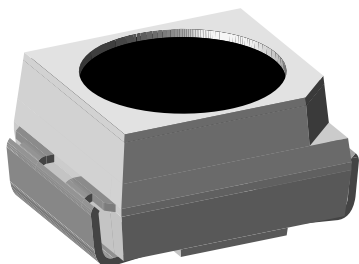


Silicon PIN Photodiode



DESCRIPTION

VEMD3160FX01 is a high speed and high sensitive PIN photodiode with a highly linear photoresponse.

FEATURES

- Package type: surface-mount
- Package form: PLCC-2
- Dimensions (L x W x H in mm): 3.5 x 2.8 x 1.75
- Daylight blocking filter
- AEC-Q101 qualified
- Excellent I_{ra} linearity
- Fast response times
- Angle of half sensitivity: $\phi = \pm 60^\circ$
- Floor life: 168 h, MSL 3, according to J-STD-020
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



APPLICATIONS

- High speed photo detector
- Small signal detection
- Proximity sensors

PRODUCT SUMMARY

COMPONENT	I_{ra} (μA)	ϕ ($^\circ$)	$\lambda_{0.5}$ (nm)
VEMD3160FX01	1.6	± 60	860 to 1030

Note

- Test conditions see table "Basic Characteristics"

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
VEMD3160FX01-GS08	Tape and reel	MOQ: 7500 pcs, 1500 pcs/reel	PLCC-2

Note

- MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ C$, unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V_R	5	V
Junction temperature		T_J	110	$^\circ C$
Ambient temperature range		T_{amb}	-40 to +110	$^\circ C$
Storage temperature range		T_{stg}	-40 to +110	$^\circ C$
Soldering temperature	According to reflow solder profile	T_{sd}	260	$^\circ C$

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

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 50\text{ mA}$	V_F	-	0.9	-	V
Breakdown voltage	$I_R = 100\text{ }\mu\text{A}$, $E = 0$	$V_{(BR)}$	20	-	-	V
Reverse dark current	$V_R = 5\text{ V}$, $E = 0$	I_{ro}	-	1	3	nA
Diode capacitance	$V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$	C_D	-	1.9	-	pF
	$V_R = 3\text{ V}$, $f = 1\text{ MHz}$, $E = 0$	C_D	-	1	-	pF
Temperature coefficient of I_{ra}	$E_e = 1\text{ mW/cm}^2$, $\lambda = 940\text{ nm}$	$TK_{I_{ra}}$	-	0.26	-	%/K
Reverse light current	$E_e = 1\text{ mW/cm}^2$, $\lambda = 940\text{ nm}$, $V_R = 5\text{ V}$	I_{ra}	1.14	1.6	2.25	μA
	$E_e = 1\text{ mW/cm}^2$, $\lambda = 890\text{ nm}$, $V_R = 5\text{ V}$	I_{ra}	-	1.5	-	μA
Angle of half sensitivity		ϕ	-	± 60	-	$^{\circ}$
Wavelength of peak sensitivity		λ_p	-	920	-	nm
Range of spectral bandwidth		$\lambda_{0.5}$	-	860 to 1030	-	nm
Rise time	$V_R = 10\text{ V}$, $R_L = 50\text{ }\Omega$, $\lambda = 950\text{ nm}$	t_r	-	180	-	ns
Fall time	$V_R = 10\text{ V}$, $R_L = 50\text{ }\Omega$, $\lambda = 950\text{ nm}$	t_f	-	180	-	ns

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

Basic characteristics graphs to be extended to $110\text{ }^{\circ}\text{C}$ ambient temperatures where applicable.

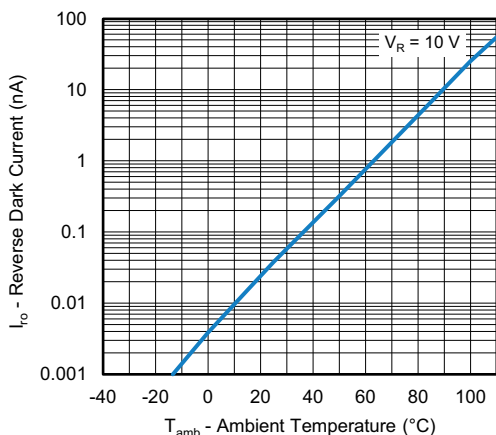


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

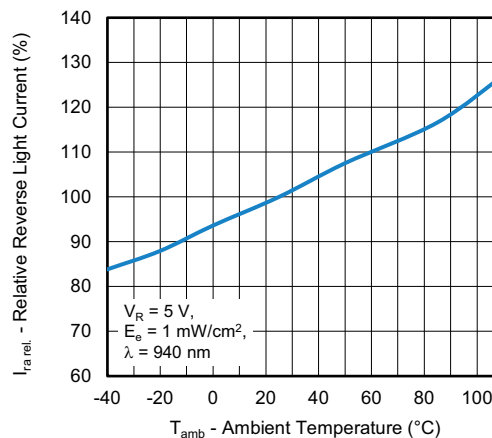


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

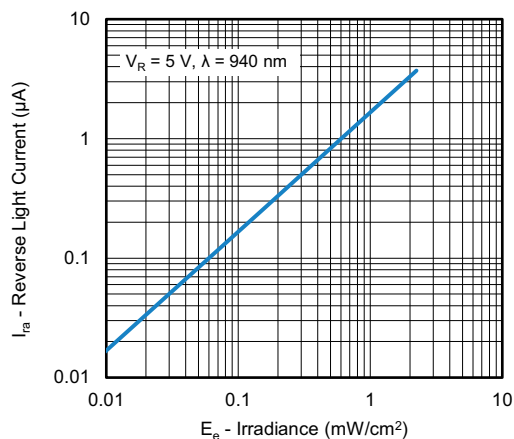


Fig. 3 - Reverse Light Current vs. Irradiance

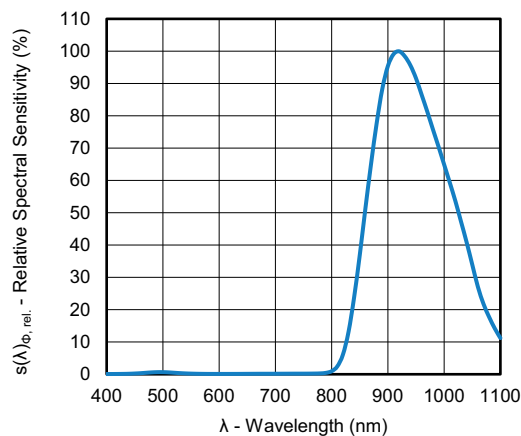


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

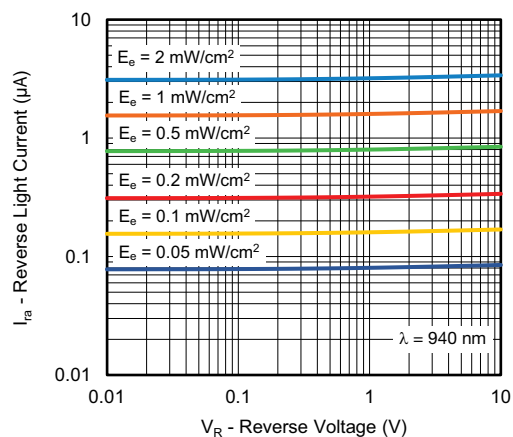


Fig. 4 - Reverse Light Current vs. Reverse Voltage

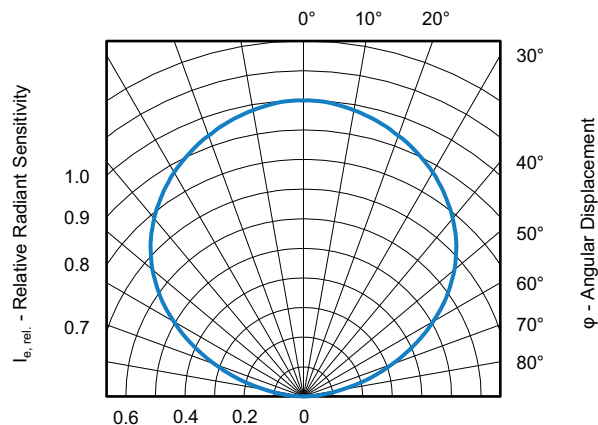


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

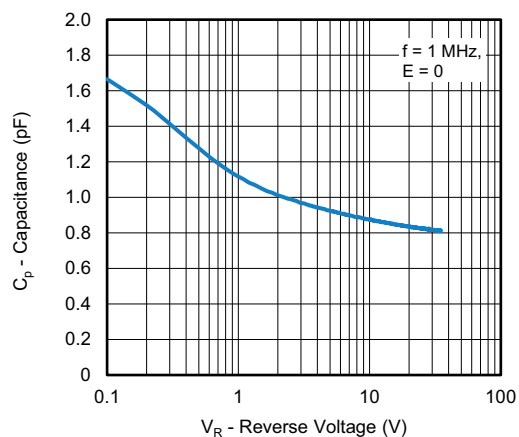


Fig. 5 - Diode Capacitance vs. Reverse Voltage

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: 168 h

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

Moisture sensitivity level 3, according to J-STD-033D.

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 $40\text{ }^{\circ}\text{C}$ (+ 5 $^{\circ}\text{C}$), RH < 5 %.

REFLOW SOLDER PROFILE

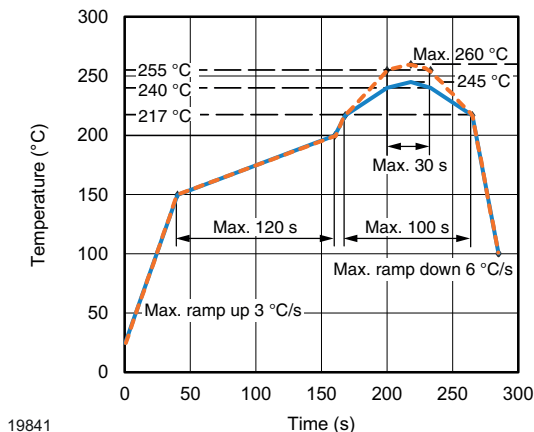
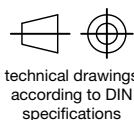
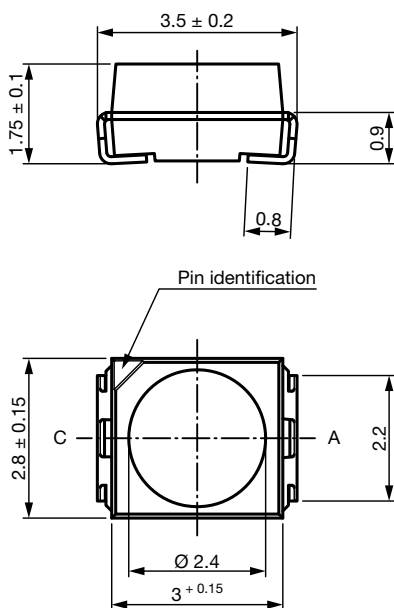
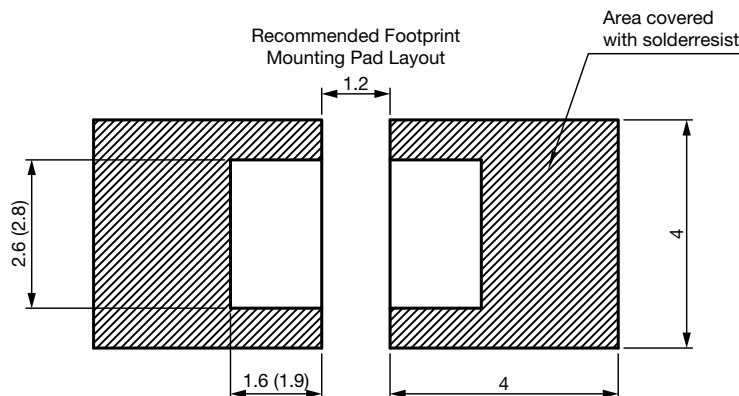


Fig. 8 - Lead (Pb)-free Reflow Solder Profile According to J-STD-020

PACKAGE DIMENSIONS in millimeters

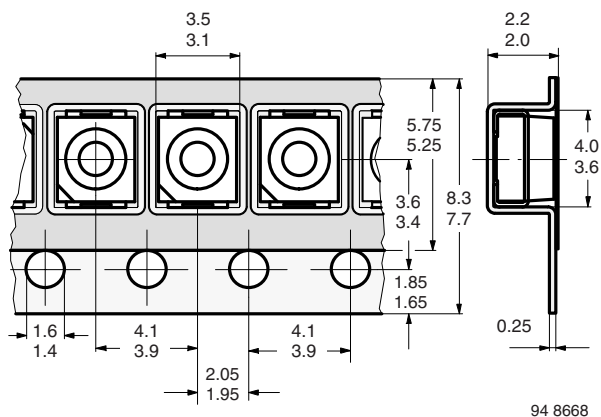


Drawing-No.: 6.541-5067.01-4
Issue: 7; 12.03.14

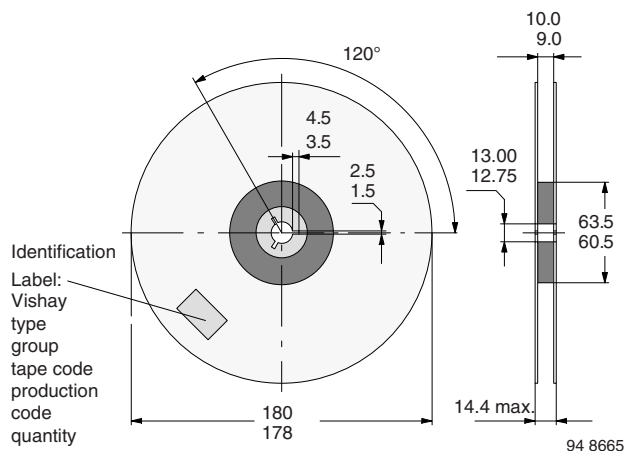




BLISTER TAPE DIMENSIONS in millimeters



REEL DIMENSIONS in millimeters





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