

ULTRA FAST RECOVERY RECTIFIER DIODES

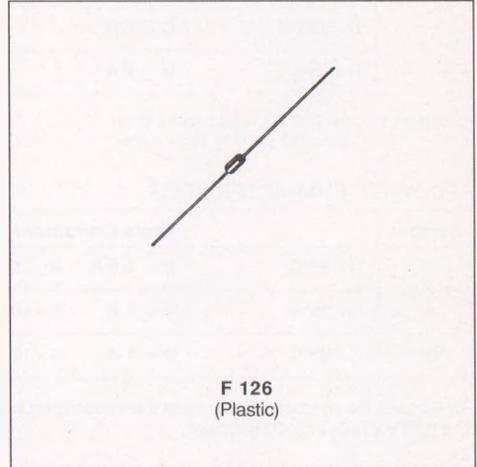
FEATURES

- SUITED FOR SMPS
- LOW LOSSES
- LOW FORWARD AND REVERSE RECOVERY TIME
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY

DESCRIPTION

Low cost single chip rectifier suited for switchmode power supply and high frequency DC to DC converters.

Packaged in F 126, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{F(AV)}$	Average Forward Current	$T_I = 60^\circ\text{C}$ $\delta = 0.5$	3	A
I_{FSM}	Surge Non Repetitive Forward Current	$T_p = 10 \text{ ms}$ Sinusoidal	30	A
T_{stg} T_j	Storage and Junction Temperature Range		- 65 to + 150 - 65 to + 150	$^\circ\text{C}$

Symbol	Parameter	STPR		Unit
		310	320	
V_{RRM}	Repetitive Peak Reverse Voltage	100	200	V

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-l)^*}$	Junction-leads	25	$^\circ\text{C/W}$

* ou infinite heatsink with $L = 5\text{mm}$ lead length.

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Tests 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 = 125°C	I _F = 3 A				0.99	V
	T _j = 125°C	I _F = 6 A				1.20	
	T _j = 25°C	I _F = 6 A				1.25	

Pulse test : * t_p = 5 ms, duty cycle < 2 %

** t_p = 380 μs, duty cycle < 2%

RECOVERY CHARACTERISTICS

Symbol	Tests Conditions			Min.	Typ.	Max.	Unit
t _{rr}	T _j = 25°C	I _F = 0.5 A	I _R = 1 A	I _{rr} = 0.25 A		30	ns
t _{fr}	T _j = 25°C	I _F = 1 A	t _r = 10 ns	V _{FRR} = 1.1 x V _F		20	ns
V _{FP}	T _j = 25°C	I _F = 1 A	t _r = 10 ns			3	V

To evaluate the conduction losses use the following equation :

$$P = 0.78 \times I_F(AV) + 0.070 I_F^2(RMS)$$

Fig.1 : Average forward power dissipation versus average forward current.

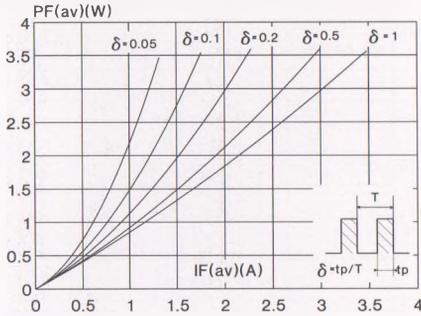


Fig.2 : Peak current versus form factor.

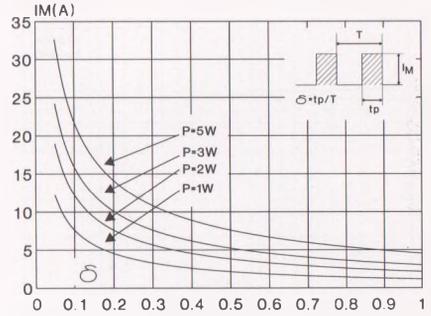


Fig.3 : Average current versus ambient temperature. (duty cycle : 0.5)
 * circuit board e (Cu) = 35μm, S (cu) = 12mm²
 L_(LEADS) = 20mm

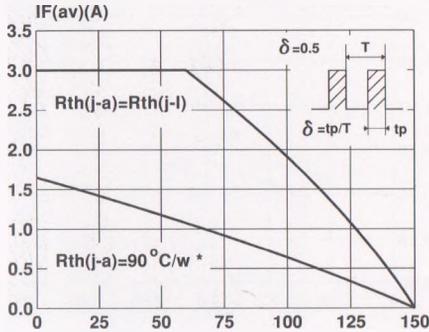


Fig.4 : Non repetitive surge peak forward current versus overload duration. (Maximum values)

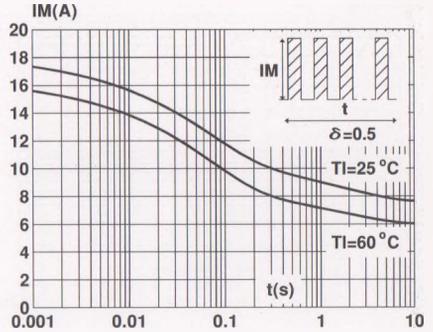


Fig.5 : Relative variation of thermal transient impedance junction to case versus pulse duration.

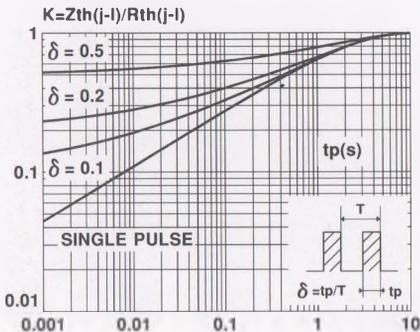


Fig.6 : Forward voltage drop versus forward current. (Maximum values)

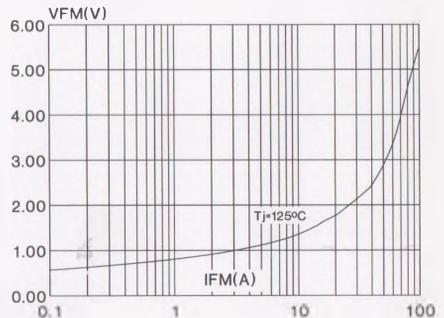


Fig.7 : Junction capacitance versus reverse voltage applied. (Typical values)

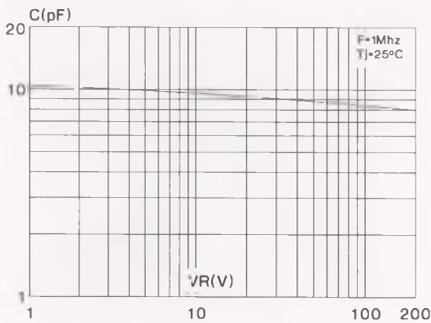


Fig.8 : Recovery charge versus dI/dt .

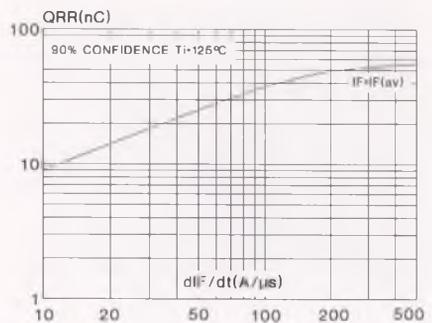


Fig.9 : Peak reverse current versus dI/dt .

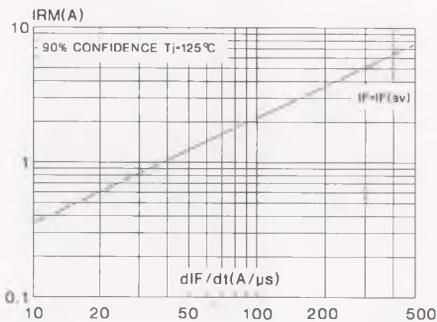


Fig.10 : Dynamic parameters versus junction temperature.

