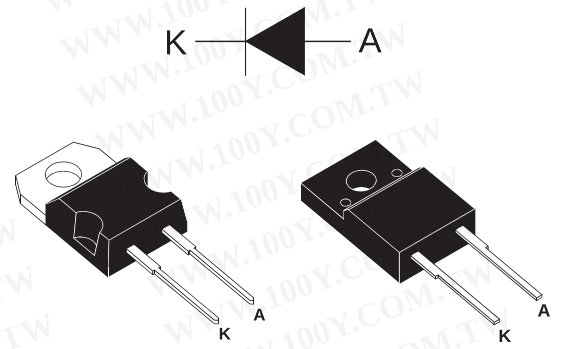
STPS1045D/F

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	**10 A**
V_{RRM}	**45 V**
V_F	**0.57 V**



TO-220AC
STPS1045D

ISOWATT220AC
STPS1045F

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		t_p = 10 ms Sinusoidal	180	A
I_{RRM}	Repetitive peak reverse current		t_p = 2 µs F = 1KHz	1	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

THERMAL RESISTANCES

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

STATIC ELECTRICAL CHARACTERISTICS

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

Pulse test : * tp = 5 ms,δ < 2 %
** tp = 380 µs, δ< 2%

To evaluate the conduction losses use the following equation :
$P = 0.42 \times I_{F(AV)} + 0.015\, I_{F}{}^{2}{}_{(RMS)}$

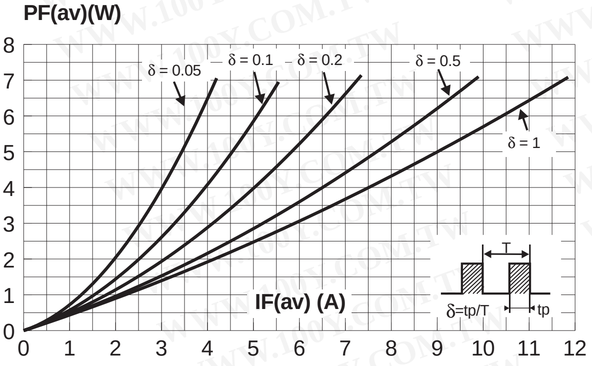


Fig. 1: Average forward power dissipation versus average forward current.

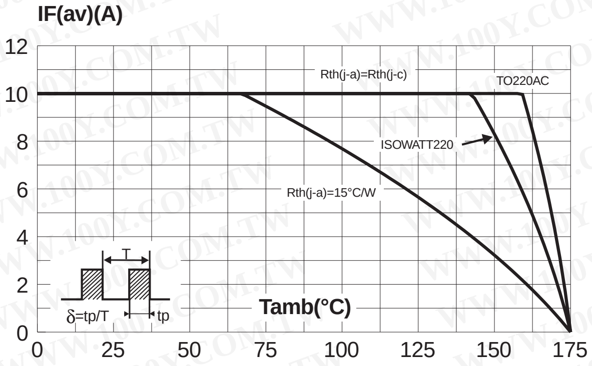


Fig. 2: Average current versus ambient temperature (δ : 0.5).

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

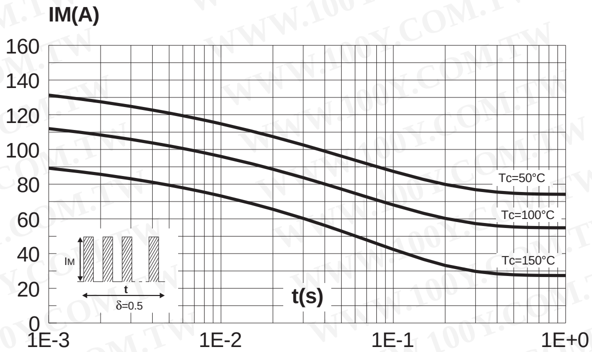


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values) (ISOWATT220AC).

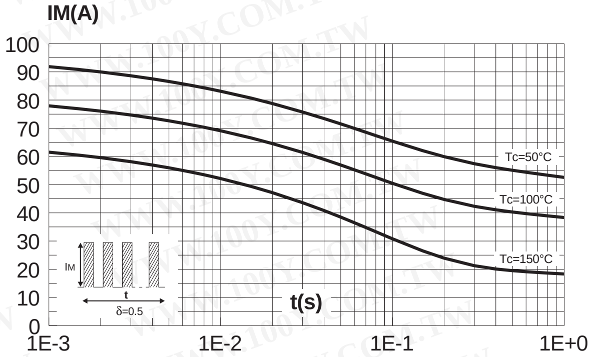


Fig. 4-1: Relative variation of thermal transient impedance junction to case versus pulse duration (TO-220AC).

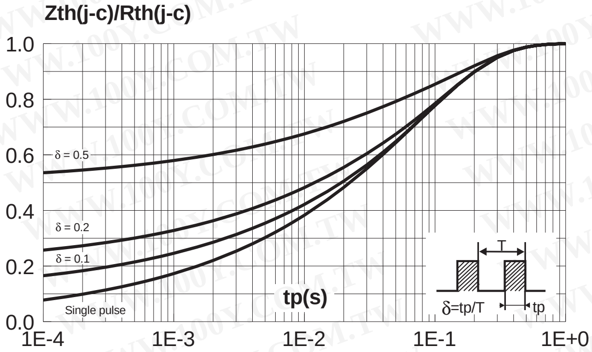


Fig. 4-2: Relative variation of thermal transient impedance junction to case versus pulse duration (ISOWATT220AC).

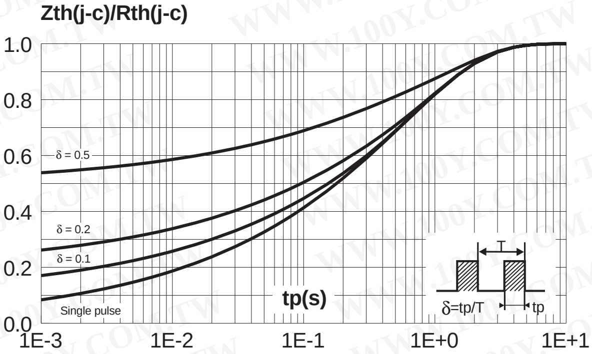


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

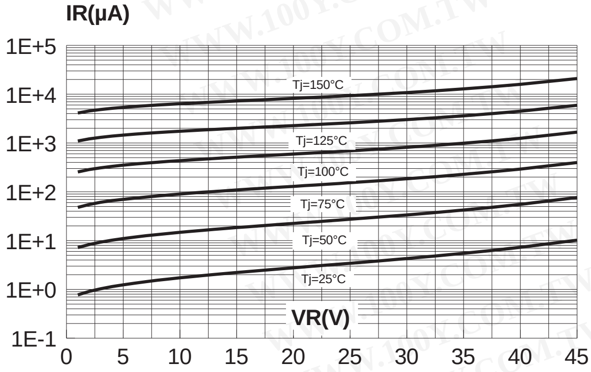


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

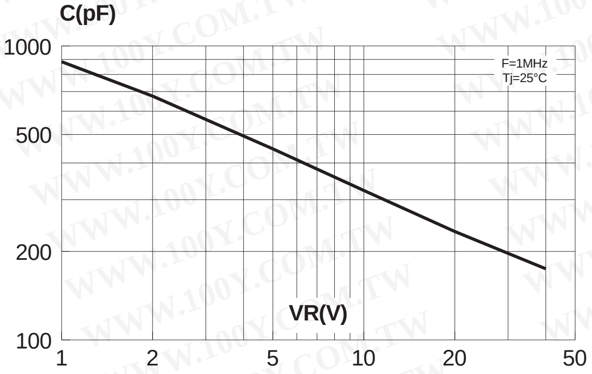
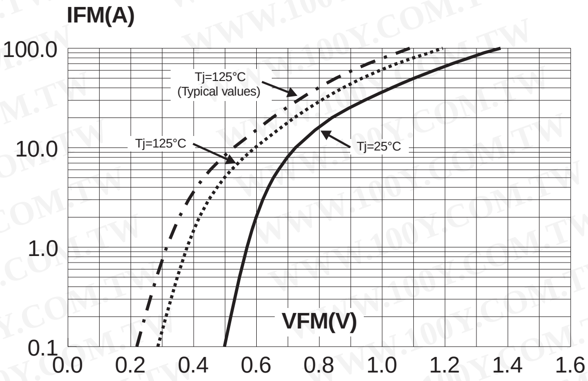
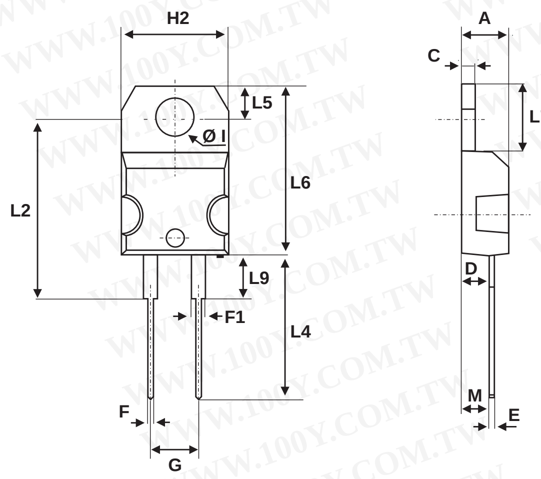


Fig. 7: Forward voltage drop versus forward current (maximum values).



PACKAGE MECHANICAL DATA

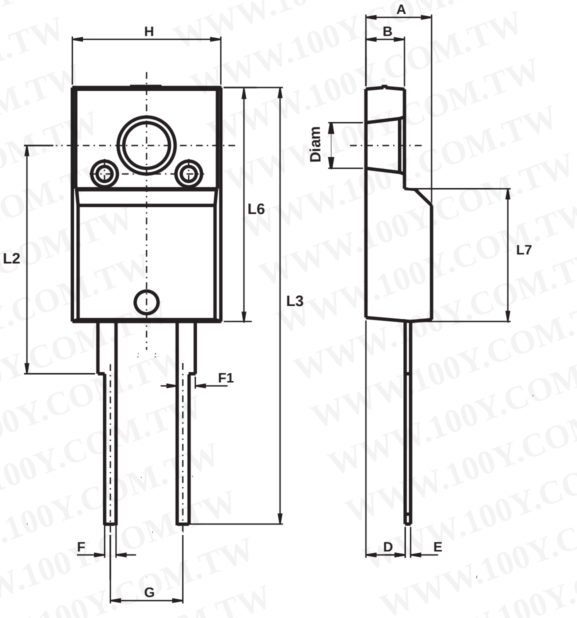
TO-220AC



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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