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ULTRA-FAST RECOVERY RECTIFIER DIODES

MAIN PRODUCTS CHARACTERISTICS

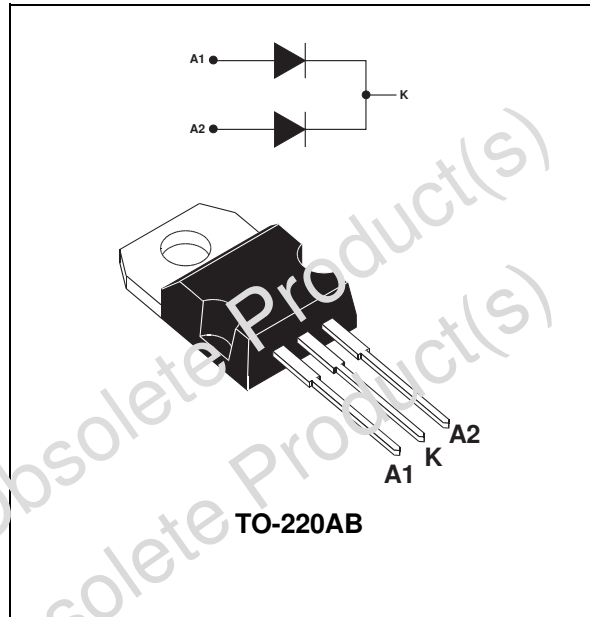
I_{F(AV)}	2 x 12 A
V_{RRM}	200 V
T_j (max)	150°C
V_F (max)	0.99 V
trr (max)	30 ns

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 δ = 0.5	T _c = 115°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	

STPR2420CT

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°C	V _R = V _{RRM}			5)	μA
		T _j = 100°C				0.8	mA
V _F **	Forward voltage drop	T _j = 125°C	I _F = 12 A			0.99	V
		T _j = 125°C	I _F = 24 A			1.20	
		T _j = 25°C	I _F = 24 A			1.25	

Pulse test : * t_p = 5 ms, δ < 2 %

** t_p = 380 μs, δ < 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°C	I _F = 0.5A I _{rr} = 0.25A I _R = 1A			30	ns
t _{fr}	T _j = 25°C	I _F = 1A t _r = 10 ns V _{FR} = 1.1 x V _F		20		
V _{FP}	T _j = 25°C	I _F = 1A t _r = 10 ns		3		V

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

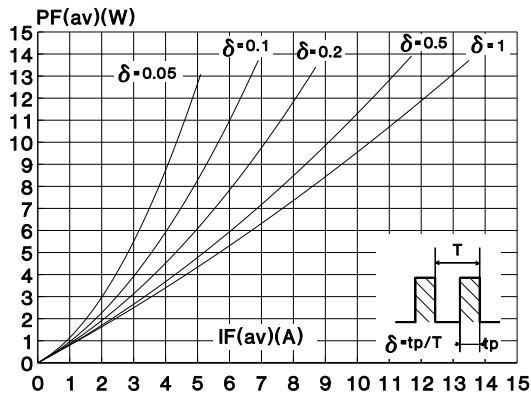


Fig. 2: Peak current versus form factor (per diode).

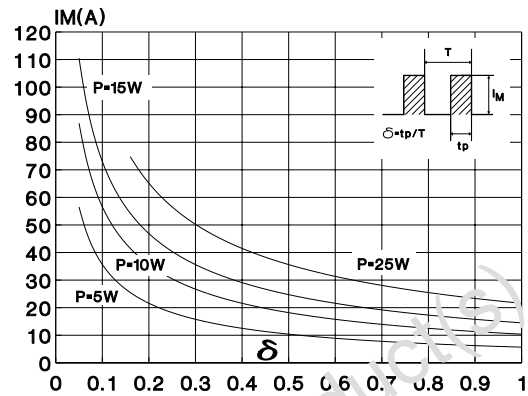


Fig. 3: Average current versus ambient temperature.

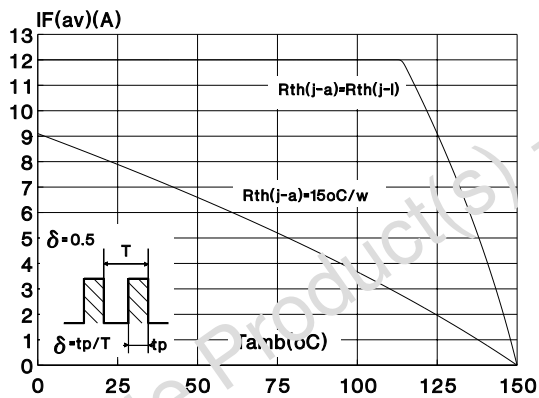


Fig. 4: Non repetitive surge peak forward current versus overload duration (maximum values).

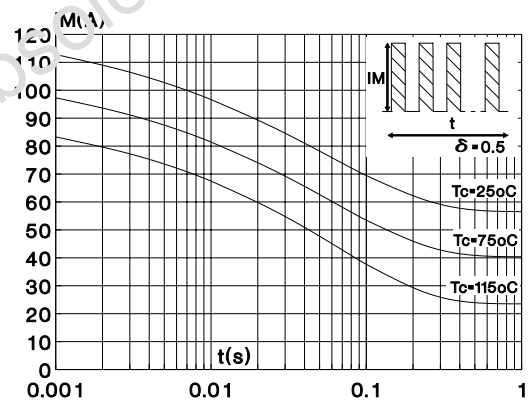


Fig. 5: Relative variation of thermal transient impedance junction to case versus pulse duration.

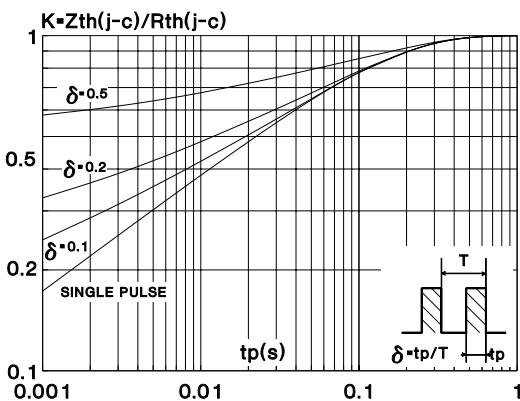


Fig. 6: Forward voltage drop versus forward current.

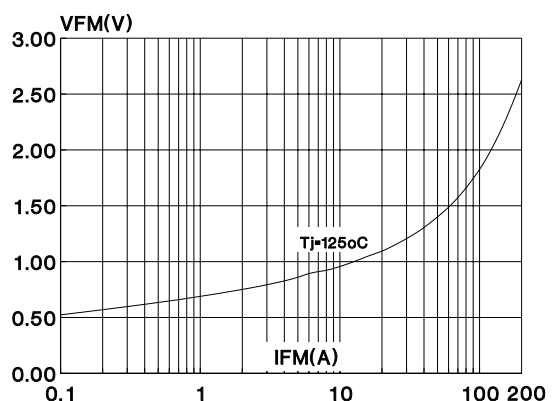


Fig. 7: Junction capacitance versus reverse voltage applied (typical values, per diode).

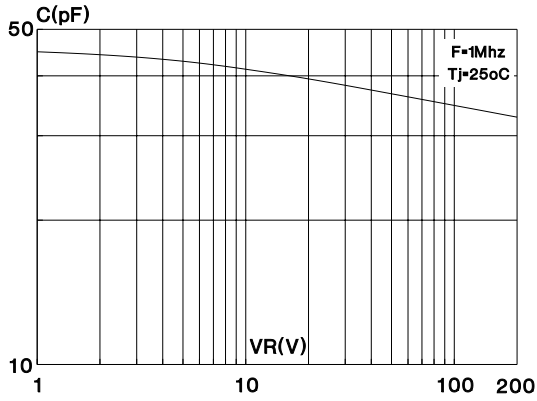


Fig. 8: Recovery charge versus dI_F/dt (per diode).

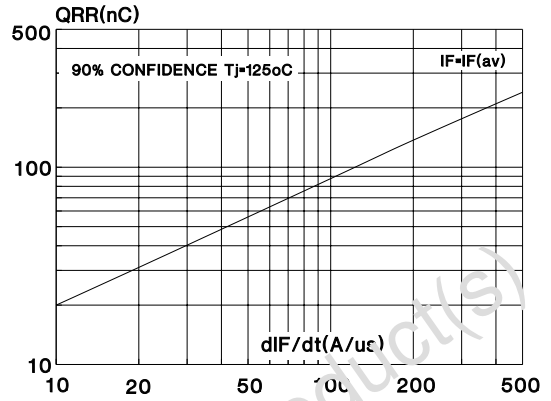


Fig. 9: Peak reverse current versus dI_F/dt (per diode).

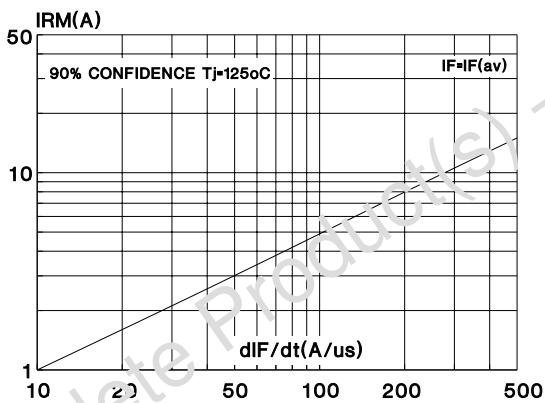
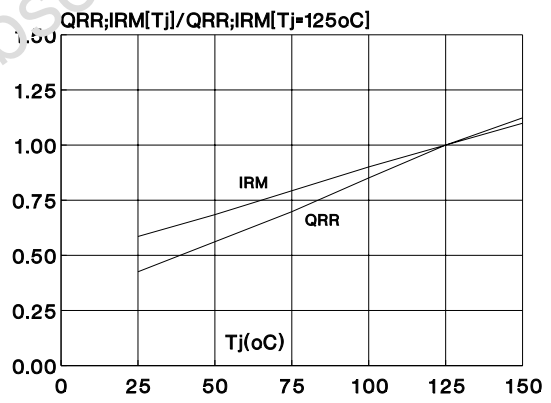
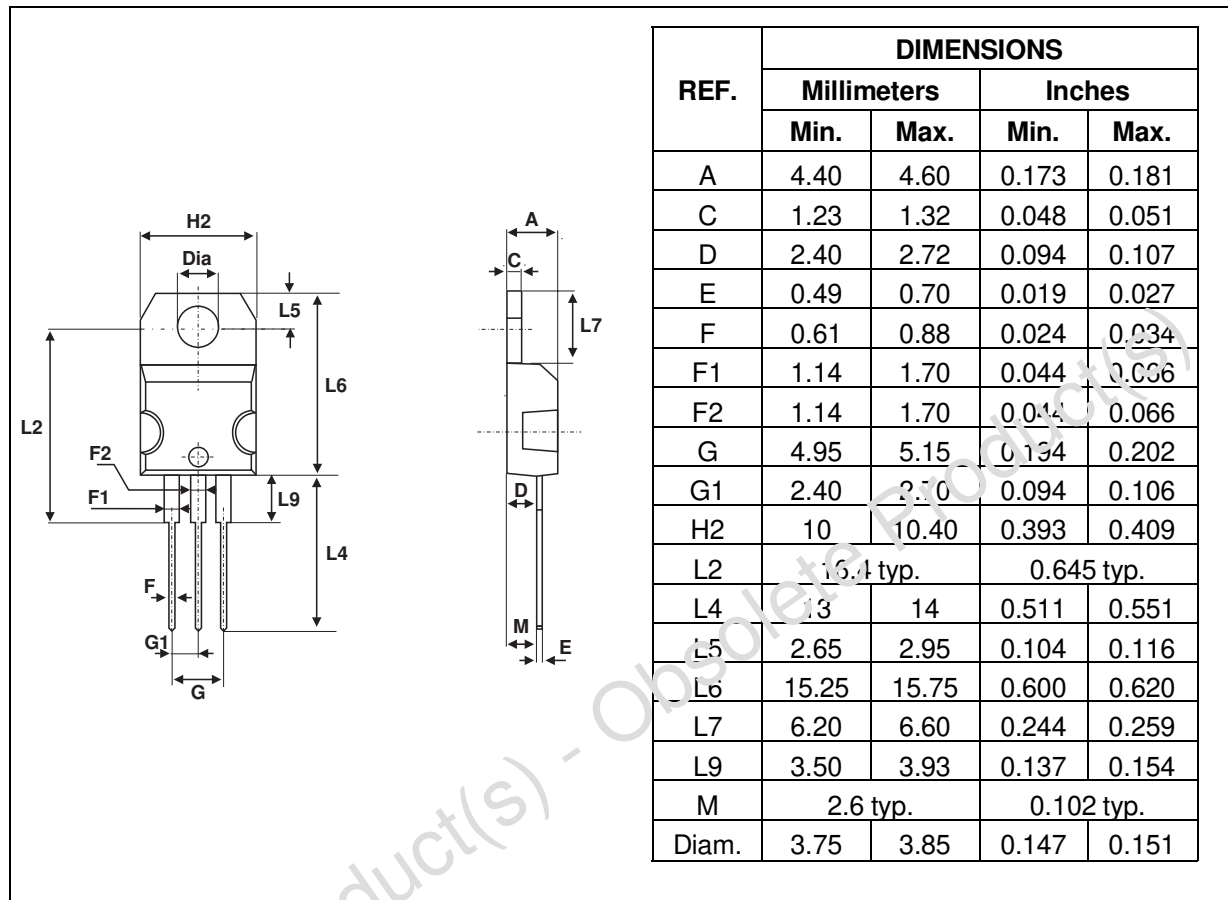


Fig. 10: Dynamic parameters versus junction temperature (per diode).



PACKAGE MECHANICAL DATA

TO-220AB



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