



# STPS0530Z

## Schottky rectifiers

### Main product characteristics

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

### Features and benefits

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

### 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.



### Order code

Order code	Marking
STPS0530Z	Z53

**Table 1. Absolute ratings (limiting values)**

Symbol	Parameter	Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage	30	V
$I_{F(RMS)}$	RMS forward current	2	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	$T_a = 55^\circ \text{C}$ 0.5	A
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10 \text{ ms sinusoidal}$ 5.5	A
dV/dt	Critical rate of rise of reverse voltage	10000	V/ $\mu\text{s}$
$T_{stg}$	Storage temperature range	-65 to + 150	$^\circ\text{C}$
$T_j$	Maximum operating junction temperature <sup>(1)</sup>	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

# 1 Characteristics

**Table 2. Thermal resistance**

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient	340 <sup>(1)</sup>	°C/W

1. Copper area on PCB S = 2.5 mm<sup>2</sup>

**Table 3. Static electrical characteristics**

Symbol	Parameter	Test conditions		Value		Unit
				STPS0530Z		
				Typ.	Max.	
$I_R^{(1)}$	Reverse leakage current	$T_j = 25^\circ C$	$V_R = 15 V$		12	$\mu A$
		$T_j = 125^\circ C$		3	5	mA
		$T_j = 25^\circ C$	$V_R = V_{RRM}$		130	$\mu A$
		$T_j = 125^\circ C$		9	21	mA
$V_F^{(2)}$	Forward voltage drop	$T_j = 25^\circ C$	$I_F = 0.1 A$		0.375	V
		$T_j = 125^\circ C$		0.20	0.22	
		$T_j = 25^\circ C$	$I_F = 0.5 A$		0.43	
		$T_j = 125^\circ C$		0.31	0.33	

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

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

To evaluate the maximum conduction losses use the following equation:

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

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)



Figure 1. Conduction losses versus average current

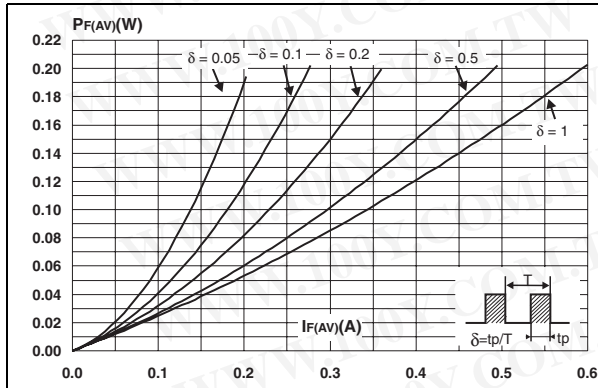


Figure 2. Average forward current versus ambient temperature ( $\delta = 0.5$ )

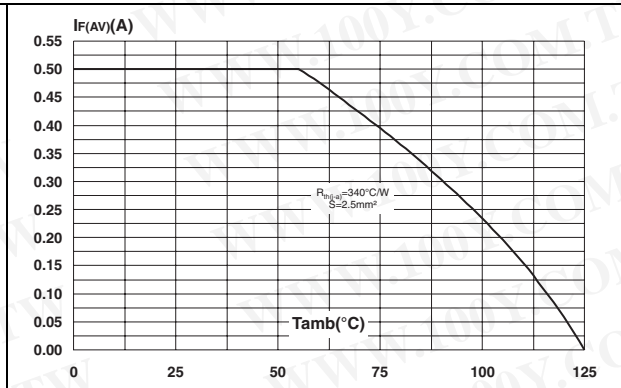


Figure 3. Non repetitive surge peak forward current versus overload duration (maximum values)

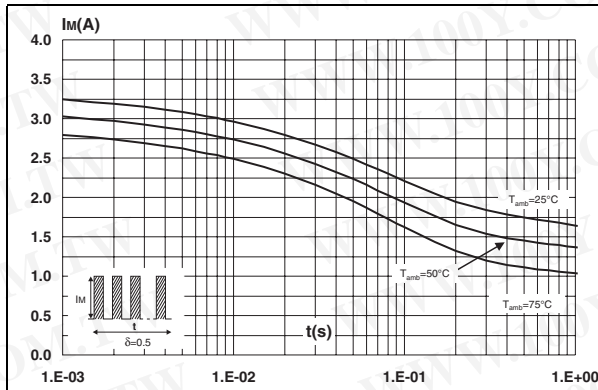


Figure 4. Relative variation of thermal impedance junction to ambient versus pulse duration

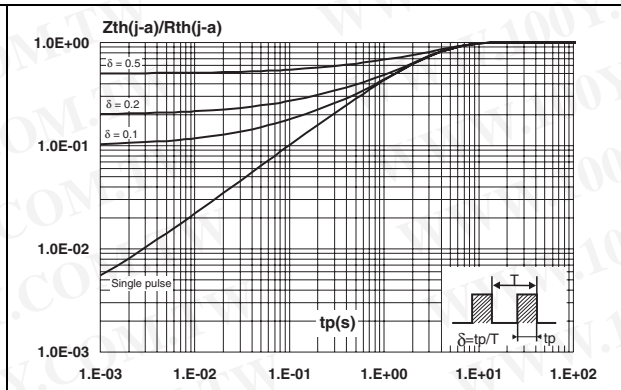


Figure 5. Reverse leakage current versus reverse voltage applied (typical values)

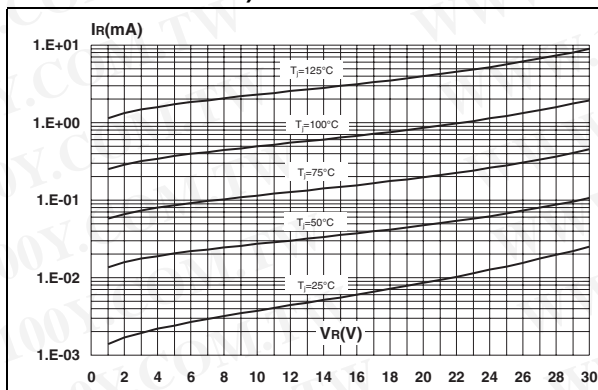
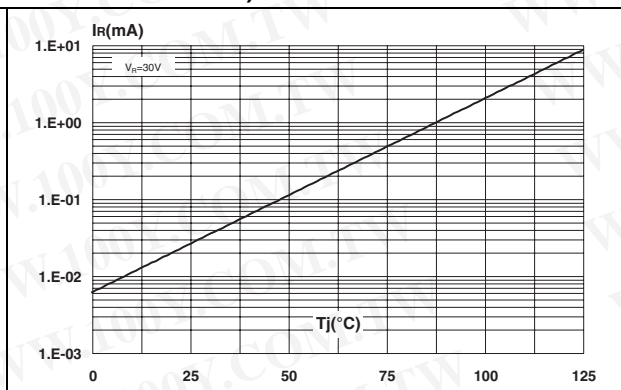


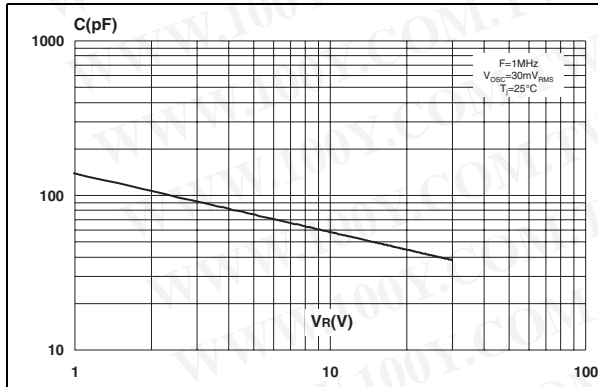
Figure 6. Reverse leakage current versus junction temperature (typical values)



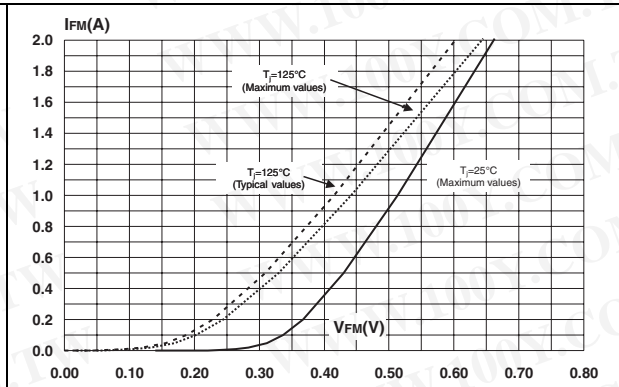
勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)



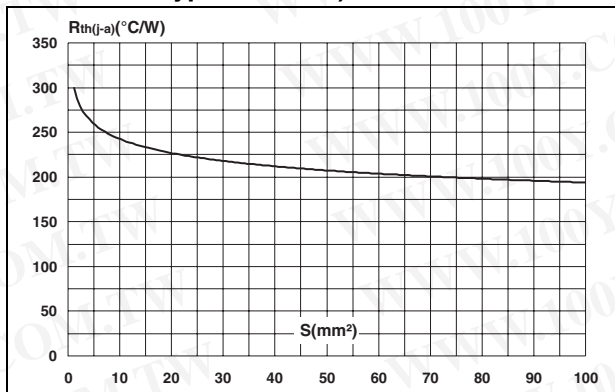
**Figure 7. Junction capacitance versus reverse voltage applied (typical values)**



**Figure 8. Forward voltage drop versus forward current**



**Figure 9. Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, Cu = 35 μm, typical values)**



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)



## 2 Package information

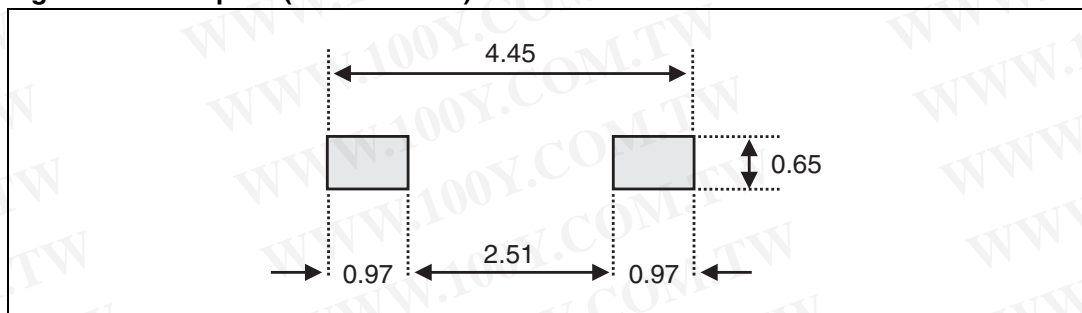
- Epoxy meets UL94, V0.
- Band indicates cathode.

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

Table 4. 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	3.95	0.14	0.156

Figure 10. Footprint (in millimeters)



In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: [www.st.com](http://www.st.com).

### 3 Ordering information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS0530Z	Z53	SOD-123	0.01 g	3000	Tape & reel

### 4 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

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

**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.**

**UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.**

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.

© 2006 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 - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

[www.st.com](http://www.st.com)

