



SMBYT03

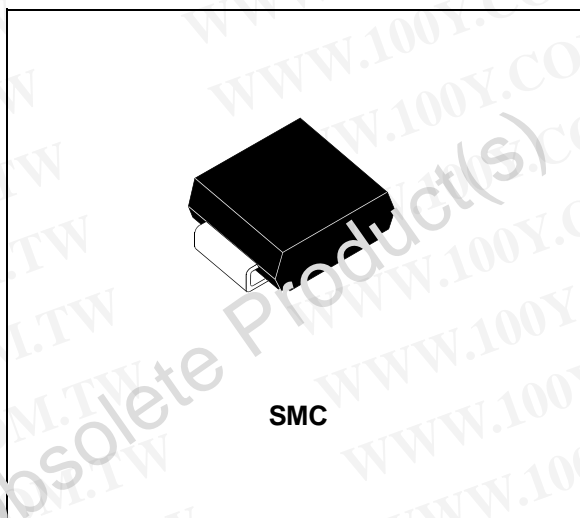
FAST RECOVERY RECTIFIER DIODES

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	$T_I=55^{\circ}C$ $\delta = 0.5$	A
I_{FSM}	Non repetitive surge peak forward current	$t_p=10ms$ sinusoidal	A
T_{stg} (j)	Storage and junction temperature range	- 40 to + 150 - 40 to + 150	$^{\circ}C$ $^{\circ}C$

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	$^{\circ}C/W$

SMBYT03

ELECTRICAL CHARACTERISTICS STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
V _F *	T _j = 25°C	I _F = 3 A			1.5	V
	T _j = 100°C			1.05	1.4	
I _R **	T _j = 25°C	V _R = V _{RRM}			10	μA
	T _j = 100°C			0.2	0.6	mA

Pulse test : * tp = 380 μs, duty cycle < 2 %

** tp = 5 ms, duty cycle < 2 %

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T _j = 25°C	I _F = 0.5A I _R = 1A			25	ns
		I _F = 1A V _R = 30V			60	

TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t _{IRM}	V _{CC} = 200V	I _F = 3A L _p ≤ 0.05μH		35	50	ns
I _{RM}	T _j = 100°C	di _F /dt = -50A/μs		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.

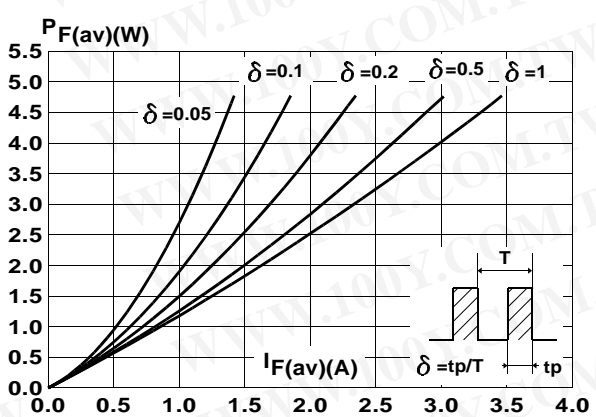


Fig.2 : Peak current versus form factor.

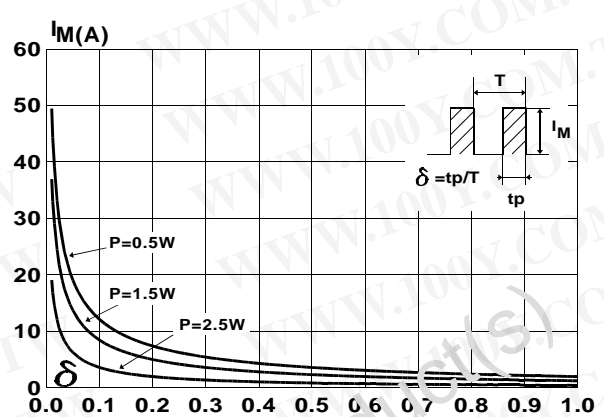


Fig.3 : Non repetitive surge peak forward current versus overload duration.

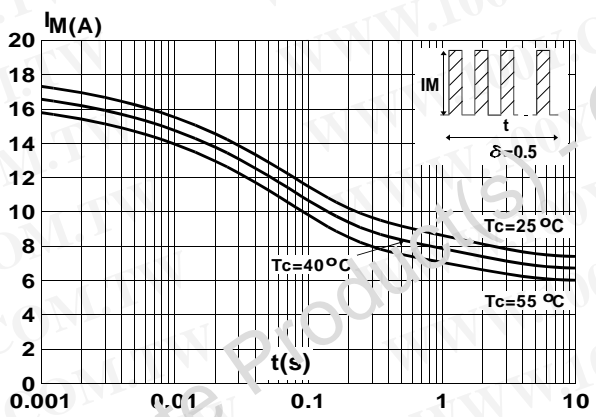


Fig.4 : Relative variation of thermal impedance junction to lead versus pulse duration.

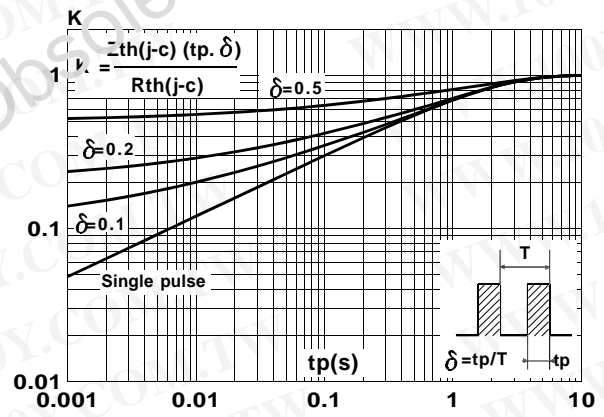


Fig.5 : Voltage drop versus forward current. (Maximum values)

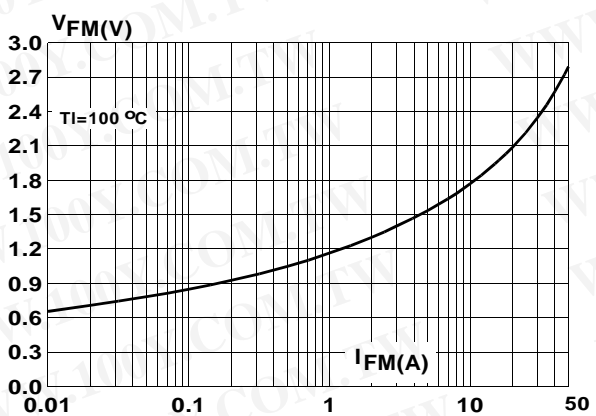
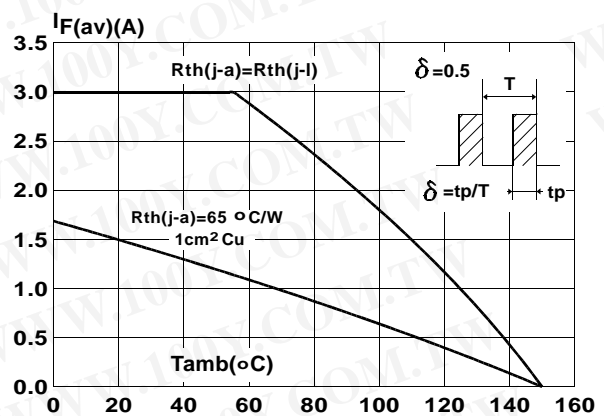


Fig.6 : Average current versus ambient temperature. (duty cycle : 0.5)



SMBYT03

Fig.7 : Recovery time versus di_F/dt .

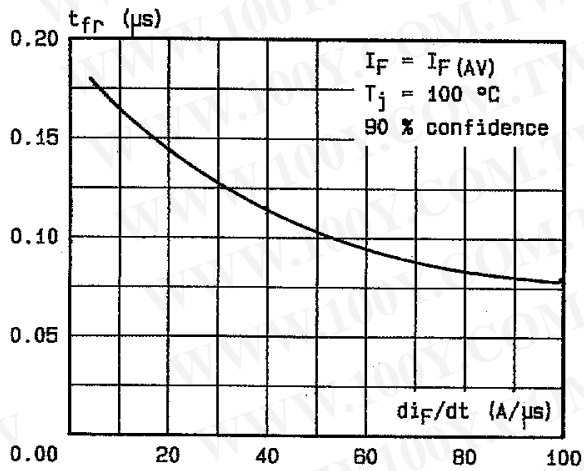


Fig.9 : Peak reverse current versus di_F/dt .

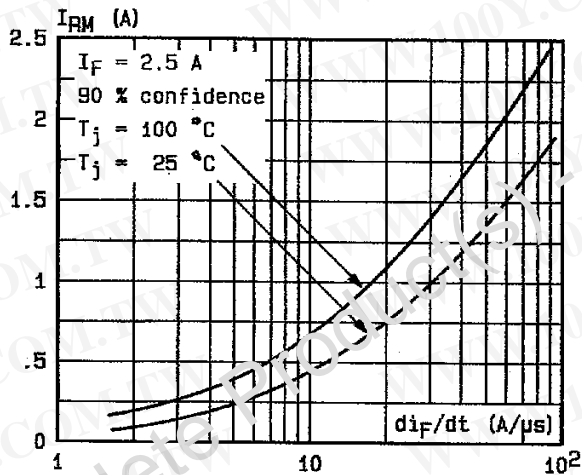


Fig.11 : Dynamic parameters versus junction temperature.

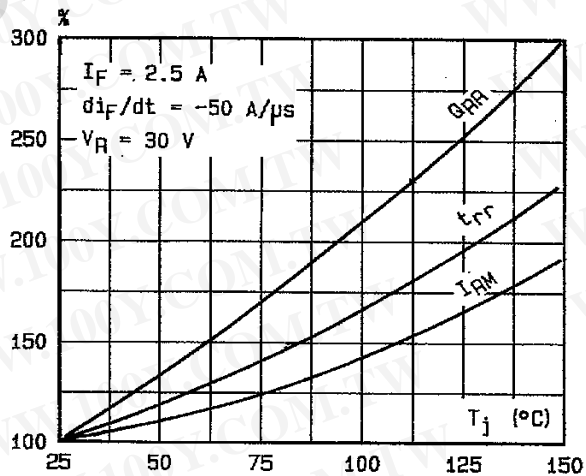


Fig.8 : Peak forward voltage versus di_F/dt .

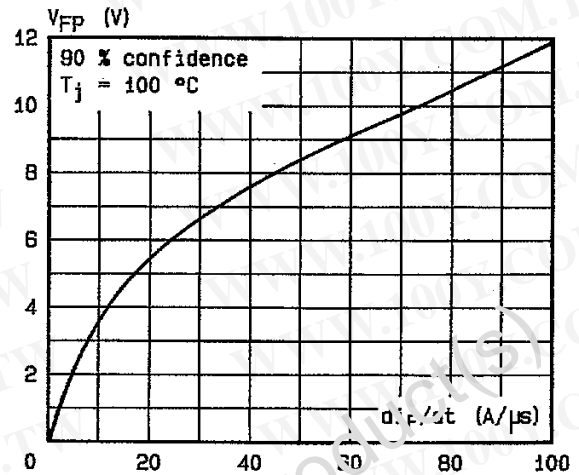


Fig.10 : Recovery charge versus di_F/dt . (typical values)

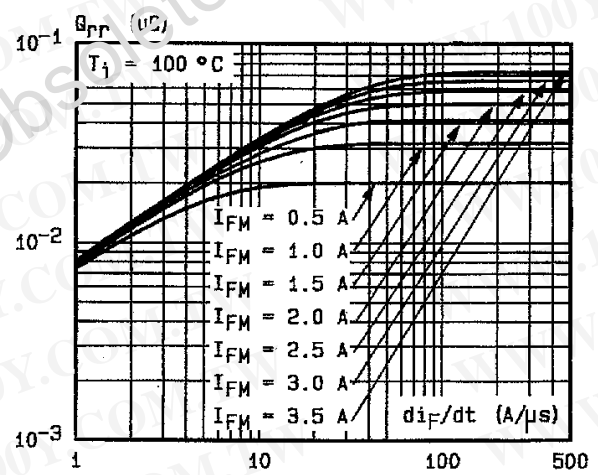
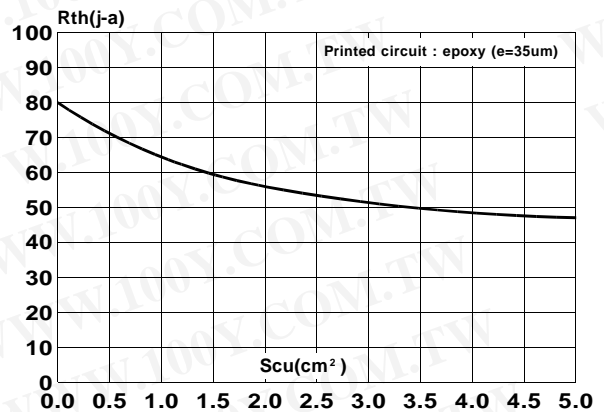
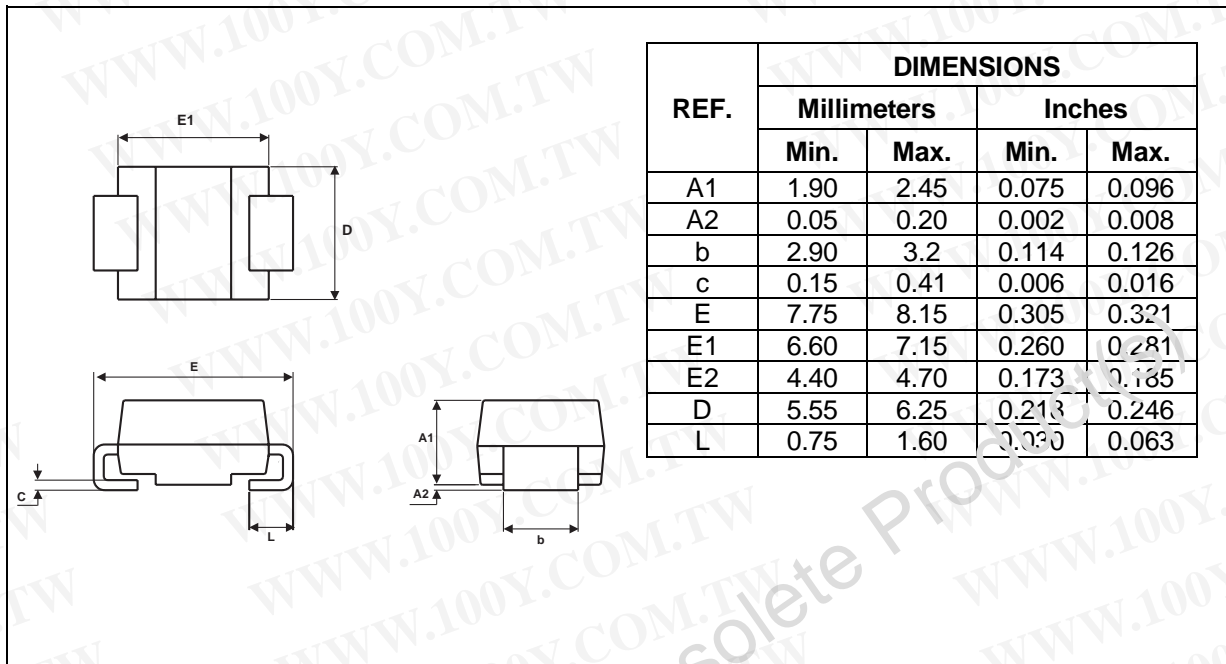


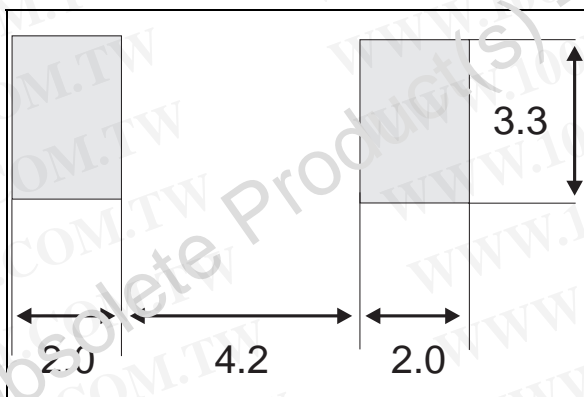
Fig.12 : Thermal resistance junction to ambient versus copper surface under each lead.



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