



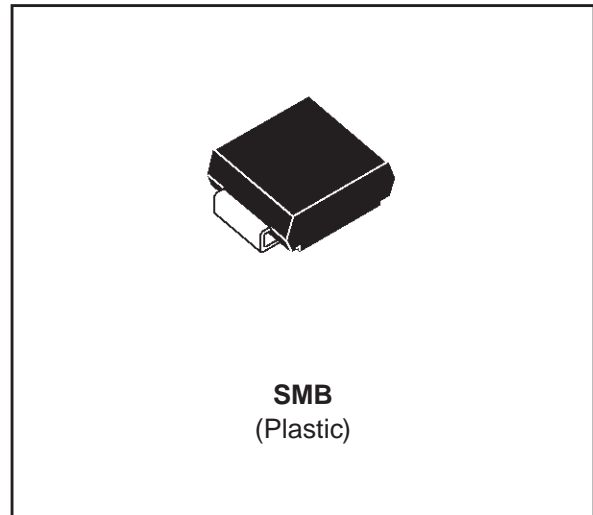
FAST RECOVERY RECTIFIER DIODES

FEATURES

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- SURFACE MOUNT DEVICE

DESCRIPTION

Single high voltage rectifier suited for Switch Mode Power Supplies and other power converters.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$I_{F(RMS)}$	RMS forward current	10	A
$I_{F(AV)}$	Average forward current	$T_I=110^{\circ}\text{C}$ $\delta = 0.5$	A
I_{FSM}	Non repetitive surge peak forward current	$t_p=10\text{ms}$ sinusoidal	A
T_{stg} T_J	Storage and junction temperature range	- 40 to + 150 - 40 to + 150	$^{\circ}\text{C}$ $^{\circ}\text{C}$

Symbol	Parameter	Value	Unit
V_{RRM}	Repetitive peak reverse voltage	400	V

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-l)}$	Junction-leads	25	$^{\circ}\text{C}/\text{W}$

SMBYT01

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
V_F *	$T_j = 25^\circ\text{C}$	$I_F = 1\text{ A}$			1.5	V
	$T_j = 100^\circ\text{C}$			1.05	1.4	
I_R **	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			10	μA
	$T_j = 100^\circ\text{C}$			0.1	0.3	mA

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

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

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	$T_j = 25^\circ\text{C}$	$I_F = 0.5\text{A}$ $I_{rr} = 0.25\text{A}$ $I_R = 1\text{A}$			25	ns
		$I_F = 1\text{A}$ $di_F/dt = -15\text{A}/\mu\text{s}$ $V_R = 30\text{V}$			60	

TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	$V_{CC} = 200\text{V}$ $T_j = 100^\circ\text{C}$	$I_F = 1\text{A}$ $L_p \leq 0.05\ \mu\text{H}$ $di_F/dt = -50\text{A}/\mu\text{s}$		35	50	ns
I_{RM}				1.5	2	A

To evaluate the conduction losses use the following equation :

$$P = 1.1 \times I_{F(AV)} + 0.25 \times I_{F(RMS)}^2$$

Voltage (V)	400
Marking	B4

Laser marking
Logo indicates cathode

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

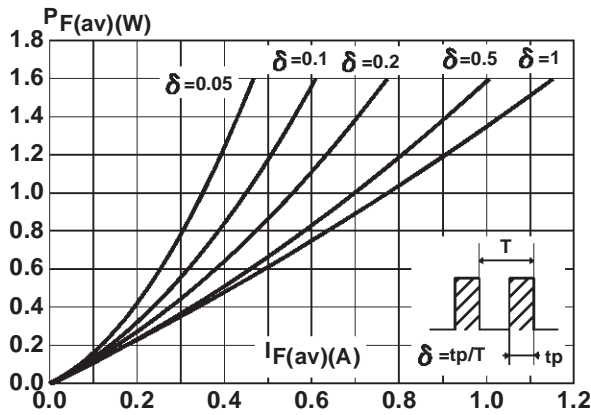


Fig. 2: Peak current versus form factor.

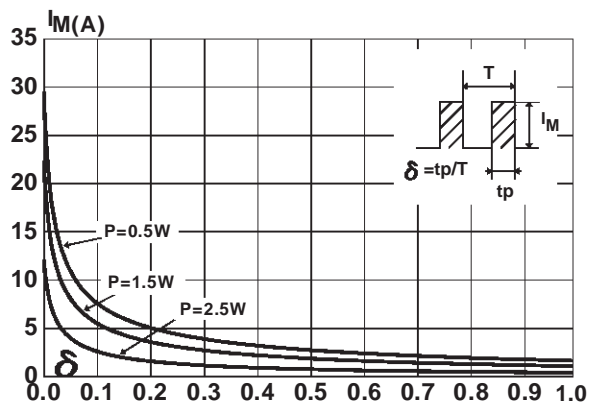


Fig. 3: Non repetitive surge peak forward current versus overload duration.

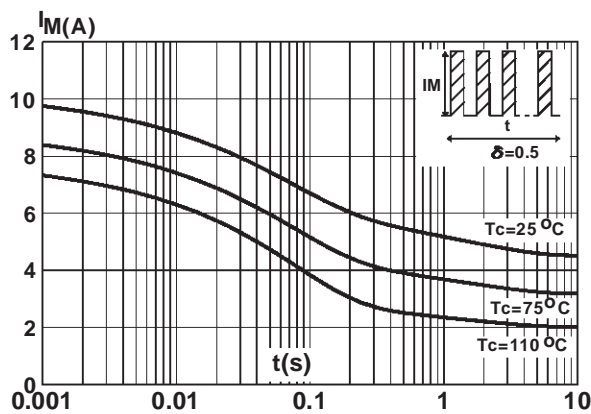


Fig. 4: Relative variation of thermal impedance junction to lead versus pulse duration.

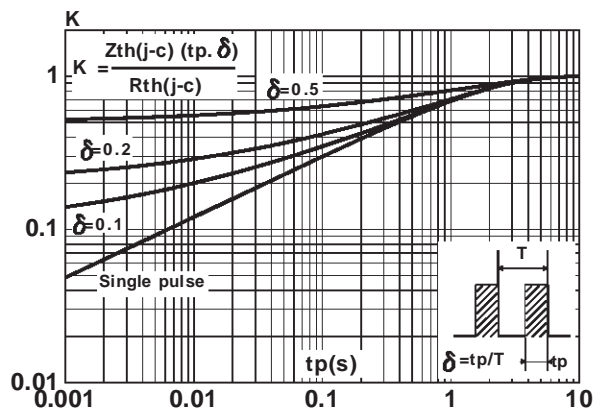


Fig. 5: Voltage drop versus forward current. (Maximum values)

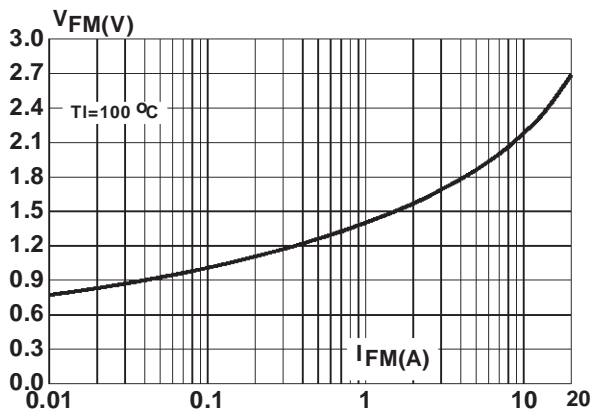


Fig. 6: Average current versus ambient temperature. (duty cycle : 0.5)

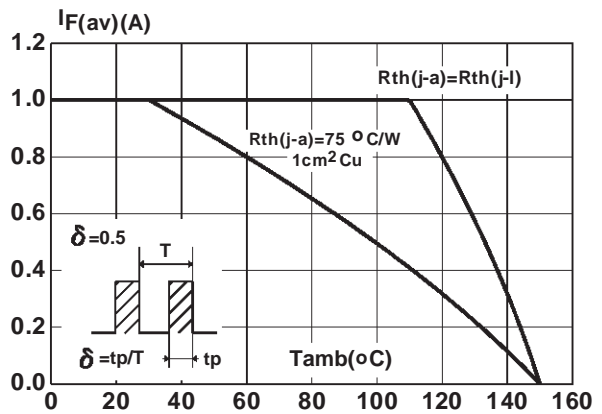


Fig. 7: Recovery time versus di_F/dt .

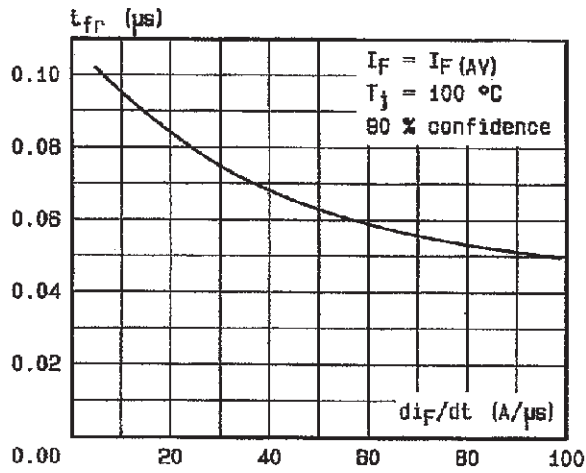


Fig. 9: Peak reverse current versus di_F/dt .

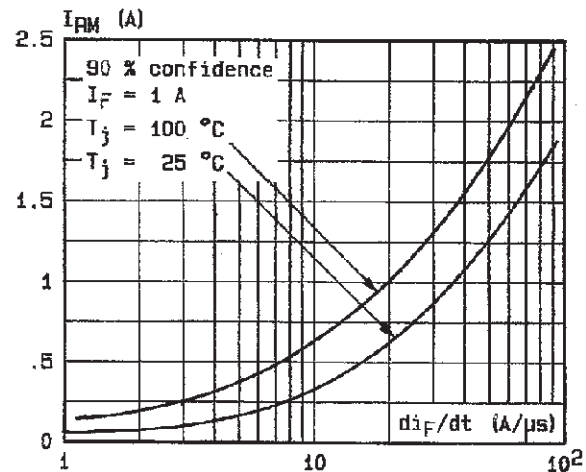


Fig. 11: Dynamic parameters versus junction temperature.

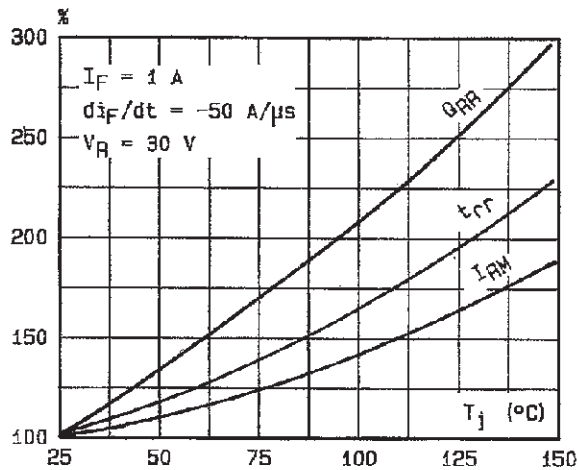


Fig. 8: Peak forward voltage versus di_F/dt .

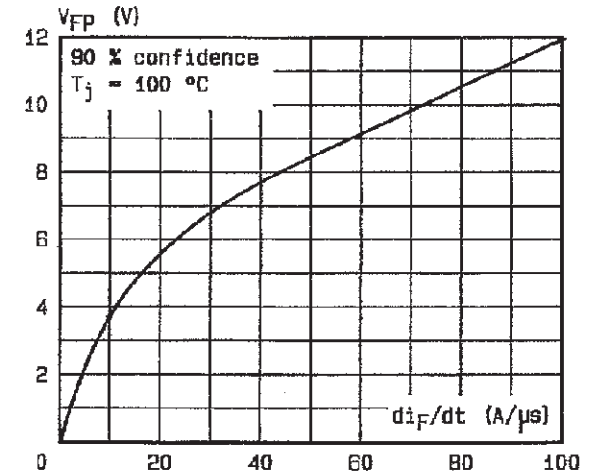


Fig. 10: Recovery charge versus di_F/dt . (typical values)

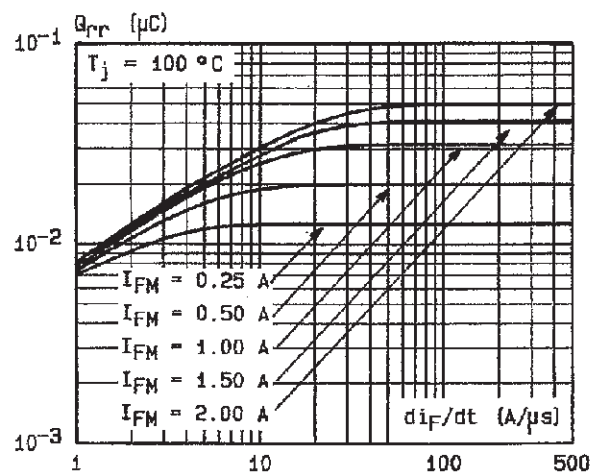
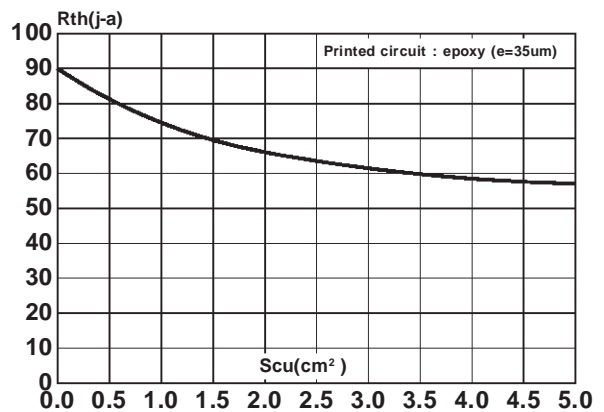
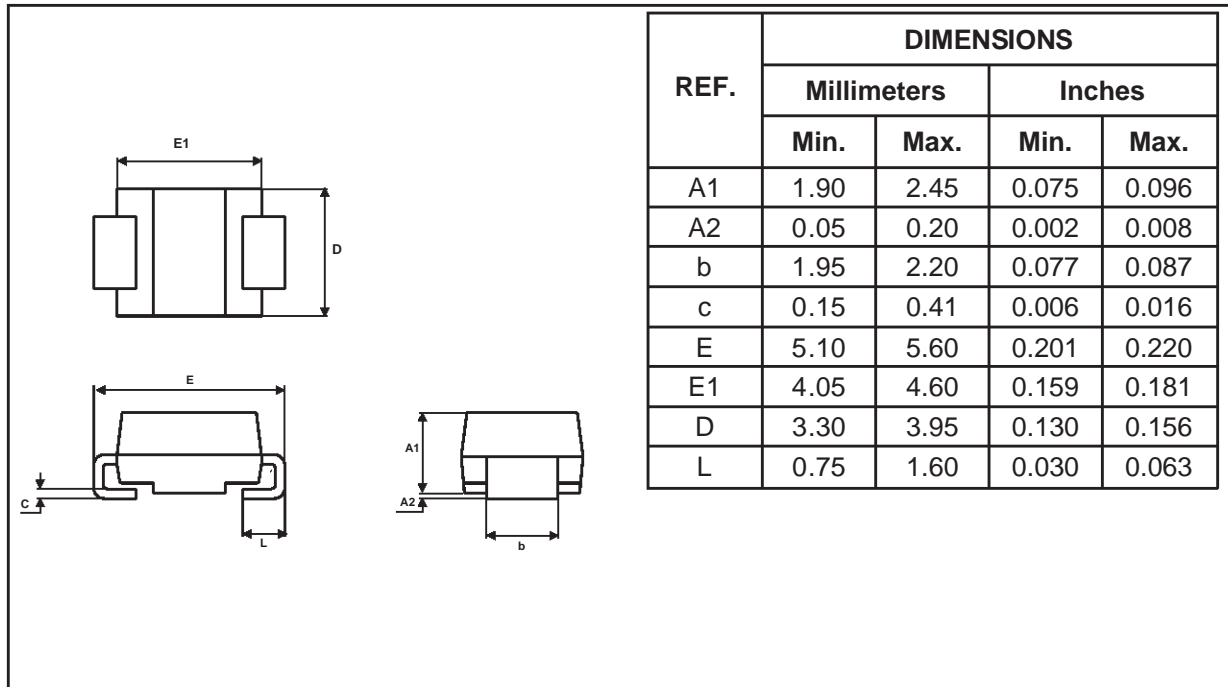


Fig. 12: Thermal resistance junction to ambient versus copper surface under each lead.

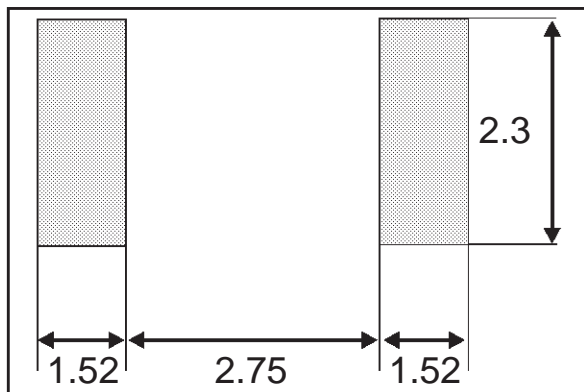


PACKAGE MECHANICAL DATA
SMB (Plastic)



FOOTPRINT DIMENSIONS (in millimeters)
SMB (Plastic)

- Laser marking
- Weight = 0.12 g.
- Logo indicates cathode



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>