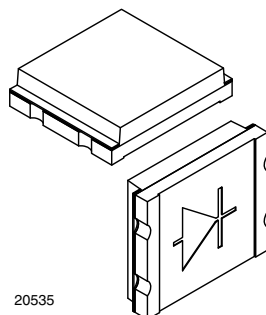




Silicon PIN Photodiode



FEATURES

- Package type: surface mount
- Package form: top view
- Dimensions (L x W x H in mm): 5 x 4.24 x 1.12
- Radiant sensitive area (in mm²): 7.7
- AEC-Q101 qualified
- Enhanced blue photo sensitivity: S (400 nm) rel > 30 %
- Peak sensitivity at 940 nm
- Suitable for visible and near infrared radiation
- Low junction capacitance
- Fast response times
- Angle of half sensitivity: $\phi = \pm 65^\circ$
- Floor life: 72 h, MSL 4, acc. J-STD-020
- Lead (Pb)-free reflow soldering
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Note

** Please see document "Vishay Material Category Policy":
www.vishay.com/doc?99902

DESCRIPTION

TEMD5080X01 is a PIN photodiode with enhanced blue sensitivity. The miniature surface mount package (SMD) include a chip with 7.7 mm² sensitive area, covered by clear epoxy.

APPLICATIONS

- High speed photo detector

PRODUCT SUMMARY

COMPONENT	I _{ra} (μA)	φ (deg)	λ0.1 (nm)
TEMD5080X01	60	± 65	350 to 1100

Note

- Test conditions see table "Basic Characteristics"

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TEMD5080X01	Tape and reel	MOQ: 1500 pcs, 1500 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	25	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 + 110	°C
Soldering temperature	Acc. reflow solder profile fig. 8	T _{sd}	260	°C
Thermal resistance junction/ambient		R _{thJA}	350	K/W



BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 50\text{ mA}$	V_F		1	1.3	V
Breakdown voltage	$I_R = 100\text{ }\mu\text{A}$, $E = 0$	$V_{(BR)}$	25			V
Reverse dark current	$V_R = 10\text{ V}$, $E = 0$	I_{ro}		2	10	nA
Diode capacitance	$V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$	C_D		90		pF
	$V_R = 3\text{ V}$, $f = 1\text{ MHz}$, $E = 0$	C_D		30	40	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		50		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	$E_e = 1\text{ mW/cm}^2$, $\lambda = 400\text{ nm}$, $V_R = 5\text{ V}$	I_{ra}		18		μA
	$E_v = 100\text{ lx}$, CIE illuminant A, $V_R = 5\text{ V}$	I_{ra}		8.5		μA
	$E_e = 1\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$, $V_R = 5\text{ V}$	I_{ra}		60		μA
Temperature coefficient of I_{ra}	CIE illuminant A	$TK_{I_{ra}}$		0.15		%/K
	$\lambda = 950\text{ nm}$	$TK_{I_{ra}}$		0.1		%/K
Angle of half sensitivity		φ		± 65		deg
Wavelength of peak sensitivity		λ_p		940		nm
Range of spectral bandwidth		$\lambda_{0.1}$		350 to 1100		nm
Noise equivalent power	$V_R = 10\text{ V}$, $\lambda = 400\text{ nm}$	NEP		1.1×10^{-13}		$\text{W}/\sqrt{\text{Hz}}$
Rise time	$V_R = 5\text{ V}$, $R_L = 50\text{ }\Omega$, $\lambda = 850\text{ nm}$	t_r		40		ns
Fall time	$V_R = 5\text{ V}$, $R_L = 50\text{ }\Omega$, $\lambda = 850\text{ nm}$	t_f		40		ns

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

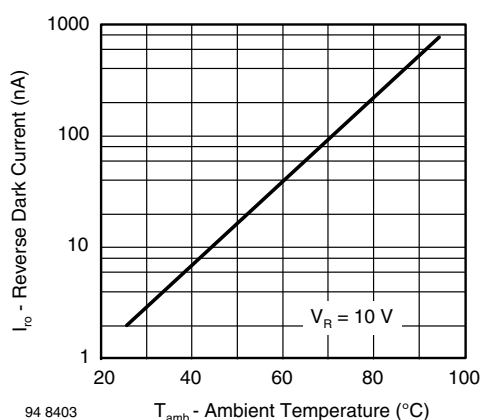


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

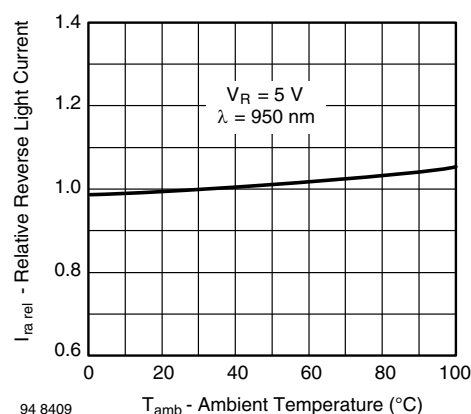


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

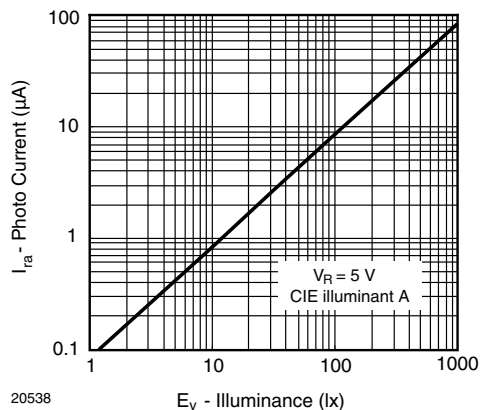


Fig. 3 - Reverse Light Current vs. Irradiance

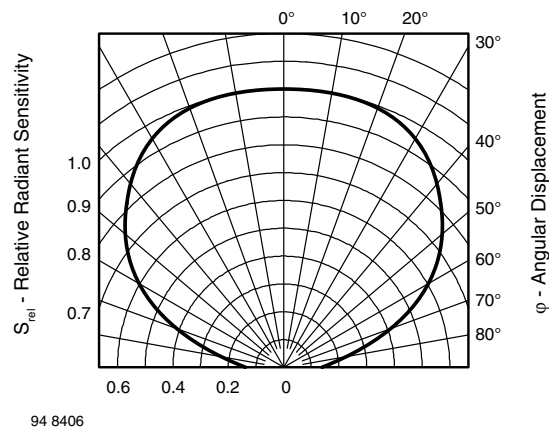


Fig. 6 - Relative Radiant Sensitivity vs. Angular Displacement

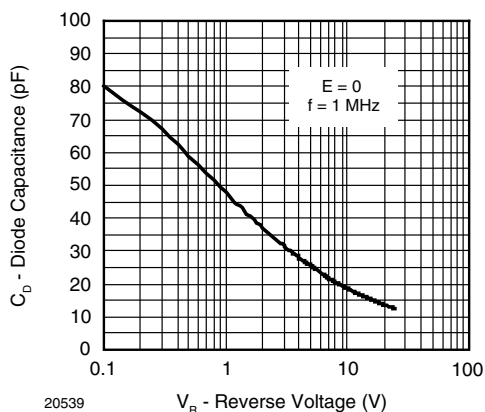


Fig. 4 - Diode Capacitance vs. Reverse Voltage

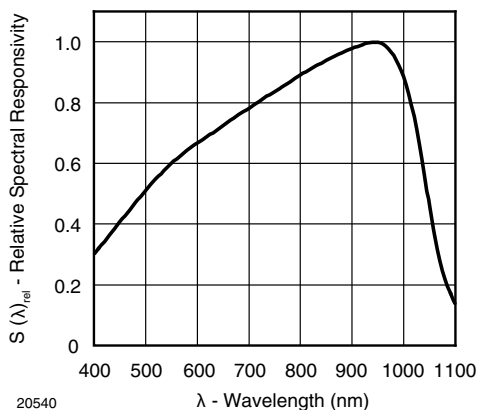
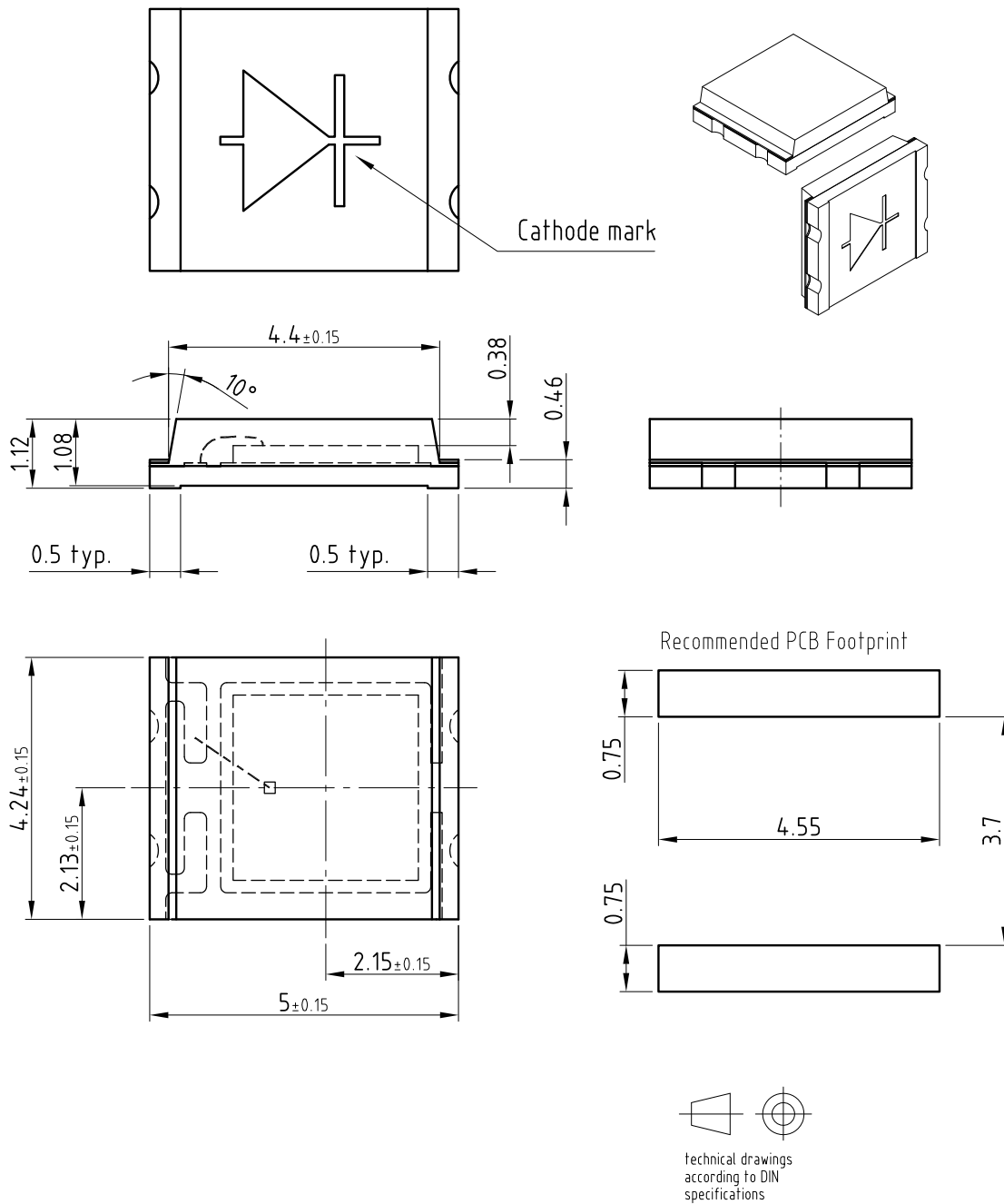


Fig. 5 - Relative Spectral Sensitivity vs. Wavelength



PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.541-5060.01-4
Issue: 3; 05.02.08
20536

Not indicated tolerances ± 0.1



Technical drawing of a film reel. The drawing includes a side view (left) and a top view (right).

Side View Dimensions:

- Top flange thickness: 0.3 ± 0.05
- Reel body height: 5.3
- Reel body width: 1.42
- Reel body angle: 3°

Top View Dimensions:

- Reel body width: 8
- Reel body height: 12 \pm 0.3
- Reel body hole diameter: $\phi 1.55 \pm 0.05$
- Reel body hole spacing: 4.5
- Reel body hole diameter (minimum): $\phi 1.5 \text{ min.}$
- Reel body hole spacing (center to center): 4
- Reel body hole spacing (edge to center): 2
- Reel body hole diameter (maximum): $\phi 1.55 \pm 0.05$
- Reel body hole spacing (edge to center): 1.75
- Reel body hole spacing (center to center): 5.5
- Reel body hole spacing (edge to center): 12 \pm 0.3
- Reel off direction: Indicated by an arrow pointing right.

20537

technical drawings
according to DIN
specifications

Form of the leave open of the wheel is supplier specific.

Form of the leave open
of the wheel is supplier specific.

Issue: 1; 05.05.08

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technical drawings
according to DIN
specifications



SOLDER PROFILE

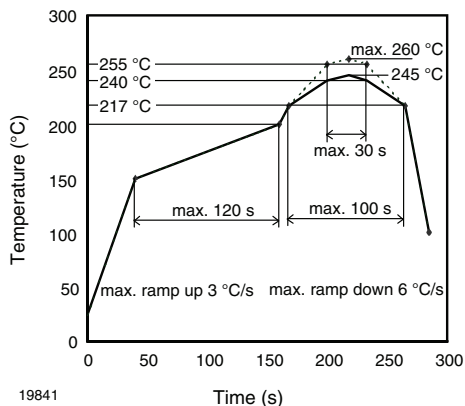


Fig. 7 - Lead (Pb)-free Reflow Solder Profile
acc. J-STD-020D

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

Time between soldering and removing from MBB must not exceed the time indicated in J-STD-020:

Moisture sensitivity: level 4

Floor life: 72 h

Conditions: $T_{amb} < 30\text{ °C}$, 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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