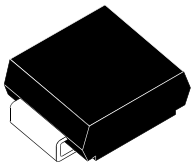
FAST RECOVERY RECTIFIER DIODES

SMBYT01

Vishaymas General Semiconductor

FEATURES

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



SMB
(Plastic)

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
$I_{F(RMS)}$	RMS forward current		10	A
$I_{F(AV)}$	Average forward current	Tl=110°C δ = 0.5	1	A
I_{FSM}	Non repetitive surge peak forward current	tp=10ms sinusoidal	30	A
T_{stg} Tj	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

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
V_F *	T_j = 25°C	I_F = 1 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			0.1	0.3	mA

Pulse test : * tp = 380 µs, δ < 2 %
** tp = 5 ms, δ < 2 %

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T_j = 25°C	I_F = 0.5A Irr = 0.25A I_R = 1A			25	ns
		I_F = 1A dI_F/dt = -15A/µs 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 = 1A Lp ≤ 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 :
$P = 1.1 \times I_{F(AV)} + 0.25 \times I_{F^2(RMS)}$

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

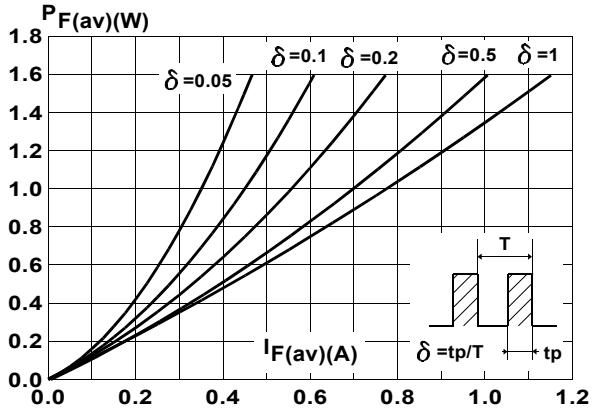


Fig. 2: Peak current versus form factor.

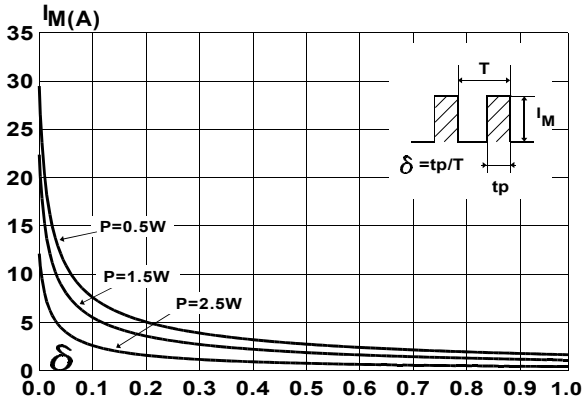


Fig. 3: Non repetitive surge peak forward current versus overload duration.

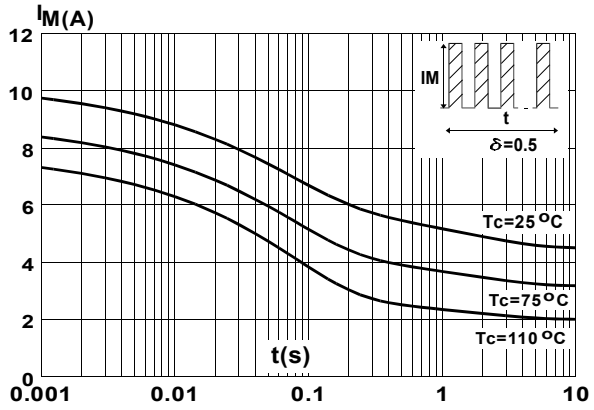


Fig. 4: Relative variation of thermal impedance junction to lead versus pulse duration.

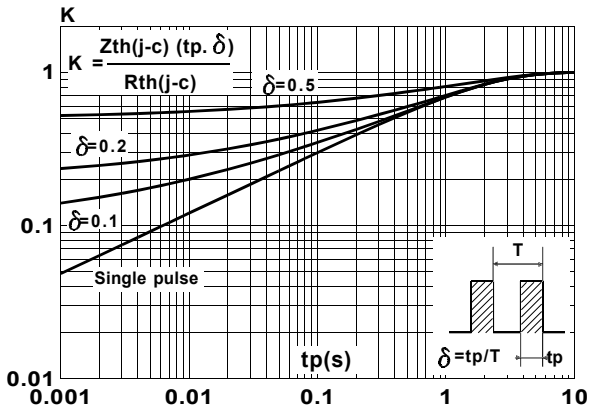


Fig. 5: Voltage drop versus forward current. (Maximum values)

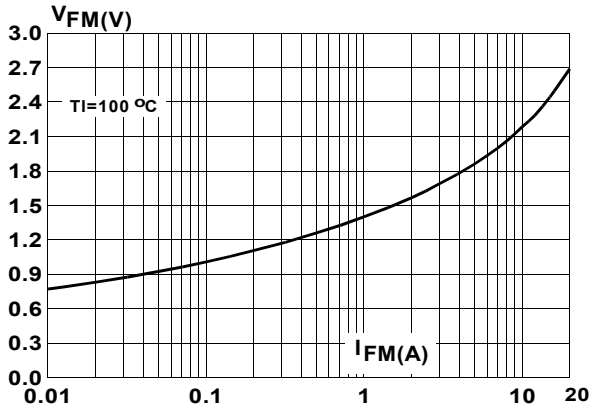


Fig. 6: Average current versus ambient temperature. (duty cycle : 0.5)

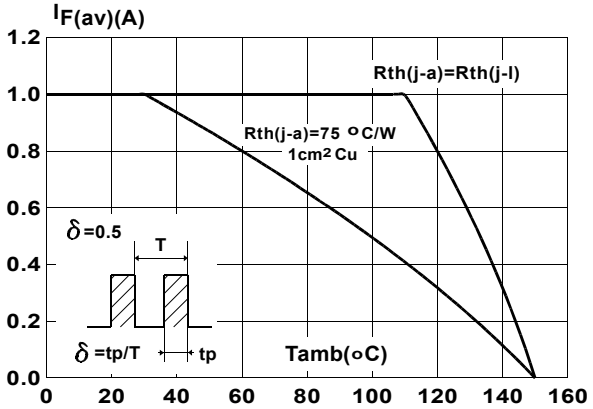


Fig. 7: Recovery time versus dI_F/dt.

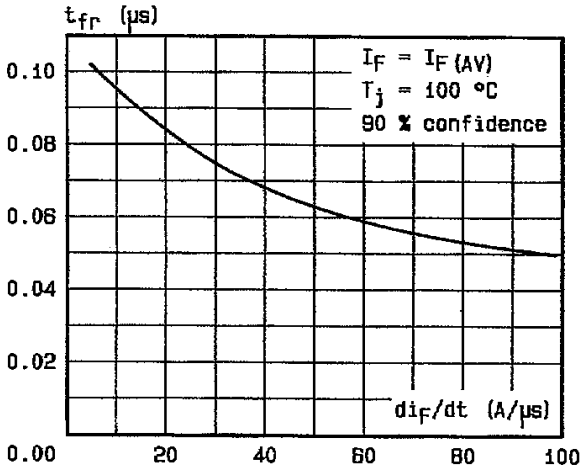


Fig. 8: Peak forward voltage versus dI_F/dt.

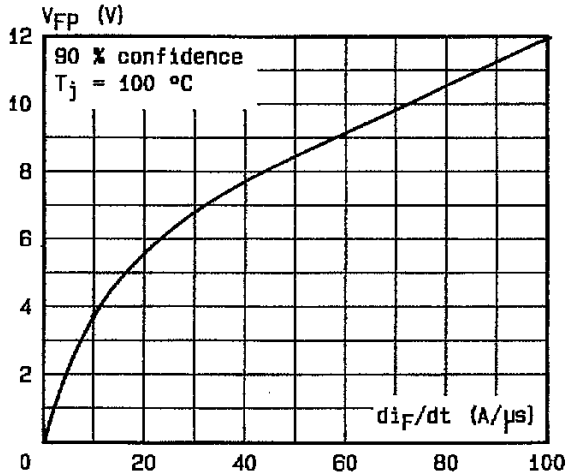


Fig. 9: Peak reverse current versus dIF/dt.

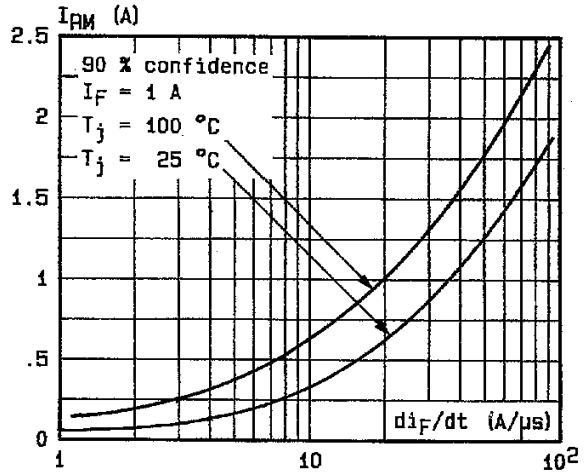


Fig. 10: Recovery charge versus dIF/dt. (typical values)

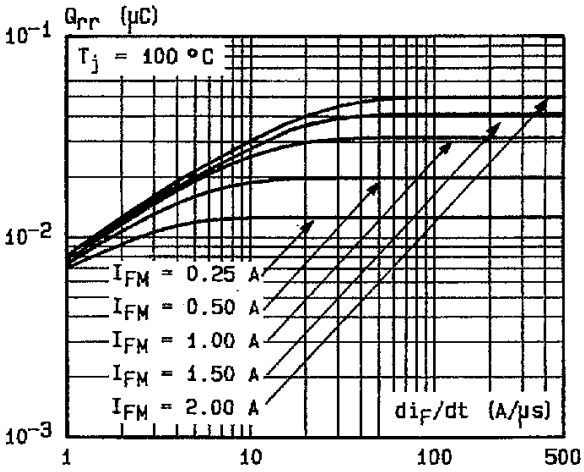


Fig. 11: Dynamic parameters versus junction temperature.

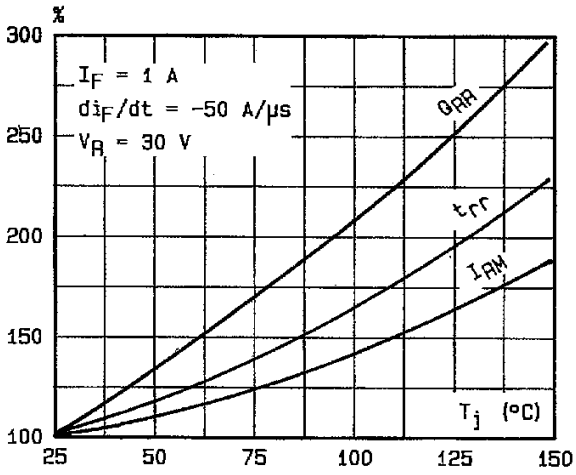
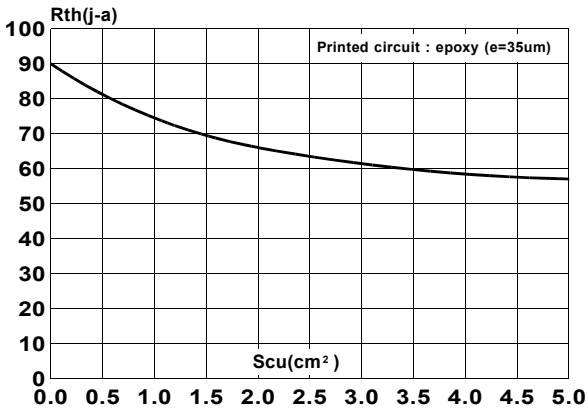
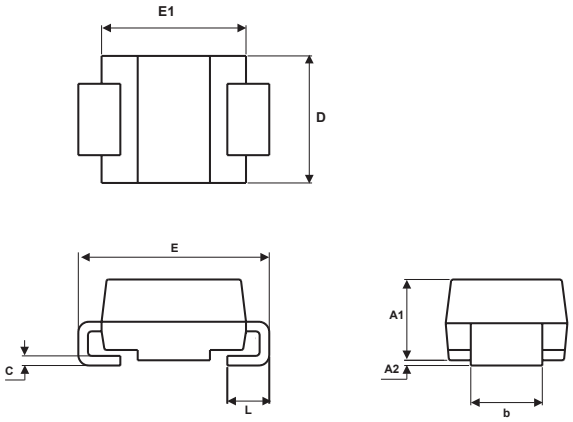


Fig. 12: Thermal resistance junction to ambient versus copper surface under each lead.

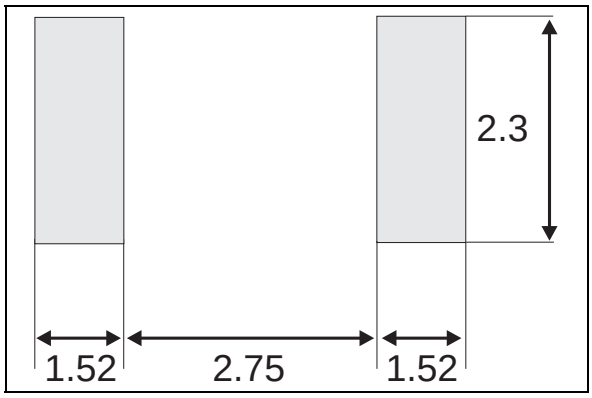


PACKAGE MECHANICAL DATA
SMB (Plastic)



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