



SOD-123
STPS0530Z

Description

Single Schottky rectifier suited for switch mode power supplies and high frequency DC to DC converters.

Packaged in SOD-123, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications. Due to the small size of the package this device fits GSM and PCMCIA requirements.

Table 1. Device summary

$I_{F(AV)}$	0.5 A
V_{RRM}	30 V
$V_F(max)$	0.33 V

Features

- Very small conduction losses
- Negligible switching losses
- Extremely fast switching

1 Characteristics

Table 2. Absolute ratings (limiting values)

Symbol	Parameter	Value	Unit
V_{RRM}	Repetitive peak reverse voltage	30	V
$I_{F(RMS)}$	Forward rms current	2	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	$T_a = 55\text{ }^{\circ}\text{C}$	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10\text{ ms sinusoidal}$	A
dV/dt	Critical rate of rise of reverse voltage	10000	V/ μs
T_{stg}	Storage temperature range	-65 to +150	$^{\circ}\text{C}$
T_j	Operating junction temperature range ⁽¹⁾	-40 to +150	$^{\circ}\text{C}$
T_L	Maximum temperature for soldering during 10 s	260	$^{\circ}\text{C}$

1. $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$ condition to avoid thermal runaway for a diode on its own heatsink

Table 3. Thermal resistance

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient	340 ⁽¹⁾	$^{\circ}\text{C/W}$

1. Copper area on PCB $S = 2.5\text{ mm}^2$

Table 4. Static electrical characteristics

Symbol	Parameter	Test conditions	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25\text{ }^{\circ}\text{C}$	$V_R = 15\text{ V}$	12	μA
		$T_j = 125\text{ }^{\circ}\text{C}$		3	5
		$T_j = 25\text{ }^{\circ}\text{C}$	$V_R = V_{RRM}$	130	μA
		$T_j = 125\text{ }^{\circ}\text{C}$		9	21
$V_F^{(2)}$	Forward voltage drop	$T_j = 25\text{ }^{\circ}\text{C}$	$I_F = 0.1\text{ A}$	0.375	V
		$T_j = 125\text{ }^{\circ}\text{C}$		0.20	
		$T_j = 25\text{ }^{\circ}\text{C}$	$I_F = 0.5\text{ A}$	0.43	
		$T_j = 125\text{ }^{\circ}\text{C}$		0.31	

1. Pulse test: $t_p = 5\text{ ms}$, $\delta < 2\%$

2. Pulse test: $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation:

$$P = 0.23 \times I_{F(AV)} + 0.18 I_{F(RMS)}^2$$

Figure 1. Conduction losses versus average current

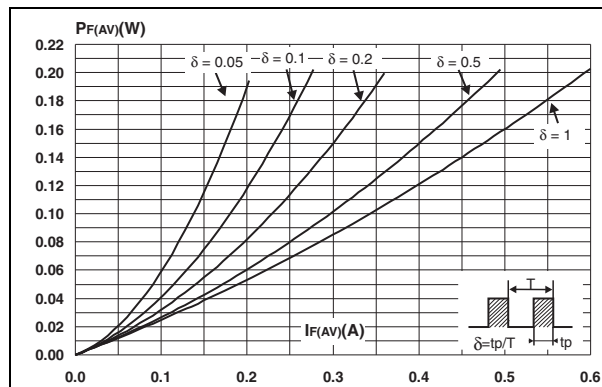
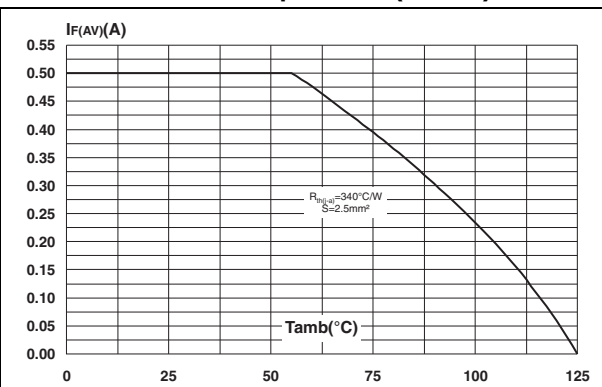
Figure 2. Average forward current versus ambient temperature ($\delta = 0.5$)

Figure 3. Non repetitive surge peak forward current versus overload duration (maximum values)

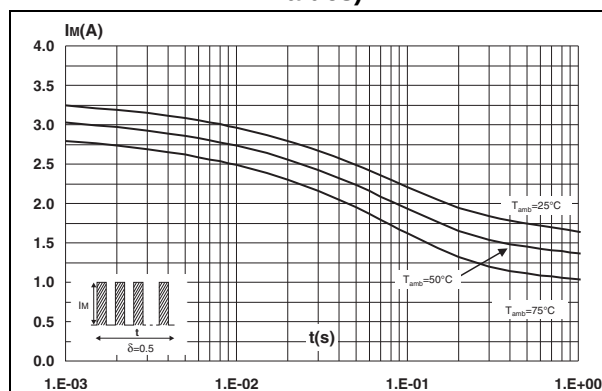


Figure 4. Relative variation of thermal impedance junction to ambient versus pulse duration

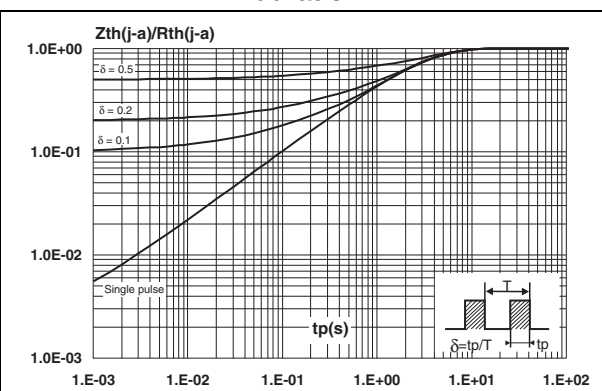


Figure 5. Reverse leakage current versus reverse voltage applied (typical values)

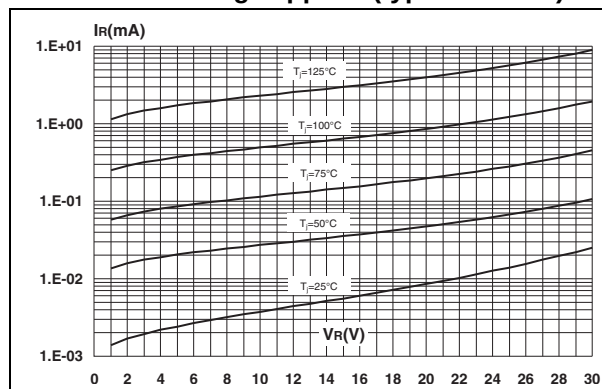


Figure 6. Reverse leakage current versus junction temperature (typical values)

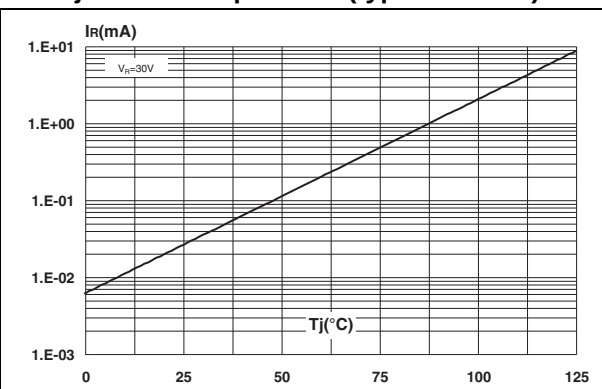


Figure 7. Junction capacitance versus reverse voltage applied (typical values)

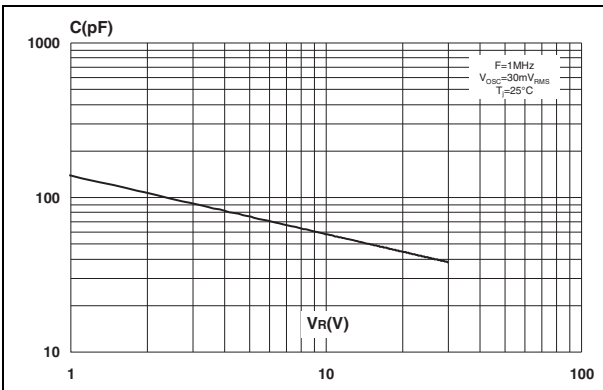


Figure 8. Forward voltage drop versus forward current

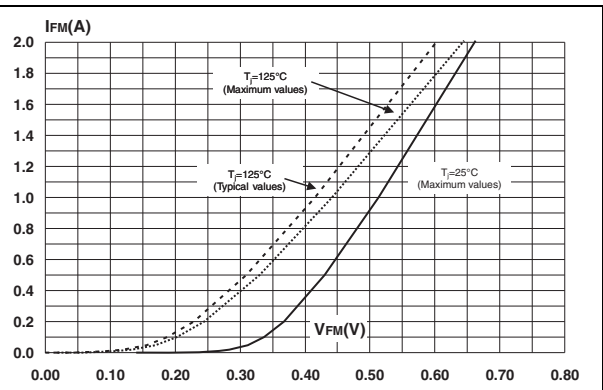
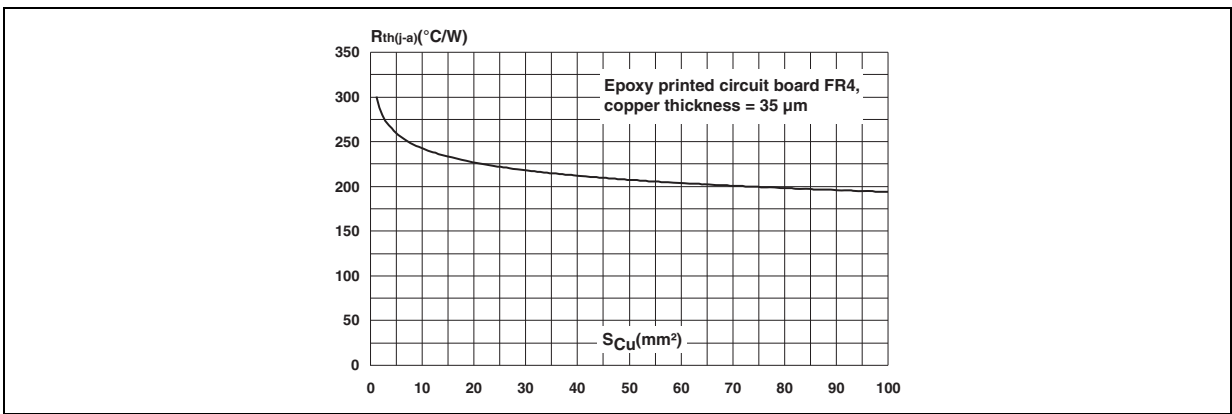


Figure 9. Thermal resistance junction to ambient versus copper surface under each lead (typical values)



2 Package information

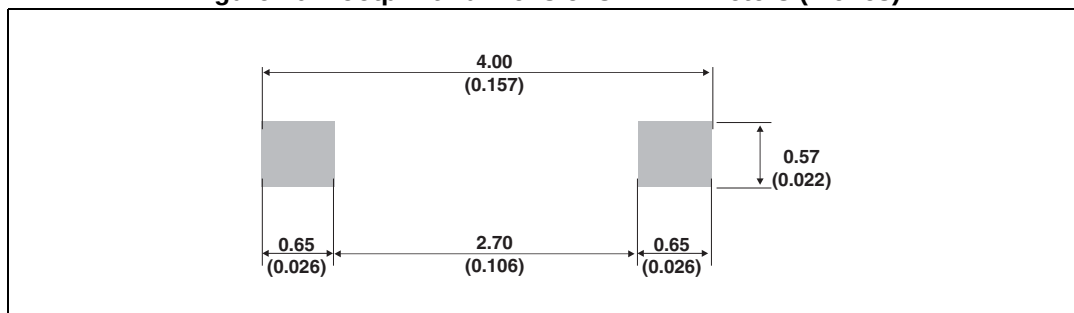
- Epoxy meets UL94, V0.
- Band indicates cathode.

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

Table 5. SOD-123 dimensions

Ref	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A		1.45		0.057
A1	0	0.1	0	0.004
A2	0.85	1.35	0.033	0.053
b	0.55 Typ.		0.022 Typ.	
c	0.15 Typ.		0.039 Typ.	
D	2.55	2.85	0.1	0.112
E	1.4	1.7	0.055	0.067
G	0.25		0.01	
H	3.55	3.75	0.14	0.1148

Figure 10. Footprint - dimensions in millimeters (inches)



3 Ordering information

Table 6. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
STPS0530Z	Z53	SOD-123	0.01 g	3000	Tape and reel

4 Revision history

Table 7. Document revision history

Date	Revision	Changes
Mar-2003	1A	Initial release.
17-Oct-2006	2	Reformatted to current standards. Updated maximum junction temperatures to 150 °C and updated package illustration to show cathode bar on page 1
23-Apr-2014	3	Updated Tj max to Tj range in Table 2 .

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

ST PRODUCTS ARE NOT DESIGNED OR AUTHORIZED FOR USE IN: (A) SAFETY CRITICAL APPLICATIONS SUCH AS LIFE SUPPORTING, ACTIVE IMPLANTED DEVICES OR SYSTEMS WITH PRODUCT FUNCTIONAL SAFETY REQUIREMENTS; (B) AERONAUTIC APPLICATIONS; (C) AUTOMOTIVE APPLICATIONS OR ENVIRONMENTS, AND/OR (D) AEROSPACE APPLICATIONS OR ENVIRONMENTS. WHERE ST PRODUCTS ARE NOT DESIGNED FOR SUCH USE, THE PURCHASER SHALL USE PRODUCTS AT PURCHASER'S SOLE RISK, EVEN IF ST HAS BEEN INFORMED IN WRITING OF SUCH USAGE, UNLESS A PRODUCT IS EXPRESSLY DESIGNATED BY ST AS BEING INTENDED FOR "AUTOMOTIVE, AUTOMOTIVE SAFETY OR MEDICAL" INDUSTRY DOMAINS ACCORDING TO ST PRODUCT DESIGN SPECIFICATIONS. PRODUCTS FORMALLY ESCC, QML OR JAN QUALIFIED ARE DEEMED SUITABLE FOR USE IN AEROSPACE BY THE CORRESPONDING GOVERNMENTAL AGENCY.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2014 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.