

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: $\varphi = \pm 60^\circ$
- 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



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 |

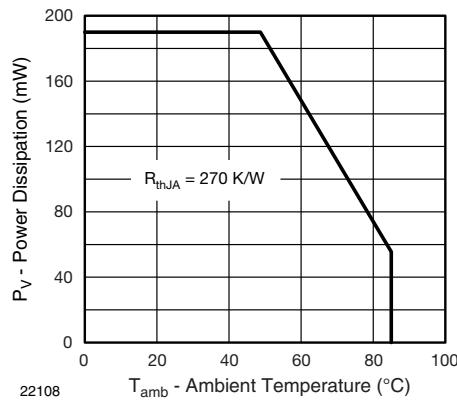


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

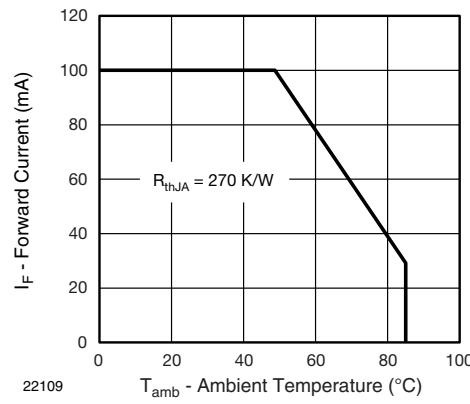


Fig. 2 - Forward Current Limit vs. Ambient Temperature

| 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 | | | |
| 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 | ϕ_e | | 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 |

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

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

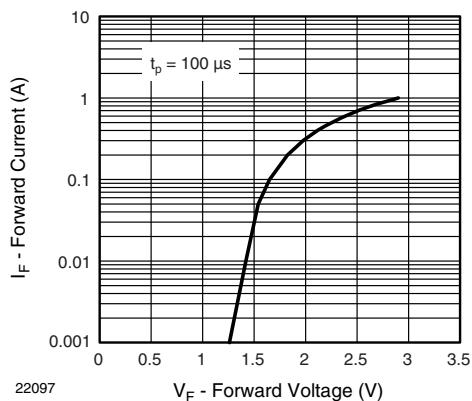


Fig. 3 - Forward Current vs. Forward Voltage

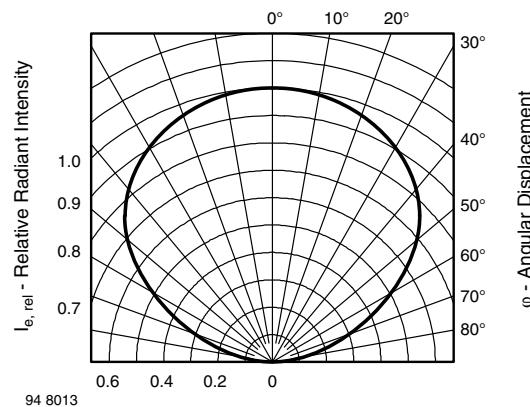


Fig. 6 - Relative Radiant Intensity vs. Angular Displacement

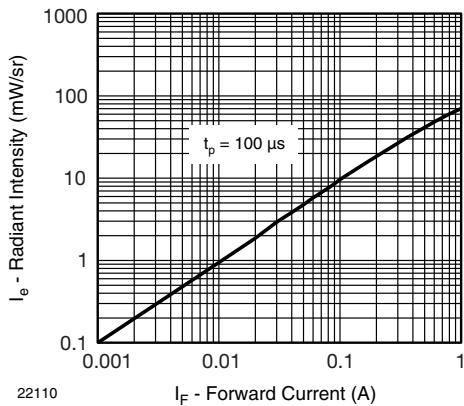


Fig. 4 - Radiant Intensity vs. Forward Current

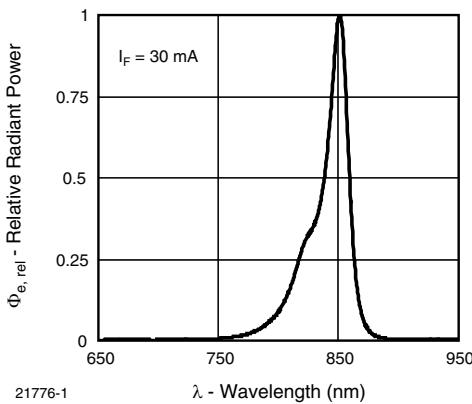


Fig. 5 - Relative Radiant Power vs. Wavelength

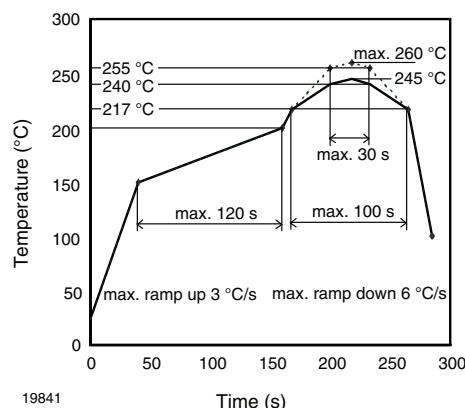
REFLOW SOLDER PROFILE

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:

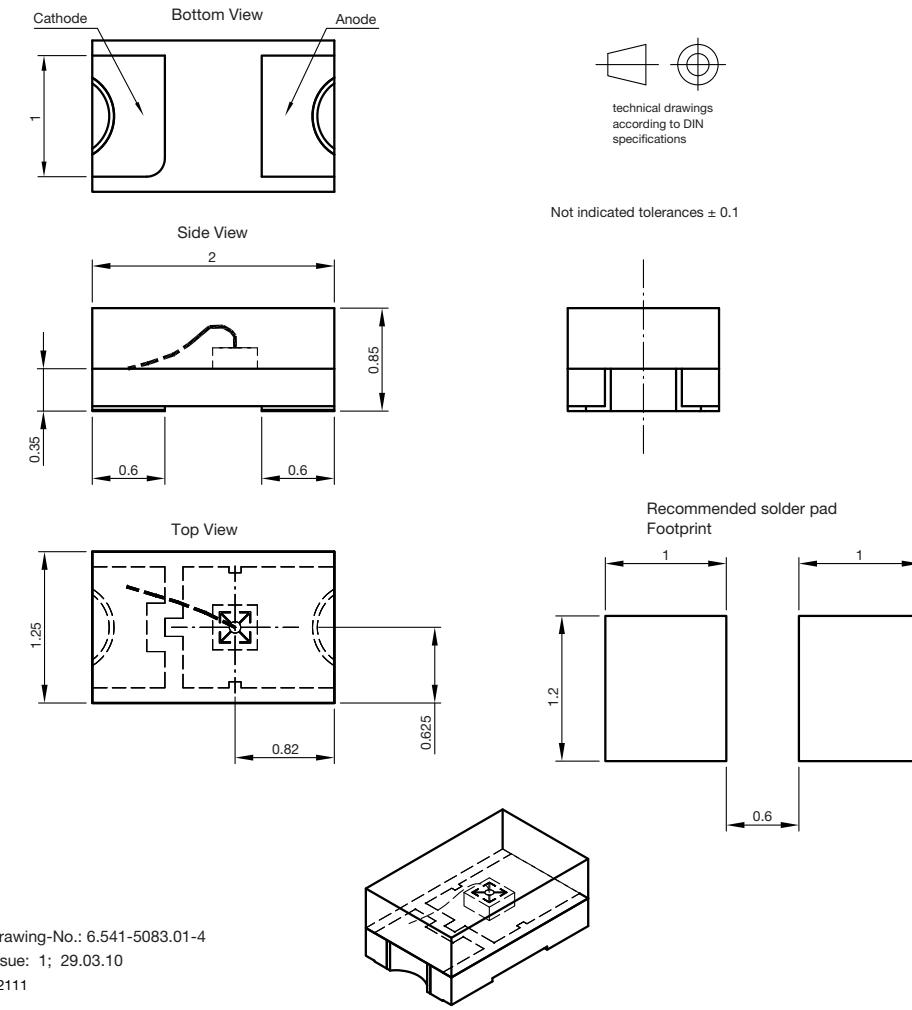
Moisture sensitivity: level 3

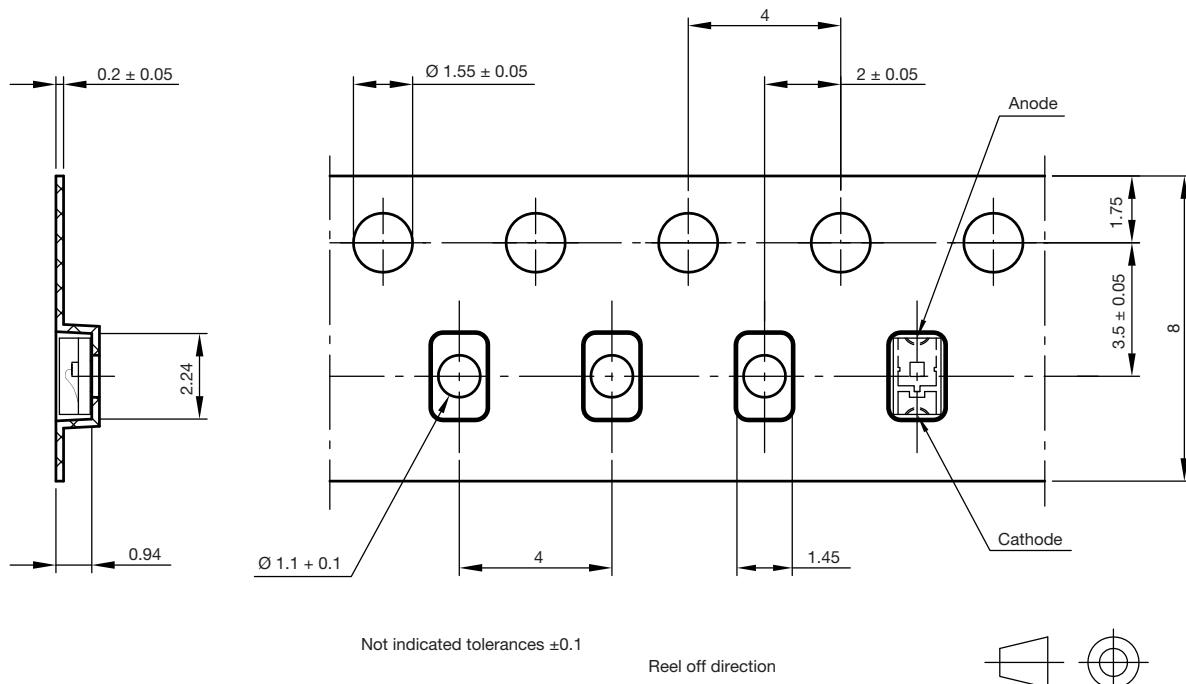
Floor life: 168 h

Conditions: $T_{amb} < 30^{\circ}\text{C}$, $\text{RH} < 60\%$

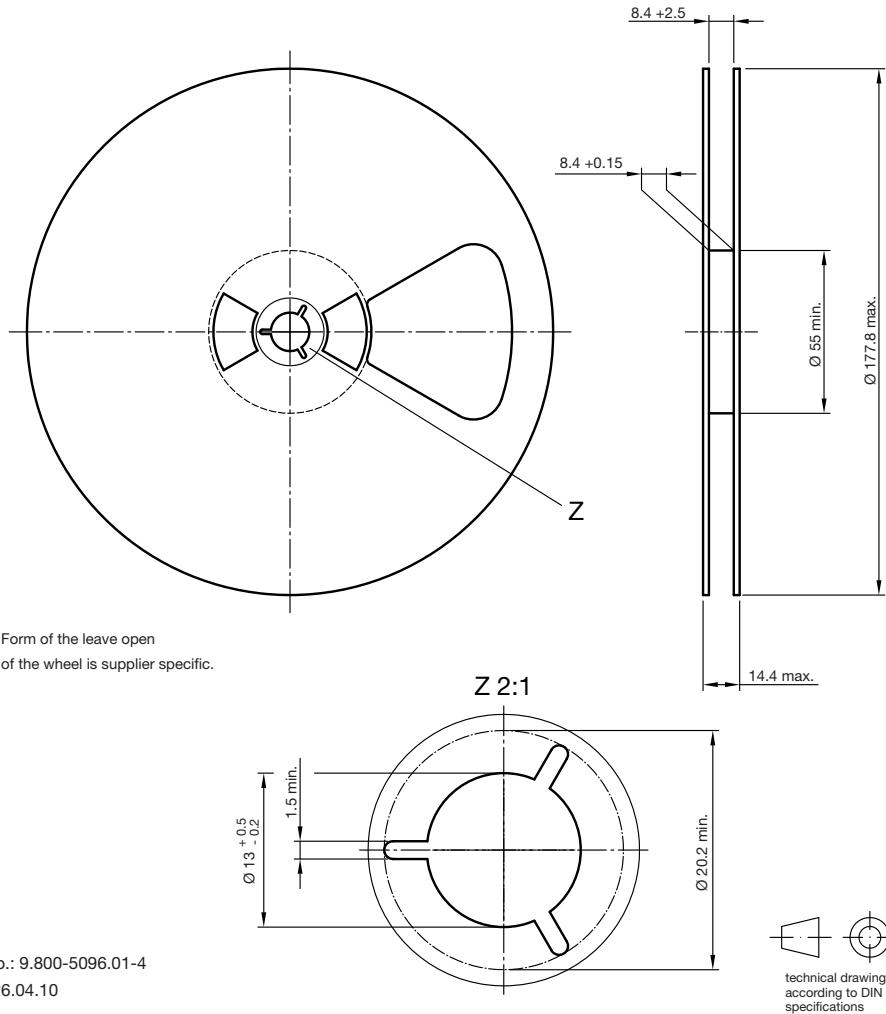
DRYING

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

PACKAGE DIMENSIONS in millimeters

BLISTER TAPE DIMENSIONS in millimeters


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

REEL DIMENSIONS in millimeters

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