



STPS1045D/F

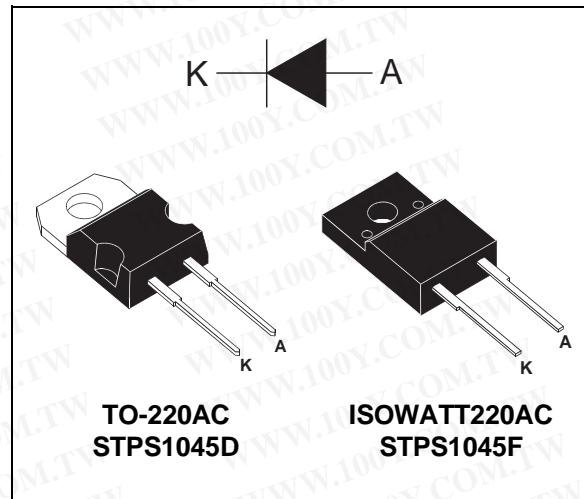
POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

I _{F(AV)}	10 A
V _{RRM}	45 V
V _F	0.57 V

FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING
- LOW FORWARD VOLTAGE DROP
- INSULATED PACKAGE: ISOWATT220AC
Insulating voltage = 2000V DC
Capacitance = 12pF



DESCRIPTION

Single chip Schottky rectifier suited for Switch Mode Power Supply and high frequency DC to DC converters.

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
V _{RRM}	Repetitive peak reverse voltage			45	V
I _{F(RMS)}	RMS forward current			30	A
I _{F(AV)}	Average forward current $\delta = 0.5$	TO-220AC	T _c = 150°C	10	A
		ISOWATT220AC	T _c = 145°C		
I _{FSM}	Surge non repetitive forward current			tp = 10 ms Sinusoidal	A
I _{RRM}	Repetitive peak reverse current			tp = 2 μs F = 1KHz	A
T _{stg}	Storage temperature range			- 65 to + 175	°C
T _j	Maximum junction temperature			175	°C
dV/dt	Critical rate of rise of reverse voltage			10000	V/μs

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THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th}(j-c)$	Junction to case	TO-220AC	2.2
		ISOWATT220AC	4.5

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	$T_j = 25^\circ C$	$V_R = V_{RRM}$			100	μA
		$T_j = 125^\circ C$				15	mA
V_F **	Forward voltage drop	$T_j = 25^\circ C$	$I_F = 15 A$			0.84	V
		$T_j = 125^\circ C$	$I_F = 15 A$			0.72	
		$T_j = 125^\circ C$	$I_F = 7.5 A$			0.57	

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

** $tp = 380 \mu s, \delta < 2\%$

To evaluate the conduction losses use the following equation :

$$P = 0.42 \times I_{F(AV)} + 0.015 I_{F}^2(\text{RMS})$$

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

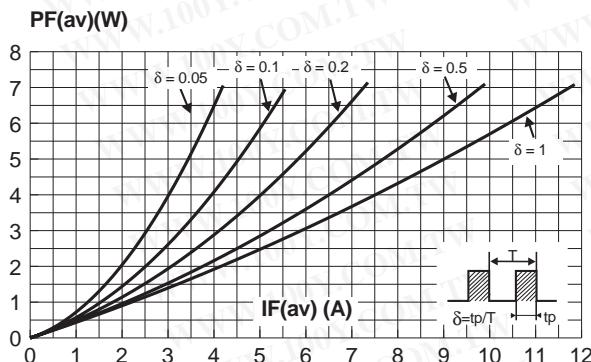


Fig. 2: Average current versus ambient temperature ($\delta : 0.5$).

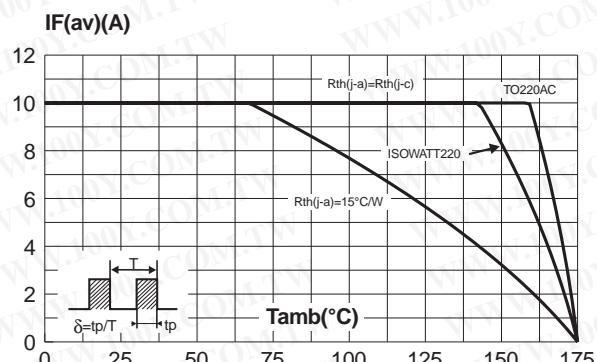


Fig. 3-1: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AC).

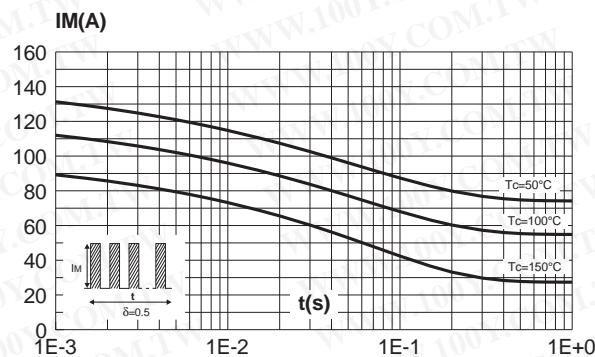


Fig. 4-1: Relative variation of thermal transient impedance junction to case versus pulse duration (TO-220AC).

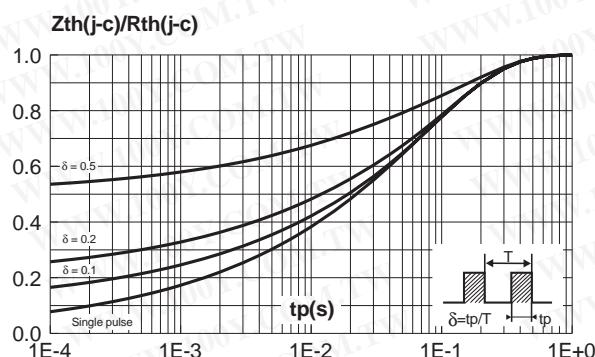


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

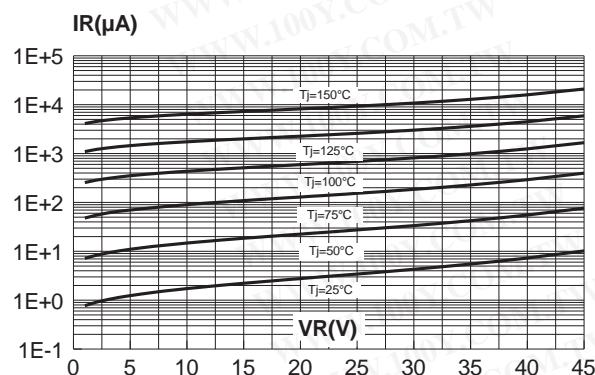


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values) (ISOWATT220AC).

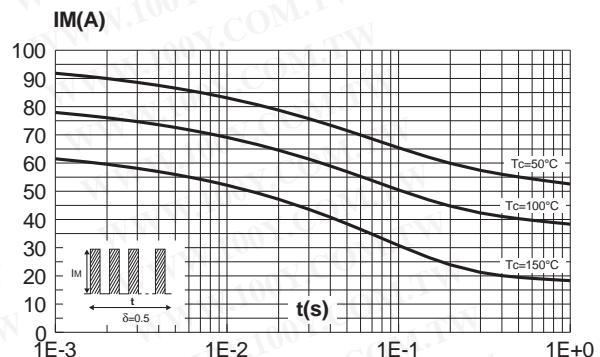


Fig. 4-2: Relative variation of thermal transient impedance junction to case versus pulse duration (ISOWATT220AC).

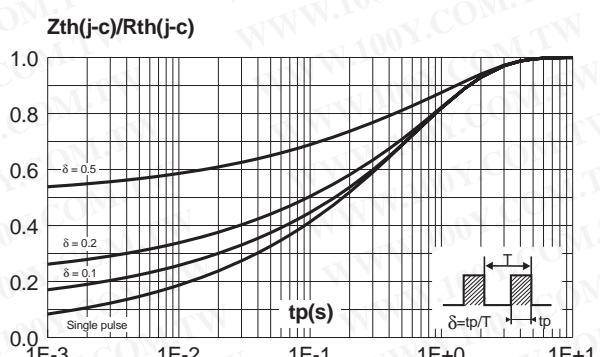
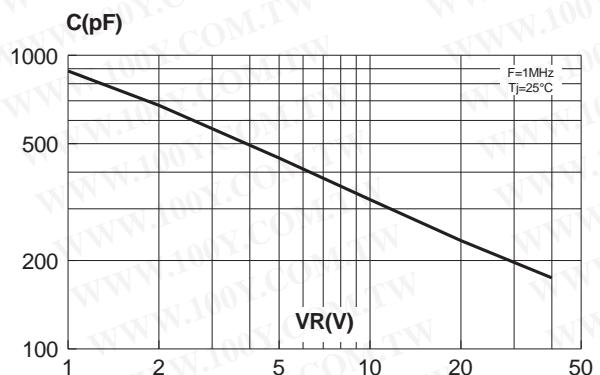
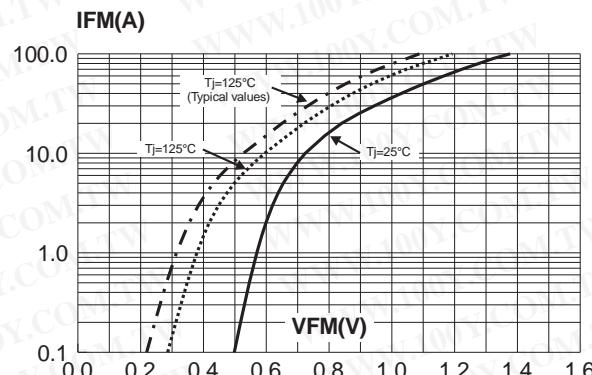


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).



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Fig. 7: Forward voltage drop versus forward current (maximum values).



PACKAGE MECHANICAL DATA

TO-220AC

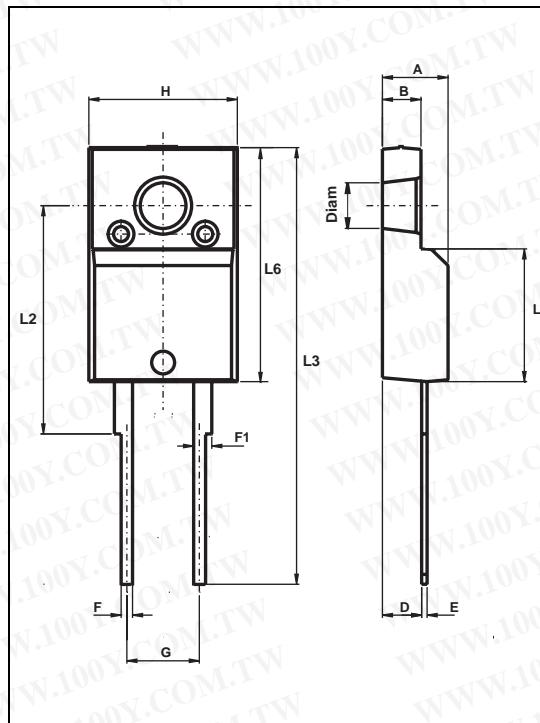
Dimensions (mm):
 L1: 10.00, L2: 16.40 typ., L3: 1.23, L4: 13.00, L5: 2.65, L6: 15.25, L7: 6.20, L8: 3.50, L9: 3.93, H2: 10.00, F1: 1.14, G: 4.95, ØI: 3.75.

Dimensions (mm):
 A: 4.40, C: 1.23, D: 2.40, E: 0.49, F: 0.61, G: 4.95, M: 2.6 typ., L7: 6.20.

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
H2	10.00	10.40	0.393	0.409
L2	16.40 typ.		0.645 typ.	
L4	13.00	14.00	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
M	2.6 typ.		0.102 typ.	
Diam. I	3.75	3.85	0.147	0.151

PACKAGE MECHANICAL DATA

ISOWATT220AC



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	2.50		2.70	0.098		0.106
D	2.40		2.75	0.094		0.108
E	0.40		0.70	0.016		0.028
F	0.75		1.00	0.030		0.039
F1	1.15		1.70	0.045		0.067
G	4.95		5.20	0.195		0.205
H	10.00		10.40	0.394		0.409
L2		16.00			0.630	
L3	28.60		30.60	1.125		1.205
L6	15.90		16.40	0.626		0.646
L7	9.00		9.30	0.354		0.366
Diam	3.00		3.20	0.118		0.0126

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