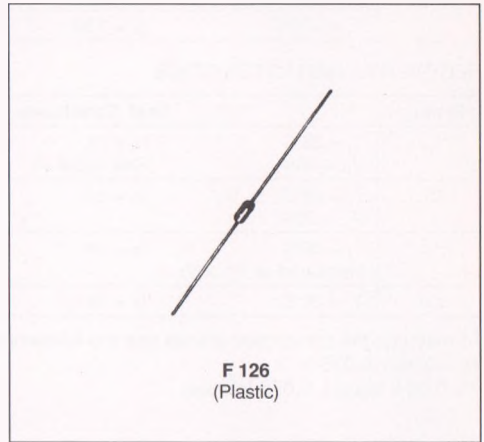


## HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

- 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  $I_{FRM}$  AT 100°C UNDER USERS CONDITIONS



### 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	$t_p \leq 20\mu s$	50	A
$I_F (AV)$	Average Forward Current*	$T_a = 90^\circ C$ $\delta = 0.5$	1.5	A
$I_{FSM}$	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	50	A
$P_{Tot}$	Power Dissipation*	$T_a = 90^\circ C$	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 <sub>R</sub>	T <sub>j</sub> = 25°C	V <sub>R</sub> = V <sub>RRM</sub>			10	μA
	T <sub>j</sub> = 100°C				0.5	mA
V <sub>F</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 4.5A			1.2	V
	T <sub>j</sub> = 100°C	I <sub>F</sub> = 1.5A			0.85	

**RECOVERY CHARACTERISTICS**

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t <sub>rr</sub>	T <sub>j</sub> = 25°C V <sub>R</sub> = 30V	I <sub>F</sub> = 1A See figure 10	di <sub>F</sub> /dt = - 50A/μs			35	ns
Q <sub>rr</sub>	T <sub>j</sub> = 25°C V <sub>R</sub> ≤ 30V	I <sub>F</sub> = 1A	di <sub>F</sub> /dt = - 20A/μs		10		nC
t <sub>fr</sub>	T <sub>j</sub> = 25°C Measured at 1.1 x V <sub>F</sub>	I <sub>F</sub> = 1A	t <sub>r</sub> = 10ns		30		ns
V <sub>FP</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 1A	t <sub>r</sub> = 10ns		5		V

To evaluate the conduction losses use the following equations :

$$V_F = 0.66 + 0.075 I_F$$

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

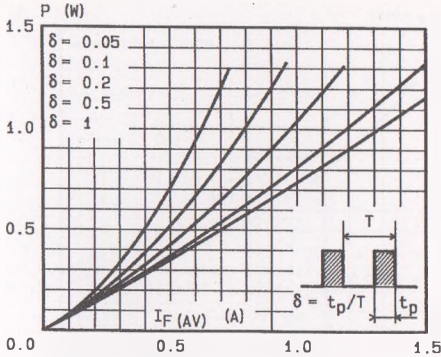


Fig.1 - Maximum average power dissipation versus average forward current.

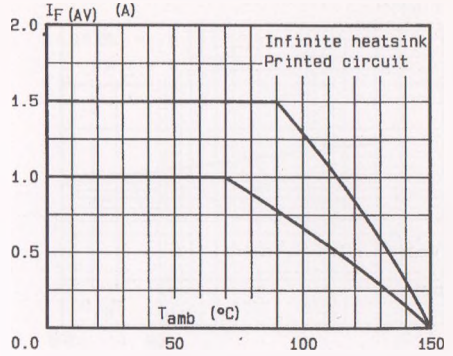


Fig.2 - Average forward current versus ambient temperature.

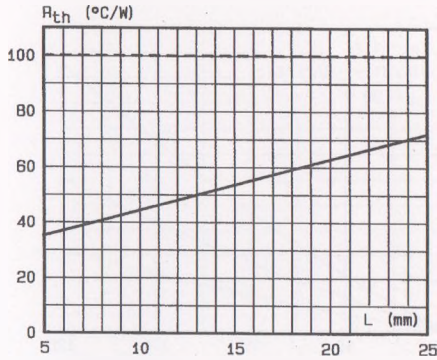


Fig.3 - Thermal resistance versus lead length.

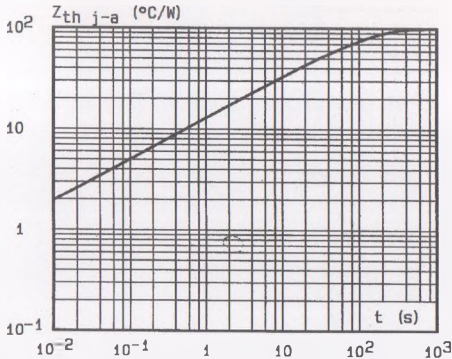


Fig.4 - Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).

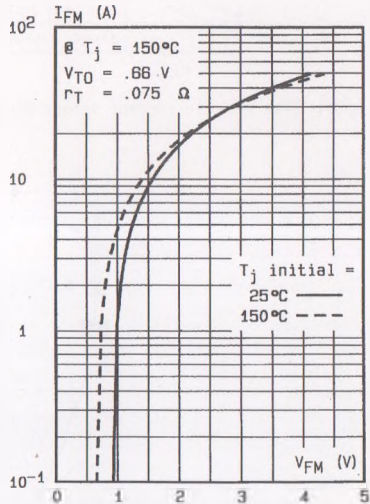
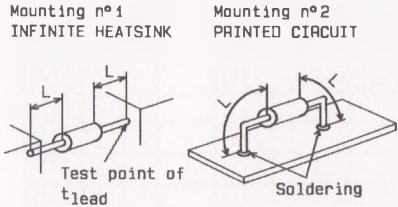


Fig.5 - Peak forward current versus peak forward voltage drop (maximum values).

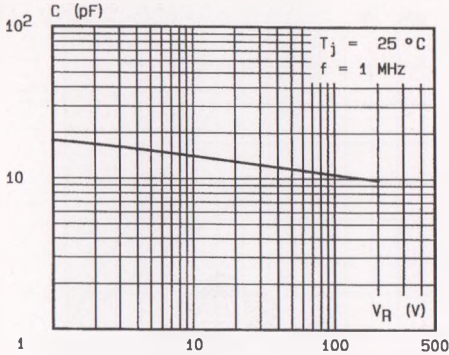


Fig. 6 - Capacitance versus reverse voltage applied.

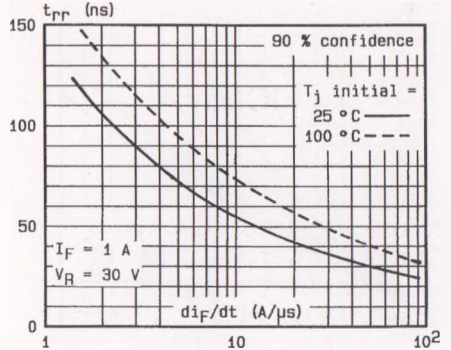


Fig. 7 - Recovery time versus  $di_F/dt$ .

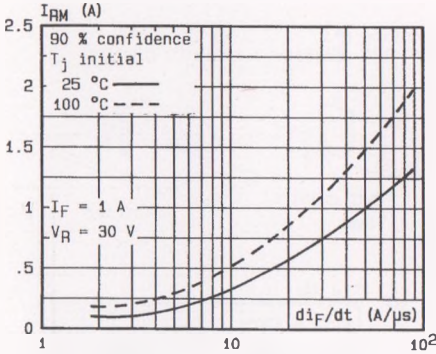


Fig. 8 - Peak reverse current versus  $di_F/dt$ .

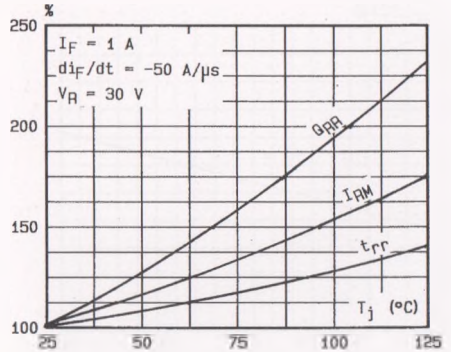


Fig. 9 - Dynamic parameters versus junction temperature.

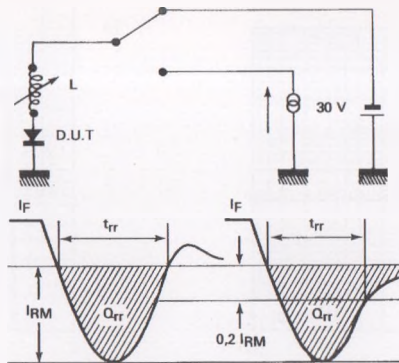


Fig. 10 - Measurement of  $t_{rr}$  (Fig. 7) and  $I_{RM}$  (Fig. 8).