



# STPR2420CT

## ULTRA-FAST RECOVERY RECTIFIER DIODES

### MAIN PRODUCTS CHARACTERISTICS

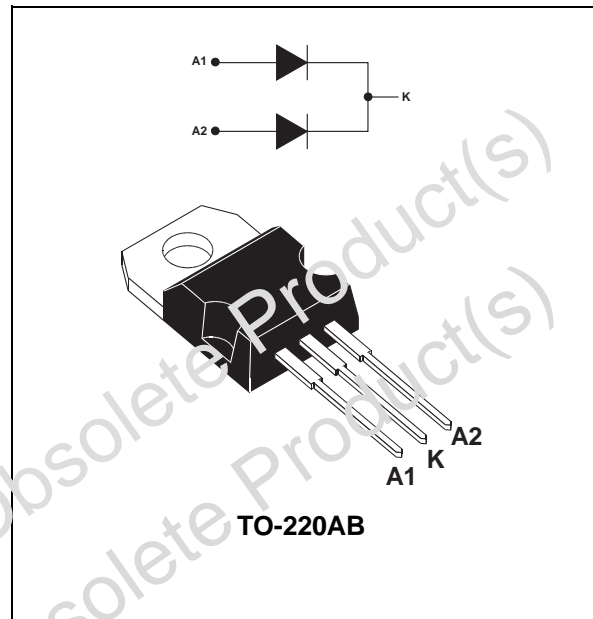
$I_{F(AV)}$	2 x 12 A
$V_{RRM}$	200 V
$T_j$ (max)	150°C
$V_F$ (max)	0.99 V
$t_{rr}$ (max)	30 ns

### FEATURES

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

Low cost dual center tap rectifier suited for Switch Mode Power Supply and high frequency DC to DC converters.

Packaged in TO-220AB, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



Symbol	Parameter		Value	Unit	
$V_{RRM}$	Repetitive peak reverse voltage		200	V	
$I_{F(RMS)}$	RMS forward current		30	A	
$I_{F(AV)}$	Average forward current $\delta = 0.5$	$T_c = 115^\circ\text{C}$	Per diode	12	A
			Per device	24	
$I_{FSM}$	Surge non repetitive forward current		$T_p = 10$ ms Sinusoidal	120	A
$T_{stg}$	Storage temperature range		- 65 to + 150	°C	
$T_j$	Maximum operating junction temperature		+ 150		

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### THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	2.5	°C/W
		Total	1.4	
$R_{th(c)}$		Coupling	0.23	

When the diodes 1 and 2 are used simultaneously :

$$\Delta T_j(\text{diode 1}) = P(\text{diode 1}) \times R_{th(j-c)} (\text{Per diode}) + P(\text{diode 2}) \times R_{th(c)}$$

### STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameters	Test conditions		Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			50	$\mu\text{A}$
		$T_j = 100^\circ\text{C}$				0.8	mA
$V_F^{**}$	Forward voltage drop	$T_j = 125^\circ\text{C}$	$I_F = 12\text{ A}$			0.99	V
		$T_j = 125^\circ\text{C}$	$I_F = 24\text{ A}$			1.20	
		$T_j = 25^\circ\text{C}$	$I_F = 24\text{ A}$			1.25	

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

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

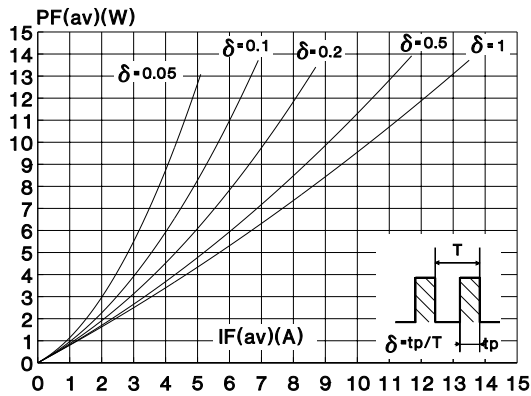
To evaluate the conduction losses use the following equation :

$$P = 0.78 \times I_{F(AV)} + 0.0175 \times I_{F(RMS)}^2$$

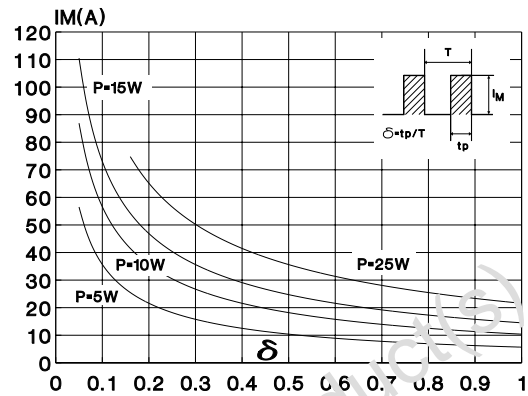
### RECOVERY CHARACTERISTICS

Symbol	Test conditions		Min.	Typ.	Max.	Unit
$t_{rr}$	$T_j = 25^\circ\text{C}$	$I_F = 0.5\text{ A}$ $I_{rr} = 0.25\text{ A}$ $I_R = 1\text{ A}$			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		
$V_{FP}$	$T_j = 25^\circ\text{C}$	$I_F = 1\text{ A}$ $t_r = 10\text{ ns}$		3		V

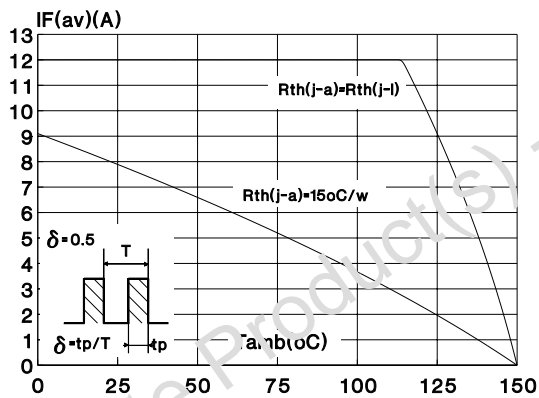
**Fig. 1:** Average forward power dissipation versus average forward current (per diode).



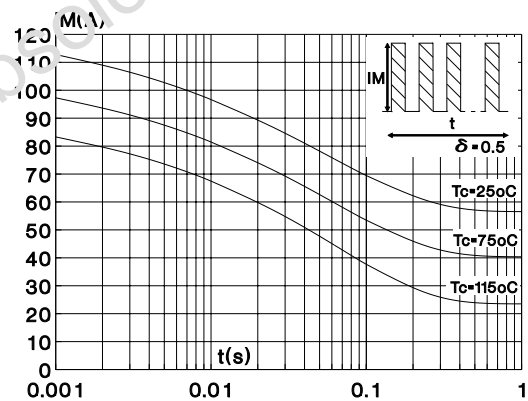
**Fig. 2:** Peak current versus form factor (per diode).



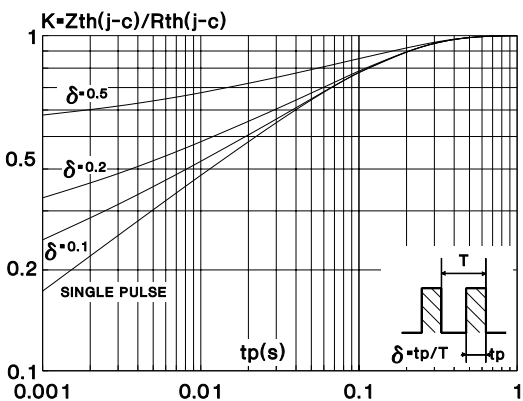
**Fig. 3:** Average current versus ambient temperature.



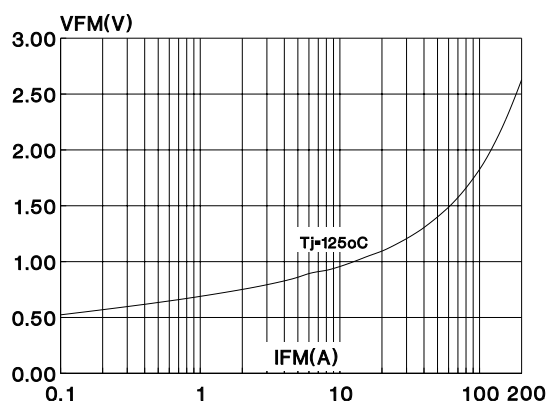
**Fig. 4:** Non repetitive surge peak forward current versus overload duration (maximum values).



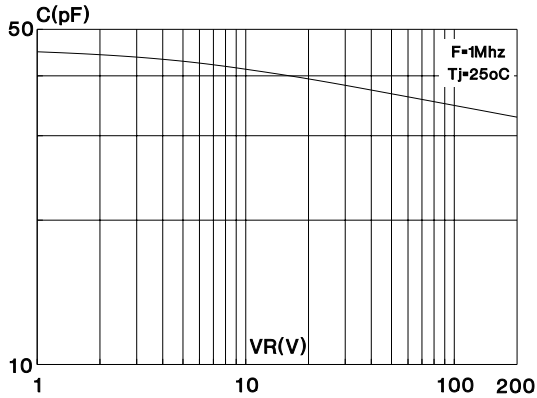
**Fig. 5:** Relative variation of thermal transient impedance junction to case versus pulse duration.



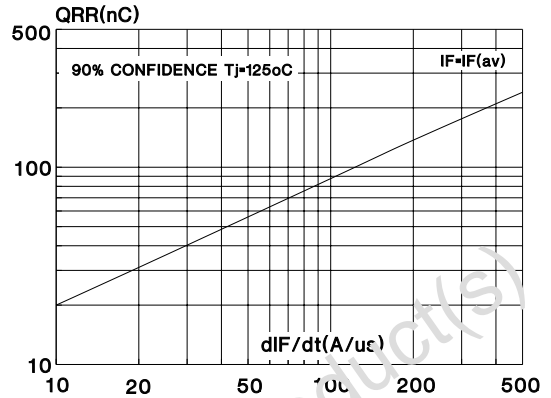
**Fig. 6:** Forward voltage drop versus forward current.



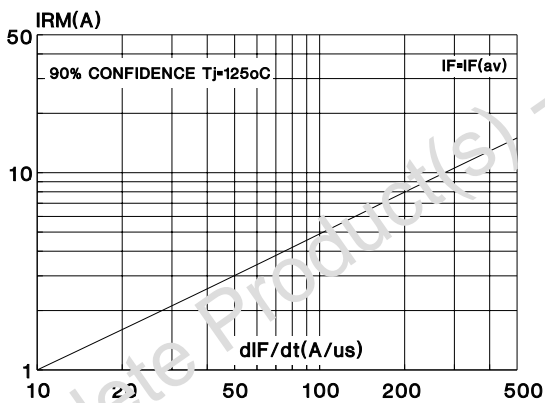
**Fig. 7:** Junction capacitance versus reverse voltage applied (typical values, per diode).



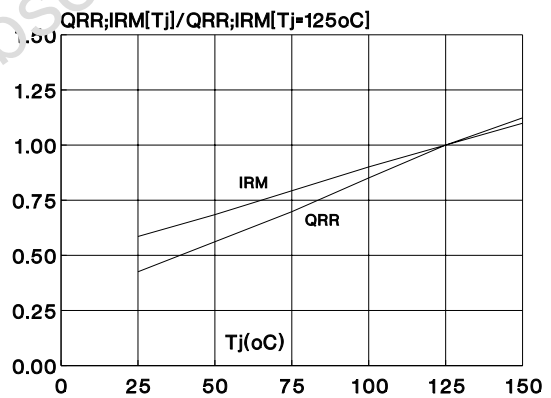
**Fig. 8:** Recovery charge versus  $dI_F/dt$  (per diode).



**Fig. 9:** Peak reverse current versus  $dI_F/dt$  (per diode).

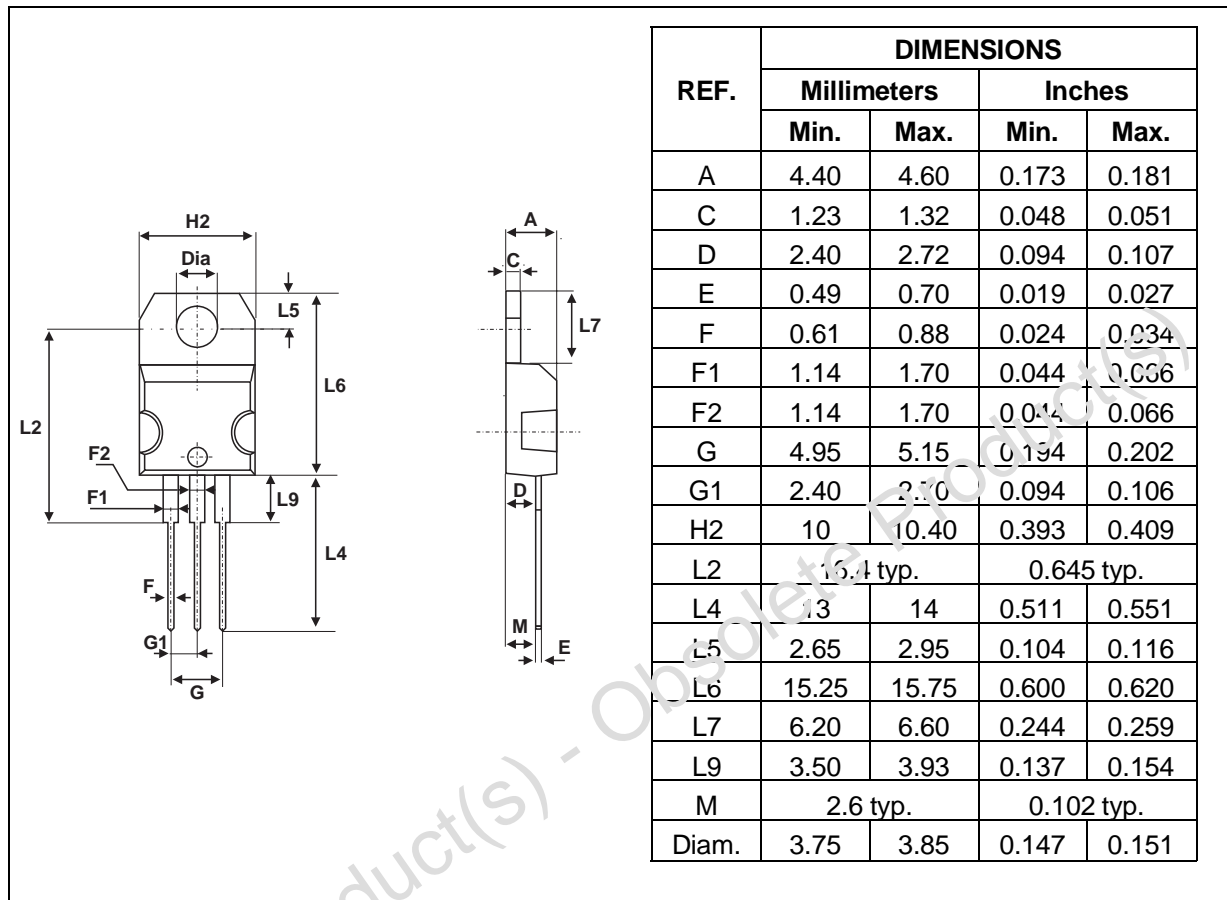


**Fig. 10:** Dynamic parameters versus junction temperature (per diode).



## PACKAGE MECHANICAL DATA

TO-220AB



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