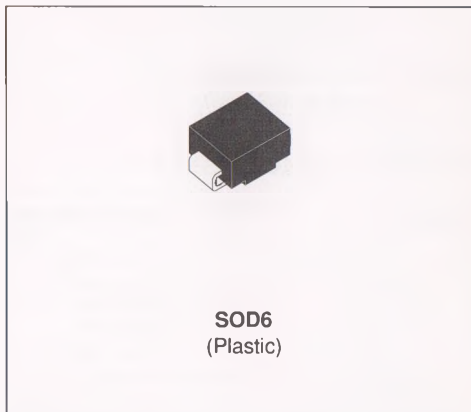


FAST RECOVERY RECTIFIER DIODES
FEATURES

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

DESCRIPTION

Single high voltage rectifier ranging from 200V to 400 V 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	$T_I = 110^\circ\text{C}$ $\delta = 0.5$	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	SMBYT01-			Unit
		200	300	400	
V_{RRM}	Repetitive peak reverse voltage	200	300	400	V

THERMAL RESISTANCE

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

**ELECTRICAL CHARACTERISTICS
STATIC CHARACTERISTICS**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
V_F *	$T_j = 25^\circ\text{C}$	$I_F = 1\text{ A}$			1.5	V
	$T_j = 100^\circ\text{C}$				1.4	
I_R **	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			20	μA
	$T_j = 100^\circ\text{C}$				0.5	mA

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

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

RECOVERY CHARACTERISTICS

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

TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

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

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)	200	300	400
Marking	B2	B3	B4

Laser marking

Logo indicates cathode

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

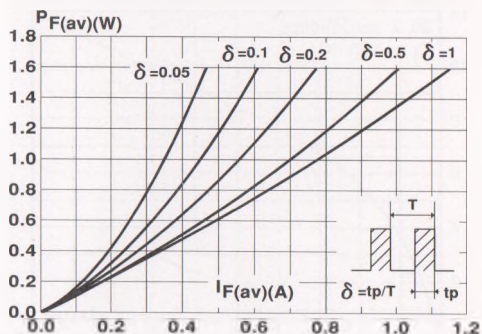


Fig.2 : Peak current versus form factor.

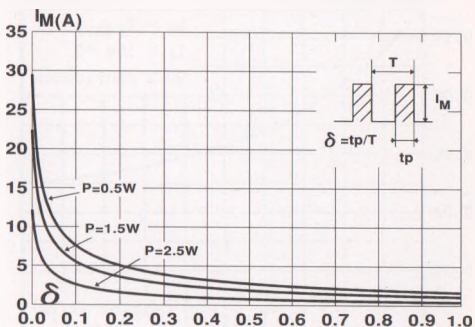


Fig.3 : Non repetitive surge peak forward current versus overload duration.

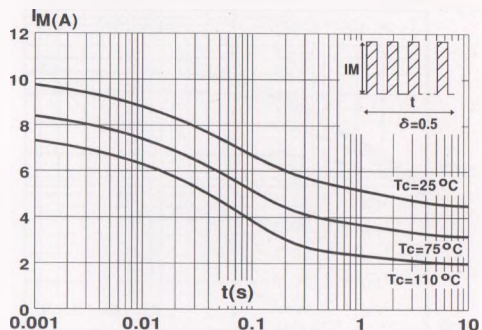


Fig.4 : Relative variation of thermal impedance junction to lead versus pulse duration.

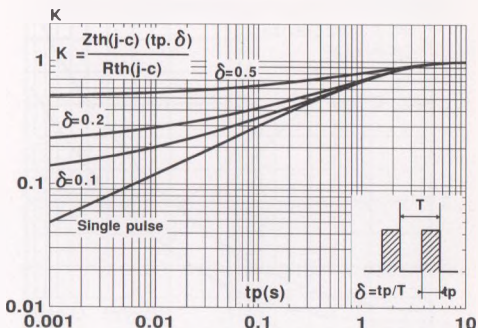


Fig.5 : Voltage drop versus forward current. (Maximum values)

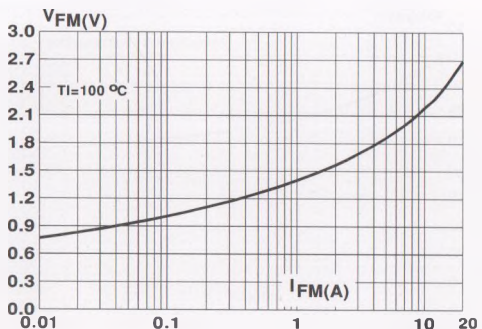


Fig.6 : Average current versus ambient temperature. (duty cycle : 0.5)

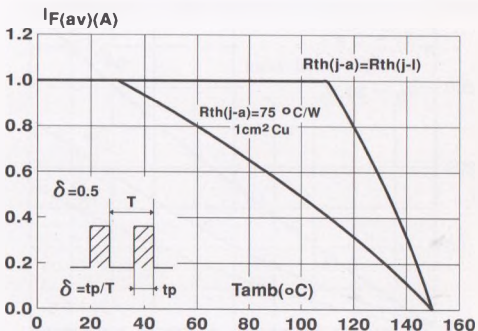


Fig.7 : Recovery time versus di_F/dt .

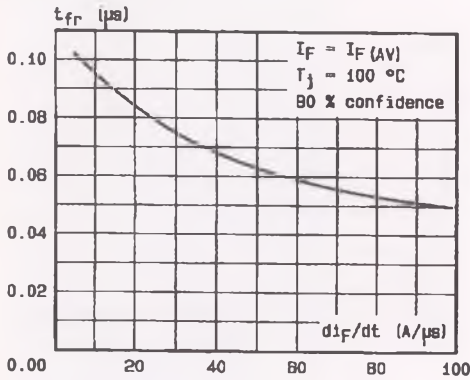


Fig.9 : Peak reverse current versus di_F/dt .

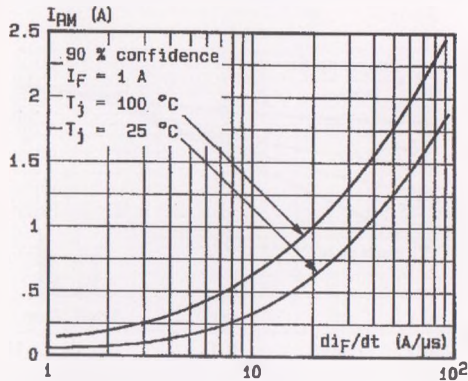


Fig.11 : Dynamic parameters versus junction temperature.

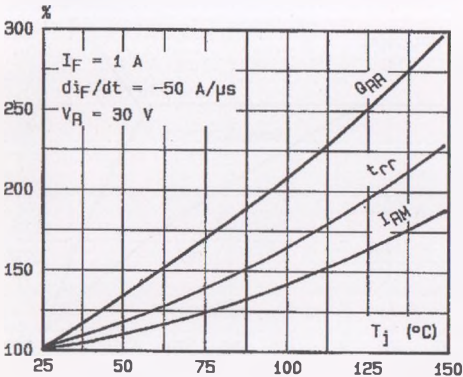


Fig.8 : Peak forward voltage versus di_F/dt .

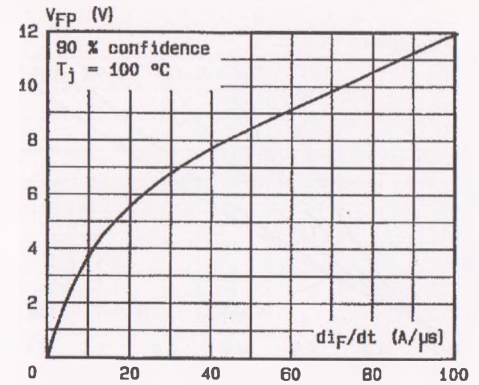


Fig.10 : Recovery charge versus di_F/dt . (typical values)

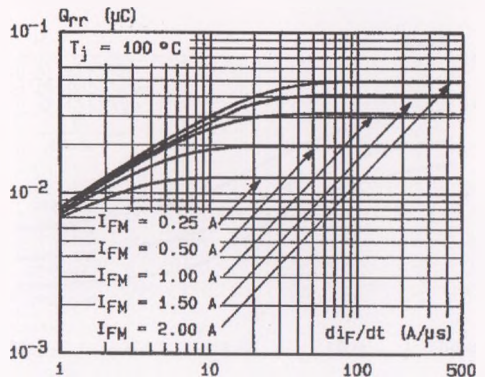


Fig.12 : Thermal resistance junction to ambient versus copper surface under each lead.

