

High Speed Infrared Emitting Diodes, 940 nm, Surface Emitter Technology



FEATURES

- Package type: surface-mount
- Package form: MiniLED
- Dimensions (L x W x H in mm): 2.3 x 1.3 x 1.4
- Peak wavelength: $\lambda_p = 940 \text{ nm}$
- Angle of half intensity: $\phi = \pm 60^\circ$
- Floor life: 672 h, MSL 2a, according to J-STD-020
- Lead (Pb)-free reflow soldering
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



LINKS TO ADDITIONAL RESOURCES



DESCRIPTION

As part of the [SurfLight™](#) portfolio, the VSMY23941 is an infrared, 940 nm emitting diode based on GaAlAs surface emitter chip technology with high radiant intensity, in a small white surface-mount (SMD) package.

APPLICATIONS

- Miniature light barrier
- Optical switch
- IR point source
- [Smart metering](#)

PRODUCT SUMMARY				
COMPONENT	I_e (mW/sr) at $I_F = 100 \text{ mA}$	ϕ (°)	λ_p (nm)	t_r (ns)
VSMY23941	15.5	± 60	940	5

Note

- Test conditions see table “Basic Characteristics“

ORDERING INFORMATION			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
VSMY23941	Tape and reel	MOQ: 3000 pcs, 3000 pcs/reel	MiniLED

Note

- MOQ: minimum order quantity



ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
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}	500	mA
Power dissipation		P _V	200	mW
Junction temperature		T _j	110	°C
Operating temperature range		T _{amb}	-40 to +100	°C
Storage temperature range		T _{stg}	-40 to +100	°C
Soldering temperature	According to Fig. 7, J-STD-020	T _{sd}	260	°C
Thermal resistance junction to ambient	EIA / JESD51	R _{thJA}	350	K/W

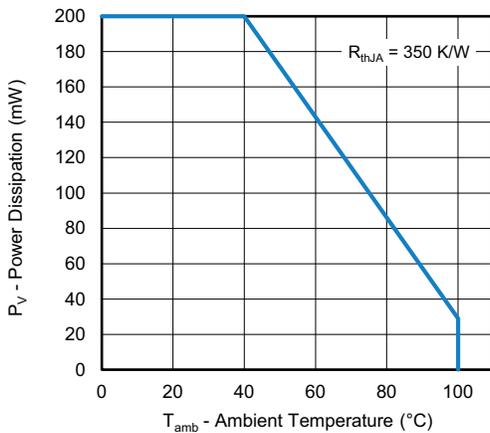


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

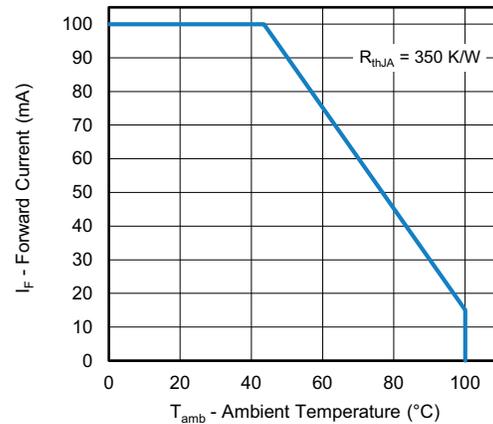


Fig. 2 - Forward Current Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	I _F = 70 mA, t _p = 20 ms	V _F	-	1.6	-	V
	I _F = 100 mA, t _p = 20 ms		-	1.7	2.0	
Temperature coefficient of V _F	I _F = 100 mA, t _p = 20 ms	TK _{V_F}	-	-0.7	-	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	-	30	-	pF
Radiant intensity	I _F = 70 mA, t _p = 20 ms	I _e	-	11	-	mW/sr
	I _F = 100 mA, t _p = 20 ms		11	15.5	20	
Temperature coefficient of radiant power	I _F = 100 mA, t _p = 20 ms	TK _{φ_e}	-	-0.27	-	%/K
Angle of half intensity		φ	-	± 60	-	°
Peak wavelength	I _F = 100 mA, t _p = 20 ms	λ _p	925	940	955	nm
Spectral bandwidth	I _F = 100 mA, t _p = 20 ms	Δλ	-	55	-	nm
Temperature coefficient of λ _p	I _F = 100 mA, t _p = 20 ms	TK _{λ_p}	-	0.28	-	nm/K
Rise time	I _F = 100 mA, 10 % to 90 %	t _r	-	5	-	ns
Fall time	I _F = 100 mA, 10 % to 90 %	t _f	-	5	-	ns

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

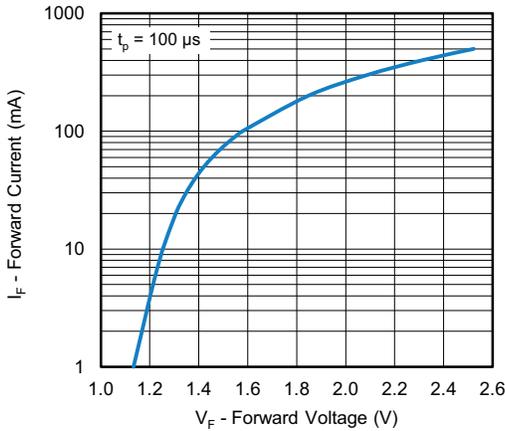


Fig. 3 - Forward Current vs. Forward Voltage

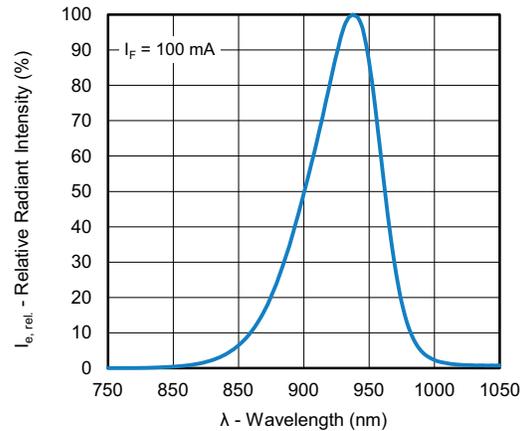


Fig. 5 - Relative Radiant Power vs. Wavelength

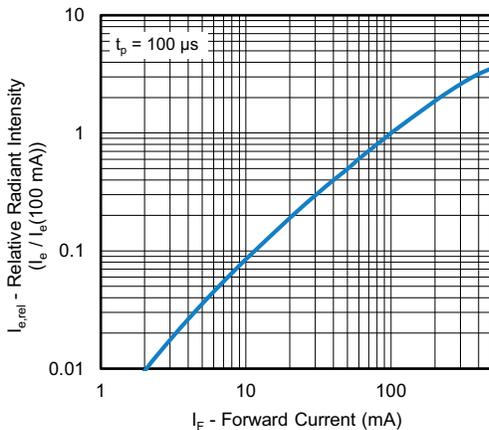


Fig. 4 - Relative Radiant Intensity vs. Forward Current

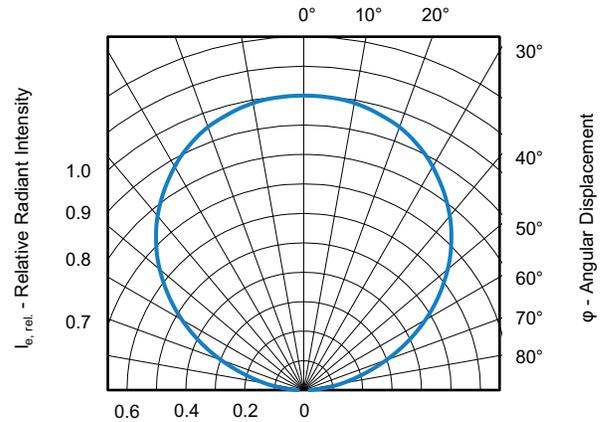
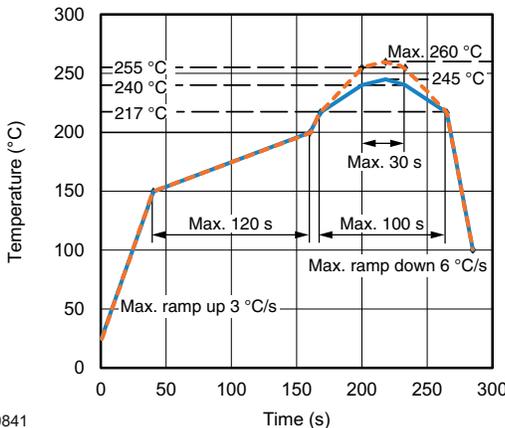


Fig. 6 - Relative Radiant Intensity vs. Angular Displacement

REFLOW SOLDER PROFILE



19841

Fig. 7 - Lead (Pb)-free Reflow Solder Profile According to 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 2a

Floor life: 672 h

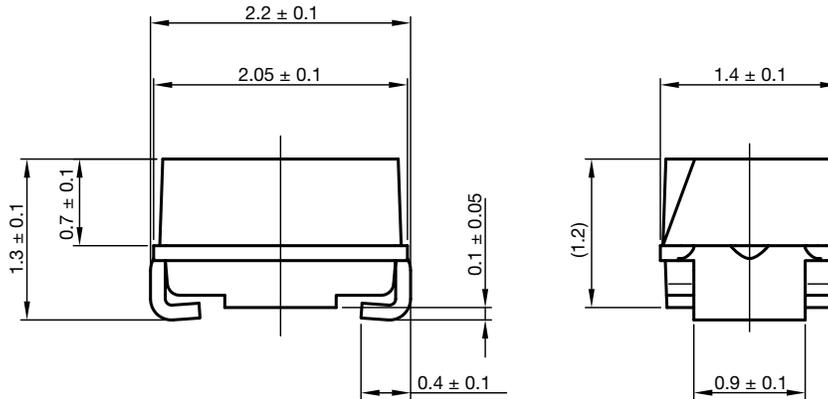
Conditions: $T_{amb} < 30\text{ }^{\circ}\text{C}$, RH < 60 %

DRYING

In case of moisture absorption devices should be baked before soldering. Conditions see J-STD-033D or label. Devices taped on reel dry using recommended conditions 192 h at 40 °C (+ 5 °C), RH < 5 %.

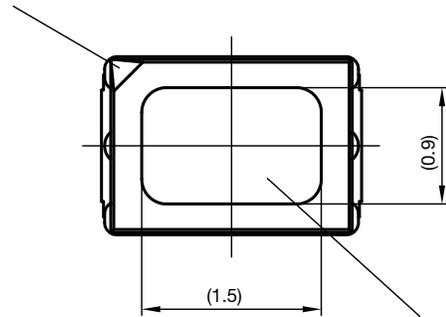


PACKAGE DIMENSIONS in millimeters

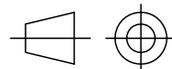
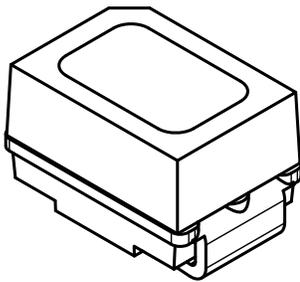


Not indicated tolerances ± 0.2

Anode mark



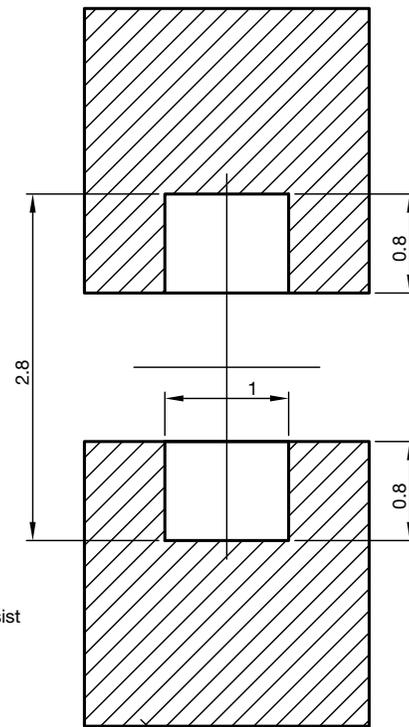
Area not flat



technical drawings according to DIN specifications

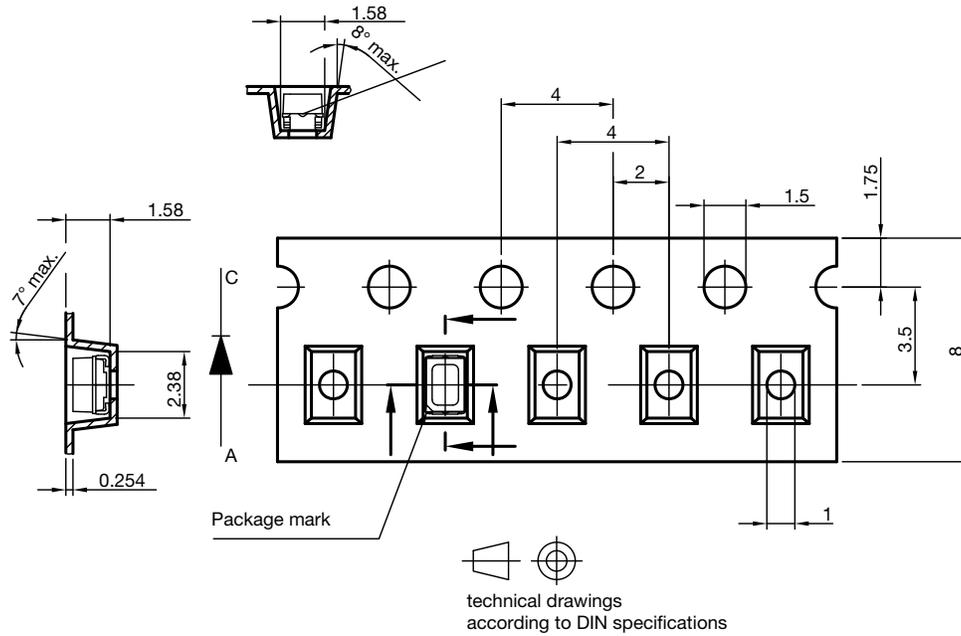


Proposed pad layout (for reference only)



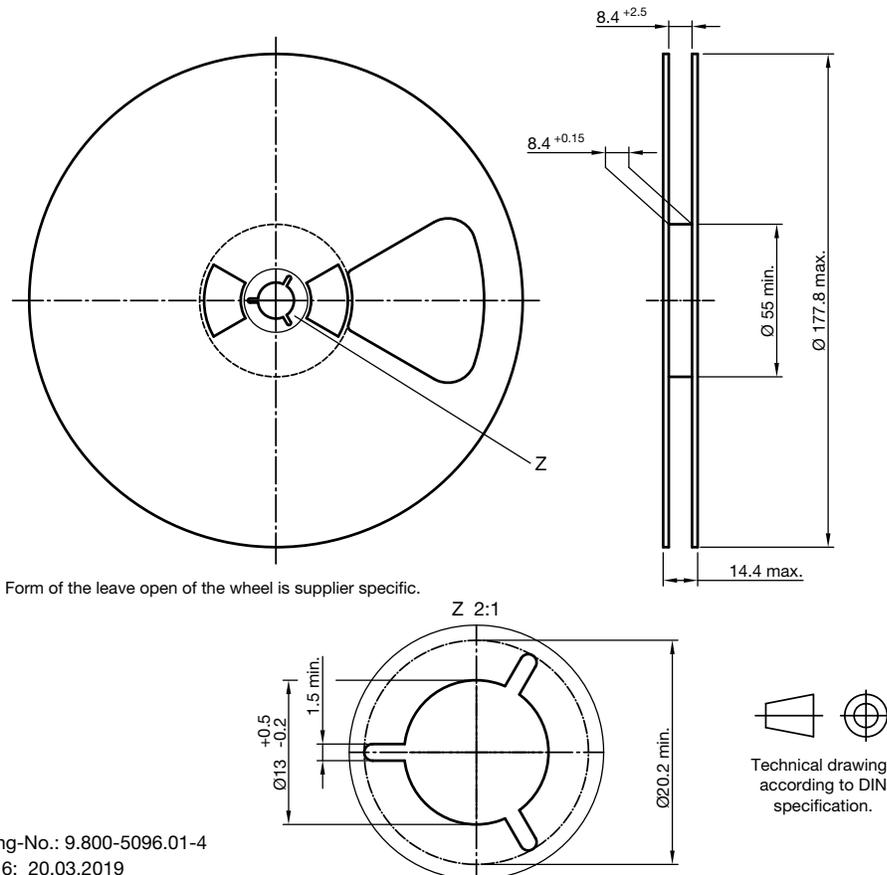
Drawing refers to following types:
Drawing-No.: 6.541-5090.01-4
Issue: 4; 20.07.17

BLISTER TAPE DIMENSIONS in millimeters



Drawing refers to following types: Mini - SMD - LED with reverse polarity: VLM. 233..., VLM. 235...
 Drawing-No.: 9.700-5381.01-4
 Issue: 2; 20.07.17

REEL DIMENSIONS in millimeters



Drawing-No.: 9.800-5096.01-4
 Issue: 6; 20.03.2019



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