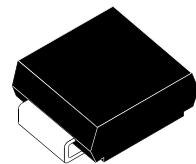


## FAST RECOVERY RECTIFIER DIODES

## 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.

SMB  
(Plastic)

## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$I_{F(RMS)}$	RMS forward current	10	A
$I_{F(AV)}$	Average forward current	1	A
$I_{FSM}$	Non repetitive surge peak forward current	tp=10ms sinusoidal	A
$T_{stg}$ $T_J$	Storage and junction temperature range	- 40 to + 150 - 40 to + 150	°C °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	°C/W

## SMBYT01

### STATIC ELECTRICAL CHARACTERISTICS

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

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

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

### RECOVERY CHARACTERISTICS

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

### TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

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

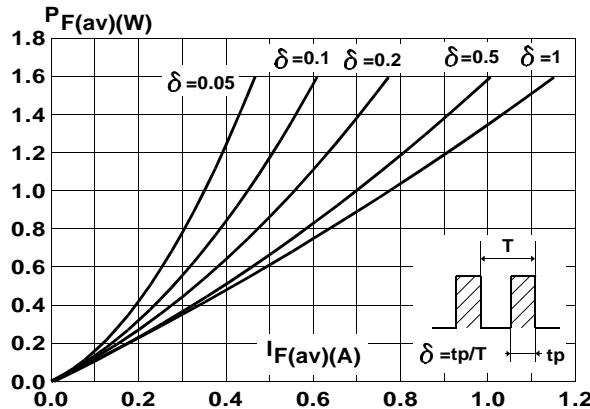
To evaluate the conduction losses use the following equation :

$$P = 1.1 \times I_F(AV) + 0.25 \times I_F^2(RMS)$$

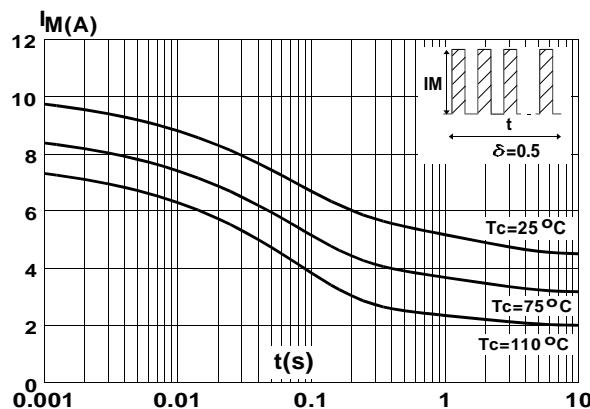
Voltage (V)	400
Marking	B4

Laser marking  
Logo indicates cathode

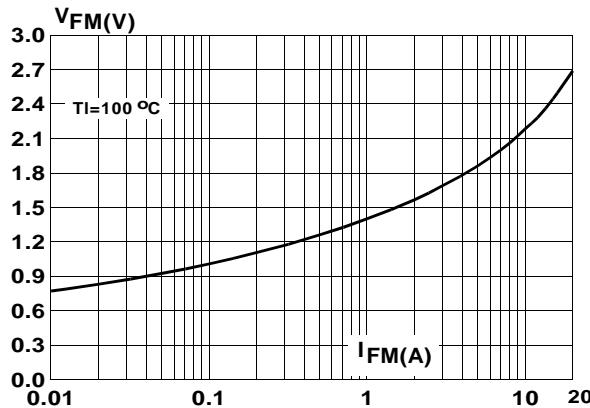
**Fig. 1:** Low frequency power losses versus average current.



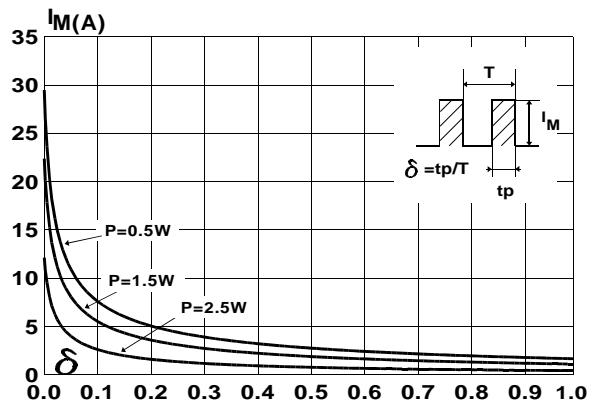
**Fig. 3:** Non repetitive surge peak forward current versus overload duration.



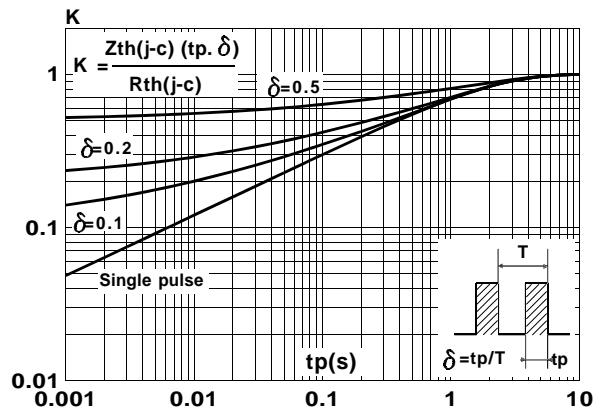
**Fig. 5:** Voltage drop versus forward current. (Maximum values)



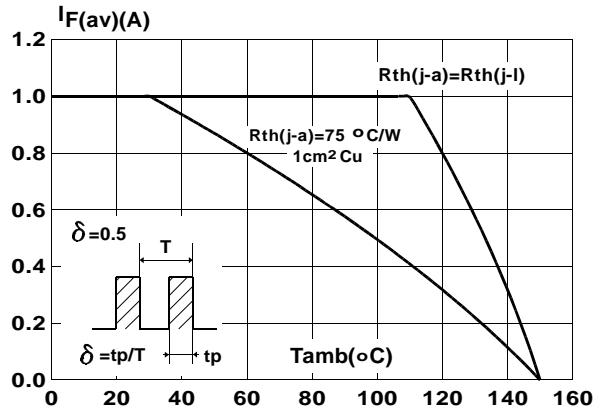
**Fig. 2:** Peak current versus form factor.



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

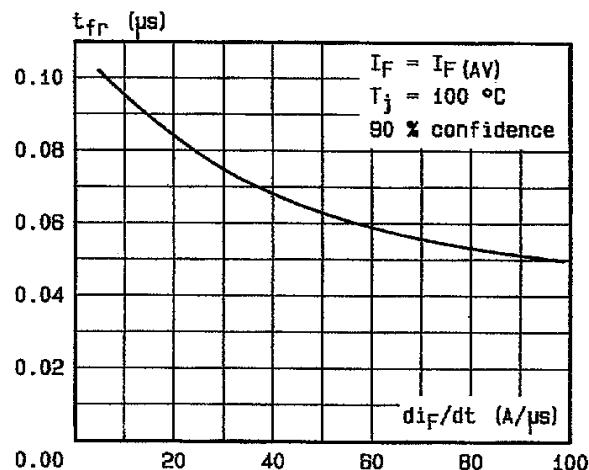


**Fig. 6:** Average current versus ambient temperature. (duty cycle : 0.5)

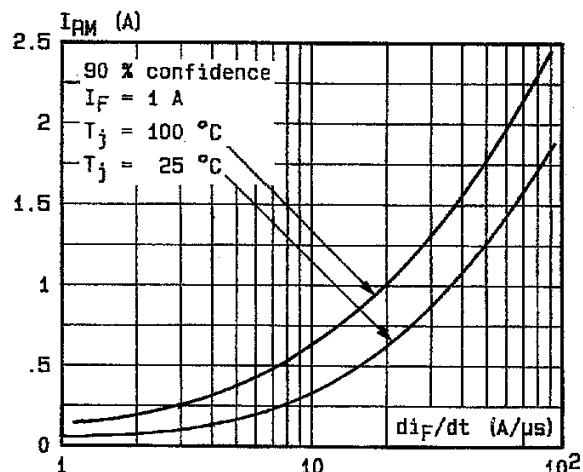


## SMBYT01

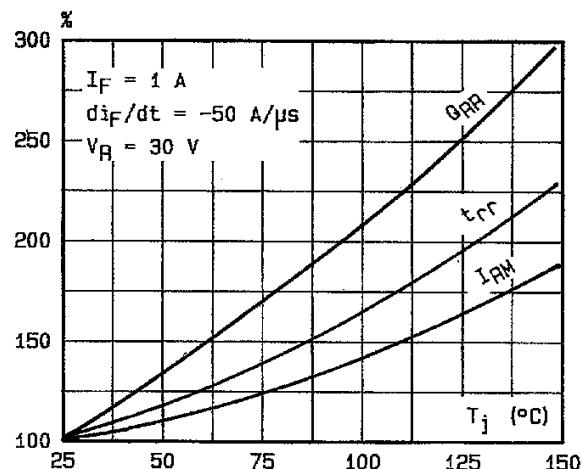
**Fig. 7:** Recovery time versus  $dI_F/dt$ .



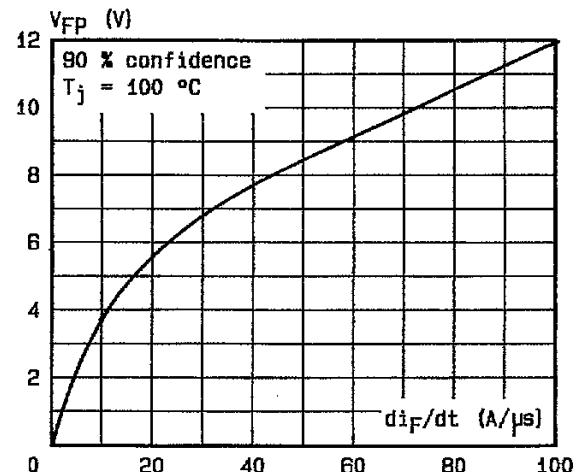
**Fig. 9:** Peak reverse current versus  $dI_F/dt$ .



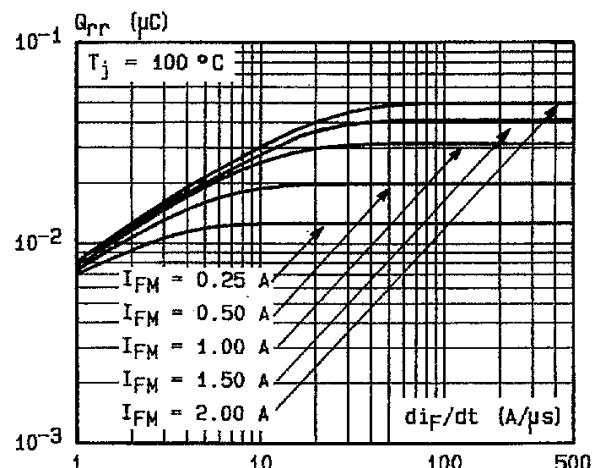
**Fig. 11:** Dynamic parameters versus junction temperature.



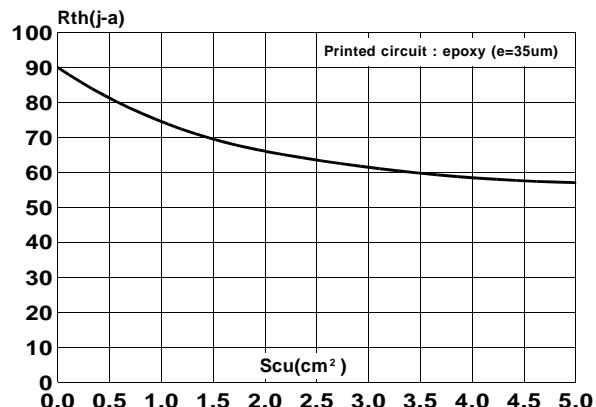
**Fig. 8:** Peak forward voltage versus  $dI_F/dt$ .



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

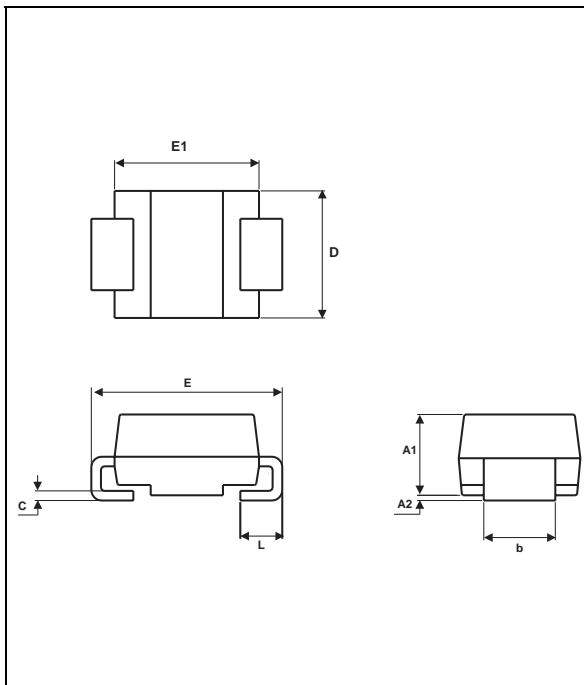


**Fig. 12:** Thermal resistance junction to ambient versus copper surface under each lead.



## PACKAGE MECHANICAL DATA

SMB (Plastic)

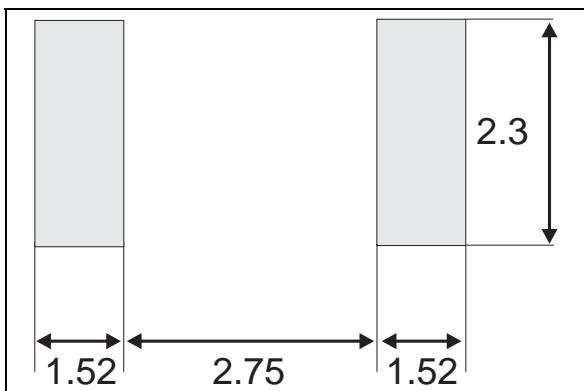


REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.41	0.006	0.016
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
D	3.30	3.95	0.130	0.156
L	0.75	1.60	0.030	0.063

### FOOTPRINT DIMENSIONS (in millimeters)

SMB (Plastic)

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



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