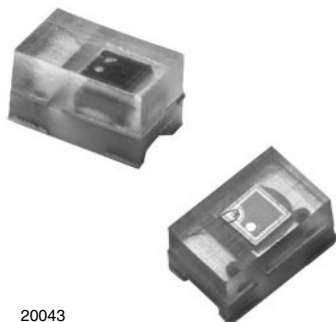


Silicon PIN Photodiode, RoHS Compliant, Released for Lead (Pb)-free Reflow Soldering, AEC Q101 Released



20043

DESCRIPTION

TEMD7000X01 is a high speed and high sensitive PIN photodiode. It is a miniature surface mount device (SMD) including the chip with a 0.23 mm² sensitive area detecting visible and near infrared radiation.

FEATURES

- Package type: surface mount
- Package form: 0805
- Dimensions (L x W x H in mm): 2 x 1.25 x 0.85
- Radiant sensitive area (in mm²): 0.23
- Product designed and qualified acc. AEC Q101 for the automotive market
- High photo sensitivity
- High radiant sensitivity
- Suitable for visible and near infrared radiation
- Fast response times
- Angle of half sensitivity: $\varphi = \pm 60^\circ$
- Floor life: 168 h, MSL 3, acc. J-STD-020
- Lead (Pb)-free reflow soldering
- Lead (Pb)-free component in accordance with RoHS 2002/95/EC and WEEE 2002/96/EC


RoHS
COMPLIANT

APPLICATIONS

- High speed photo detector

PRODUCT SUMMARY

COMPONENT	I _{ra} (μA)	φ (deg)	λ _{0.1} (nm)
TEMD7000X01	3	± 60	350 to 1120

Note

Test conditions see table "Basic Characteristics"

ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TEMD7000X01	Tape and reel	MOQ: 3000 pcs, 3000 pcs/reel	0805

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. 8	T _{sd}	260	°C
Thermal resistance junction/ambient	Acc. J-STD-051	R _{thJA}	270	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		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	$E_e = 1 \text{ mW/cm}^2$, $\lambda = 950 \text{ nm}$, $V_R = 5 \text{ V}$	I_{ra}		3		μA
Angle of half sensitivity		ϕ		± 60		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

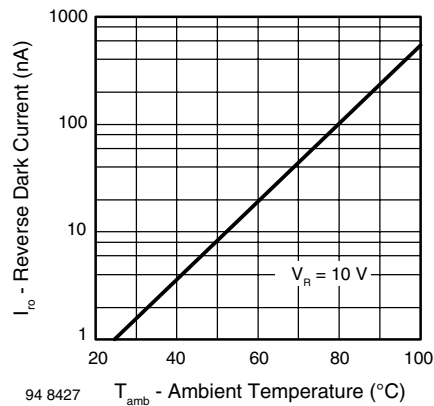


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

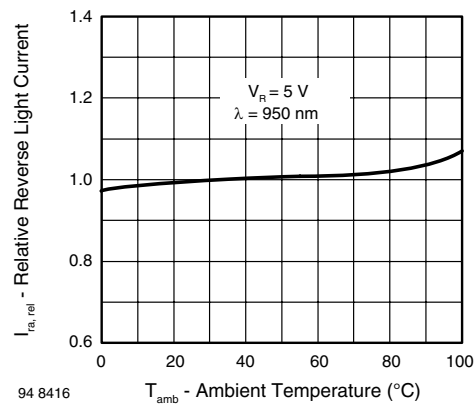
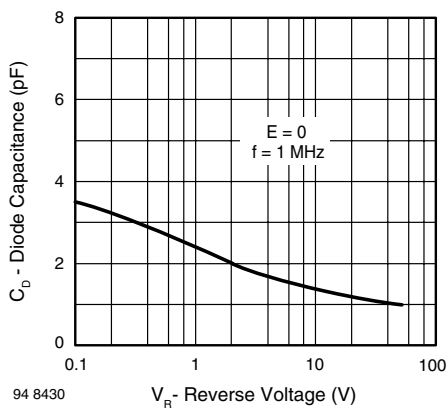
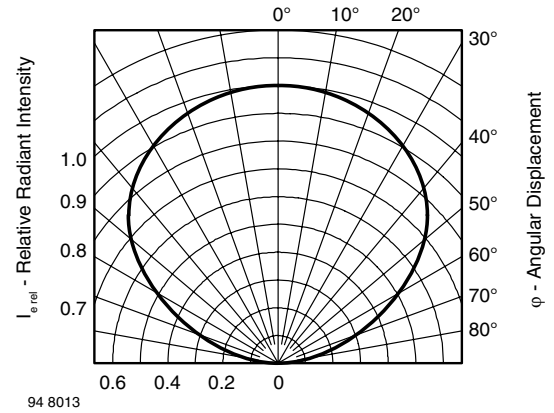
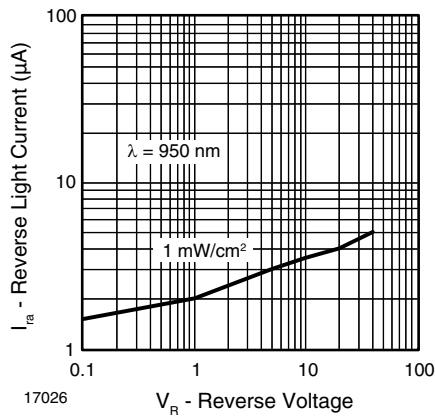
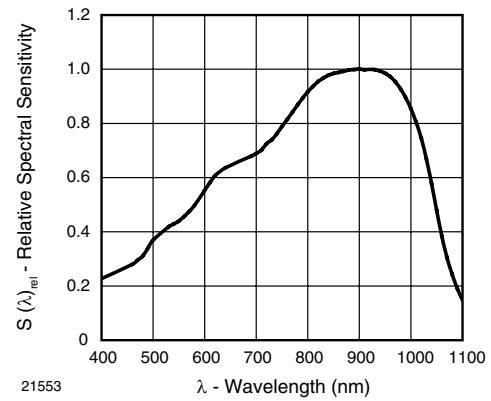
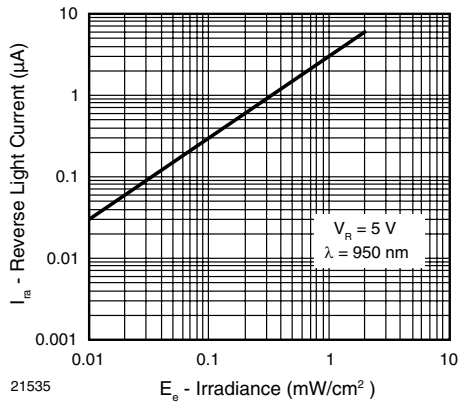


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature



Silicon PIN Photodiode, RoHS
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REFLOW SOLDER PROFILE

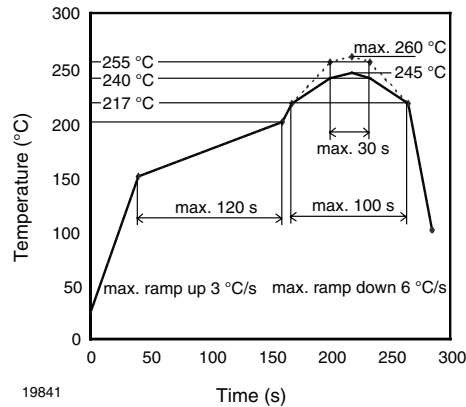


Fig. 8 - Lead (Pb)-free Reflow Solder Profile acc. J-STD-020D

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: 168 h

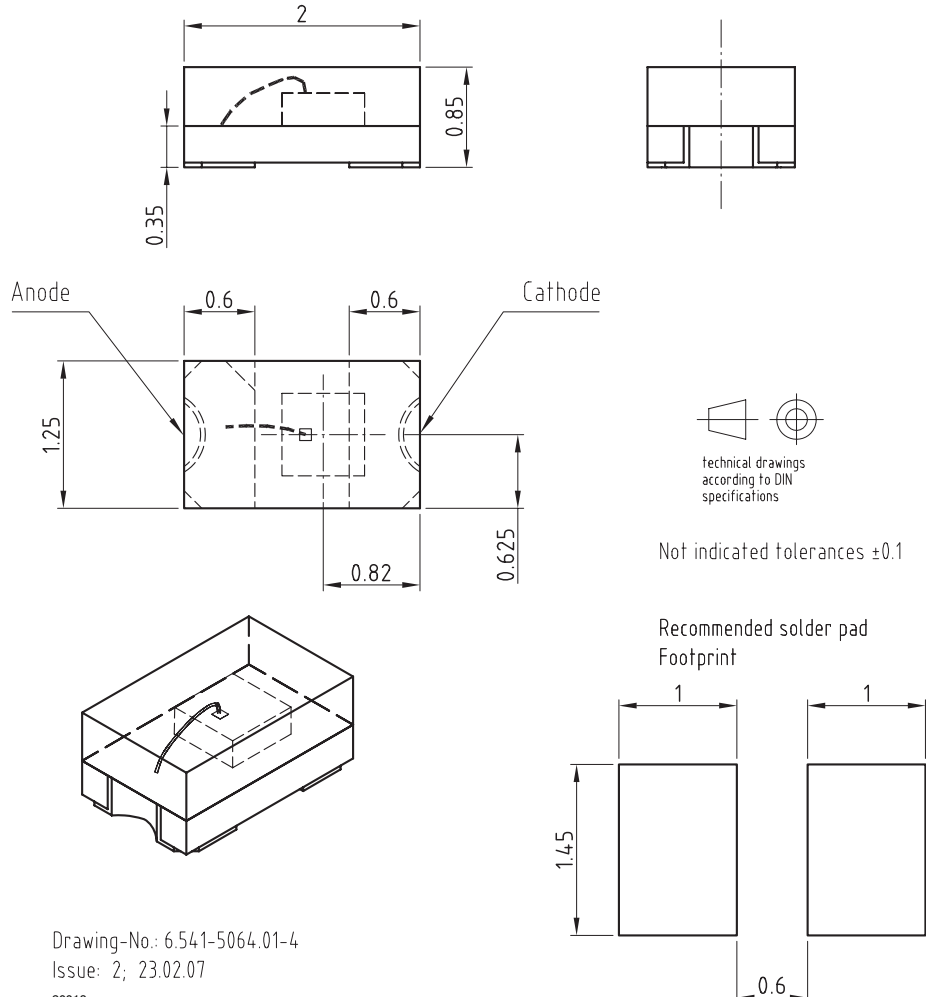
Conditions: $T_{amb} < 30^{\circ}\text{C}$, $RH < 60\%$

Moisture sensitivity level 3, 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 ($+ 5^{\circ}\text{C}$), $RH < 5\%$.

PACKAGE DIMENSIONS in millimeters

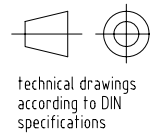
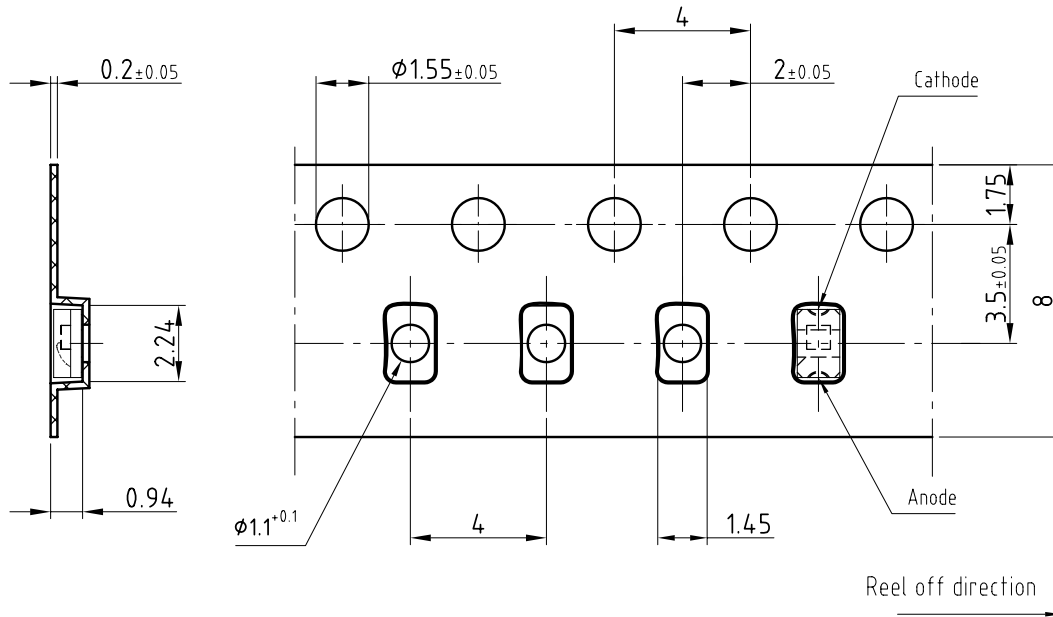




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BLISTER TAPE DIMENSIONS in millimeters



Drawing-No.: 9.700-5311.01-4

Issue: 1; 23.02.07

21501

Not indicated tolerances ± 0.1

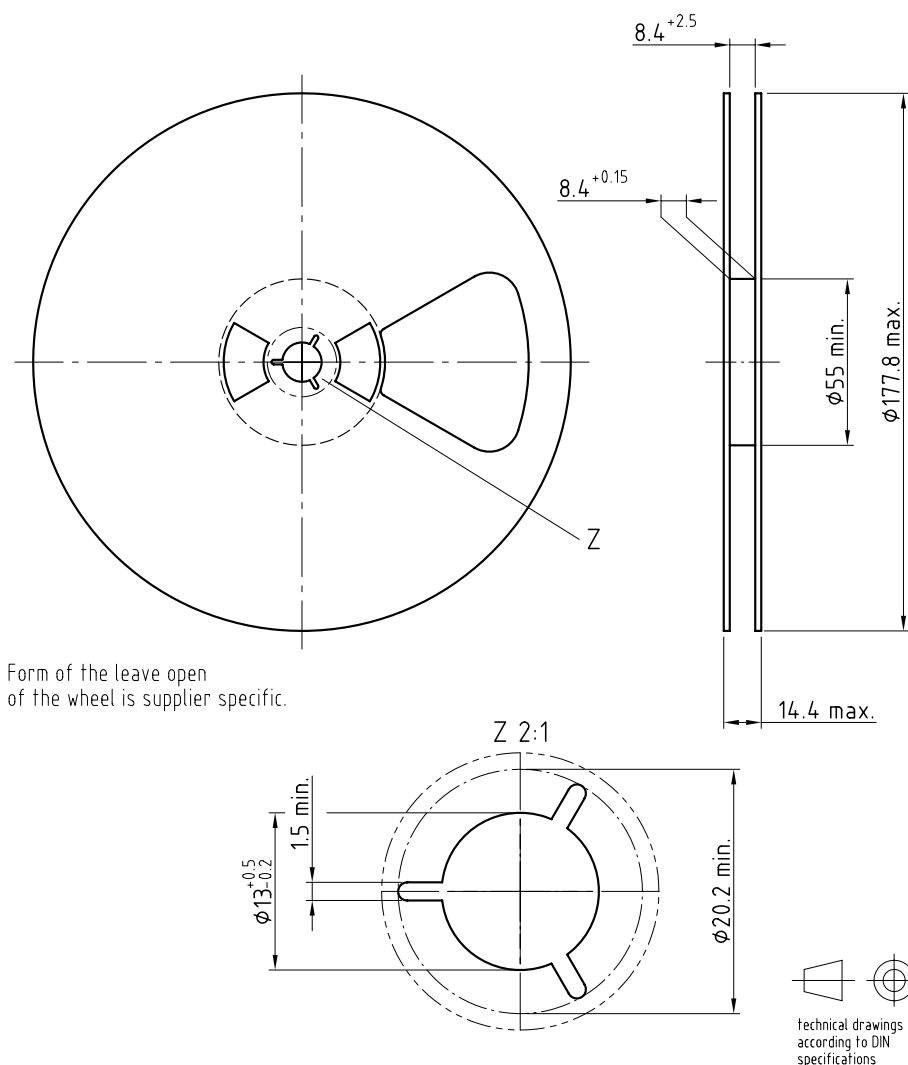
TEMD7000X01

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Silicon PIN Photodiode, RoHS
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Reflow Soldering, AEC Q101 Released



REEL DIMENSIONS in millimeters



Drawing-No.: 9.800-5096.01-4

Issue: 1; 05.05.08

20875



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