SGS-THOMSON
MICROELECTRONICS

BYW 100-50 → 200

HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

- VERY LOW CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD AND REVERSE RECOVERY TIMES
- HIGH SURGE CURRENT
- THE SPECIFICATIONS AND CURVES ENABLE THE DETERMINATION OF t_{rr} AND I_{RM} AT 100°C UNDER USERS CONDITIONS

F 126
(Plastic)

DESCRIPTION

Low voltage drop rectifiers suited for switching mode base drive and transistor circuits

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
I_{FRM}	Repetitive Peak Forward Current	$t_p \le 20\mu s$	50	A
$I_{F(AV)}$	Average Forward Current*	$T_a = 90°C$ $\delta = 0.5$	1.5	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	50	A
P_{tot}	Power Dissipation*	$T_a = 90°C$	1.3	W
T_{stg} T_j	Storage and Junction Temperature Range		– 40 to 150	°C
T_L	Maximum Lead Temperature for Soldering during 10s at 4mm from Case		230	°C

Symbol	Parameter	BYW 100–				Unit
		50	100	150	200	
V_{RRM}	Repetitive Peak Reverse Voltage	50	100	150	200	V
V_{RSM}	Non Repetitive Peak Reverse Voltage	55	110	165	220	V

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th\ (j-a)}$	Junction-ambient*	45	°C/W

* On infinite heatsink with 10mm lead length

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R	T_j = 25°C	$V_R = V_{RRM}$			10	µA
	T_j = 100°C				0.5	mA
V_F	T_j = 25°C	I_F = 4.5A			1.2	V
	T_j = 100°C	I_F = 1.5A			0.85	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t_{rr}	T_j = 25°C V_R = 30V	I_F = 1A See figure 10	di_F/dt = – 50A/µs			35	ns
Q_{rr}	T_j = 25°C $V_R \leq$ 30V	I_F = 1A	di_F/dt = – 20A/µs		10		nC
t_{fr}	T_j = 25°C Measured at 1.1 x V_F	I_F = 1A	t_r = 10ns		30		ns
V_{FP}	T_j = 25°C	I_F = 1A	t_r = 10ns		5		V

To evaluate the conduction losses use the following equations :

$V_F = 0.66 + 0.075\ I_F$

$P = 0.06 \times I_{F(AV)} + 0.075\ I_F{}^2{}_{(RMS)}$

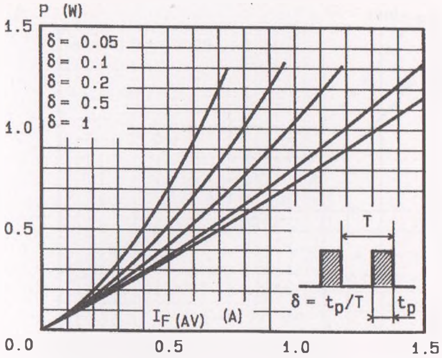


Fig.1 - Maximum average power dissipation versus average forward current.

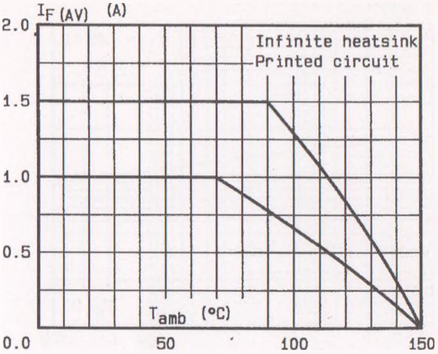


Fig.2 - Average forward current versus ambient temperature.

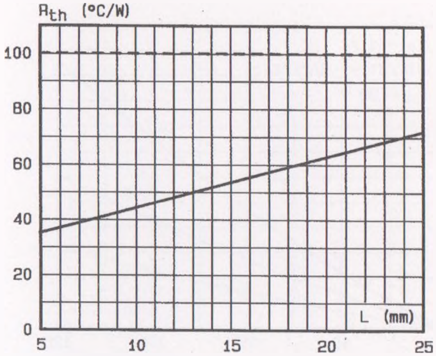
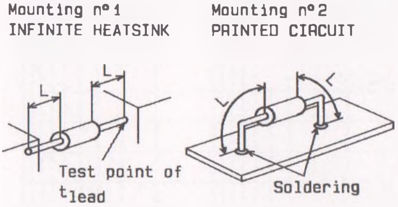


Fig.3 - Thermal resistance versus lead length.


Mounting n°1
INFINITE HEATSINK

Mounting n°2
PRINTED CIRCUIT

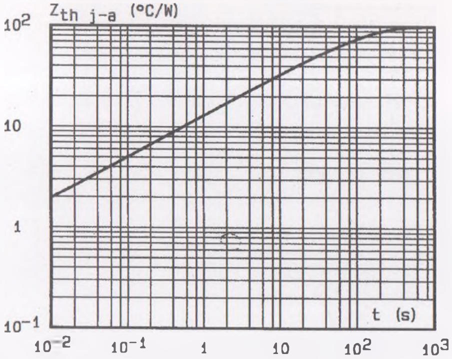


Fig.4 - Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).

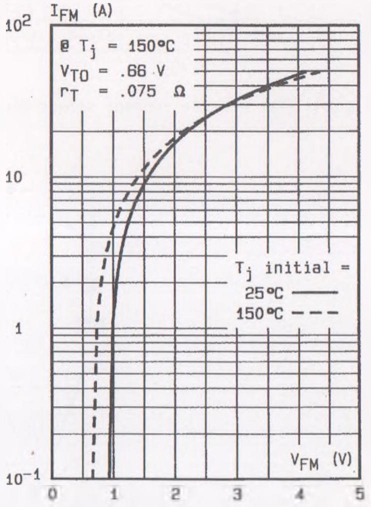


Fig.5 - Peak forward current versus peak forward voltage drop (maximum values).

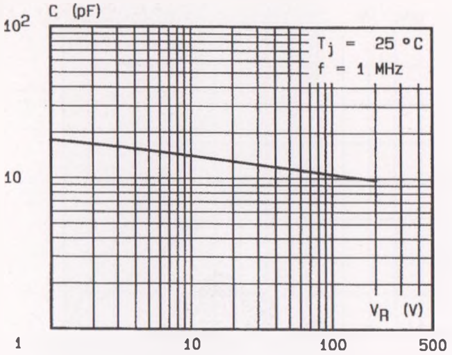


Fig.6 - Capacitance versus reverse voltage applied.

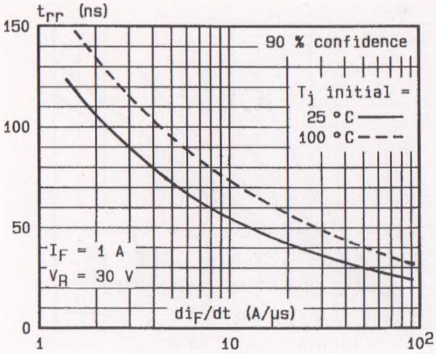


Fig.7 - Recovery time versus diF/dt.

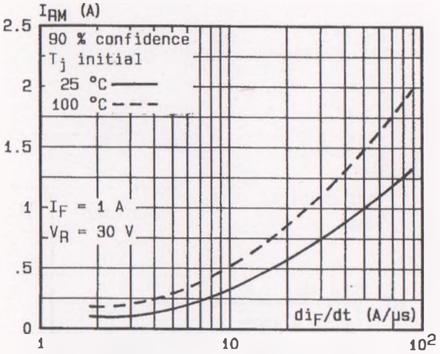


Fig.8 - Peak reverse current versus diF/dt.

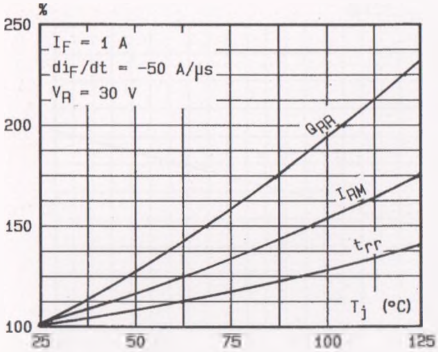


Fig.9 - Dynamic parameters versus junction temperature.

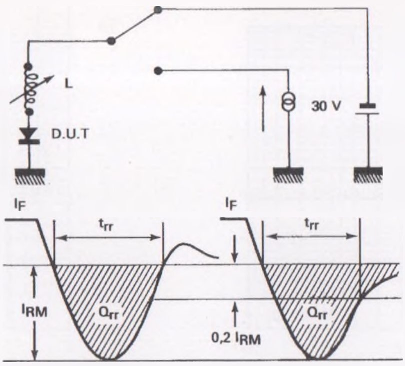


Fig.10 - Measurement of trr (Fig.7) and IRM (Fig.8).