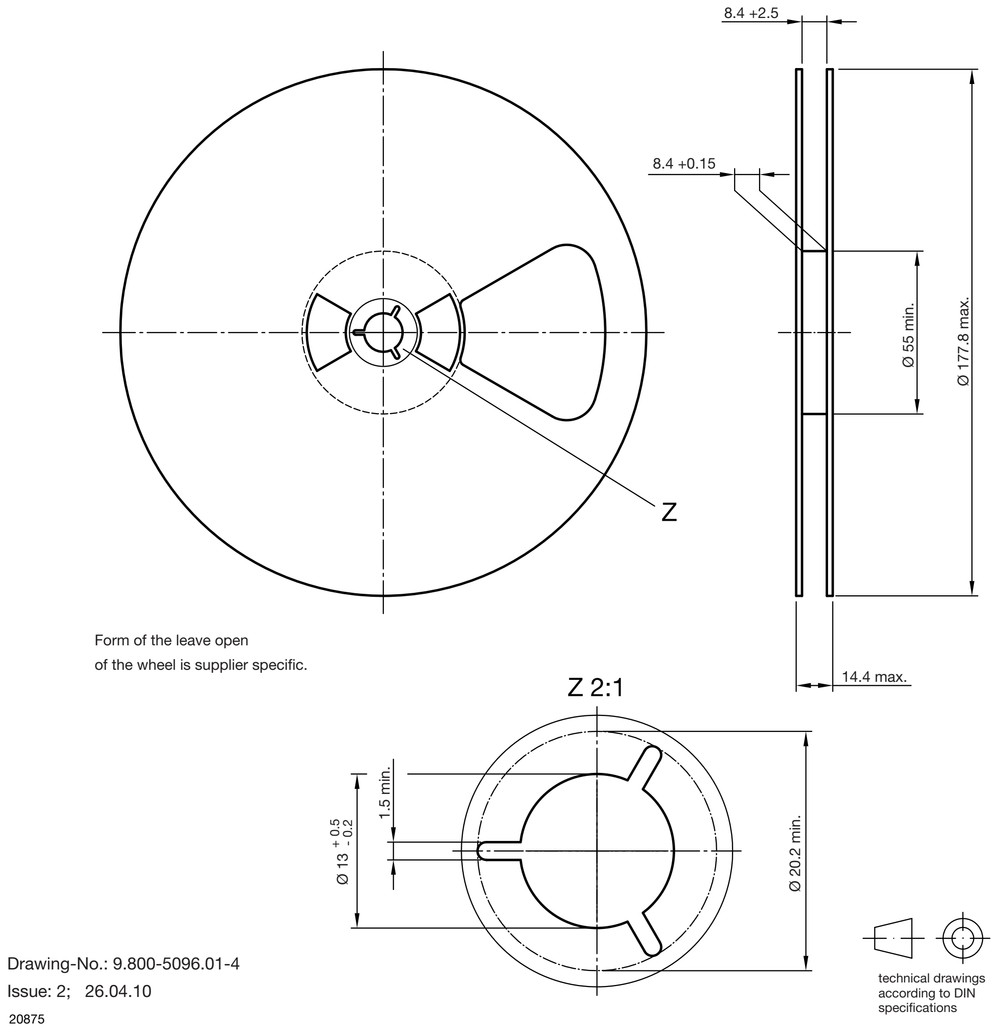
PACKAGE DIMENSIONS in millimeters



BLISTER TAPE DIMENSIONS in millimeters



REEL DIMENSIONS in millimeters



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