



## SMBYW02-200

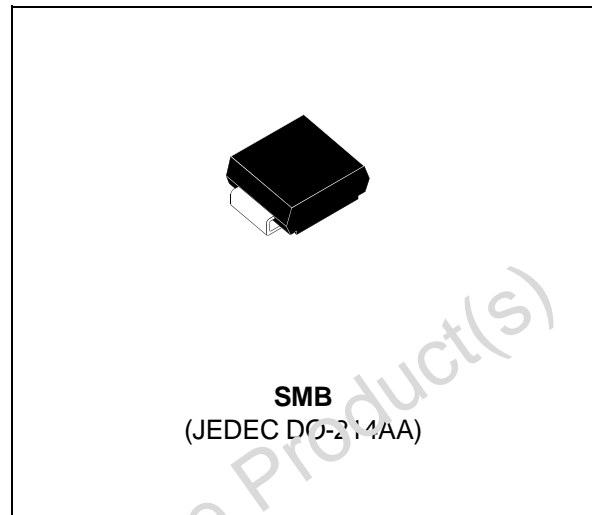
### HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

#### MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	<b>2 A</b>
$V_{RRM}$	<b>200 V</b>
$V_F(max)$	<b>0.85 V</b>
$T_j(max)$	<b>150 °C</b>

#### FEATURES AND BENEFITS

- SUITED FOR SMPS
- VERY LOW CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- LOW FORWARD AND REVERSE RECOVERY TIMES



#### DESCRIPTION

Single chip rectifier suited for Switch Mode Power Supplies and high frequency DC to DC converters. Packaged in SMB, this surface mount device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

#### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage	200	V
$I_{F(RMS)}$	RMS forward current	10	A
$I_{F(AV)}$	Average forward current	2	A
		$T_I=100^{\circ}C$ $\delta = 0.5$	
$I_{FSM}$	Non repetitive surge peak forward current	50	A
		$t_p=10ms$ sinusoidal	
$T_{stg}$	Storage temperature range	- 65 to + 150	°C
$T_j$	Maximum operating junction temperature	150	°C

## SMBYW02-200

### THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
Rth (j-l)	Junction to leads	25	°C/W

### STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameters	Test Conditions		Min.	Typ.	Max.	Unit
$V_F$ *	Reverse Leakage Current	$T_j = 25^\circ\text{C}$	$I_F = 6\text{ A}$			1.25	V
		$T_j = 100^\circ\text{C}$	$I_F = 2\text{ A}$		0.8	0.85	
$I_R$ **	Forward Voltage Drop	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			10	$\mu\text{A}$
		$T_j = 100^\circ\text{C}$			0.1	0.3	mA

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

\*\*  $t_p = 5\ \text{ms}$ ,  $\delta < 2\%$

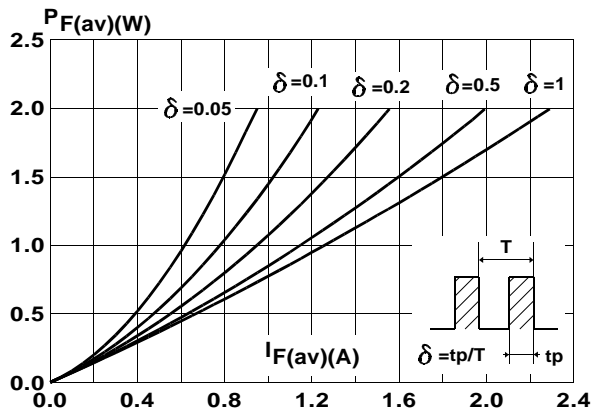
To evaluate the conduction losses use the following equation :

$$P = 0.7 \times I_{F(AV)} + 0.075 \times I_{F(RMS)}^2$$

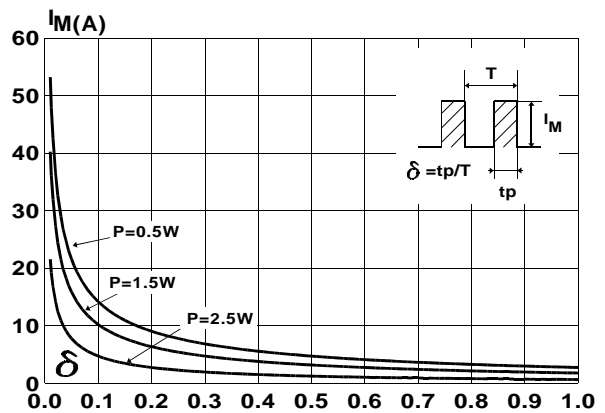
### RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	$T_j = 25^\circ\text{C}$	$I_F = 1\text{ A}$ $di_F/dt = -50\text{A}/\mu\text{s}$ $V_R = 30\text{V}$		26	35	ns
tfr	$T_j = 25^\circ\text{C}$	$I_F = 2\text{ A}$ $di_F/dt = -50\text{A}/\mu\text{s}$ $V_{FR} = 1.1 \times V_F \text{ max}$		30		ns
$V_{FP}$	$T_j = 25^\circ\text{C}$	$I_F = 2\text{ A}$ $di_F/dt = -50\text{A}/\mu\text{s}$		5		V

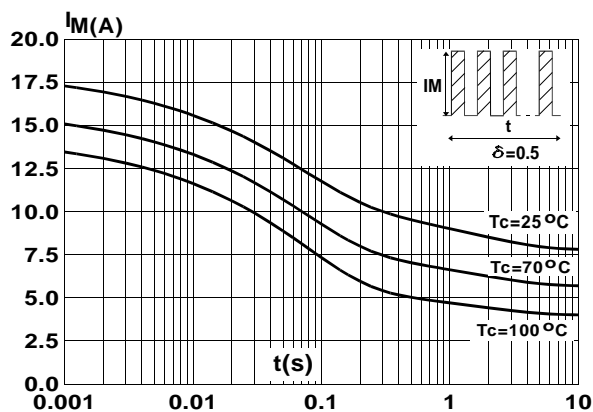
**Fig. 1:** Low frequency power losses versus average current.



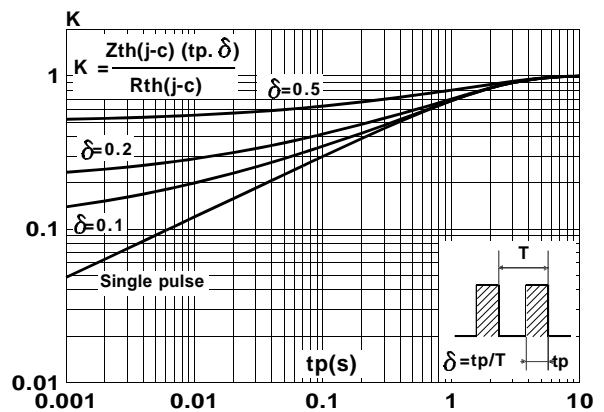
**Fig. 2:** Peak current versus form factor.



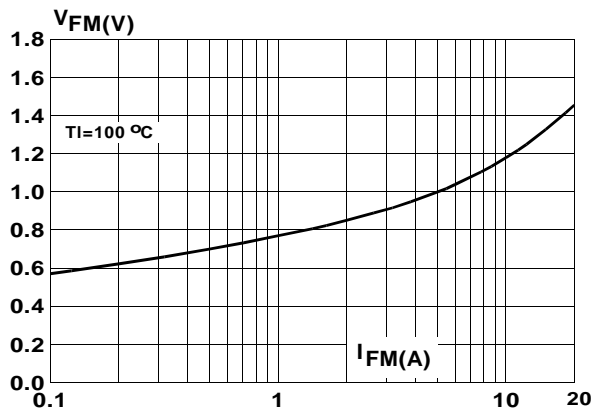
**Fig. 3:** Non repetitive surge peak forward current versus overload duration.



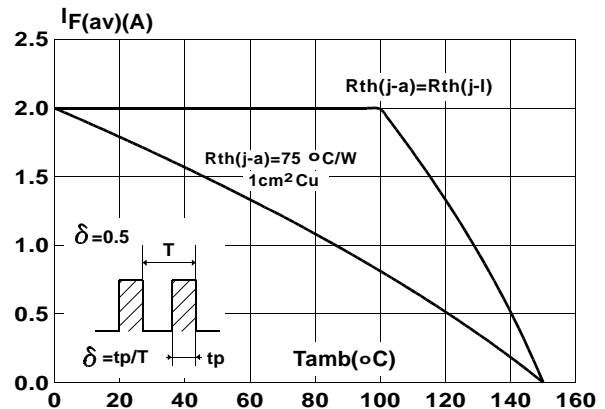
**Fig. 4:** Relative variation of thermal impedance junction to lead versus pulse duration.



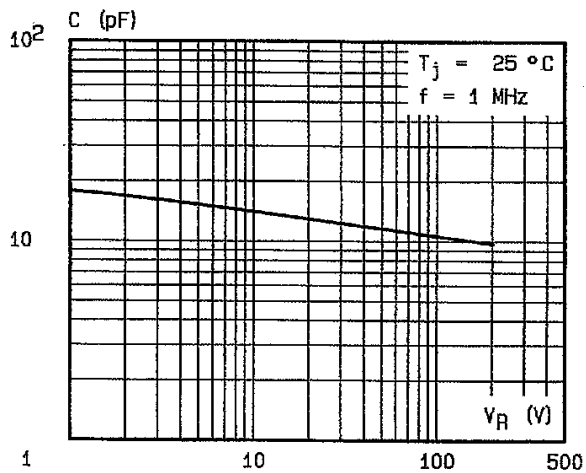
**Fig. 5:** Voltage drop versus forward current (maximum values).



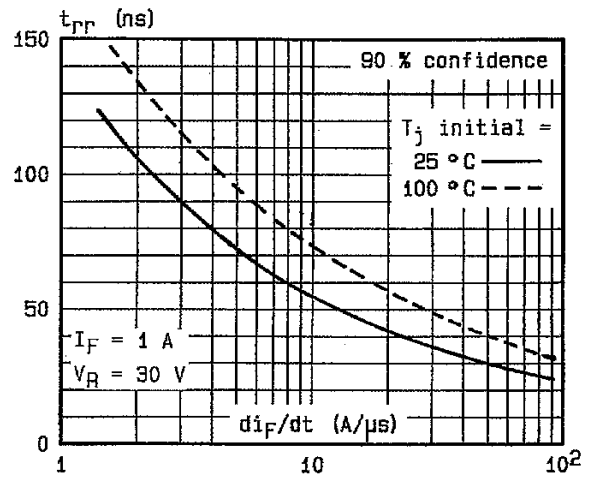
**Fig. 6:** Average current versus ambient temperature (delta=0.5).



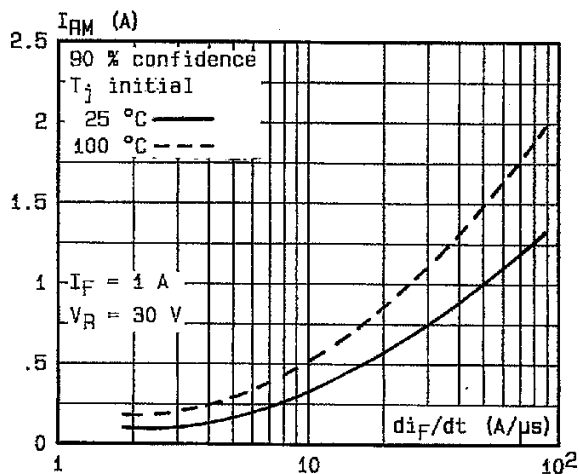
**Fig. 7:** Capacitance versus reverse voltage applied.



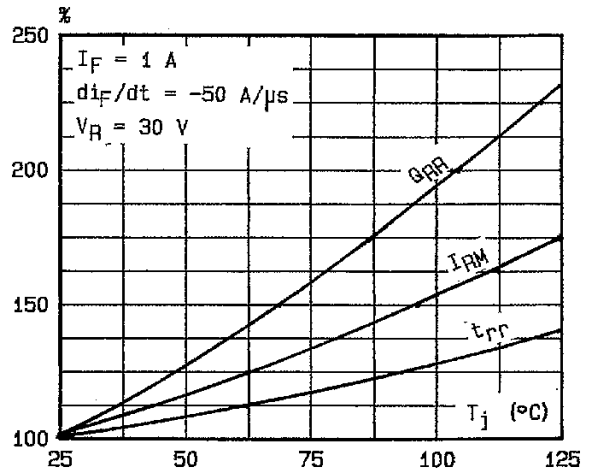
**Fig. 8:** Recovery time versus  $di_F/dt$ .



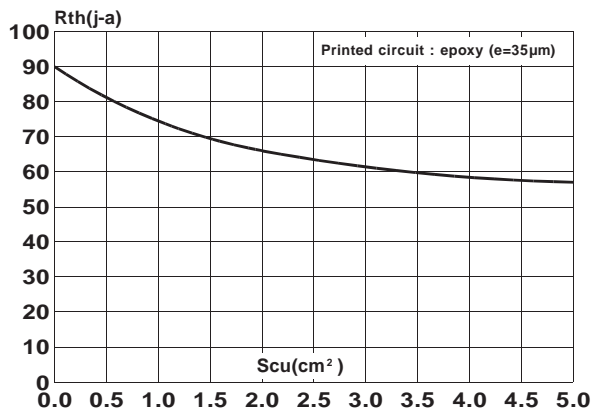
**Fig. 9:** Peak reverse current versus  $di_F/dt$ .



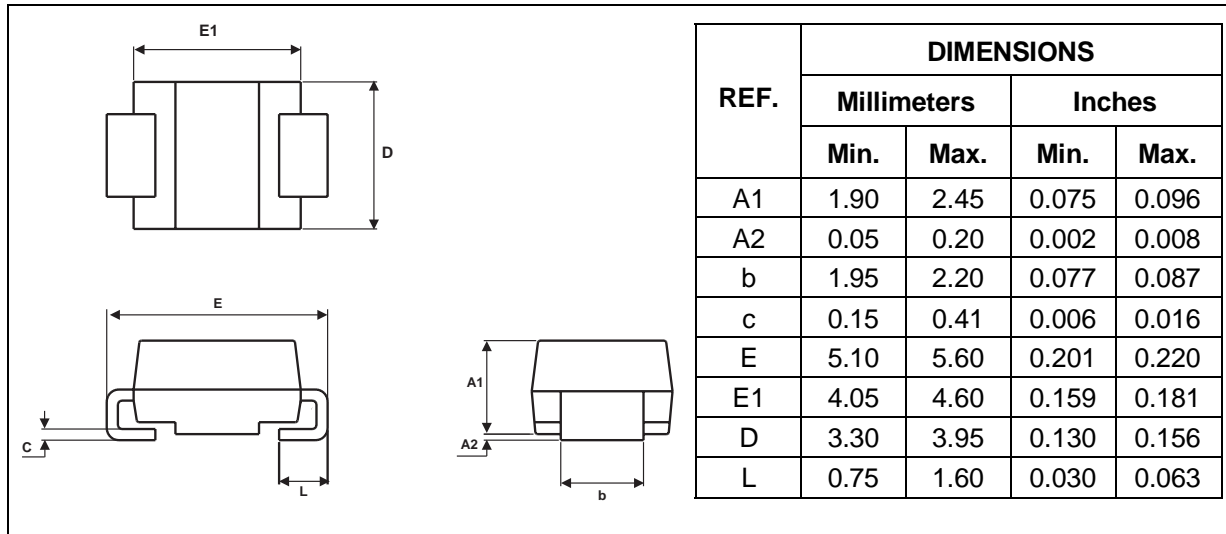
**Fig. 10:** Dynamic parameters versus junction temperature.



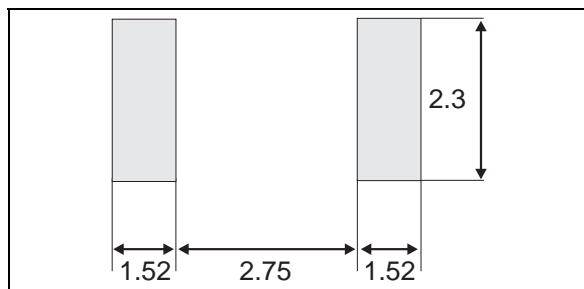
**Fig. 11:** Thermal resistance junction to ambient versus copper surface under each lead.



**PACKAGE MECHANICAL DATA**  
SMB



**FOOTPRINT DIMENSIONS (in millimeters)**  
SMB



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
SMBYW02-200	A20	SMB	0.11g	2500	Tape & reel

- Band indicates cathode
- Epoxy meets UL94,V0

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 1999 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia  
Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>