

Silicon PIN Photodiode



DESCRIPTION

VEMD8080 is a high speed and high sensitive PIN photodiode with enhanced sensitivity for visible light. It is a low profile surface-mount device (SMD) including the chip with a 4.6 mm² sensitive area detecting visible and near infrared radiation.

FEATURES

Package type: surface mount





• Radiant sensitive area (in mm²): 4.6

0.48 mm low profile package

• Enhanced sensitivity for visible light

• Suitable for visible and near infrared radiation

• Fast response times

• Angle of half sensitivity: $\varphi = \pm 65^{\circ}$

• Floor life: 168 h, MSL 3, according to J-STD-020

 Material categorization: for definitions of compliance please see www.vishav.com/doc?99912



ROHS COMPLIANT HALOGEN

FREE GREEN (5-2008)

APPLICATIONS

- · High speed photo detector
- Wearables

PRODUCT SUMMARY				
COMPONENT	I _{ra} (μΑ)	φ (deg)	λ _{0.1} (nm)	
VEMD8080	28	± 65	350 to 1100	

Note

• Test conditions see table "Basic Characteristics"

ORDERING INFORMATION					
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM		
VEMD8080	Tape and reel	MOQ: 5000 pcs, 5000 pcs/reel	Top view		

Note

• MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)					
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT	
Reverse voltage		V_{R}	20	V	
Junction temperature		Tj	85	°C	
Operating temperature range		T _{amb}	-40 to +85	°C	
Storage temperature range		T _{stg}	-40 to +85	°C	
Soldering temperature	According to reflow solder profile Fig. 8	T _{sd}	260	°C	
Thermal resistance junction-to-ambient		R _{thJA}	350	K/W	
ESD safety HBM	± 2000 V, 1.5 kΩ, 100 pF, 3 pulses	ESD _{HBM}	≥2	kV	

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PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	I _F = 50 mA	V _F	-	1.2	1.6	V
Breakdown voltage	I _R = 100 μA, E = 0	V _(BR)	20	-	-	V
Reverse dark current	V _R = 10 V, E = 0	I _{ro}	-	0.2	10	nA
Diode capacitance	V _R = 0 V, f = 1 MHz, E = 0	C _D	-	47	-	pF
	V _R = 3 V, f = 1 MHz, E = 0	C _D	-	17	40	pF
Open circuit voltage	$E_{e} = 1 \text{ mW/cm}^{2}, \lambda = 950 \text{ nm}$	Vo	-	320	-	mV
Temperature coefficient of Vo	$E_{e} = 1 \text{ mW/cm}^{2}, \lambda = 950 \text{ nm}$	TK _{Vo}	-	-3.0	-	mV/K
Short circuit current	$E_{e} = 1 \text{ mW/cm}^{2}, \lambda = 950 \text{ nm}$	I _k	-	32	-	μΑ
Temperature coefficient of I _k	$E_{e} = 1 \text{ mW/cm}^{2}, \lambda = 950 \text{ nm}$	TK _{lk}	-	0.1	-	%/K
Reverse light current	$E_{e} = 1 \text{ mW/cm}^{2}, \lambda = 850 \text{ nm}, V_{R} = 5 \text{ V}$	I _{ra}	23	28	33	μΑ
	$E_e = 0.25 \text{ mW/cm}^2$, $\lambda = 525 \text{ nm}$, $V_R = 5 \text{ V}$	I _{ra}	3.4	4.4	5.3	μΑ
Angle of half sensitivity		φ	-	± 65	-	deg
Wavelength of peak sensitivity		λ_{p}	-	850	-	nm
Range of spectral bandwidth		λ _{0.1}	-	350 to 1100	-	nm
Rise time	$V_R = 10 \text{ V}, R_L = 1 \text{ k}\Omega, \lambda = 830 \text{ nm}$	t _r	-	70	-	ns
	$V_R = 10 \text{ V}, R_L = 50 \Omega, \lambda = 830 \text{ nm}$	t _r	-	30	-	ns
Fall time	$V_R = 10 \text{ V}, R_L = 1 \text{ k}\Omega, \lambda = 830 \text{ nm}$	t _f	-	70	-	ns
	$V_R = 10 \text{ V}, R_L = 50 \Omega, \lambda = 830 \text{ nm}$	t _f	-	30	-	ns

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

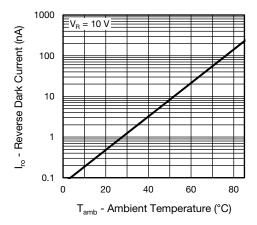


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

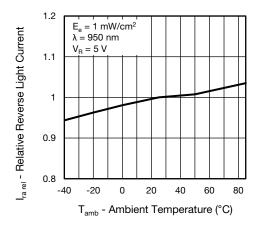


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

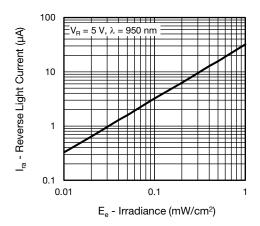


Fig. 3 - Reverse Light Current vs. Irradiance

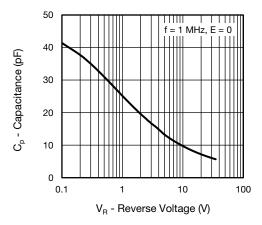


Fig. 4 - Diode Capacitance vs. Reverse Voltage

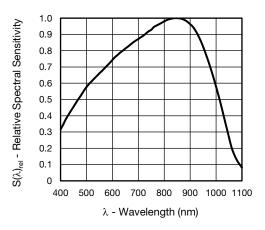


Fig. 5 - Relative Spectral Sensitivity vs. Wavelength

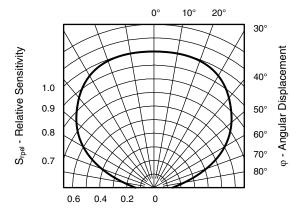
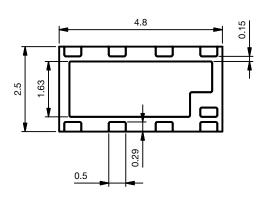
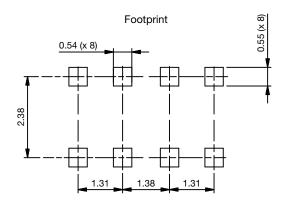


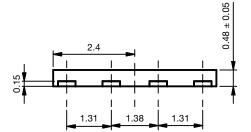
Fig. 6 - Relative Sensitivity vs. Angular Displacement



PACKAGE DIMENSIONS in millimeters

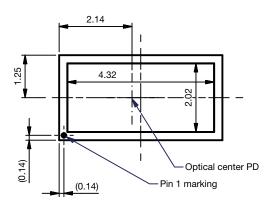


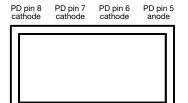




Not indicated tolerances ± 0.1 mm

PD pin 1 cathode





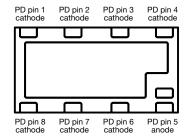
PD pin 3 cathode

PD pin 4

Pinning top view

Pinning bottom view

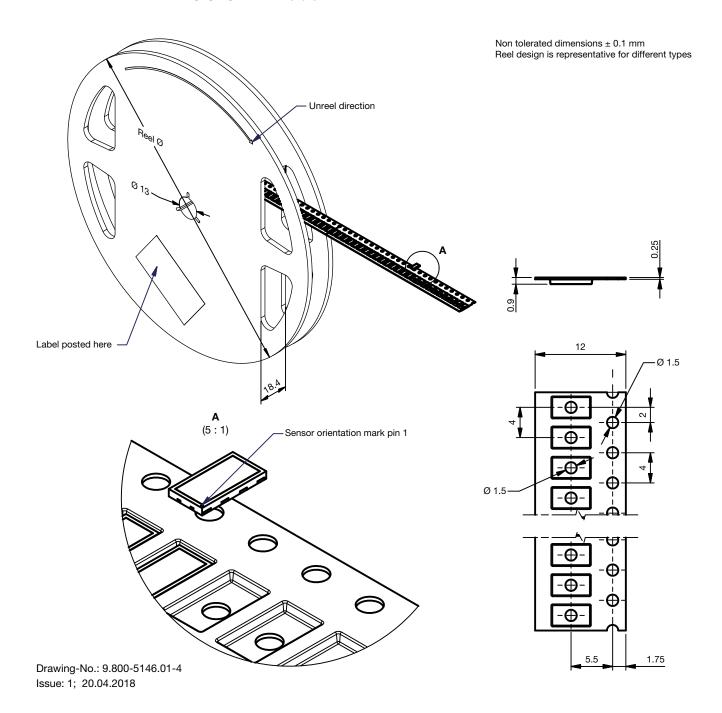
PD pin 2 cathode



Drawing number: 6.550-5354.01-4 Issue: 1; 20.04.2018

Technical drawings according to DIN specification.

TAPE AND REEL DIMENSIONS in millimeters



SOLDER PROFILE

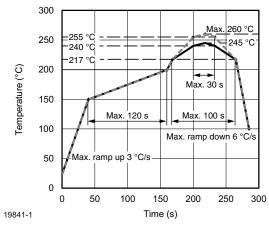


Fig. 7 - Lead (Pb)-free Reflow Solder Profile According to J-STD-020D

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

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 recommended conditions:

192 h at 40 °C (+ 5 °C), RH < 5 %

or

96 h at 60 °C (+ 5 °C), RH < 5 %



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