



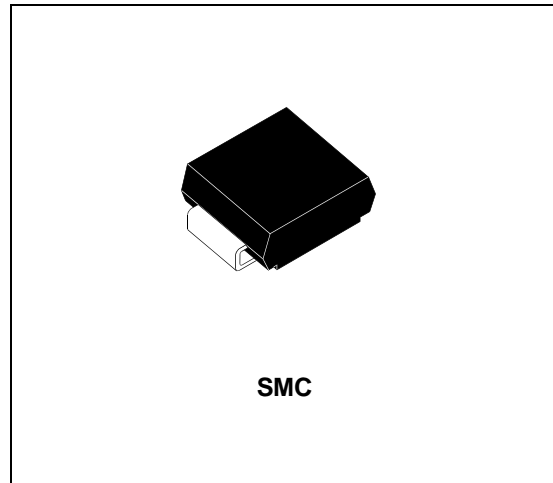
FAST RECOVERY RECTIFIER DIODES

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	$T_I=55^{\circ}\text{C}$ $\delta = 0.5$	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	20	$^{\circ}\text{C}/\text{W}$

SMBYT03

ELECTRICAL CHARACTERISTICS STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
V_F *	$T_j = 25^\circ\text{C}$	$I_F = 3\text{ A}$			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
	$T_j = 100^\circ\text{C}$			0.2	0.6	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	$T_j = 25^\circ\text{C}$	$I_F = 0.5\text{ A}$ $I_{rr} = 0.25\text{ A}$ $I_R = 1\text{ A}$			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}	$V_{CC} = 200\text{ V}$ $T_j = 100^\circ\text{C}$	$I_F = 3\text{ A}$ $L_p \leq 0.05\ \mu\text{H}$ $di_F/dt = -50\text{ A}/\mu\text{s}$		35	50	ns
I_{RM}				1.5	2	A

To evaluate the conduction losses use the following equation :

$$P = 1.1 \times I_{F(AV)} + 0.08 \times I_{F(RMS)}^2$$

Voltage (V)	200	300	400
Marking	C2	C3	C4

Laser marking
Logo indicates cathode

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

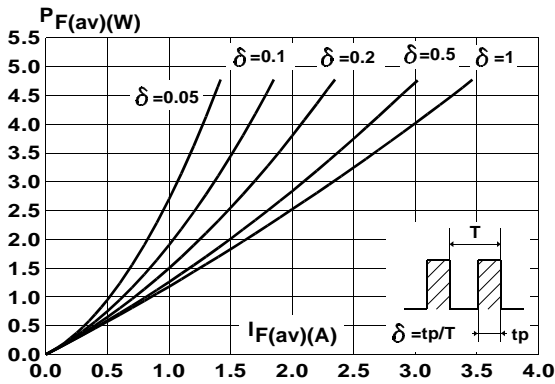


Fig.2 : Peak current versus form factor.

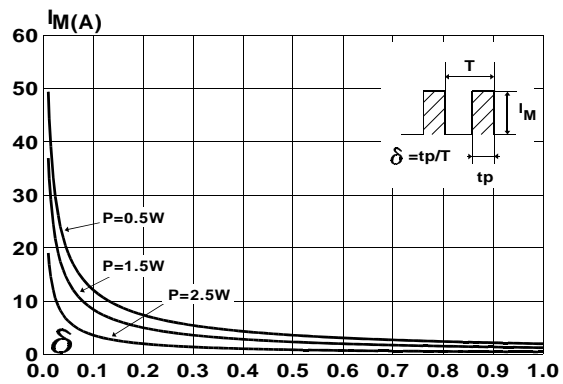


Fig.3 : Non repetitive surge peak forward current versus overload duration.

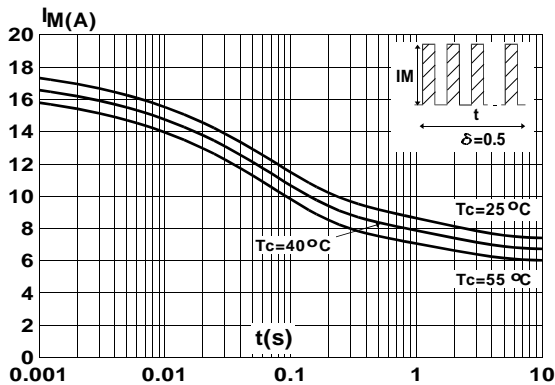


Fig.4 : Relative variation of thermal impedance junction to lead versus pulse duration.

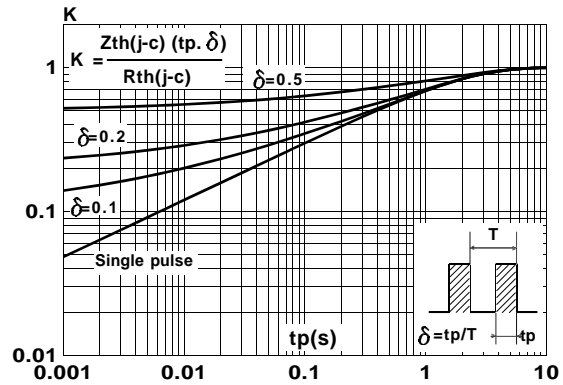


Fig.5 : Voltage drop versus forward current. (Maximum values)

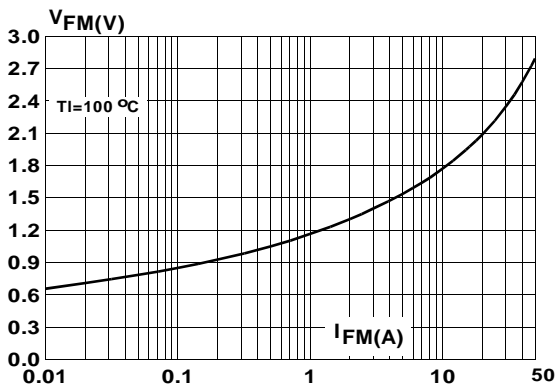


Fig.6 : Average current versus ambient temperature. (duty cycle : 0.5)

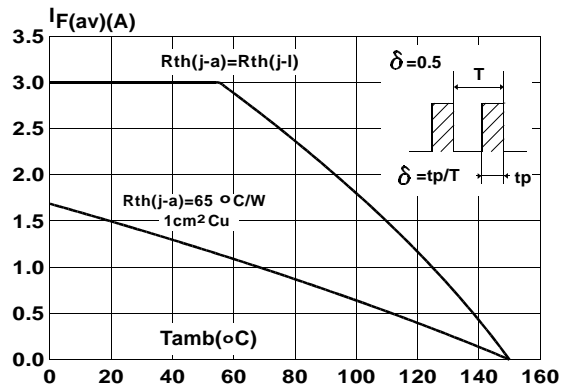


Fig.7 : Recovery time versus di_F/dt .

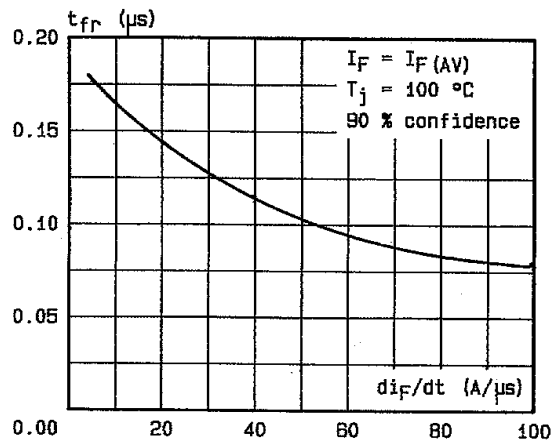


Fig.9 : Peak reverse current versus di_F/dt .

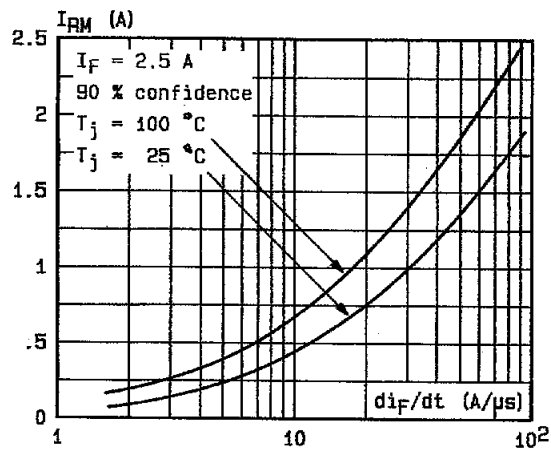


Fig.11 : Dynamic parameters versus junction temperature.

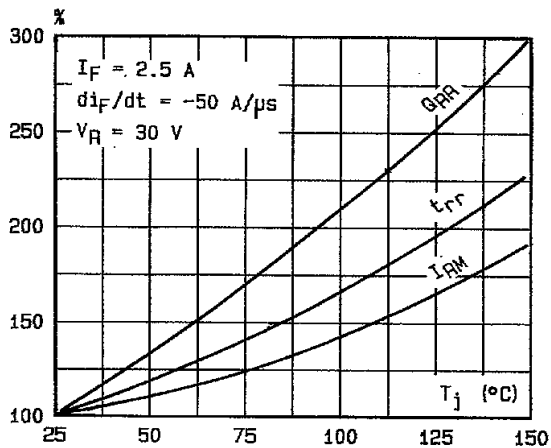


Fig.8 : Peak forward voltage versus di_F/dt .

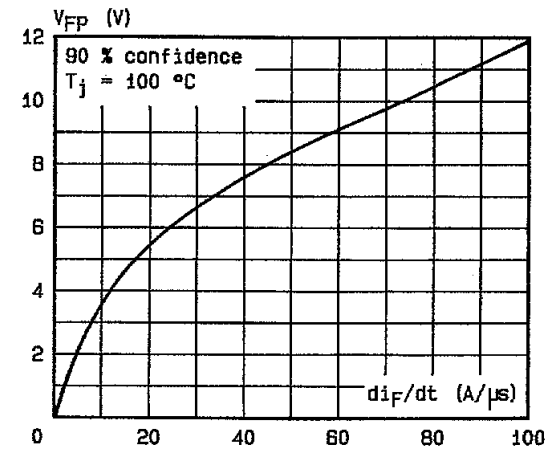


Fig.10 : Recovery charge versus di_F/dt . (typical values)

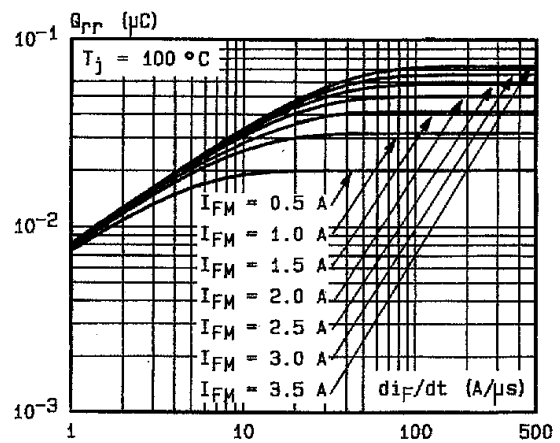
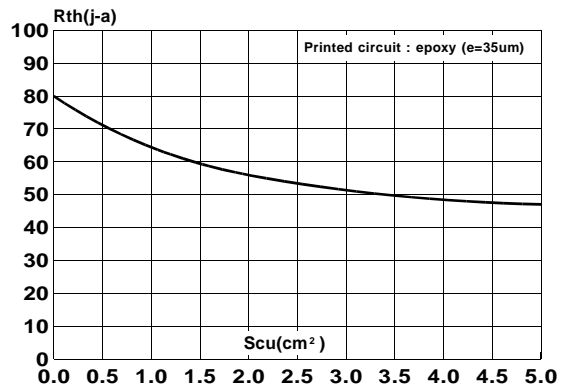
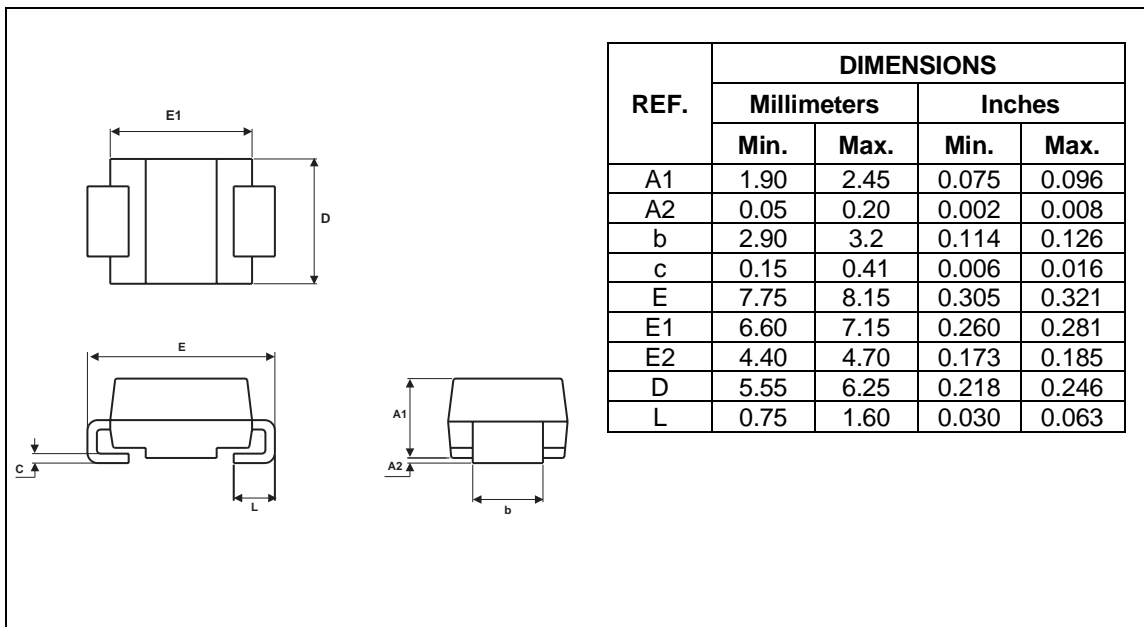


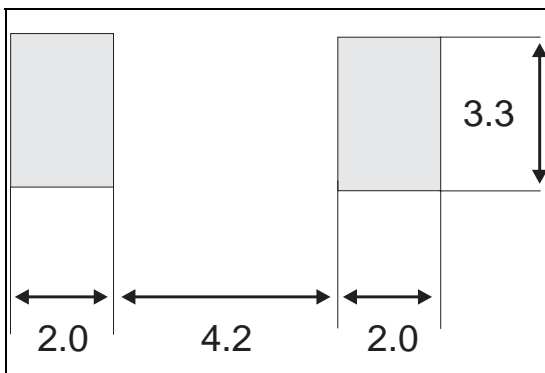
Fig.12 : Thermal resistance junction to ambient versus copper surface under each lead.



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