



STPR520D/F

ULTRA-FAST RECOVERY RECTIFIER DIODES

MAIN PRODUCTS CHARACTERISTICS

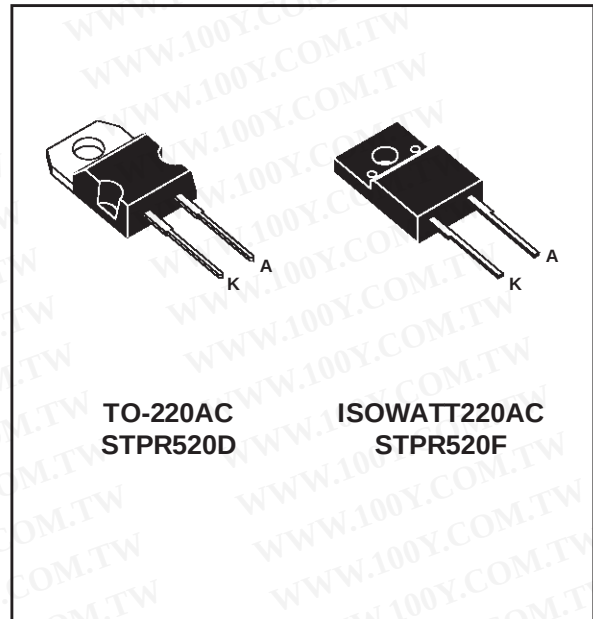
$I_F(AV)$	5 A
V_{RRM}	200 V
$T_j(max)$	150°C
$V_F(max)$	0.99 V
$trr(max)$	30 ns

FEATURES

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

Low cost single chip rectifier suited for switchmode power supply and high frequency DC to DC converters.

Packaged in TO-220AC and ISOWATT220AC, 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			10	A
$I_F(AV)$	Average forward current $\delta = 0.5$	TO-220AC	$T_c = 125^\circ C$	5	A
		ISOWATT220AC	$T_c = 115^\circ C$		
I_{FSM}	Surge non repetitive forward current		$T_p = 10\text{ ms}$ Sinusoidal	50	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	TO-220AC	4	°C/W
		ISOWATT220AC	6	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameters	Test conditions		Min.	Typ.	Max.	Unit
I _R *	Reverse leakage current	T _j = 25°C	V _R = V _{RRM}			50	μA
		T _j = 100°C				0.5	mA
V _F **	Forward voltage drop	T _j = 125°C	I _F = 5 A			0.99	V
		T _j = 125°C	I _F = 10 A			1.20	
		T _j = 25°C	I _F = 10 A			1.25	

Pulse test : * tp = 5 ms, δ < 2 %

** tp = 380 μs, δ < 2 %

To evaluate the conduction losses use the following equation :

$$P = 0.78 \times I_{F(AV)} + 0.042 \times I_{F(RMS)}^2$$

RECOVERY CHARACTERISTICS

Symbol	Test conditions			Min.	Typ.	Max.	Unit
trr	T _j = 25°C	I _F = 0.5A	I _{rr} = 0.25A I _R = 1A			30	ns
tfr	T _j = 25°C	I _F = 1A	tr = 10 ns V _{FR} = 1.1 x V _F		20		
V _{FP}	T _j = 25°C	I _F = 1A	tr = 10 ns		3		V

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

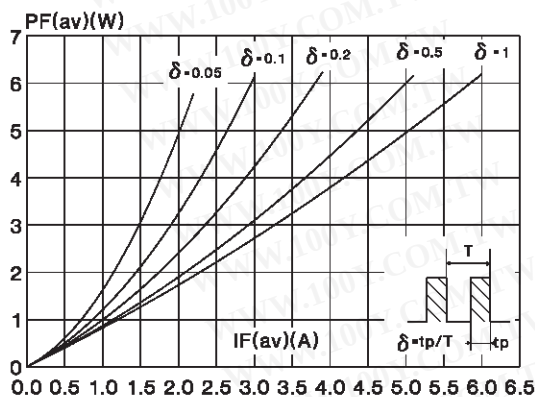


Fig. 2: Peak current versus form factor.

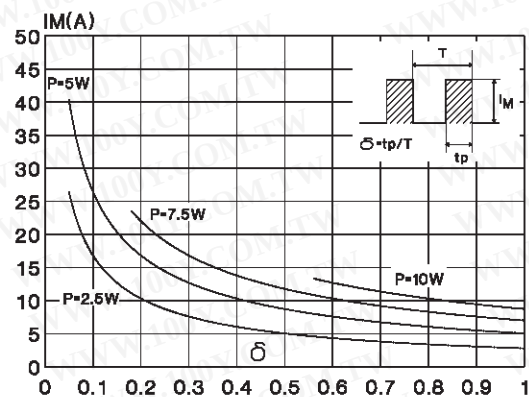


Fig. 3: Average current versus ambient temperature.

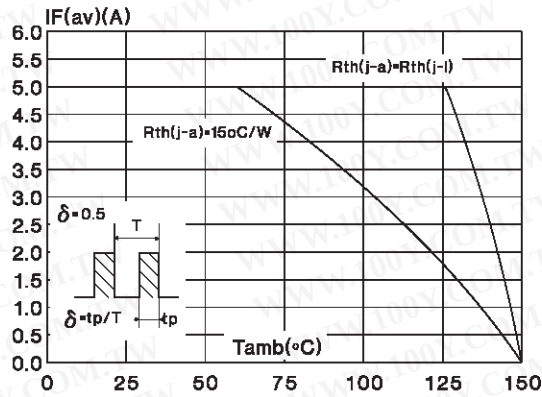


Fig. 4: Average current versus ambient temperature.

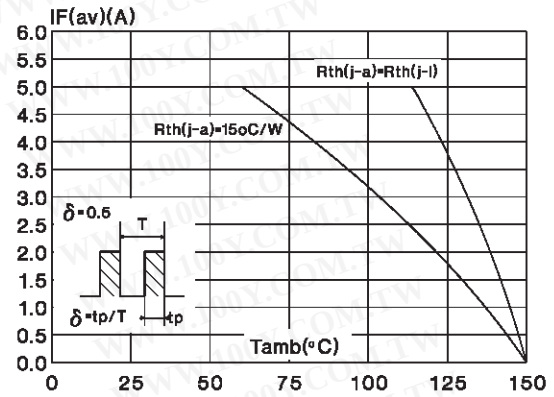


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AC).

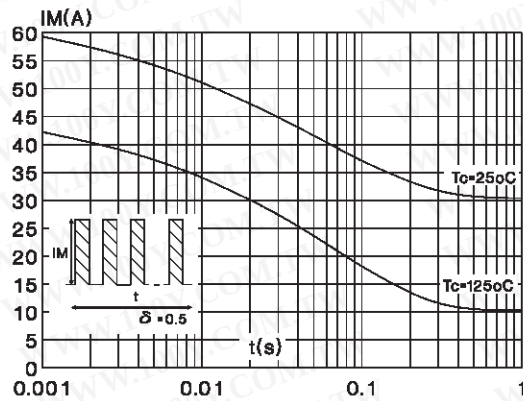


Fig. 6: Non repetitive surge peak forward current versus overload duration (maximum values) (ISOWATT220AC).

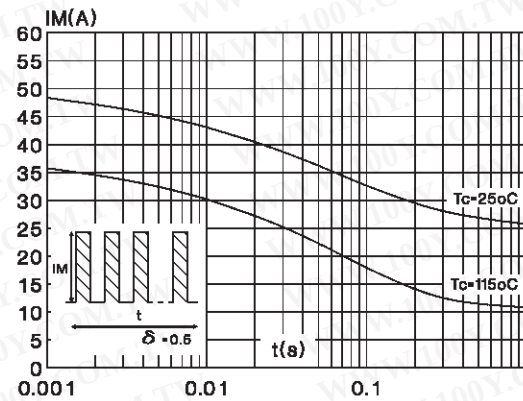


Fig. 7: Relative variation of thermal transient impedance junction to case versus pulse duration (TO-220AC).

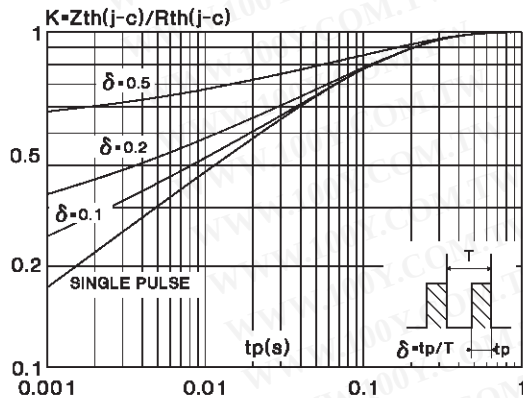
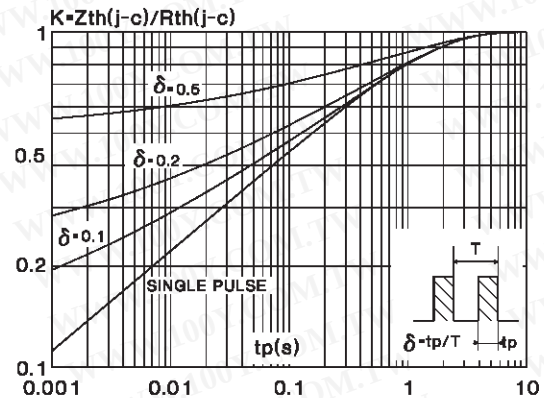


Fig. 8: Relative variation of thermal transient impedance junction to case versus pulse duration (ISOWATT220AC).



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Fig. 9: Forward voltage drop versus forward current.

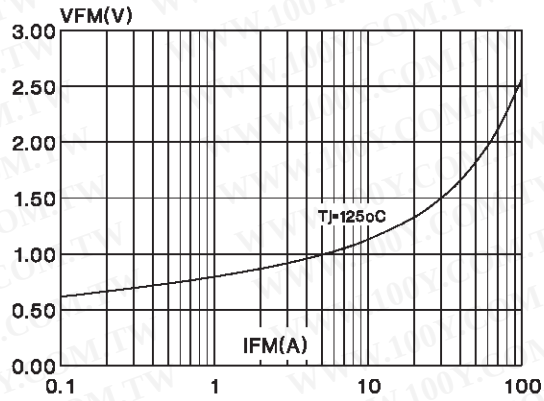


Fig. 10: Junction capacitance versus reverse voltage applied (typical values).

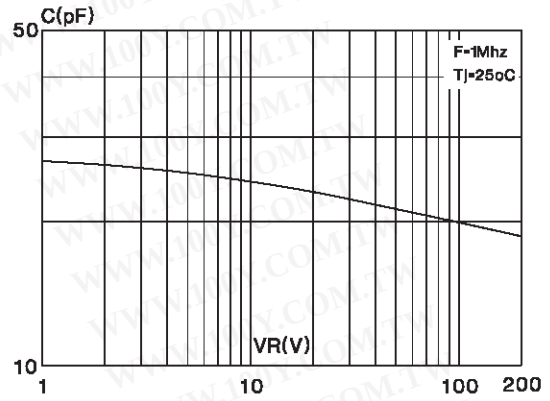


Fig. 11: Recovery charge versus di_F/dt .

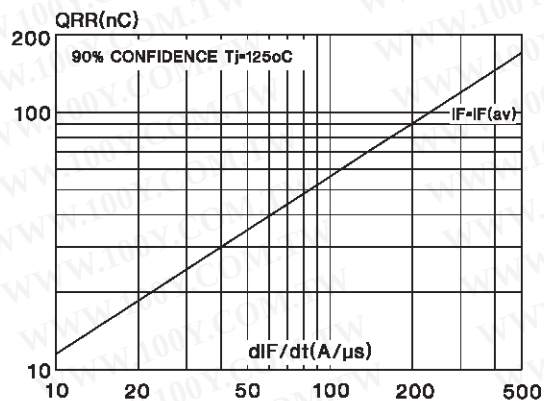


Fig. 12: Peak reverse current versus di_F/dt .

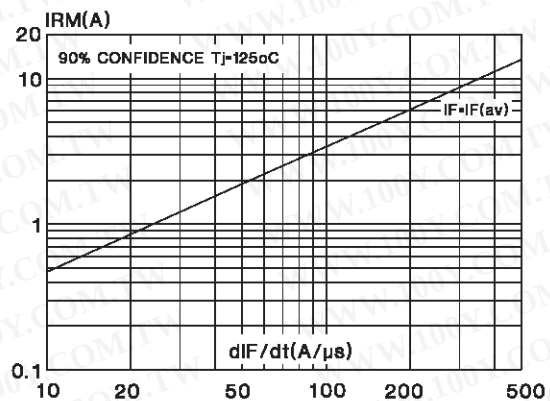
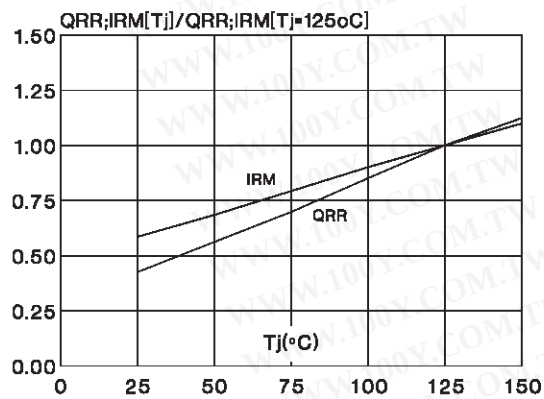
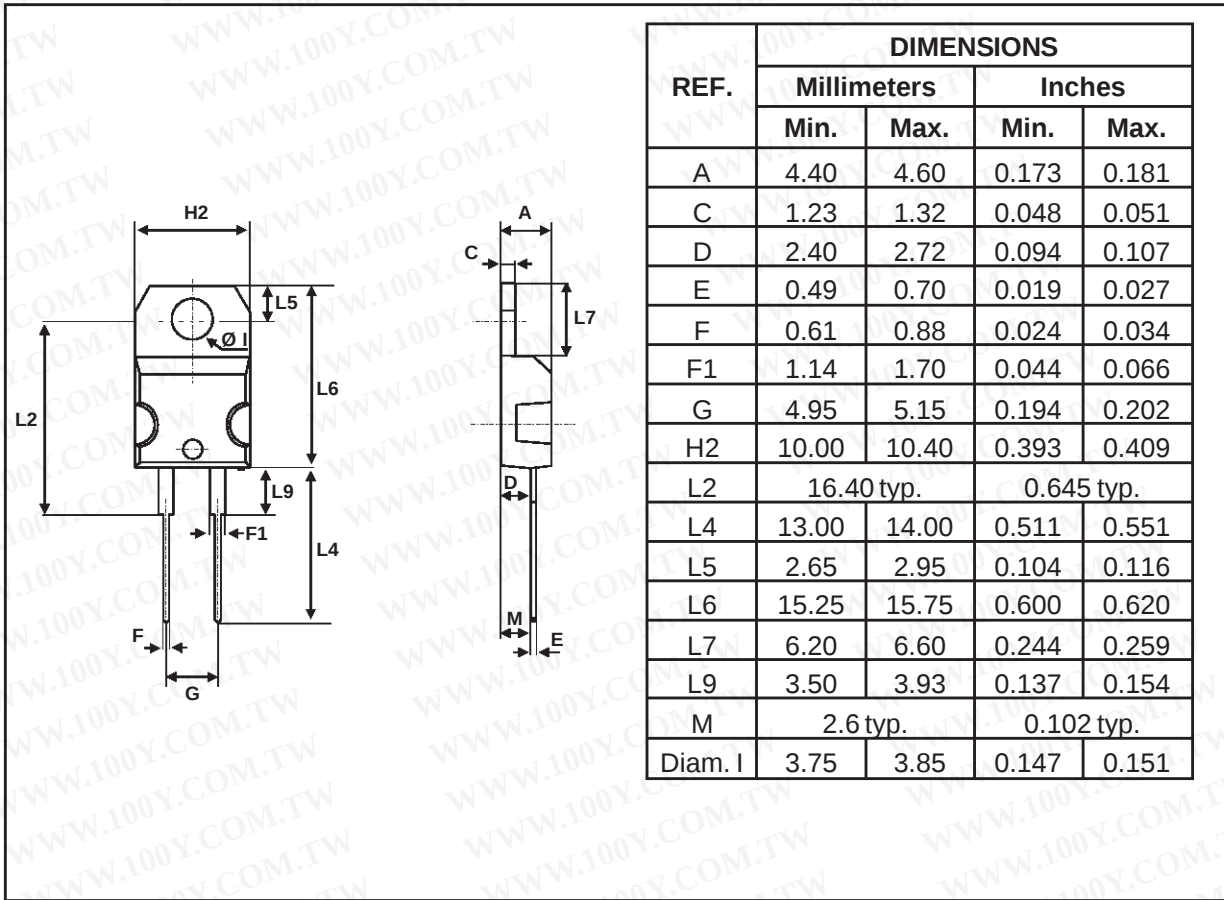


Fig. 13: Dynamic parameters versus junction temperature.

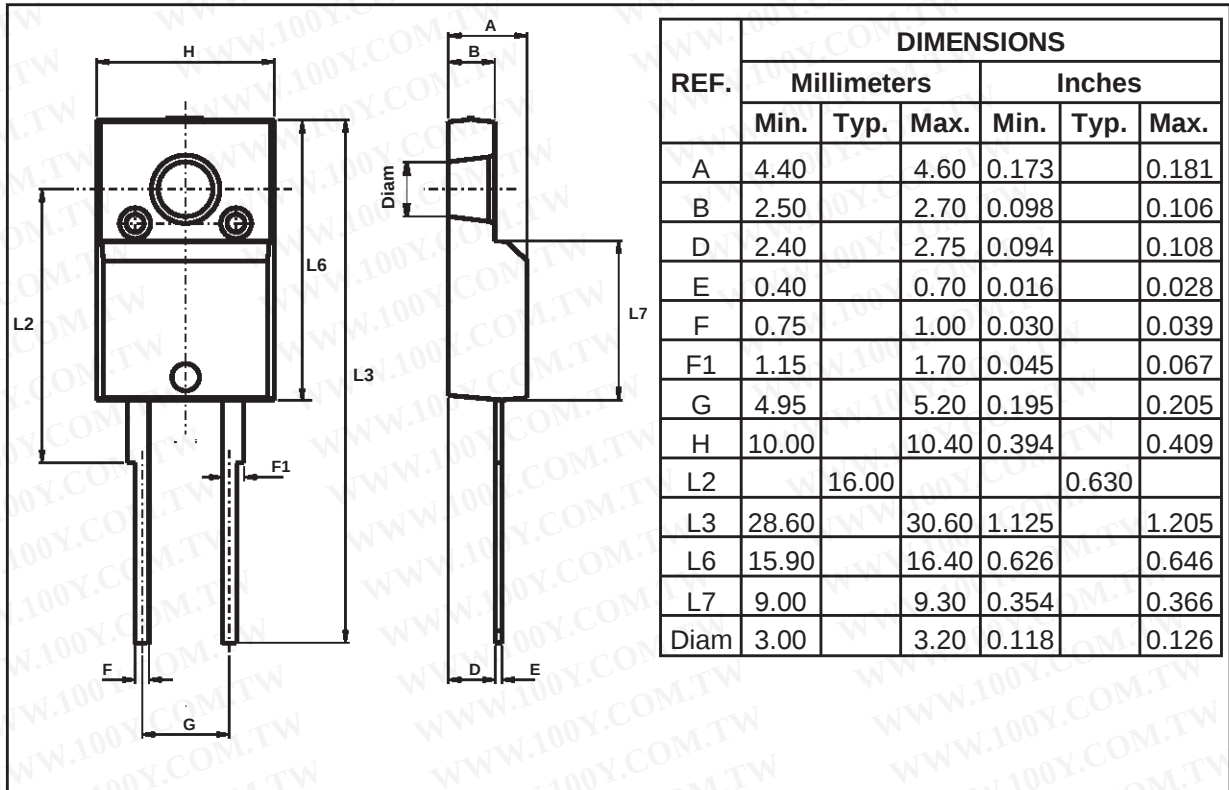


PACKAGE MECHANICAL DATA
TO-220AC



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PACKAGE MECHANICAL DATA ISOWATT220AC



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