SGS-THOMSON MICROELECTRONICS

BYT 03-200→400

FAST RECOVERY RECTIFIER DIODES

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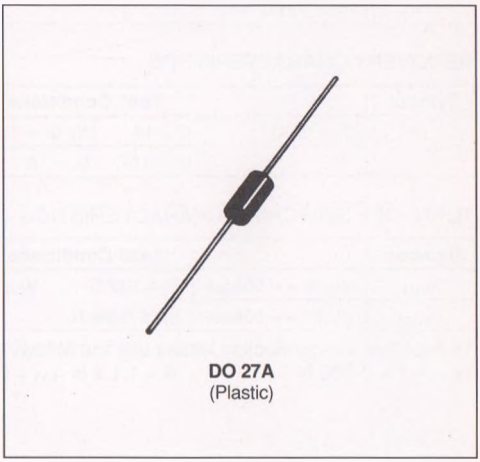
- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING



DO 27A
(Plastic)

SUITABLE APPLICATIONS
- FREE WHEELING DIODE IN CONVERTERS AND MOTOR CONTROL CIRCUITS
- RECTIFIERS IN S.M.P.S.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
I_{FRM}	Repetitive Peak Forward Current	$t_p \leq 10\mu s$	60	A
$I_{F(AV)}$	Average Forward Current *	$T_a = 65°C$ $\delta = 0.5$	3	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	60	A
P	Power Dissipation *	$T_a = 65°C$	4.2	W
T_{stg} T_j	Storage and Junction Temperature Range		– 40 to + 150	°C

Symbol	Parameter	BYT 03-			Unit
		200	300	400	
V_{RRM}	Repetitive Peak Reverse Voltage	200	300	400	V
V_{RSM}	Non Repetitive Peak Reverse Voltage	220	330	440	V

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th\ (j-a)}$	Junction-ambient*	20	°C/W

* On infinite heatsink with 10mm lead lengh

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R	T_j = 25°C	$V_R = V_{RRM}$			20	µA
	T_j = 100°C				0.5	mA
V_F	T_j = 25°C	I_F = 3A			1.5	V
	T_j = 100°C				1.4	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{rr}	T_j = 25°C	I_F = 1A di_F/dt = – 15A/µs V_R = 30V			55	ns
		I_F = 0.5A I_R = 1A I_{rr} = 0.25A			25	

TURN -OFF SWITCHING CHARACTERISTICS - Without Series Inductance

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	di_F/dt = – 50A/µs	T_j = 100°C V_{CC} = 200V I_F = 3A		35	50	ns
I_{RM}	di_F/dt = – 50A/µs	$L_P \leq$ 0.05µH		1.5	2	A

To evaluate the conduction losses use the following equations :

$V_F = 1.1 + 0.050\ I_F$ $\qquad P = 1.1 \times I_{F\,(AV)} + 0.050\ I_F{}^2{}_{(RMS)}$

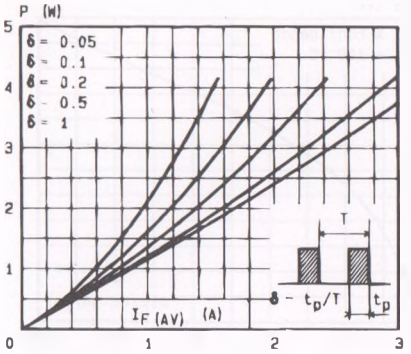


Fig.1 - Maximum average power dissipation versus average forward current.

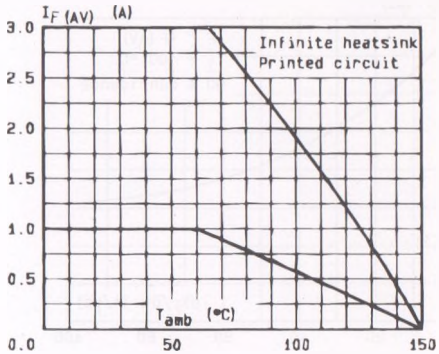


Fig.2 - Average forward current versus ambient temperature.

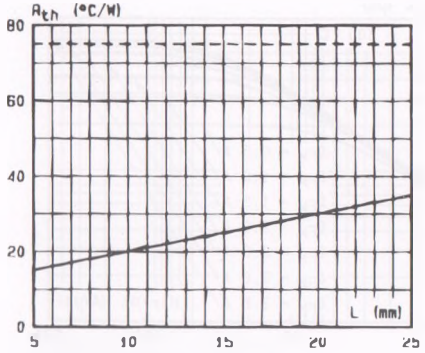
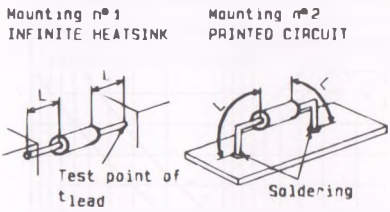


Fig.3 Thermal resistance versus lead length.



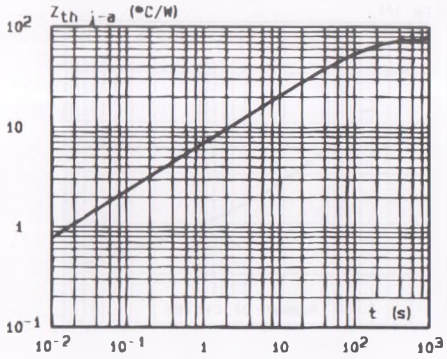


Fig.4 - Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).

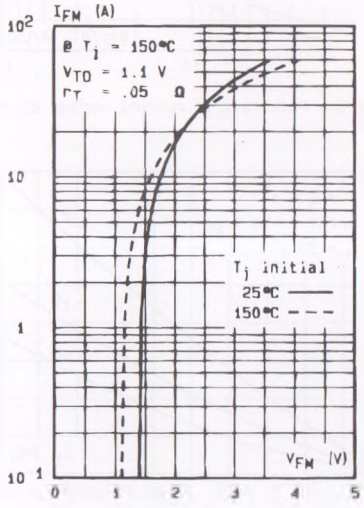


Fig.5 - Peak forward current versus peak forward voltage drop (maximum values).

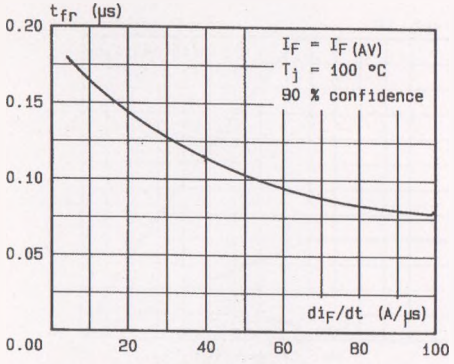


Fig.7 - Recovery time versus di_F/dt.

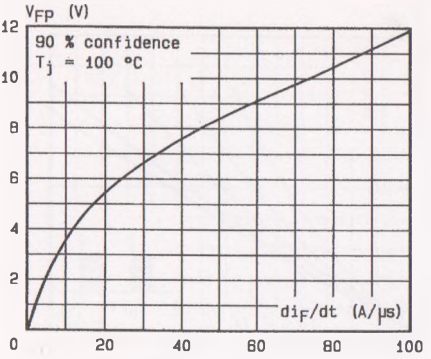


Fig.8 - Peak forward voltage versus di_F/dt.

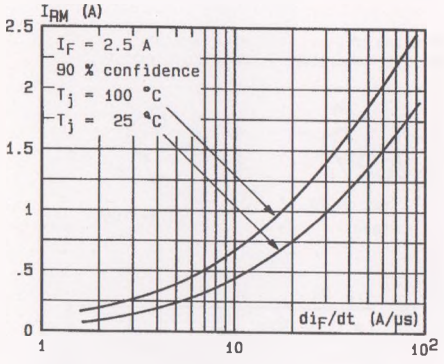


Fig.9 - Peak reverse current versus di_F/dt.

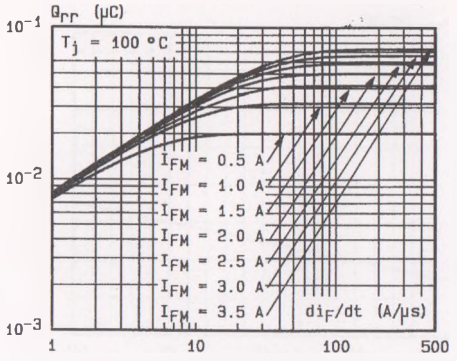


Fig.10 - Recovered charge versus di_F/dt (typical values).

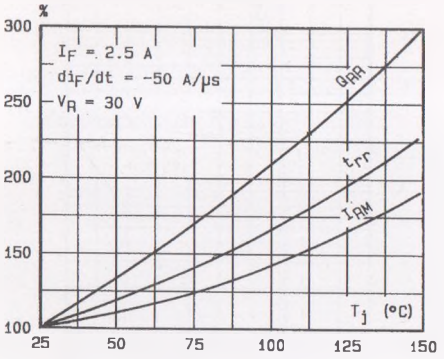


Fig.11 - Dynamic parameters versus junction temperature.

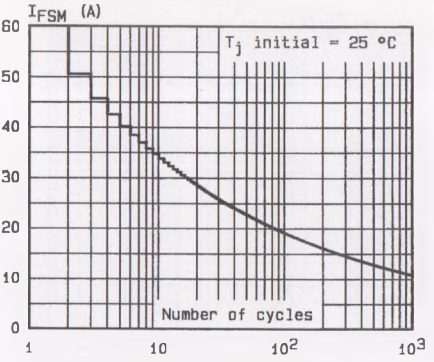


Fig.12 - Non repetitive surge peak current versus number of cycles