

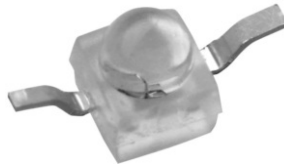
## Silicon PIN Photodiode

VEMD2520X01



16758-11

VEMD2500X01



### DESCRIPTION

VEMD2500X01 and VEMD2520X01 are high speed and high sensitive PIN photodiodes in a clear epoxy, miniature surface mount package (SMD) with dome lens. The photo sensitive area of the chip is 0.23 mm<sup>2</sup>.

### FEATURES

- Package type: surface mount
- Package form: GW, RGW
- Dimensions (L x W x H in mm): 2.3 x 2.3 x 2.8
- AEC-Q101 qualified
- High radiant sensitivity
- Suitable for visible and near infrared radiation
- Fast response times
- Angle of half sensitivity:  $\varphi = \pm 15^\circ$
- Package matched with IR emitter series VSMB2000X01
- Floor life: 4 weeks, MSL 2a, acc. J-STD-020
- Lead (Pb)-free reflow soldering
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition
- Find out more about Vishay's Automotive Grade Product requirements at: [www.vishay.com/applications](http://www.vishay.com/applications)



### APPLICATIONS

- High speed photo detector

### PRODUCT SUMMARY

COMPONENT	I <sub>ra</sub> (μA)	φ (deg)	λ <sub>0.1</sub> (nm)
VEMD2500X01	12	± 15	350 to 1120
VEMD2520X01	12	± 15	350 to 1120

#### Note

Test conditions see table "Basic Characteristics"

### ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
VEMD2500X01	Tape and reel	MOQ: 6000 pcs, 6000 pcs/reel	Reverse gullwing
VEMD2520X01	Tape and reel	MOQ: 6000 pcs, 6000 pcs/reel	Gullwing

#### Note

MOQ: minimum order quantity

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V <sub>R</sub>	60	V
Power dissipation	T <sub>amb</sub> ≤ 25 °C	P <sub>V</sub>	215	mW
Junction temperature		T <sub>j</sub>	100	°C
Operating temperature range		T <sub>amb</sub>	- 40 to + 100	°C
Storage temperature range		T <sub>stg</sub>	- 40 to + 100	°C
Soldering temperature	Acc. reflow solder profile fig. 7	T <sub>sd</sub>	260	°C
Thermal resistance junction/ambient	Acc. J-STD-051	R <sub>thJA</sub>	250	K/W

#### Note

T<sub>amb</sub> = 25 °C, unless otherwise specified

BASIC CHARACTERISTICS						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 50 \text{ mA}$	$V_F$		1		V
Breakdown voltage	$I_R = 100 \text{ }\mu\text{A}, E = 0$	$V_{(BR)}$	32			V
Reverse dark current	$V_R = 10 \text{ V}, E = 0$	$I_{ro}$		1	10	nA
Diode capacitance	$V_R = 0 \text{ V}, f = 1 \text{ MHz}, E = 0$	$C_D$		4		pF
	$V_R = 5 \text{ V}, f = 1 \text{ MHz}, E = 0$	$C_D$		1.3		pF
Open circuit voltage	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	$V_o$		350		mV
Temperature coefficient of $V_o$	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	$TK_{V_o}$		-2.6		mV/K
Short circuit current	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	$I_k$		11		$\mu\text{A}$
Temperature coefficient of $I_k$	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	$TK_{I_k}$		0.1		%/K
Reverse light current	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}, V_R = 5 \text{ V}$	$I_{ra}$	5	12		$\mu\text{A}$
Angle of half sensitivity		$\phi$		$\pm 15$		deg
Wavelength of peak sensitivity		$\lambda_p$		900		nm
Range of spectral bandwidth		$\lambda_{0.1}$		350 to 1120		nm
Rise time	$V_R = 10 \text{ V}, R_L = 1 \text{ k}\Omega, \lambda = 820 \text{ nm}$	$t_r$		100		ns
Fall time	$V_R = 10 \text{ V}, R_L = 1 \text{ k}\Omega, \lambda = 820 \text{ nm}$	$t_f$		100		ns

**Note**

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

**BASIC CHARACTERISTICS**

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

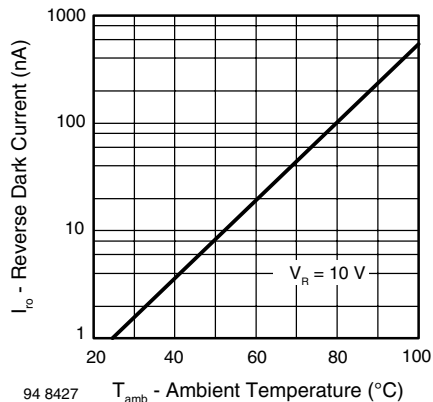


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

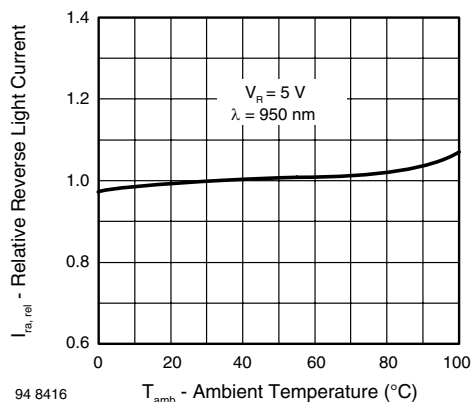


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

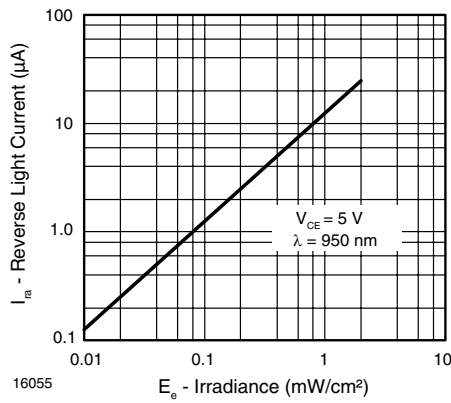


Fig. 3 - Reverse Light Current vs. Irradiance

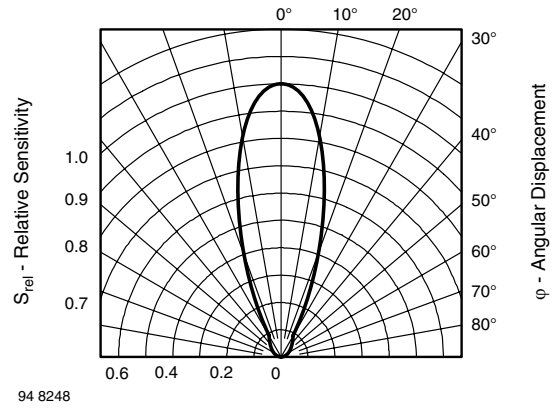


Fig. 6 - Relative Radiant Intensity vs. Angular Displacement

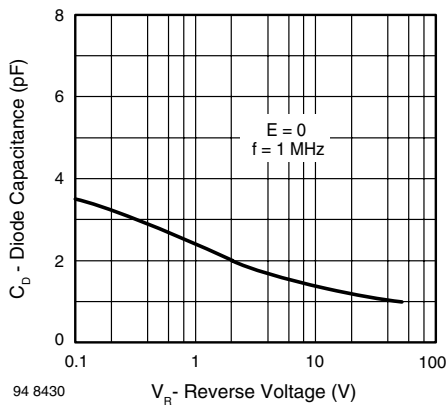


Fig. 4 - Diode Capacitance vs. Reverse Voltage

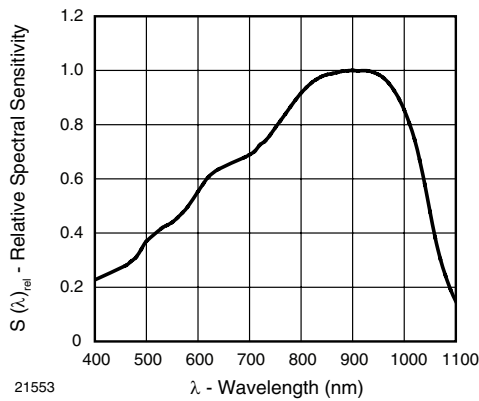


Fig. 5 - Relative Spectral Sensitivity vs. Wavelength

## REFLOW SOLDER PROFILE

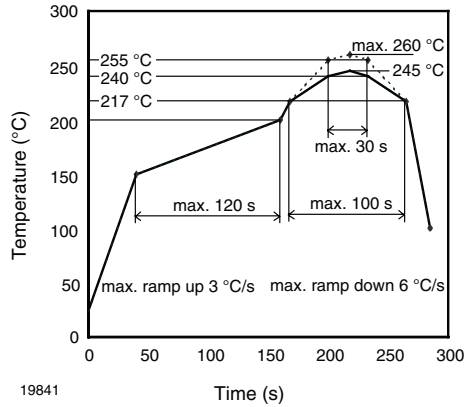


Fig. 7 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020D

## 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: 4 weeks

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

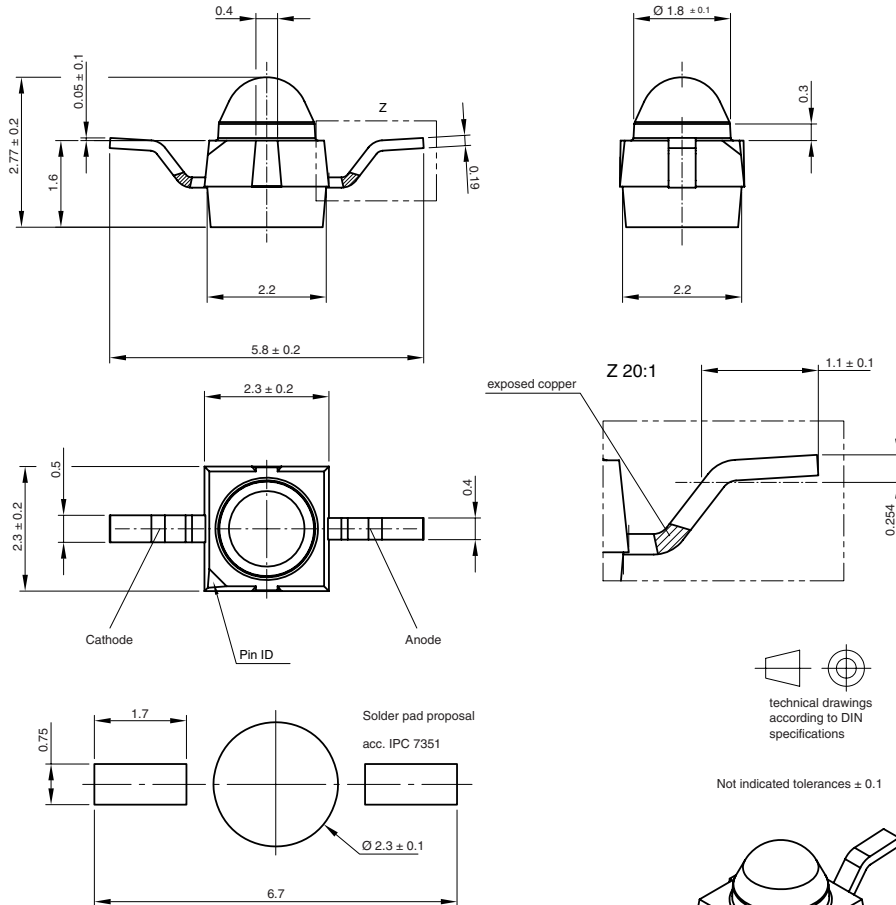
Moisture sensitivity level 2a, acc. to J-STD-020.

## 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 °C (+ 5 °C), RH < 5 %.

## PACKAGE DIMENSIONS in millimeters: VEMD2500X01



Drawing-No.: 6.544-5391.02-4  
Issue: 1; 26.09.08  
21517

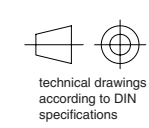
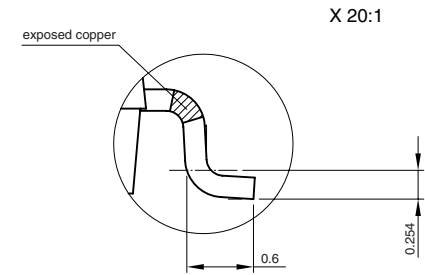
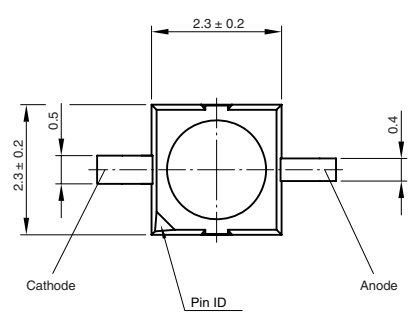
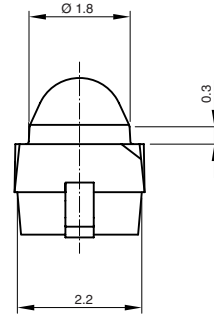
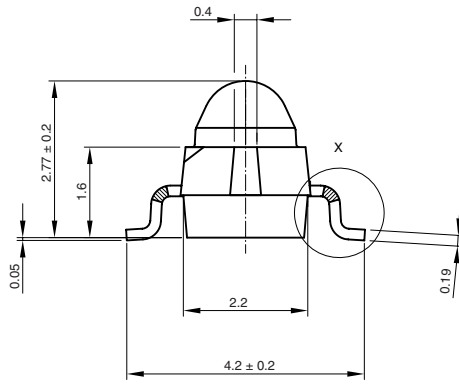


# VEMD2500X01, VEMD2520X01

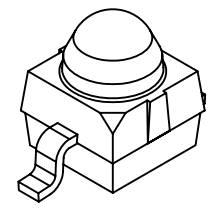
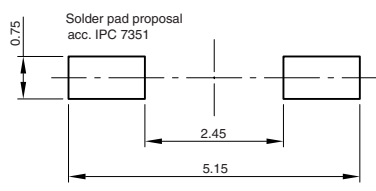
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## PACKAGE DIMENSIONS in millimeters: **VEMD2520X01**



Not indicated tolerances ± 0.1



Drawing-No.: 6.544-5383.02-4  
Issue: 3; 26.09.08  
21488

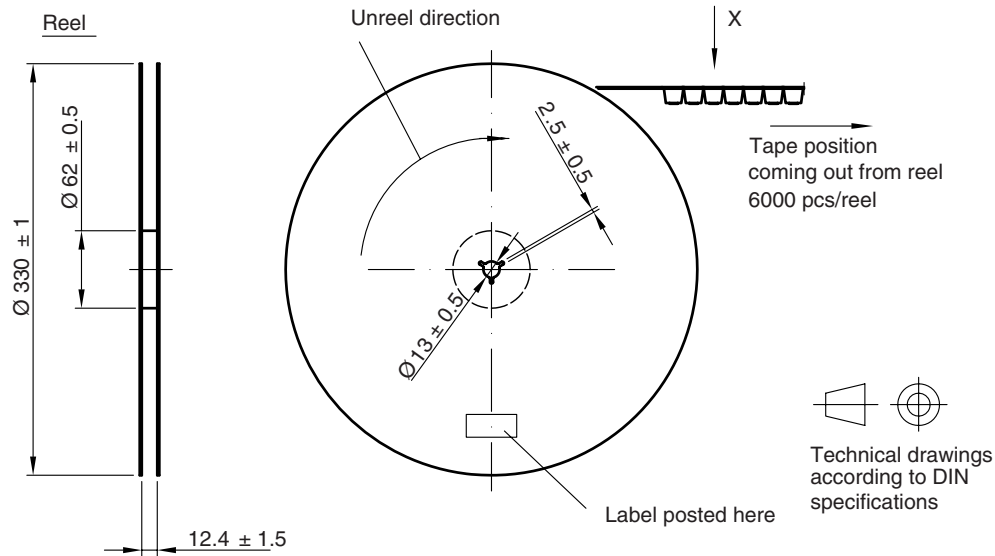
# VEMD2500X01, VEMD2520X01

Vishay Semiconductors

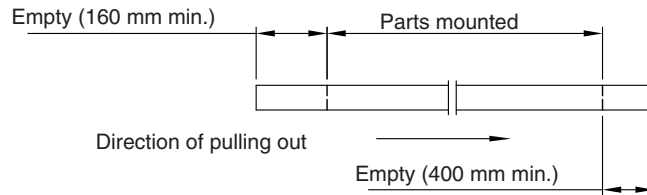
Silicon PIN Photodiode



## TAPING AND REEL DIMENSIONS in millimeters: VEMD2500X01

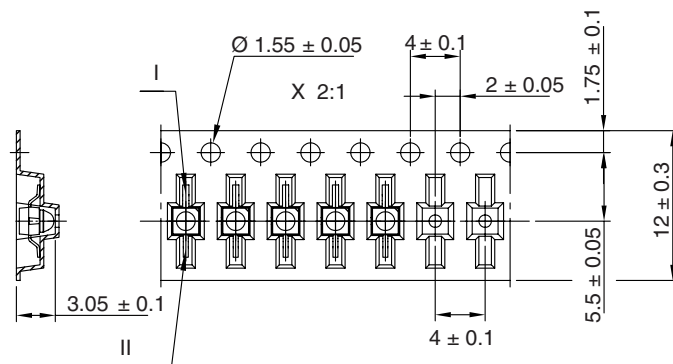


Leader and trailer tape:



Terminal position in tape

Device	Lead I	Lead II
VEMT2000	Collector	Emitter
VEMT2500		
VEMD2000	Cathode	Anode
VSMB2000		



Drawing-No.: 9.800-5100.01-4  
 Issue: X; 29.04.09  
 21572

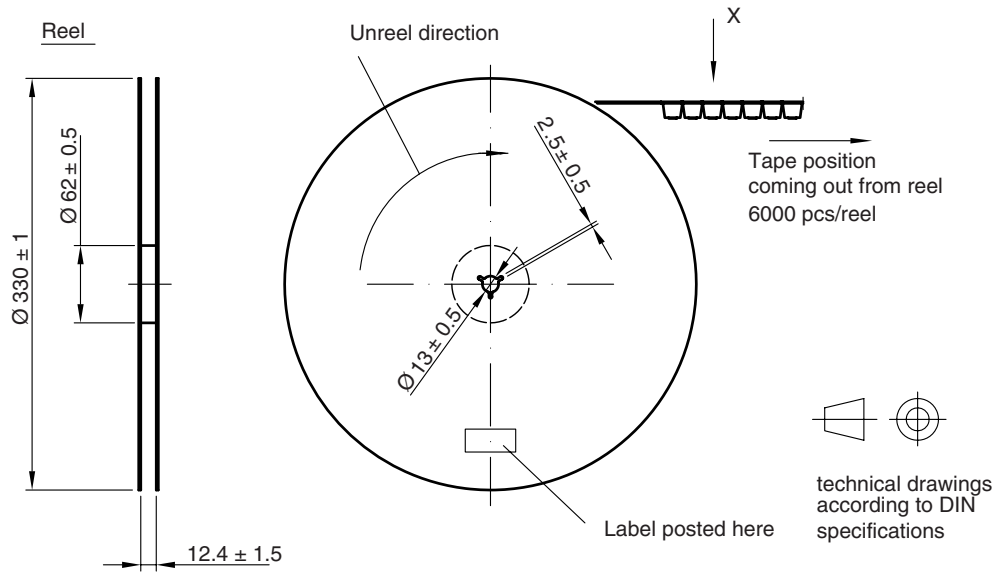


# VEMD2500X01, VEMD2520X01

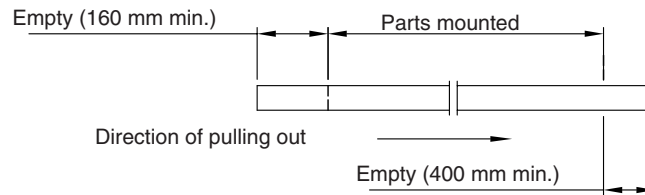
Silicon PIN Photodiode

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## TAPING AND REEL DIMENSIONS in millimeters: VEMD2520X01

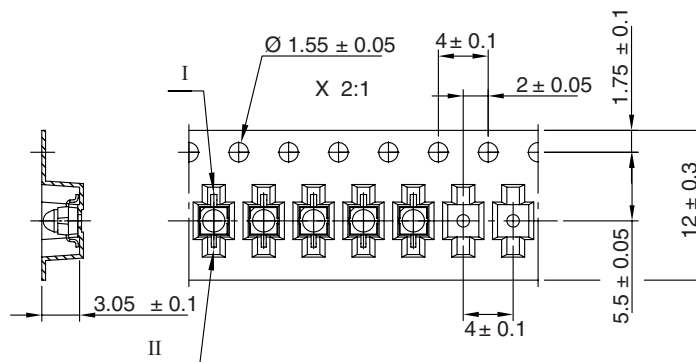


### Leader and trailer tape:



### Terminal position in tape

Device	Lead I	Lead II
VEMT2020	Collector	Emitter
VEMT2520	Collector	Emitter
VSMB2020	Cathode	Anode
VEMD2020	Cathode	Anode



Drawing-No.: 9.800-5091.01-4

Issue: X; 29.04.09

21571



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