



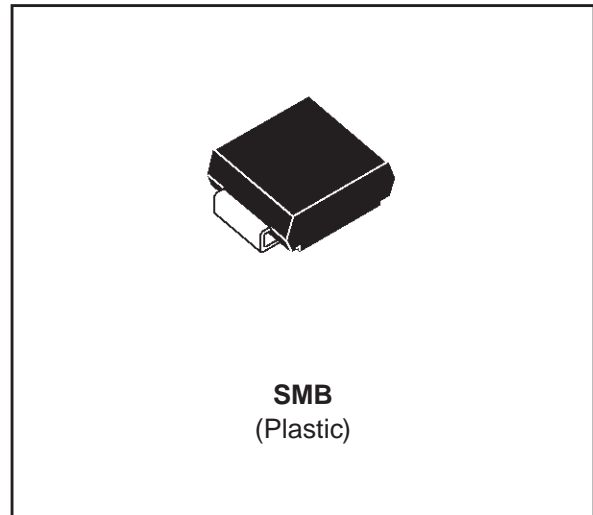
## FAST RECOVERY RECTIFIER DIODES

### 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	$\mu\text{A}$
	$T_j = 100^\circ\text{C}$			0.1	0.3	$\text{mA}$

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

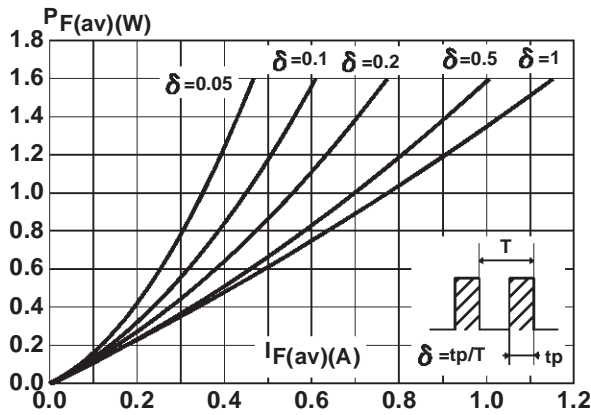
To evaluate the conduction losses use the following equation :

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

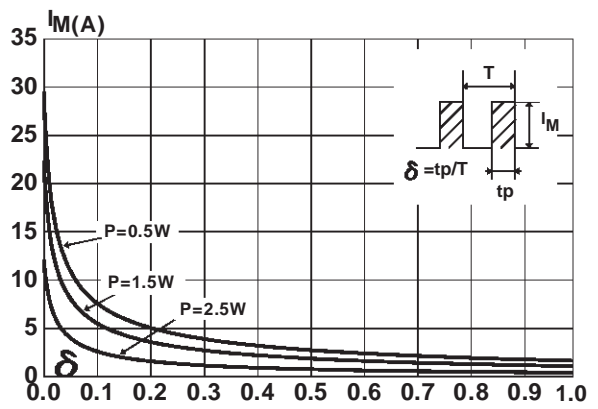
Voltage (V)	400
Marking	B4

Laser marking  
Logo indicates cathode

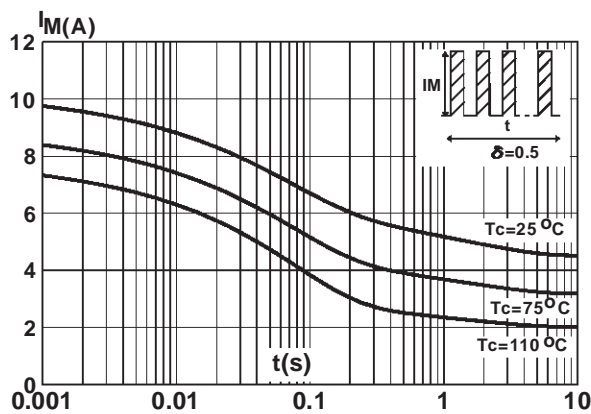
**Fig. 1:** Low frequency power losses versus average current.



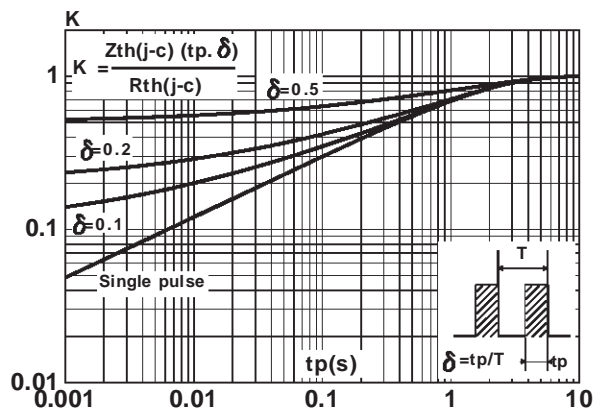
**Fig. 2:** Peak current versus form factor.



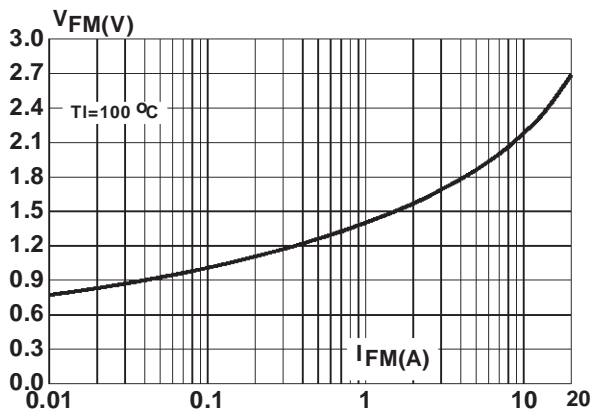
**Fig. 3:** Non repetitive surge peak forward current versus overload duration.



**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)

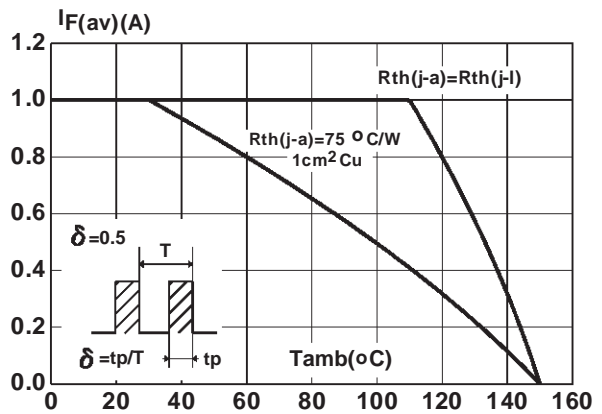


Fig. 7: Recovery time versus  $di_F/dt$ .

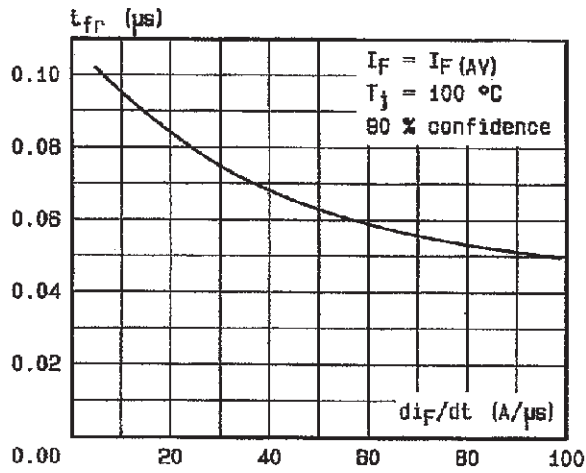


Fig. 9: Peak reverse current versus  $di_F/dt$ .

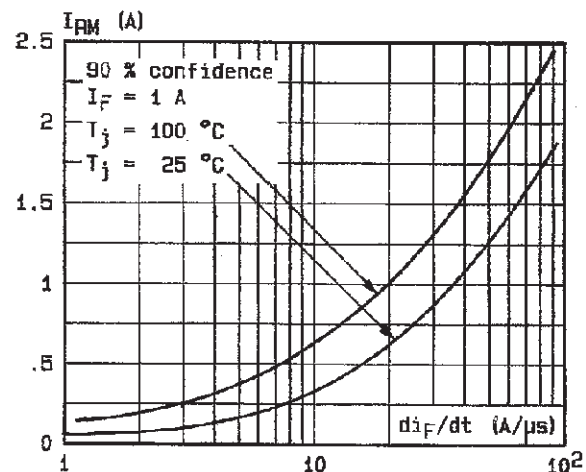


Fig. 11: Dynamic parameters versus junction temperature.

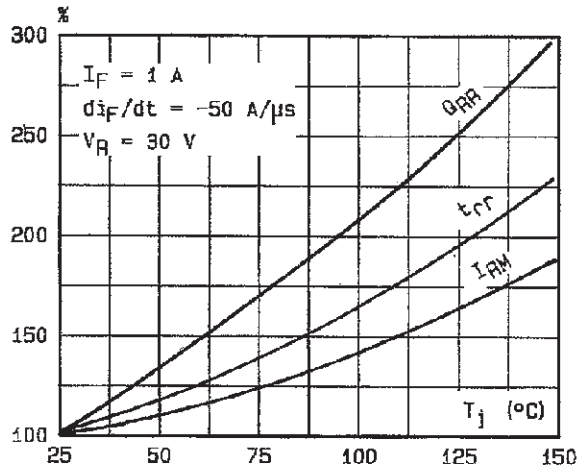


Fig. 8: Peak forward voltage versus  $di_F/dt$ .

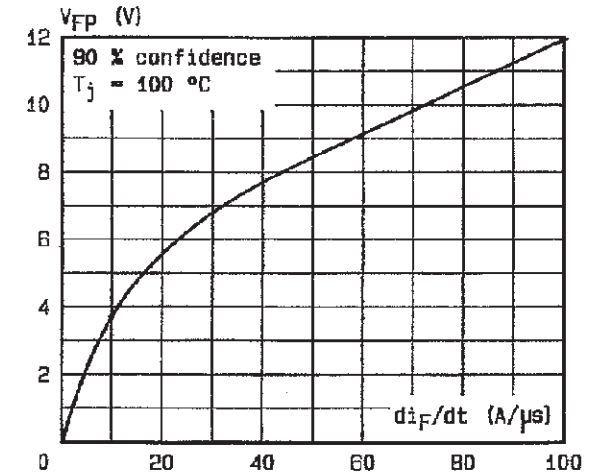


Fig. 10: Recovery charge versus  $di_F/dt$ . (typical values)

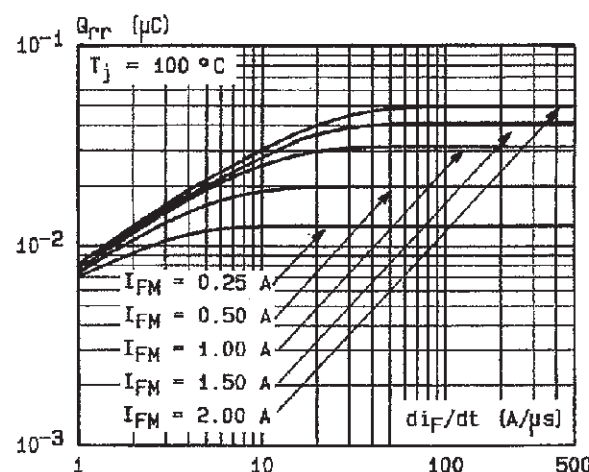
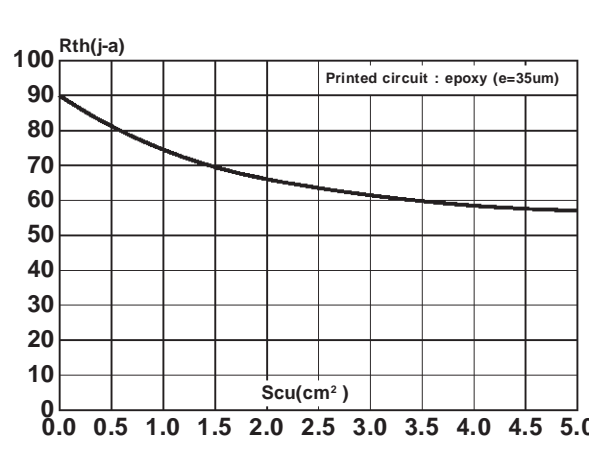
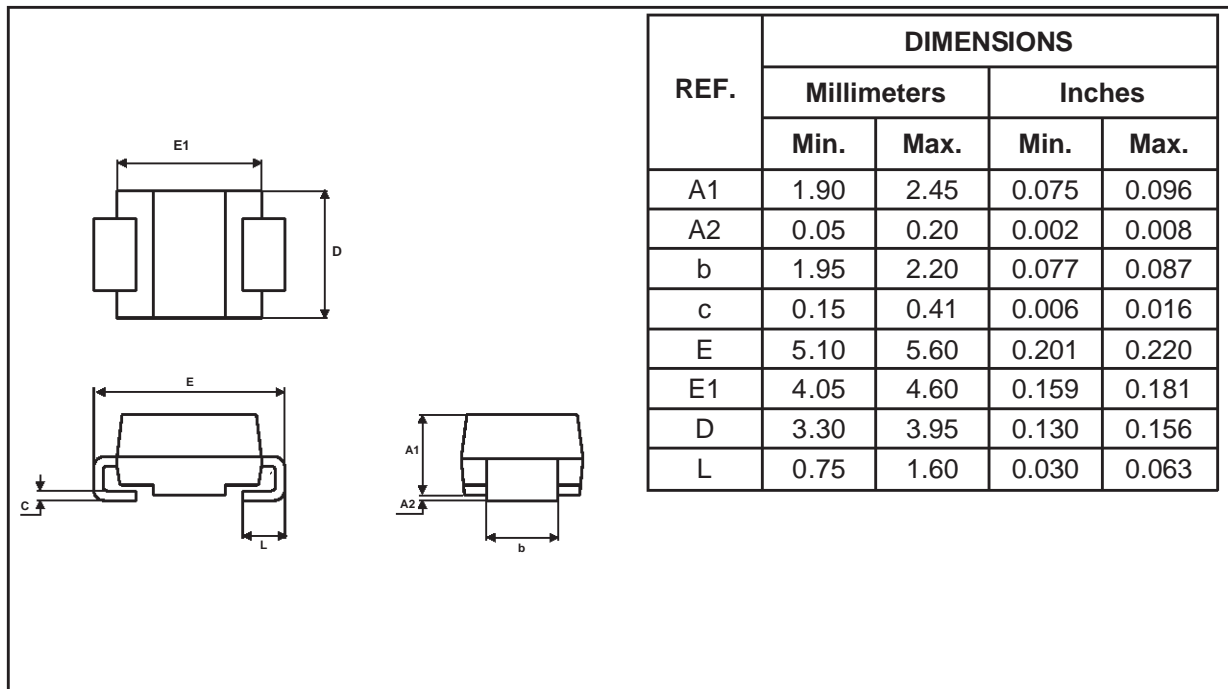


Fig. 12: Thermal resistance junction to ambient versus copper surface under each lead.

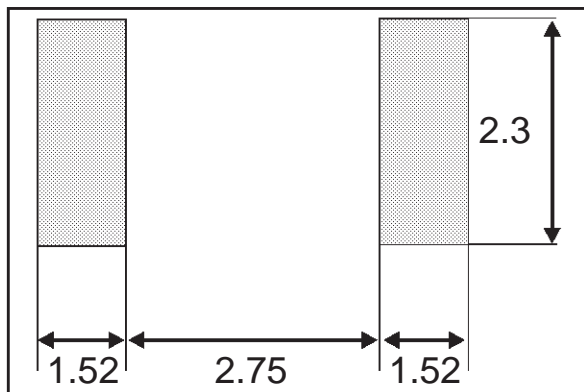


**PACKAGE MECHANICAL DATA**  
SMB (Plastic)



**FOOTPRINT DIMENSIONS (in millimeters)**  
SMB (Plastic)

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



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