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SMBYT01

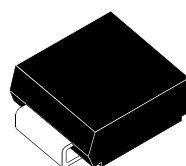
FAST RECOVERY RECTIFIER DIODES

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	$T_I=110^{\circ}\text{C}$ $\delta = 0.5$	1	A
I_{FSM}	Non repetitive surge peak forward current	$t_p=10\text{ms}$ sinusoidal	30	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	$^{\circ}\text{C/W}$

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

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

RECOVERY CHARACTERISTICS

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

TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

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

To evaluate the conduction losses use the following equation :

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

Voltage (V)	400
Marking	B4

Laser marking

Logo indicates cathode

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

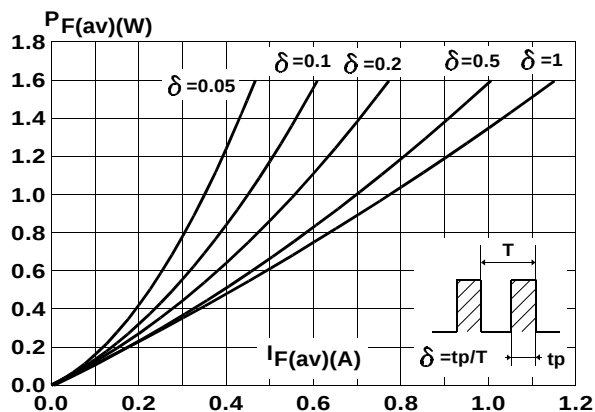


Fig. 2: Peak current versus form factor.

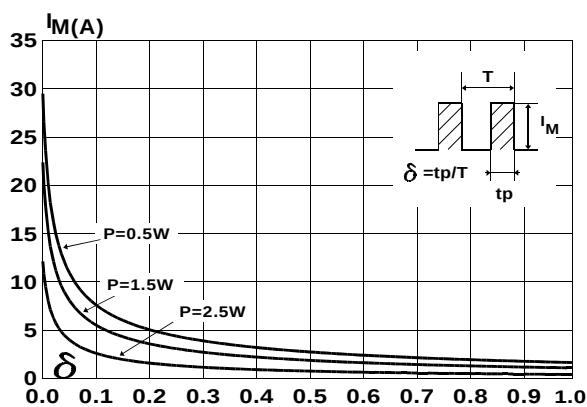


Fig. 3: Non repetitive surge peak forward current versus overload duration.

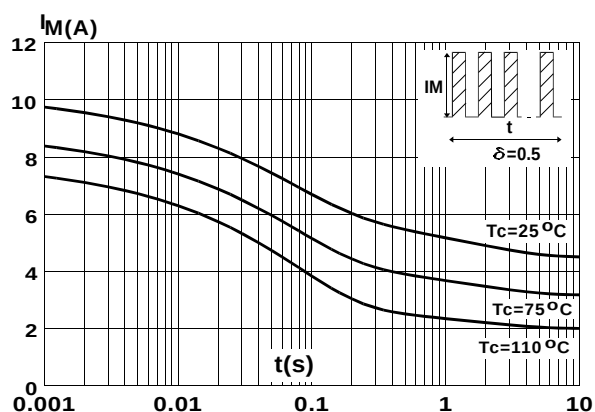


Fig. 4: Relative variation of thermal impedance junction to lead versus pulse duration.

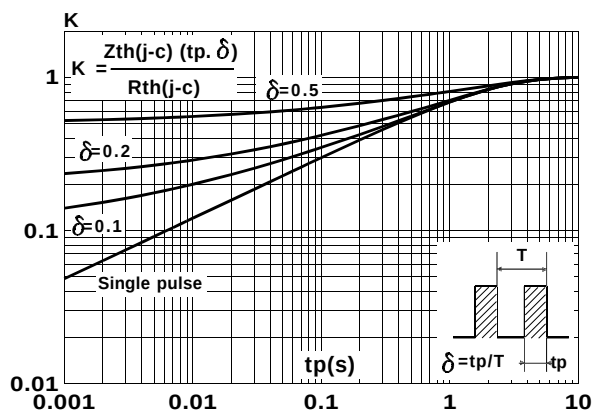


Fig. 5: Voltage drop versus forward current. (Maximum values)

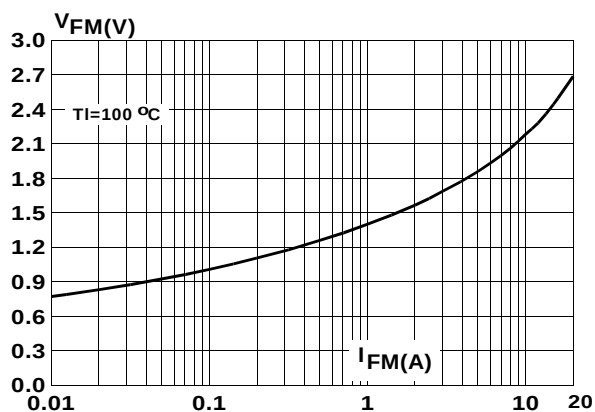
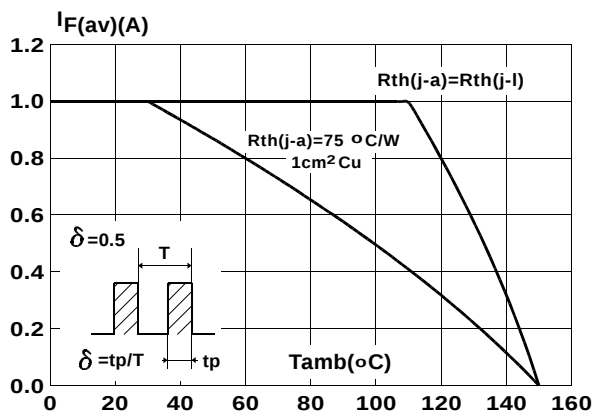


Fig. 6: Average current versus ambient temperature. (duty cycle : 0.5)



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Fig. 7: Recovery time versus di_F/dt .

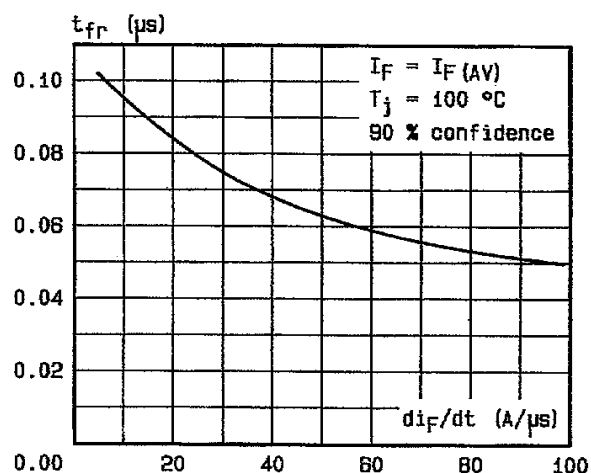


Fig. 9: Peak reverse current versus di_F/dt .

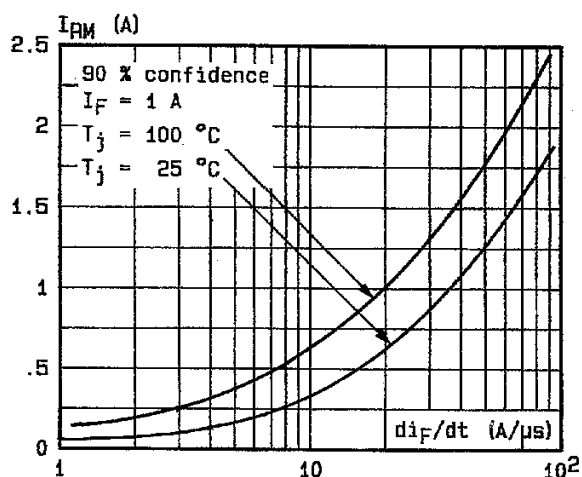


Fig. 11: Dynamic parameters versus junction temperature.

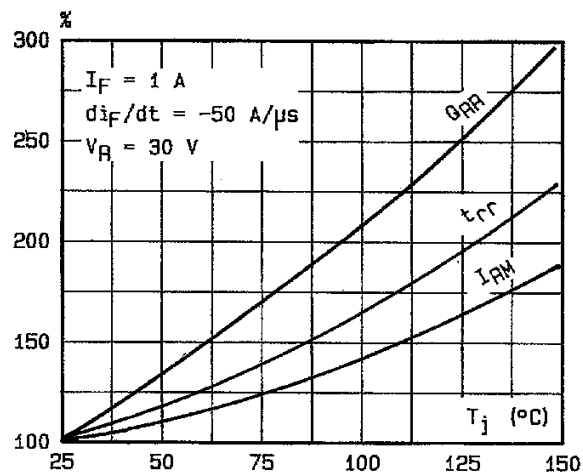


Fig. 8: Peak forward voltage versus di_F/dt .

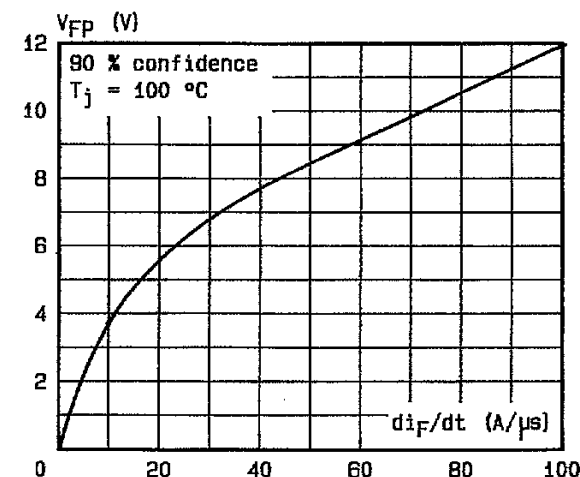


Fig. 10: Recovery charge versus di_F/dt . (typical values)

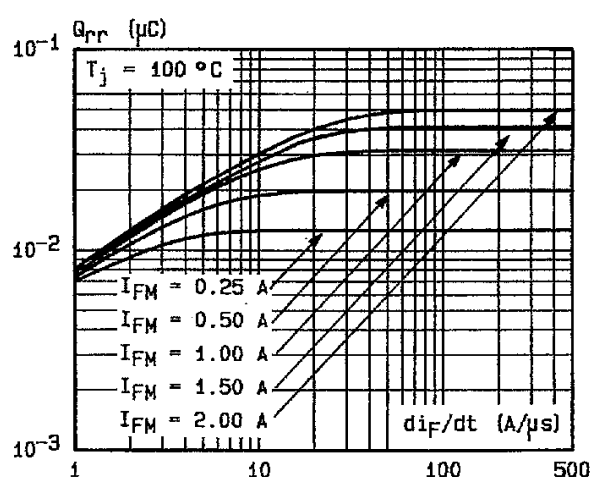
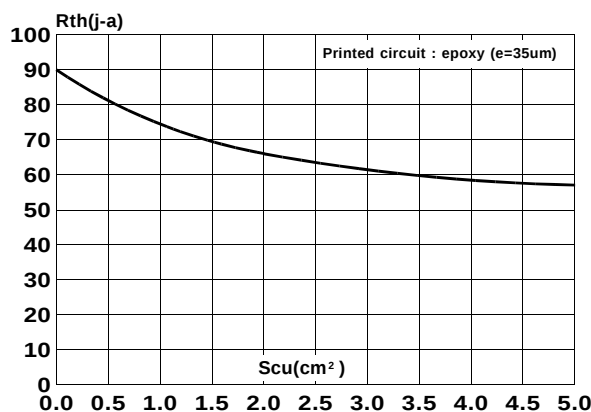


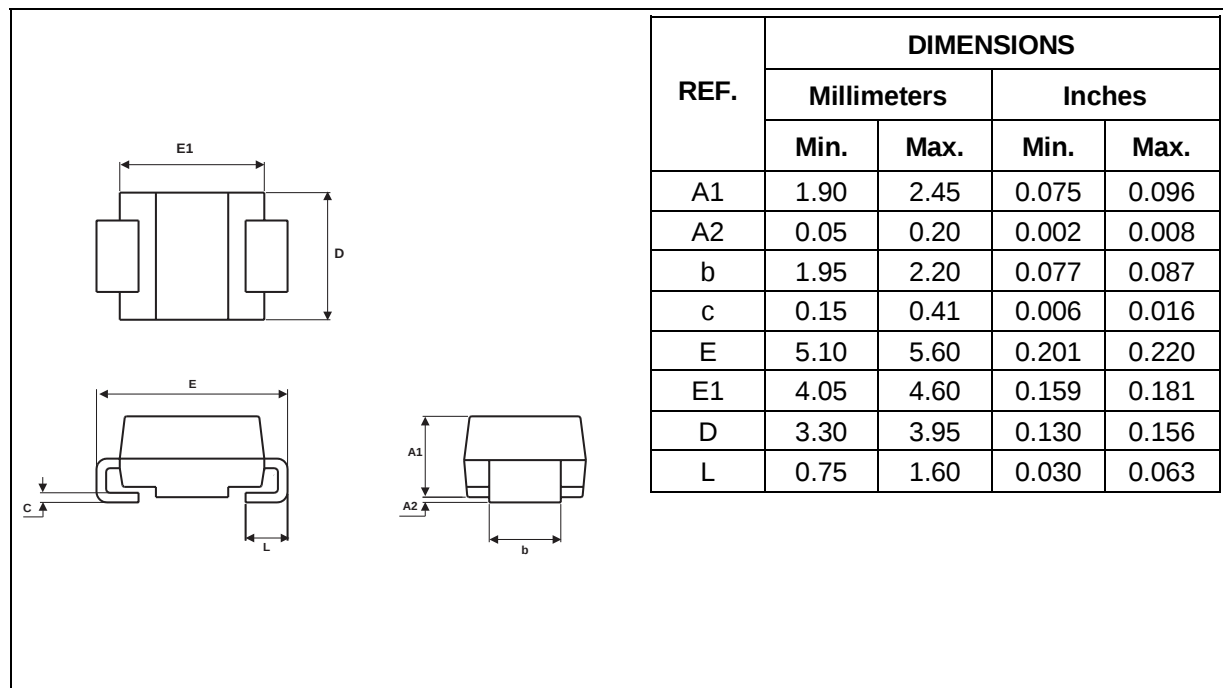
Fig. 12: Thermal resistance junction to ambient versus copper surface under each lead.



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PACKAGE MECHANICAL DATA

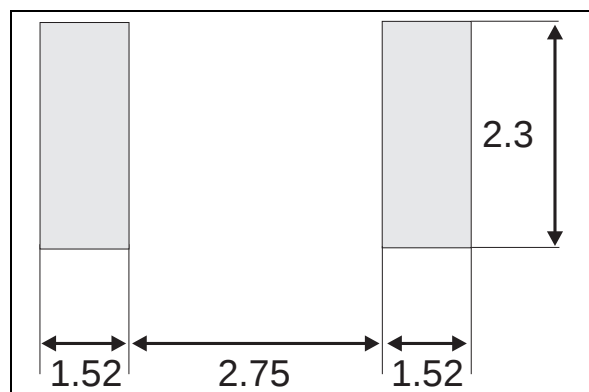
SMB (Plastic)



FOOTPRINT DIMENSIONS (in millimeters)

SMB (Plastic)

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



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