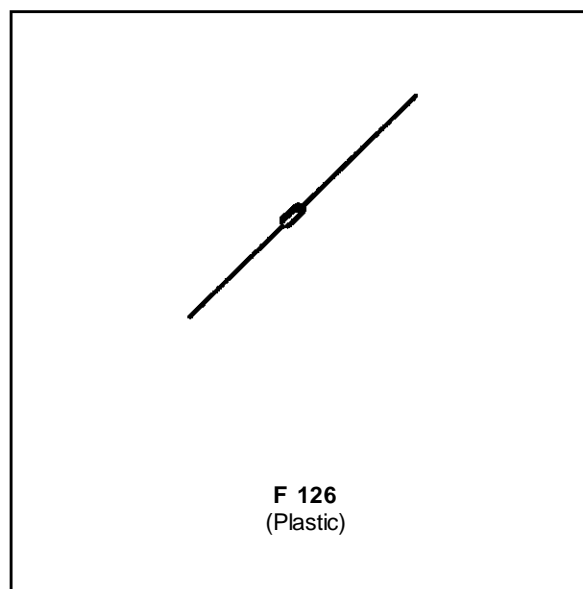


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## ULTRA FAST RECOVERY RECTIFIER DIODES

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- 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 <sub>F(AV)</sub>	Average Forward Current	T <sub>I</sub> = 60°C δ = 0.5	3	A
I <sub>FSM</sub>	Surge Non Repetitive Forward Current	T <sub>p</sub> = 10 ms Sinusoidal	30	A
T <sub>stg</sub> T <sub>J</sub>	Storage and Junction Temperature Range		- 65 to + 150 - 65 to + 150	°C

Symbol	Parameter	STPR		Unit
		310	320	
V <sub>RRM</sub>	Repetitive Peak Reverse Voltage	100	200	V

### THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
R <sub>th(j-l)*</sub>	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	$\mu\text{A}$
	$T_j = 100^\circ\text{C}$				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%

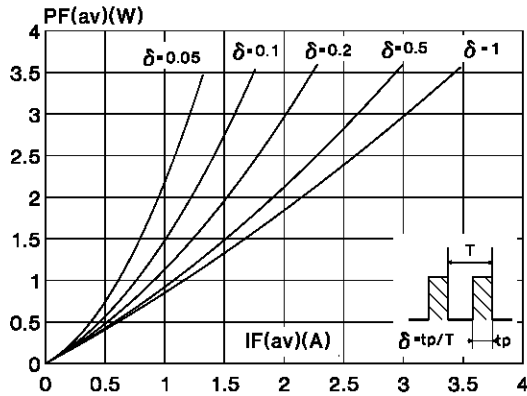
#### RECOVERY CHARACTERISTICS

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

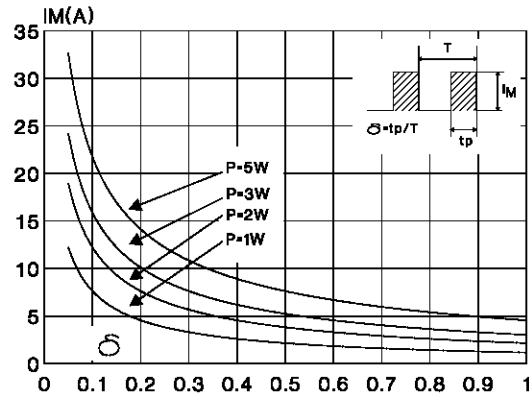
To evaluate the conduction losses use the following equation :

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

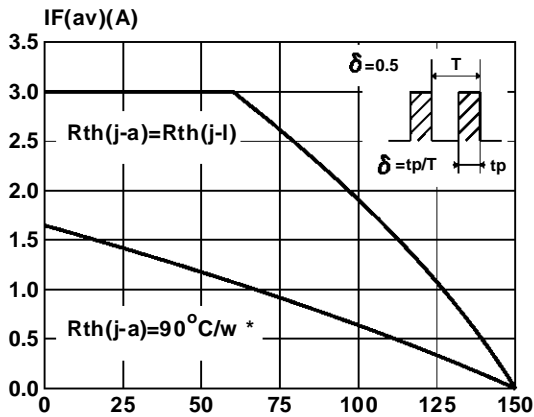
**Fig.1 :** Average forward power dissipation versus average forward current.



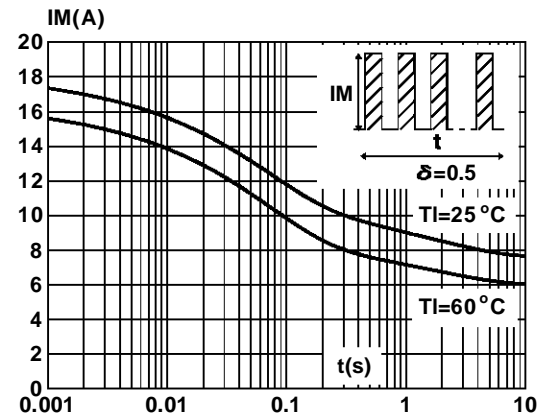
**Fig.2 :** Peak current versus form factor.



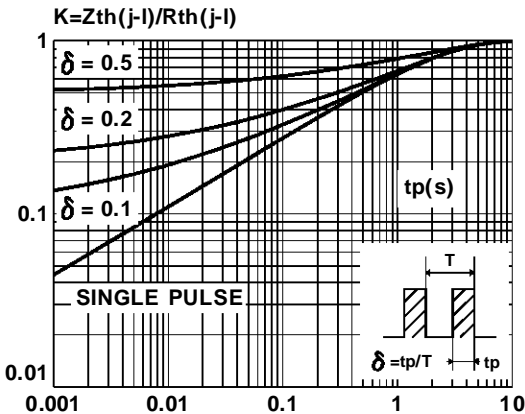
**Fig.3 :** Average current versus ambient temperature. (duty cycle : 0.5)  
 \* circuit board e (Cu) = 35μm, S (cu) = 12mm<sup>2</sup>  
 L(LEADS)= 20mm



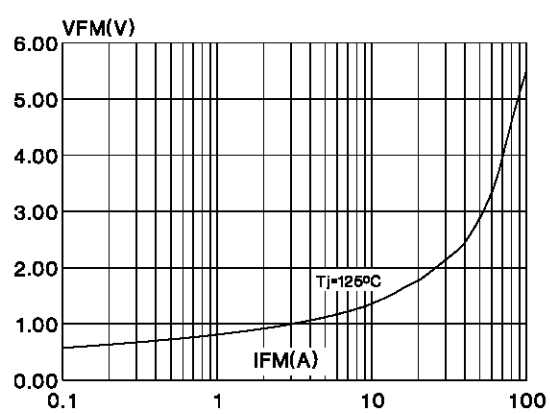
**Fig.4 :** Non repetitive surge peak forward current versus overload duration. (Maximum values)



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

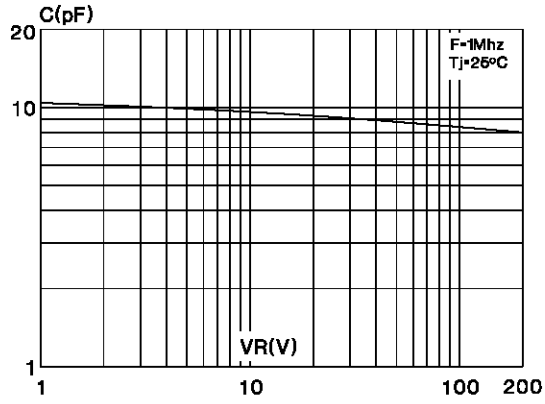


**Fig.6 :** Forward voltage drop versus forward current. (Maximum values)

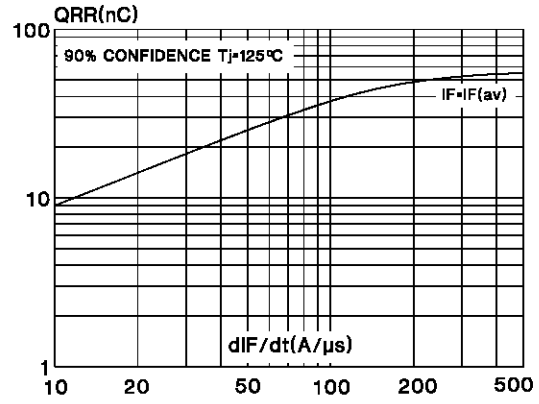


# STPR310/STPR320

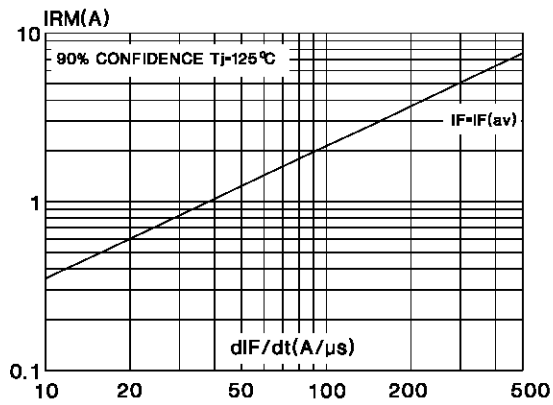
**Fig.7** : Junction capacitance versus reverse voltage applied. (Typical values)



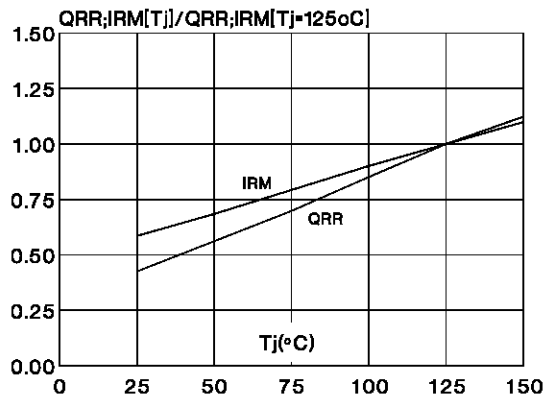
**Fig.8** : Recovery charge versus  $dI_F/dt$ .



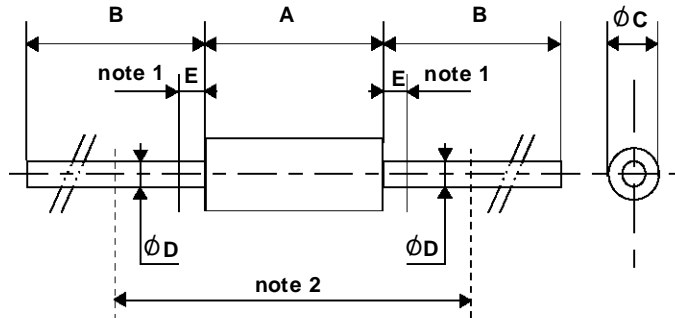
**Fig.9** : Peak reverse current versus  $dI_F/dt$ .



**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 $\varnothing D$ 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		
$\varnothing C$	2.95	3.05	0.116	0.120	
$\varnothing D$	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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