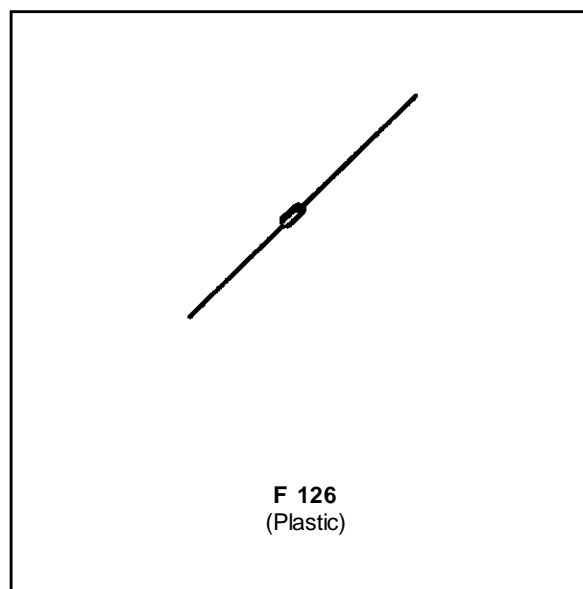

ULTRA FAST RECOVERY RECTIFIER DIODES

- 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°C δ = 0.5	3	A
I _{FSM}	Surge Non Repetitive Forward Current	T _p = 10 ms Sinusoidal	30	A
T _{stg} T _J	Storage and Junction Temperature Range		- 65 to + 150 - 65 to + 150	°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	°C/W

* ou infinite heatsink with L = 5mm lead length.

STPR310/STPR320

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			10	μA
	$T_j = 100^\circ\text{C}$				0.5	mA
V_F^{**}	$T_j = 125^\circ\text{C}$	$I_F = 3\text{ A}$			0.99	V
	$T_j = 125^\circ\text{C}$	$I_F = 6\text{ A}$			1.20	
	$T_j = 25^\circ\text{C}$	$I_F = 6\text{ A}$			1.25	

Pulse test : * $t_p = 5\text{ ms}$, duty cycle < 2 %

** $t_p = 380\text{ }\mu\text{s}$, duty cycle < 2%

RECOVERY CHARACTERISTICS

Symbol	Tests Conditions			Min.	Typ.	Max.	Unit
t_{rr}	$T_j = 25^\circ\text{C}$	$I_F = 0.5\text{ A}$	$I_R = 1\text{ A}$ $I_{rr} = 0.25\text{ A}$			30	ns
t_{fr}	$T_j = 25^\circ\text{C}$	$I_F = 1\text{ A}$	$t_r = 10\text{ ns}$ $V_{FR} = 1.1 \times V_F$		20		ns
V_{FP}	$T_j = 25^\circ\text{C}$	$I_F = 1\text{ A}$	$t_r = 10\text{ ns}$		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.

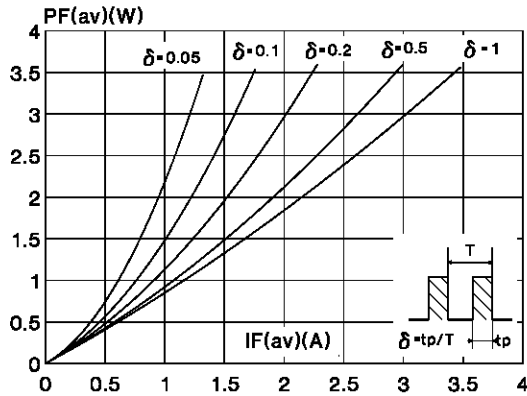


Fig.2 : Peak current versus form factor.

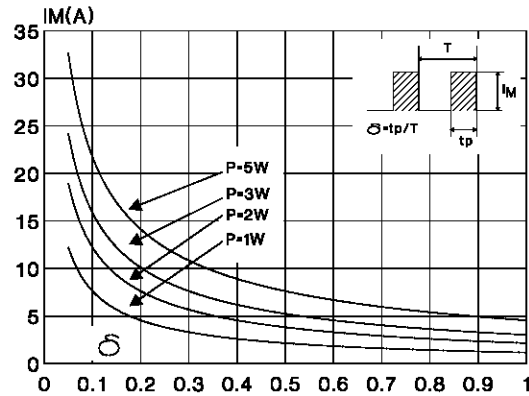


Fig.3 : Average current versus ambient temperature. (duty cycle : 0.5)
 * circuit board e (Cu) = 35μm, S (cu) = 12mm²
 L(LEADS)= 20mm

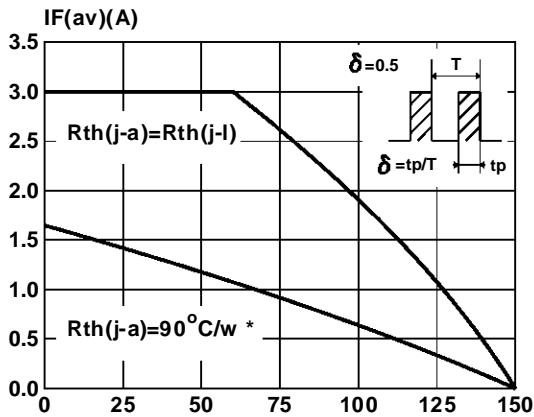


Fig.4 : Non repetitive surge peak forward current versus overload duration. (Maximum values)

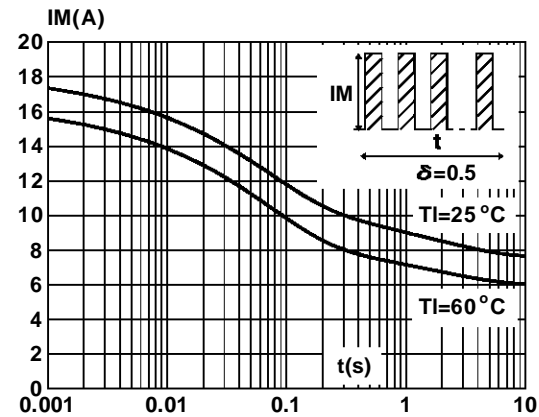


Fig.5 : Relative variation of thermal transient impedance junction to case versus pulse duration.

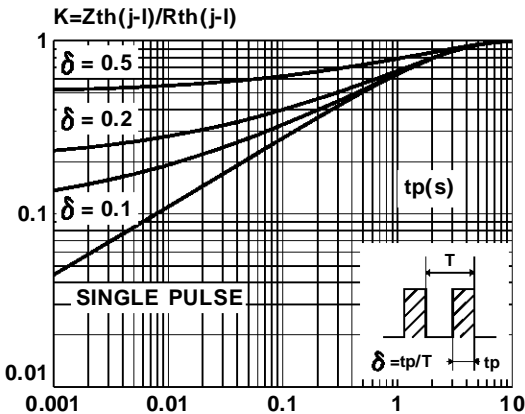
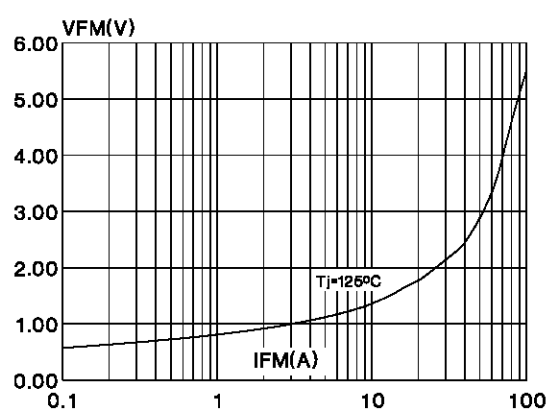


Fig.6 : Forward voltage drop versus forward current. (Maximum values)



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

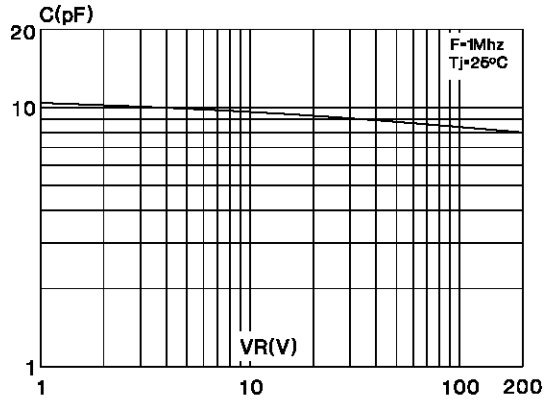


Fig.8 : Recovery charge versus dI_F/dt .

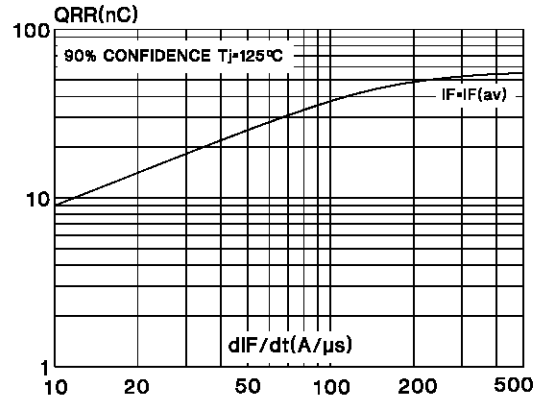


Fig.9 : Peak reverse current versus dI_F/dt .

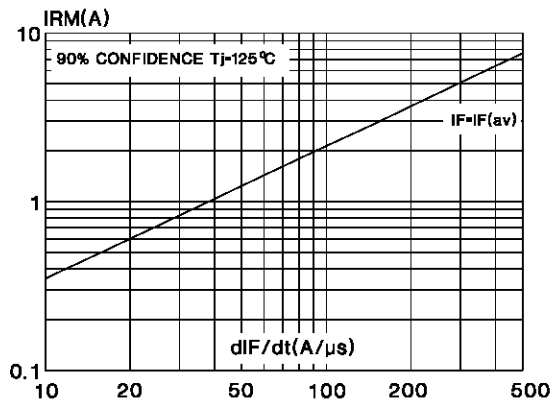
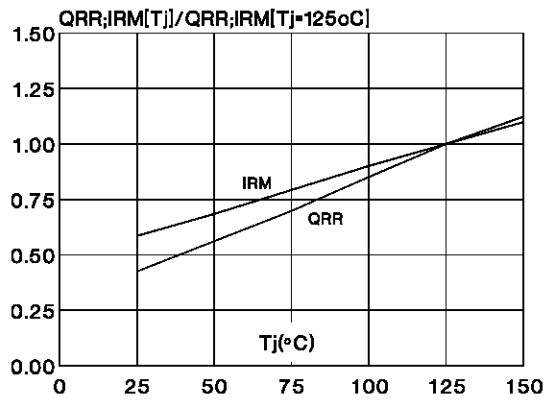
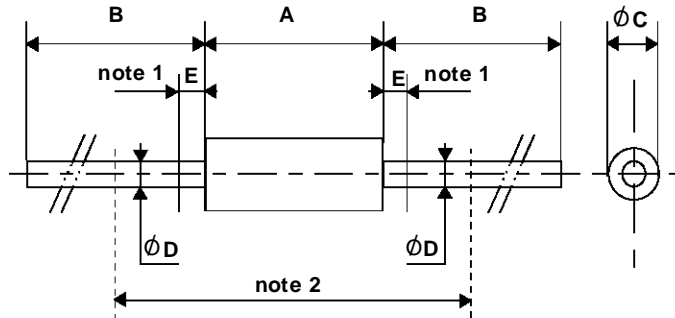


Fig.10 : Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA

F126



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

Cooling method : by convention (method A)

Marking : Clear, ring at cathode end

Weight : 0.4 g

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