



# STPR320

## ULTRA-FAST RECOVERY RECTIFIER DIODES

### MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	3 A
$V_{RRM}$	200 V
$T_j$ (max)	150°C
$V_F$ (max)	0.99 V
$t_{rr}$ (max)	30 ns

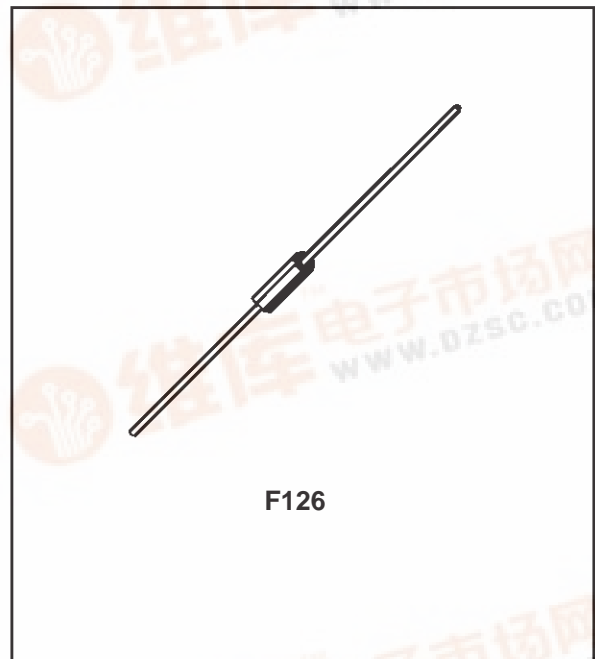
### FEATURES

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

### DESCRIPTION

Low cost single chip rectifier suited for Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in F126, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



### ABSOLUTE MAXIMUM (limiting values)

Symbol	Parameter	Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage	200	V
$I_{F(AV)}$	Average forward current	3	A
$I_{FSM}$	Surge non repetitive forward current	30	A
$T_{stg}$	Storage temperature range	- 65 to + 150	°C
$T_j$	Maximum operating junction temperature	150	°C

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### THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-l)}$	Junction lead (L=5mm)	25	°C/W

### STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameters	Test conditions		Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			10	$\mu\text{A}$
		$T_j = 100^\circ\text{C}$			0.2	0.5	mA
$V_F^{**}$	Forward voltage drop	$T_j = 125^\circ\text{C}$	$I_F = 3\text{ A}$		0.8	0.99	V
		$T_j = 125^\circ\text{C}$	$I_F = 6\text{ A}$		0.95	1.20	
		$T_j = 25^\circ\text{C}$	$I_F = 6\text{ A}$			1.25	

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

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

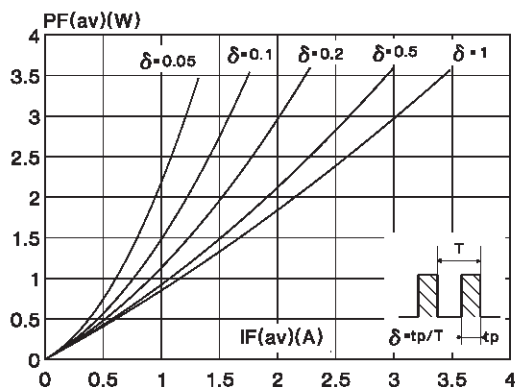
To evaluate the conduction losses use the following equation :

$$P = 0.78 \times I_{F(AV)} + 0.070 \times I_{F(RMS)}^2$$

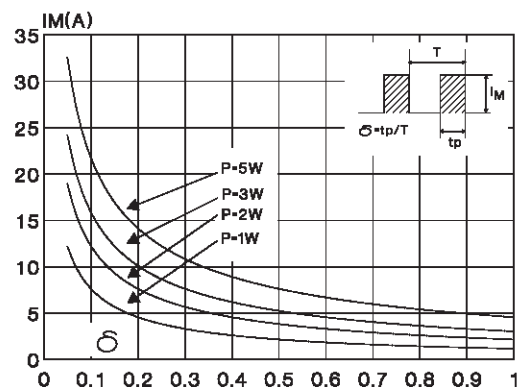
### RECOVERY CHARACTERISTICS

Symbol	Test 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
$t_{fr}$	$T_j = 25^\circ\text{C}$	$I_F = 3\text{ A}$ $V_{FR} = 1.1 \times V_F \text{ max}$	$dI_F/dt = 50\text{ A}/\mu\text{s}$		20		ns
$V_{FP}$	$T_j = 25^\circ\text{C}$	$I_F = 3\text{ A}$	$dI_F/dt = 50\text{ A}/\mu\text{s}$		3		V

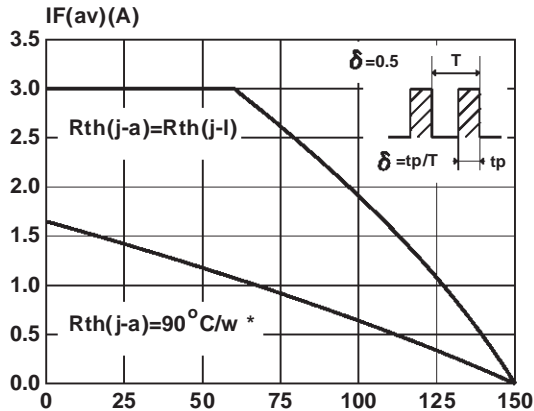
**Fig. 1 :** Average forward power dissipation versus average forward current.



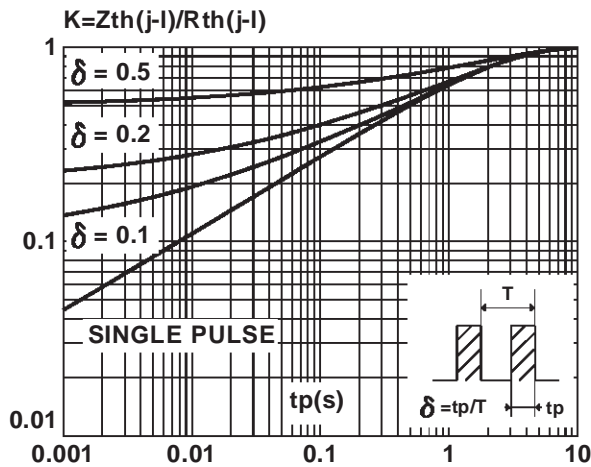
**Fig. 2 :** Peak current versus form factor.



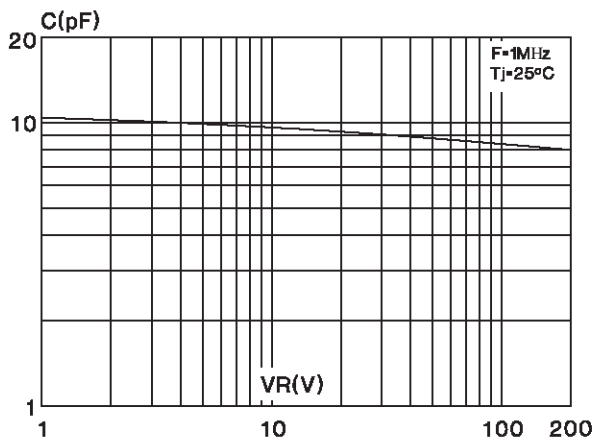
**Fig. 3:** Average current versus ambient temperature ( $\delta : 0.5$ )  
 \* circuit board  $e$  (Cu) =  $35\mu\text{m}$ ,  $S$  (cu) =  $12\text{mm}^2$   
 $L(\text{LEADS}) = 20\text{mm}$



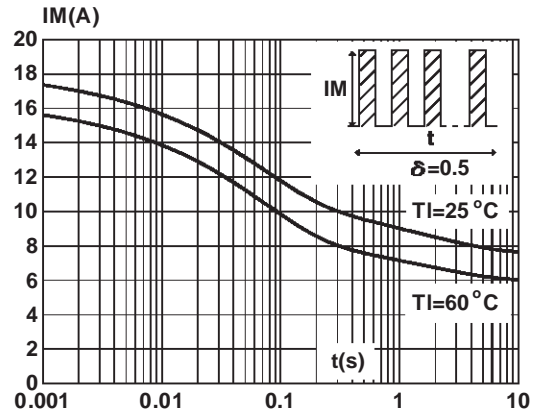
**Fig. 5:** Relative variation of thermal transient impedance junction to case versus pulse duration.



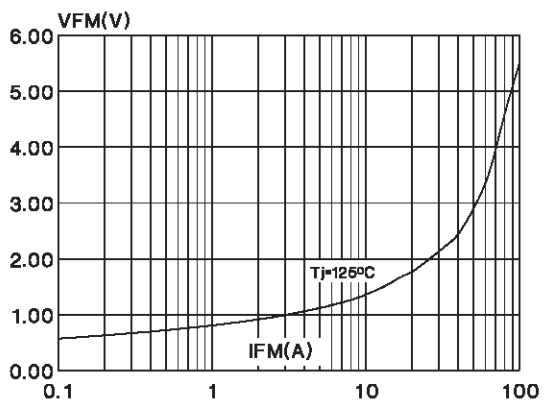
**Fig 7:** Junction capacitance versus reverse voltage applied (typical values).



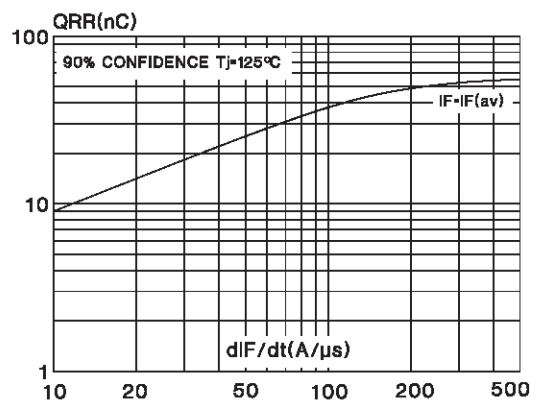
**Fig. 4:** Non repetitive surge peak forward current versus overload duration (maximum values).



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

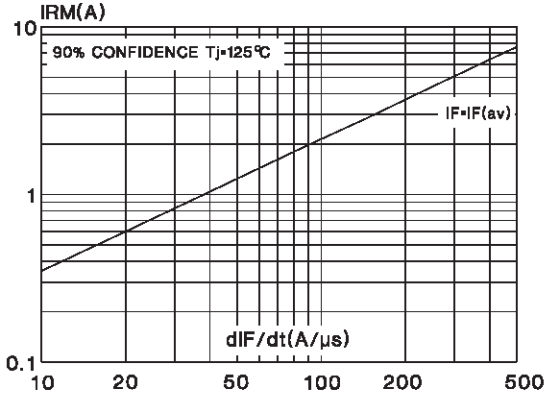


**Fig. 8:** Recovery charges versus  $dI_F/dt$ .

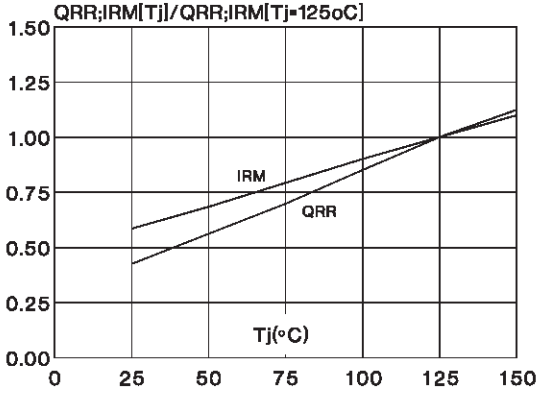


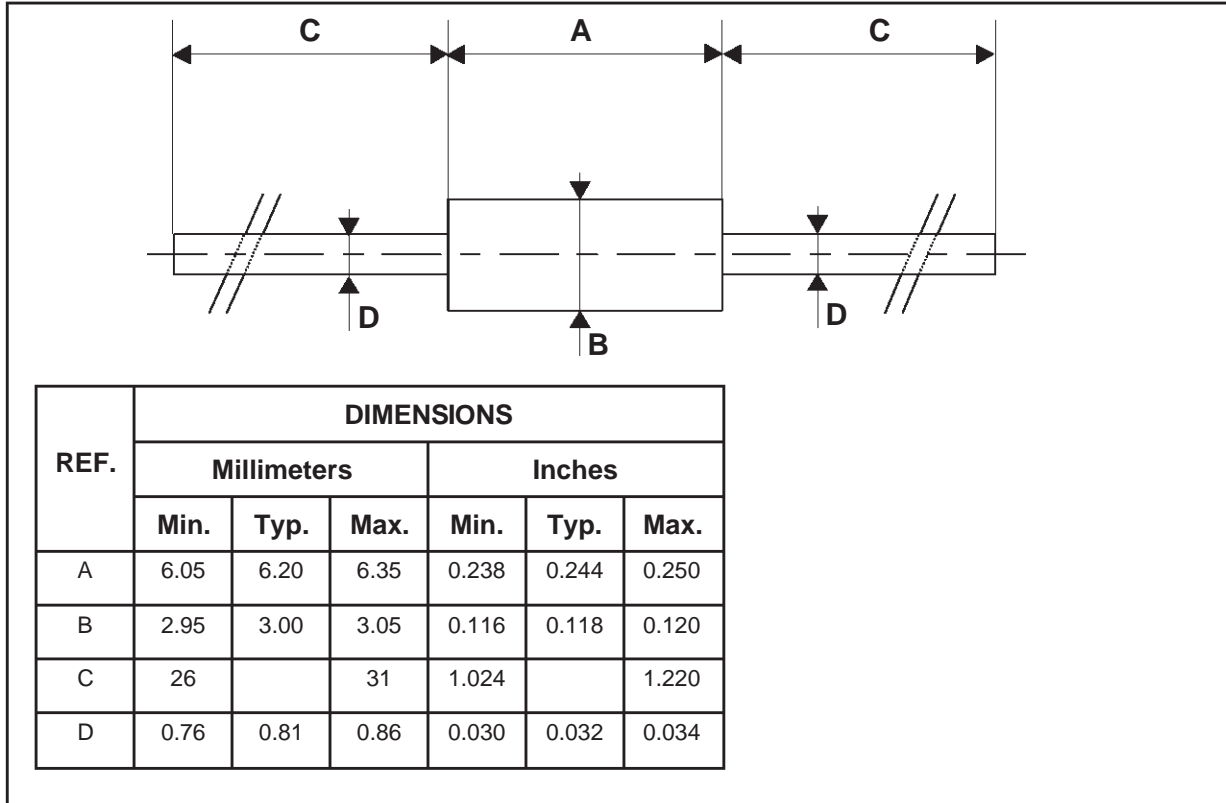
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**Fig. 9:** Peak reverse current versus  $di_F/dt$ .



**Fig. 10:** Dynamic parameters versus junction temperature.



**PACKAGE MECHANICAL DATA**  
 F126


Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPR320	STPR320	F126	0.4g	1000	Ammopack

- Cooling method : by conduction (C)
- Epoxy meets UL94,V0

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