

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

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

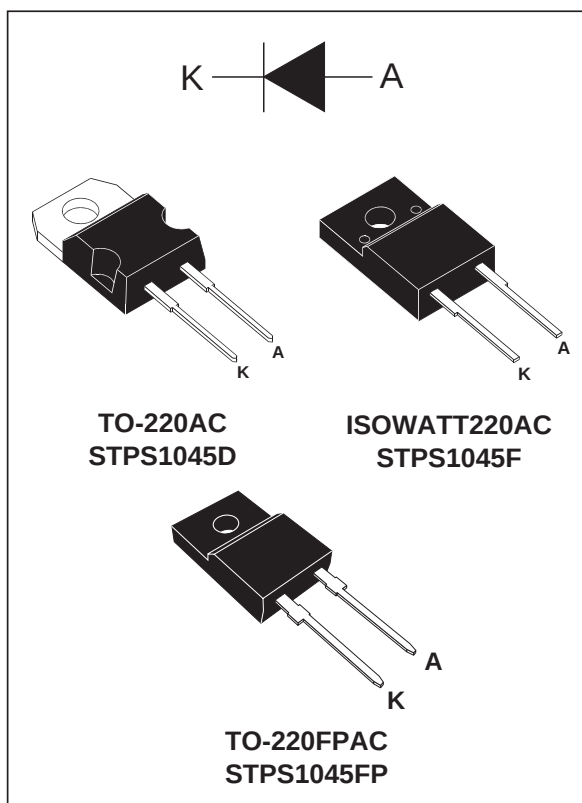
FEATURES AND BENEFITS

- Very small conduction losses
- Negligible switching losses
- Extremely fast switching
- Low forward voltage drop
- Insulated package: ISOWATT220AC, TO-220FPAC
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	$T_c = 150^\circ\text{C}$	10	A
		ISOWATT220AC TO-220FPAC	$T_c = 145^\circ\text{C}$		
I_{FSM}	Surge non repetitive forward current		$t_p = 10\text{ ms}$ Sinusoidal	180	A
I_{RRM}	Repetitive peak reverse current		$t_p = 2\text{ }\mu\text{s}$ $F = 1\text{ KHz}$	1	A
T_{stg}	Storage temperature range			- 65 to + 175	$^\circ\text{C}$
T_j	Maximum junction temperature			175	$^\circ\text{C}$
dV/dt	Critical rate of rise of reverse voltage			10000	V/ μs

STPS1045D/F/FP

THERMAL RESISTANCES

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

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			100	μA
		$T_j = 125^{\circ}\text{C}$				15	mA
V_F^{**}	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 20\text{ A}$			0.84	V
		$T_j = 125^{\circ}\text{C}$	$I_F = 20\text{ A}$			0.72	
		$T_j = 125^{\circ}\text{C}$	$I_F = 10\text{ A}$			0.60	

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 :

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

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

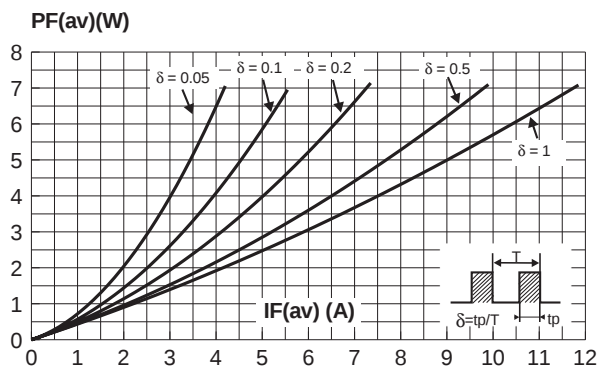


Fig. 2: Average current versus ambient temperature ($\delta : 0.5$).

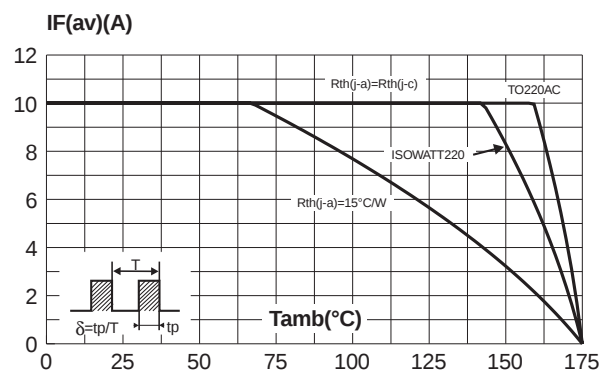


Fig. 3-1: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AC).

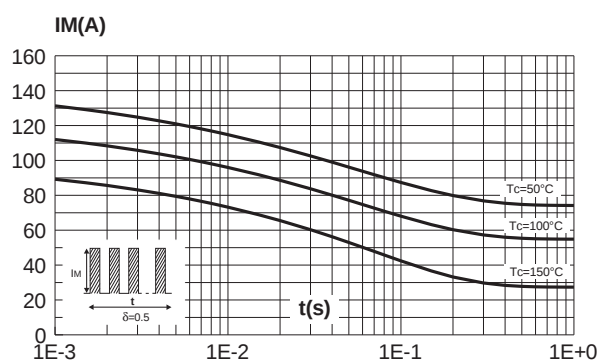


Fig. 4-1: Relative variation of thermal transient impedance junction to case versus pulse duration (TO-220AC).

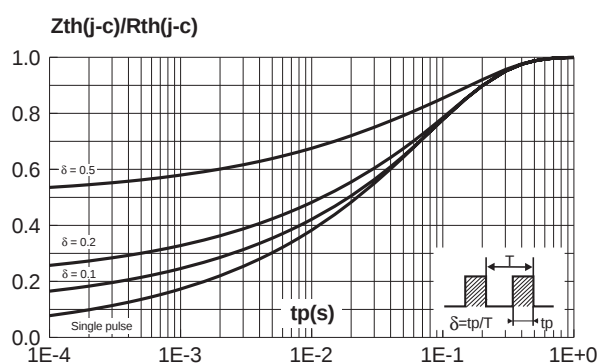


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

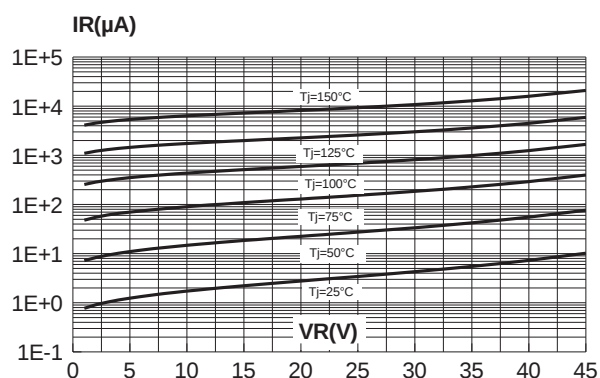


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values) (ISOWATT220AC, TO-220FPAC).

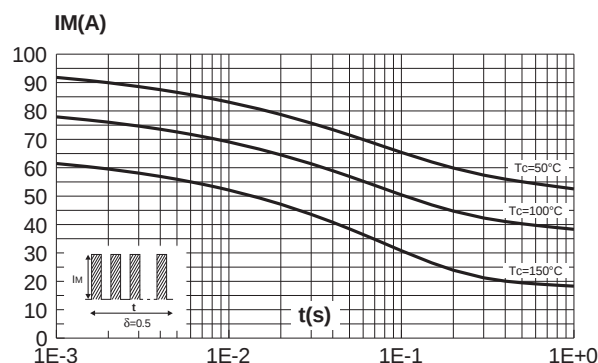


Fig. 4-2: Relative variation of thermal transient impedance junction to case versus pulse duration (ISOWATT220AC, TO-220FPAC).

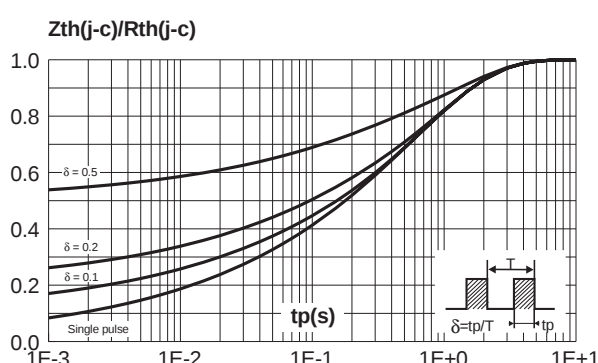


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

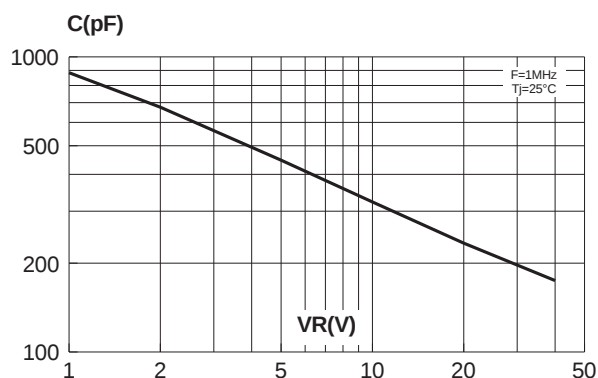
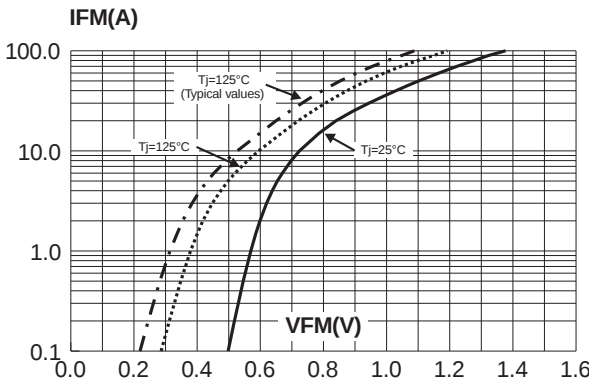


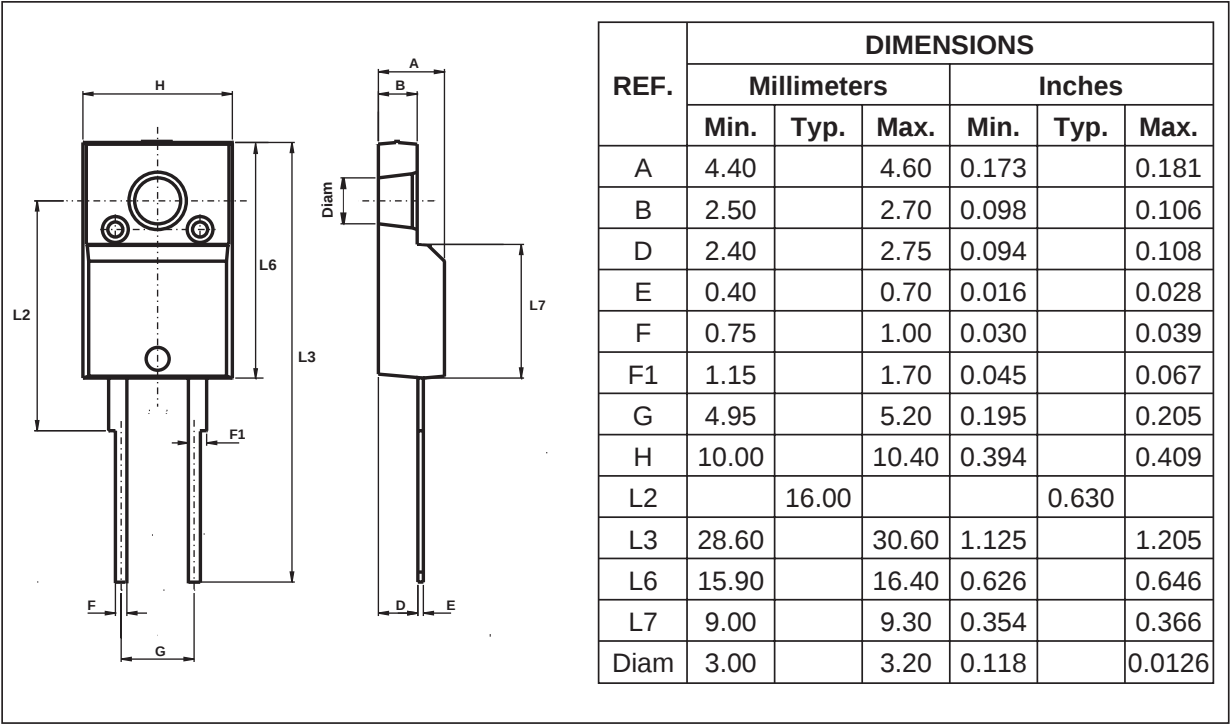
Fig. 7: Forward voltage drop versus forward current (maximum values).



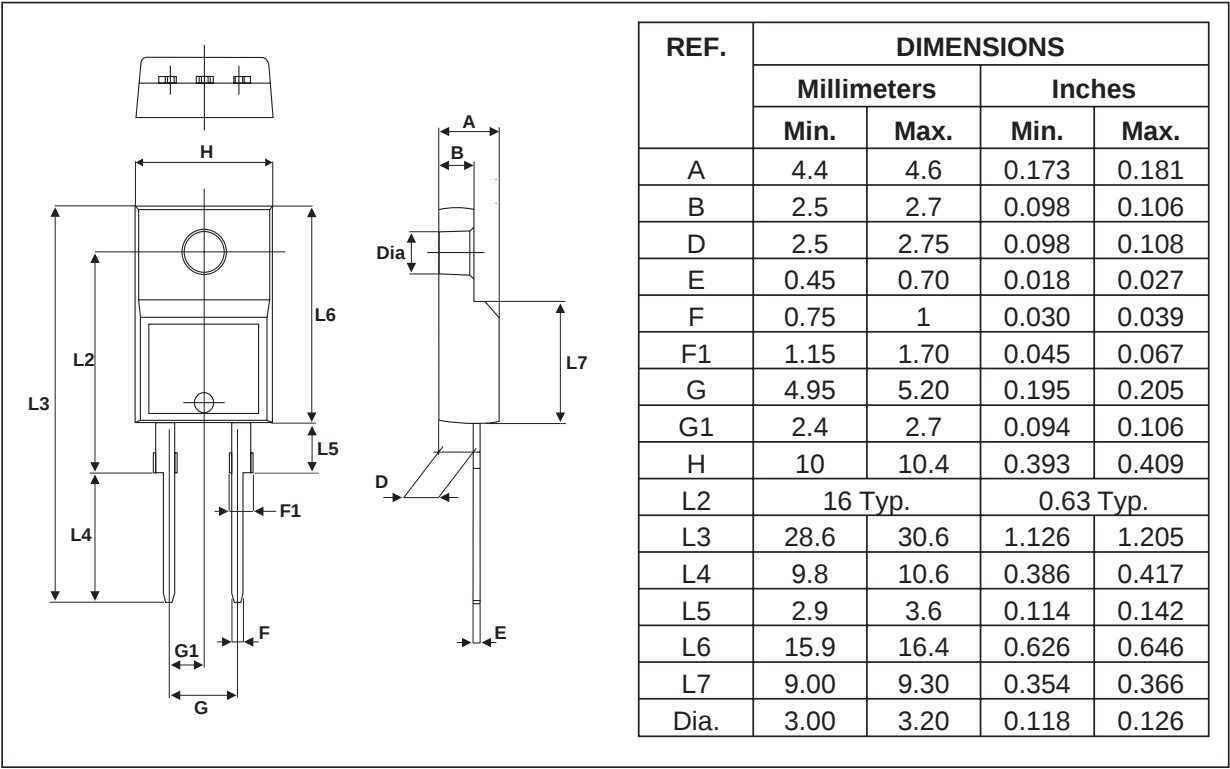
PACKAGE MECHANICAL DATA
TO-220AC

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



PACKAGE MECHANICAL DATA
TO-220FPAC



STPS1045D/F/FP

Type	Marking	Package	Weight	Base Qty	Delivery Mode
STPS1045D	STPS1045D	TO-220AC	1.86 g	50	Tube
STPS1045F	STPS1045F	ISOWATT220AC	2 g	50	Tube
STPS1045FP	STPS1045FP	TO-220FPAC	1.9 g	50	Tube

- Epoxy meets UL94, V0

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