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 and rectifier suited for switching mode base drive and transistor circuits.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
I_{FRM}	Repetive Peak Forward Current	$t_p \leq 20\mu s$	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 - 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:

$V_F = 0.66 + 0.075\ I_F$

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

Figure 1. Maximum average power dissipation versus average forward current.

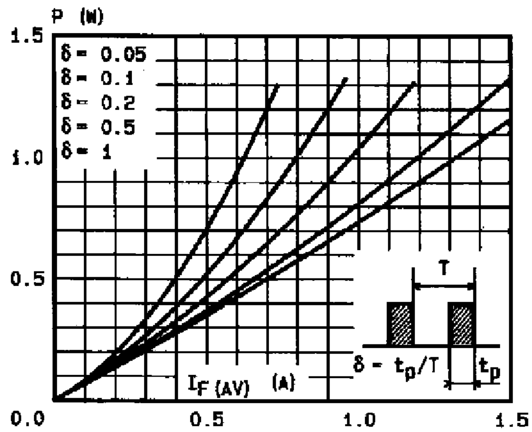


Figure 2. Average forward current versus ambient temperature.

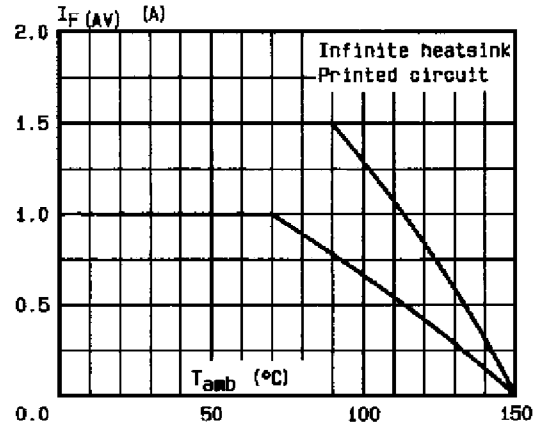
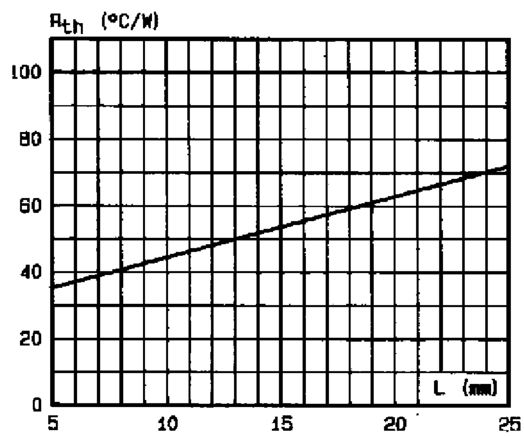


Figure 3. Thermal resistance versus lead length.



Mounting n°1
INFINITE HEATSINK

Mounting n°2
PRINTED CIRCUIT

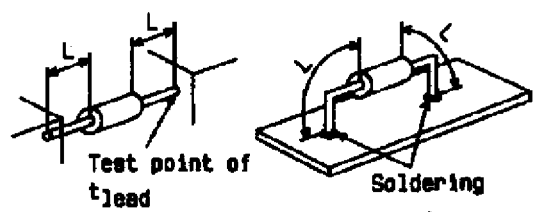


Figure 4. Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).

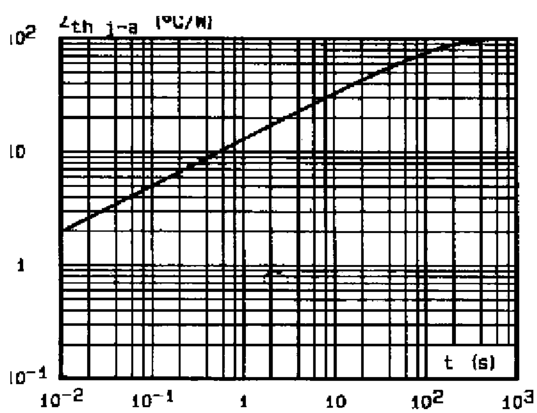


Figure 5. Peak forward current versus peak forward voltage drop (maximum values).

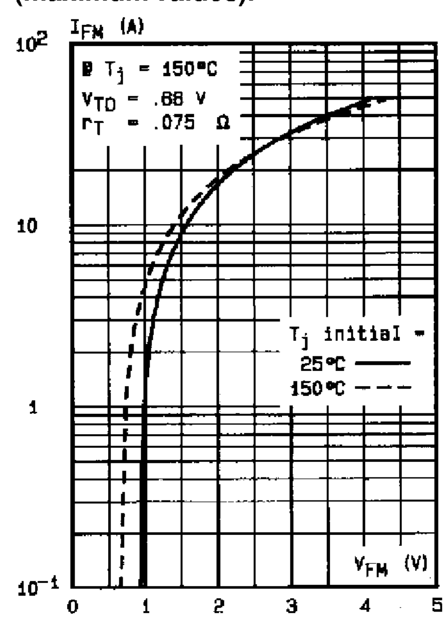


Figure 6. Capacitance versus reverse voltage applied.

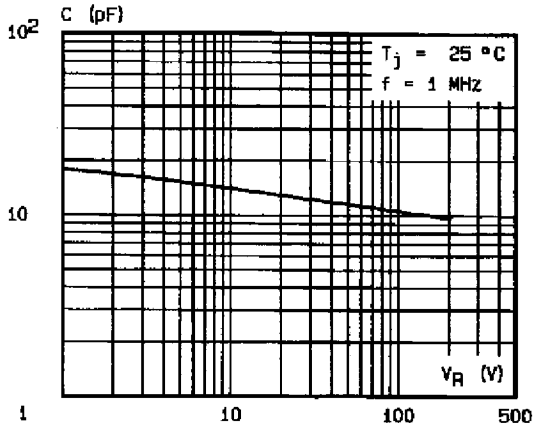


Figure 7. Recovery time versus di_F/dt.

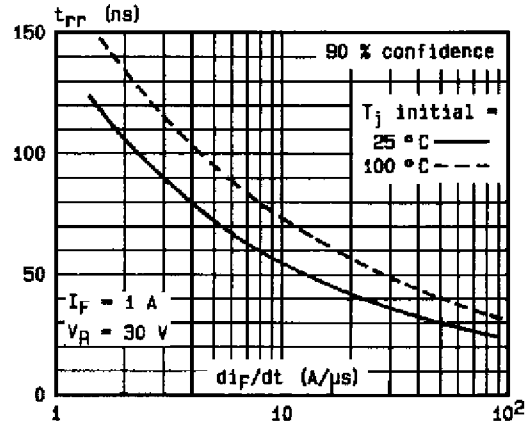


Figure 8. Peak reverse current versus di_F/dt.

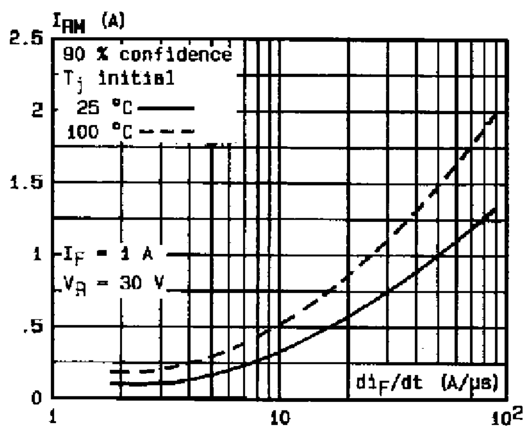


Figure 9. Dynamic parameters versus junction temperature.

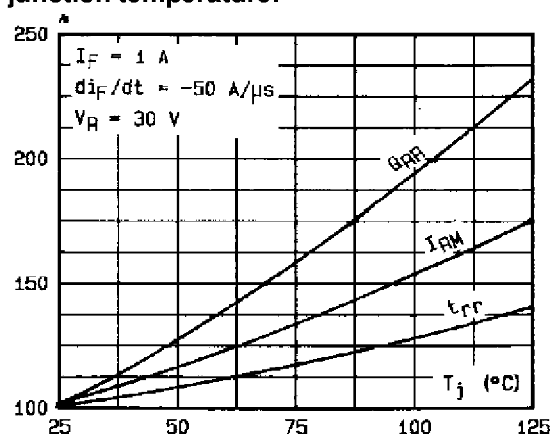
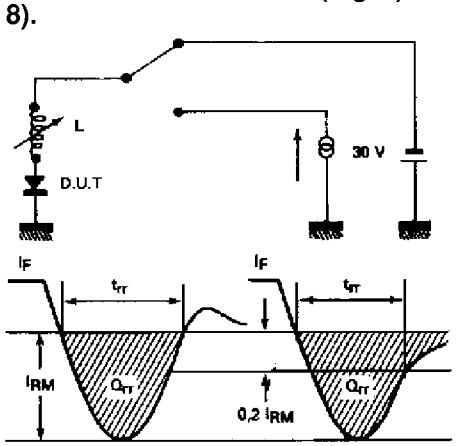
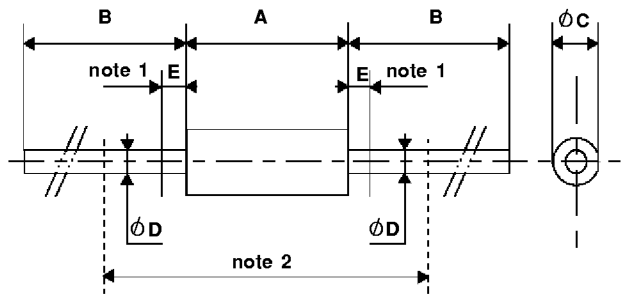


Figure 10. Measurement of t_{rr} (Fig. 7) and I_{RM} (Fig. 8).



PACKAGE MECHANICAL DATA

F 126 (Plastic)



REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A	6.05	6.35	0.238	0.250	1 - The lead diameter ∅ D is not controlled over zone E
B	26		1.024		
∅ C	2.95	3.05	0.116	0.120	2 - The minimum axial lengh within which the device may be placed with its leads bent at right angles is 0.59”(15 mm)
∅ D	0.76	0.86	0.029	0.034	
E		1.27		0.050	

Cooling method: by convection (method A)
Marking: type number
Weight: 0.4g