

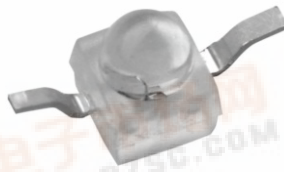
Silicon PIN Photodiode

VEMD2520X01



16758-11

VEMD2500X01



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: $\phi = \pm 15^\circ$
- 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

AUTOMOTIVE
GRADE

e3

RoHS
COMPLIANT
HALOGEN
FREE

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 mm².

APPLICATIONS

- High speed photo detector

PRODUCT SUMMARY

COMPONENT	I _{ra} (μA)	φ (deg)	λ _{0.1} (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 _R	60	V
Power dissipation	T _{amb} ≤ 25 °C	P _V	215	mW
Junction temperature		T _j	100	°C
Operating temperature range		T _{amb}	- 40 to + 100	°C
Storage temperature range		T _{stg}	- 40 to + 100	°C
Soldering temperature	Acc. reflow solder profile fig. 7	T _{sd}	260	°C
Thermal resistance junction/ambient	Acc. J-STD-051	R _{thJA}	250	K/W

Note

T_{amb} = 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		μA
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		μA
Angle of half sensitivity		ϕ		± 15		deg
Wavelength of peak sensitivity		λ_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

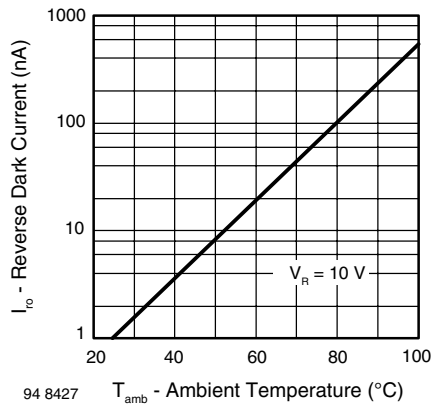


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

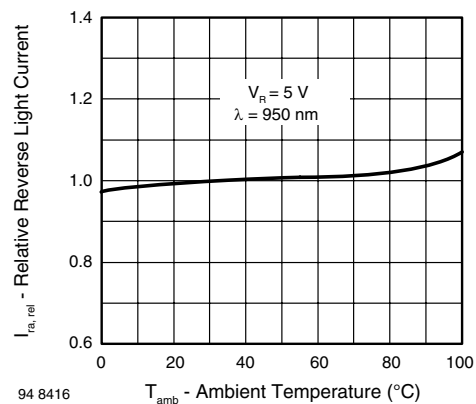


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

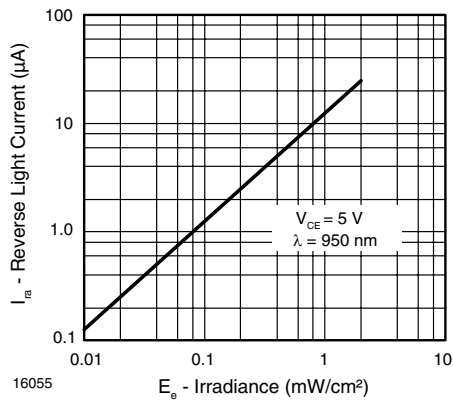


Fig. 3 - Reverse Light Current vs. Irradiance

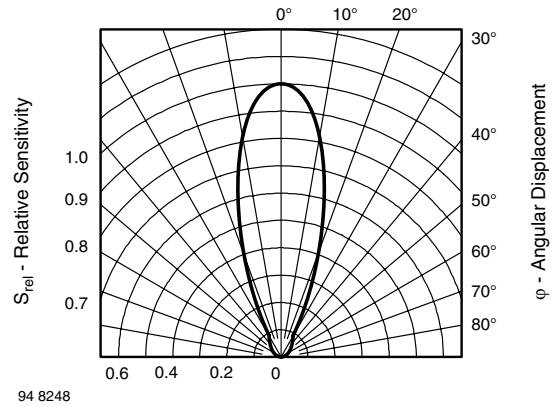


Fig. 6 - Relative Radiant Intensity vs. Angular Displacement

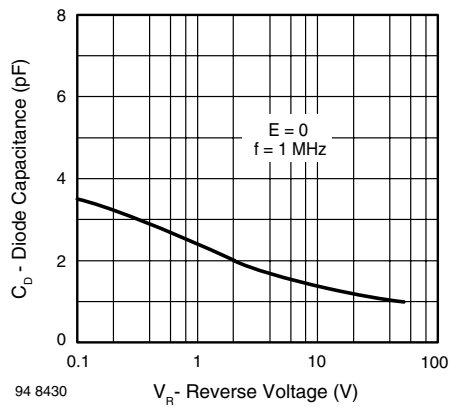


Fig. 4 - Diode Capacitance vs. Reverse Voltage

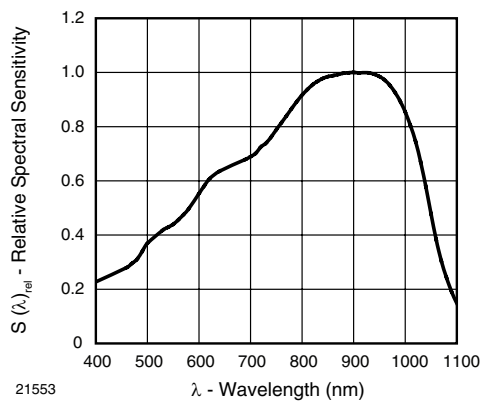


Fig. 5 - Relative Spectral Sensitivity vs. Wavelength

REFLOW SOLDER PROFILE

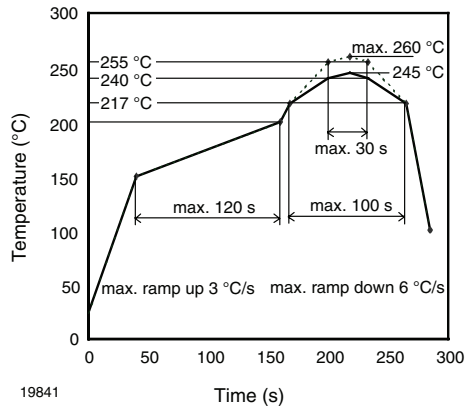


Fig. 7 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020D

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

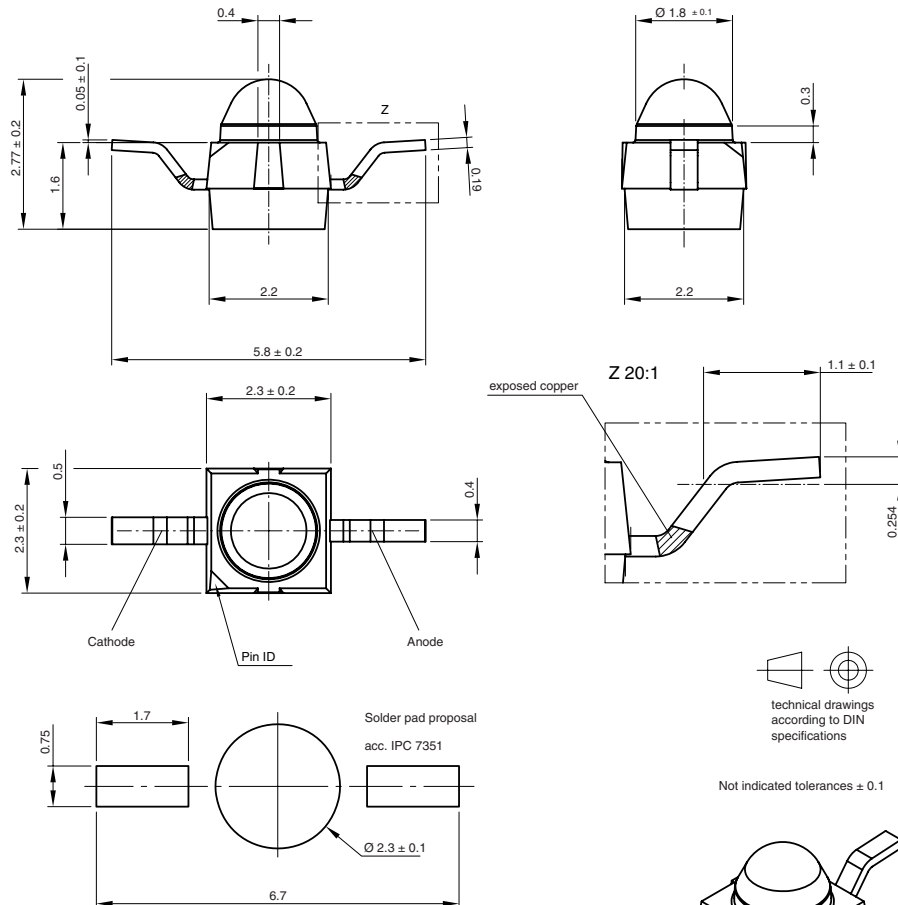
Conditions: $T_{\text{amb}} < 30\text{ }^{\circ}\text{C}$, RH < 60 %

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

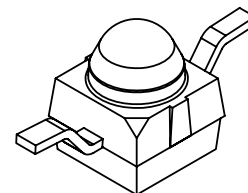
DRYING

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 %.

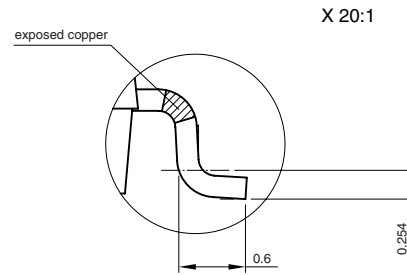
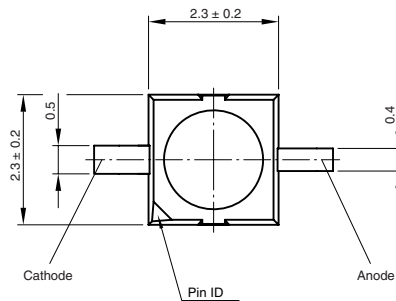
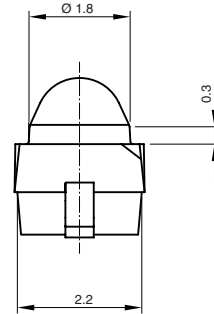
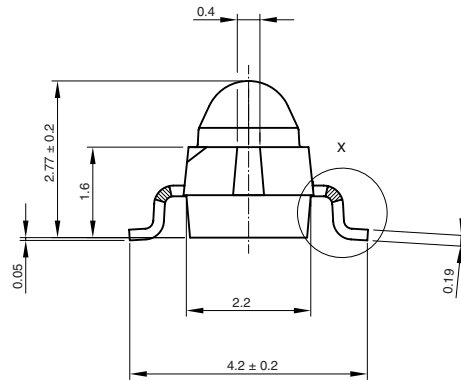
PACKAGE DIMENSIONS in millimeters: **VEMD2500X01**



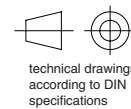
Drawing-No.: 6.544-5391.02-4
Issue: 1; 26.09.08
21517



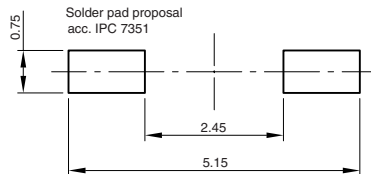
PACKAGE DIMENSIONS in millimeters: **VEMD2520X01**



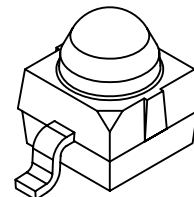
X 20:1



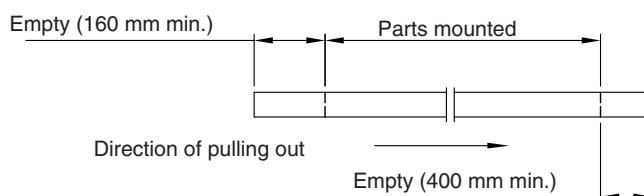
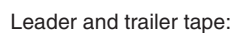
Not indicated tolerances ± 0.1



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

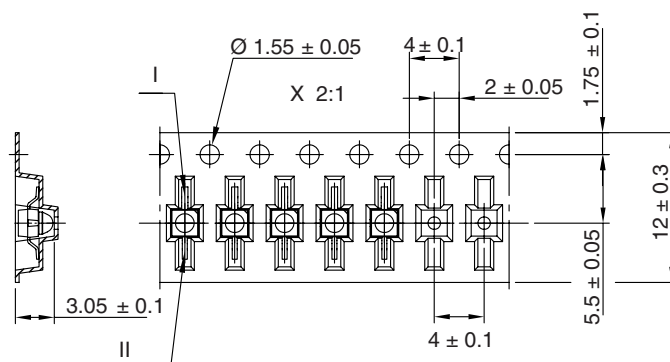


Silicon PIN Photodiode



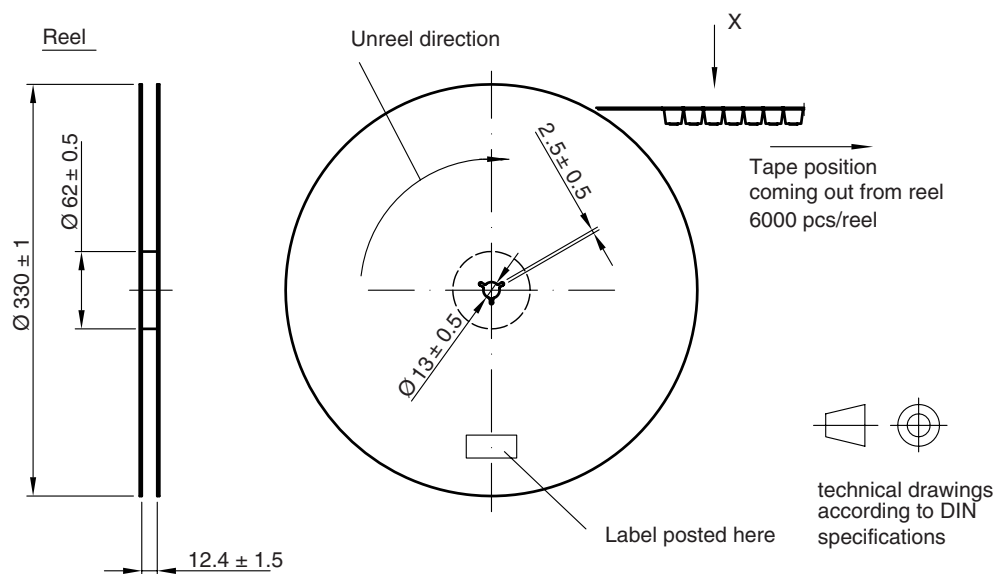
Terminal position in tape

Device	Lead I	Lead II
VENT2000	Collector	Emitter
VENT2500		
VEMD2000	Cathode	Anode
VSMB2000		

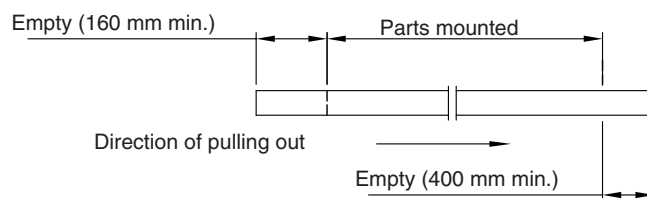


Drawing-No.: 9.800-5100.01-4
Issue: X; 29.04.09
21572

TAPING AND REEL DIMENSIONS in millimeters: **VEMD2520X01**

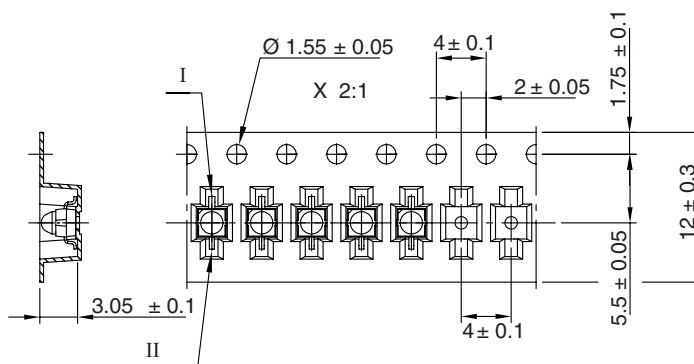


Leader and trailer tape:



Terminal position in tape

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



Drawing-No.: 9.800-5091.01-4

Issue: X; 29.04.09

21571

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.