

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
- AVALANCHE CAPABILITY SPECIFIED

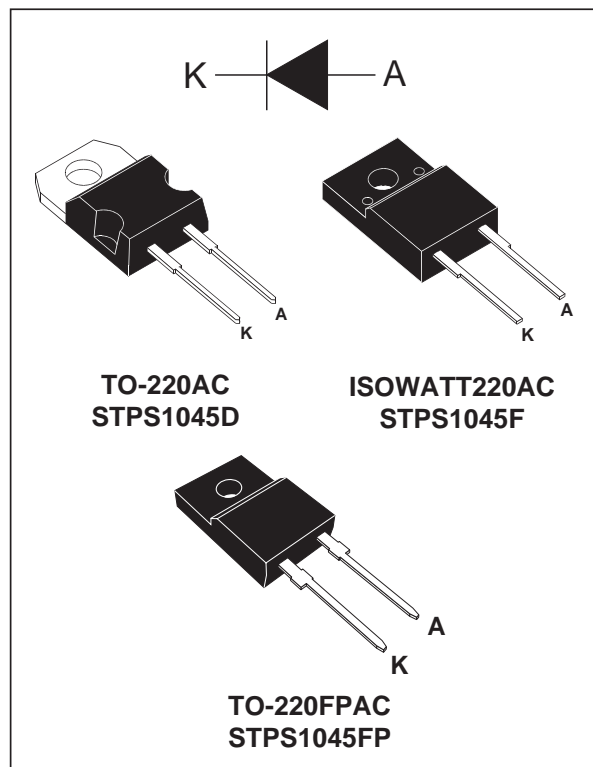
DESCRIPTION

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	10	A
		ISOWATT220AC TO-220FPAC		
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal	180	A
I_{RRM}	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$ $F = 1 \text{ KHz}$	1	A
P_{ARM}	Repetitive peak avalanche power	$t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$	4000	W
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	$^{\circ}\text{C}/\text{W}$
		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.

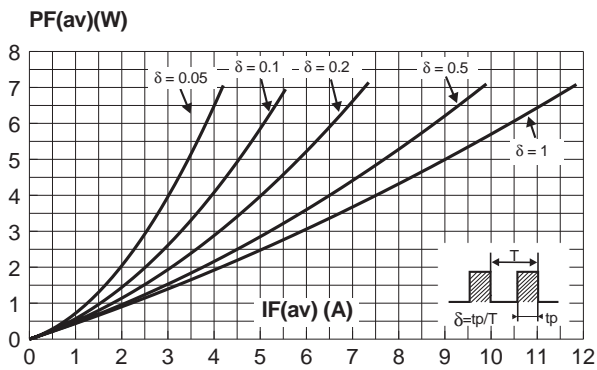


Fig. 2: Average current versus ambient temperature ($\delta : 0.5$).

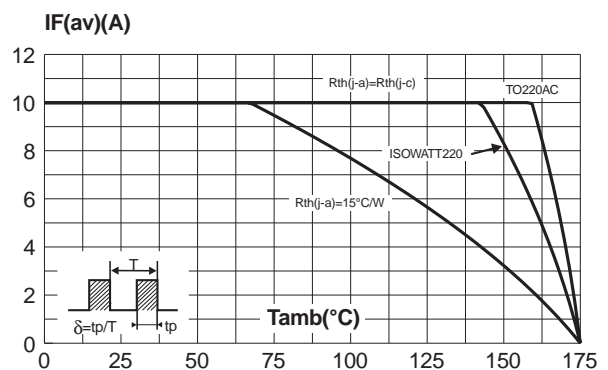


Fig. 3: Normalized avalanche power derating versus pulse duration.

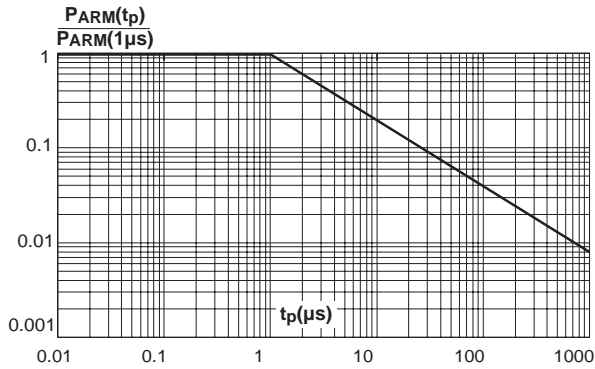


Fig. 4: Normalized avalanche power derating versus junction temperature.

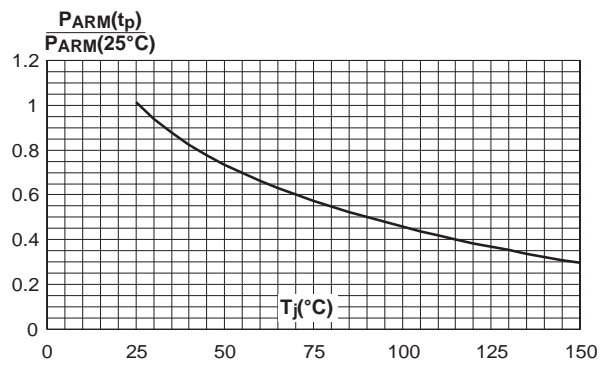


Fig. 5-1: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AC).

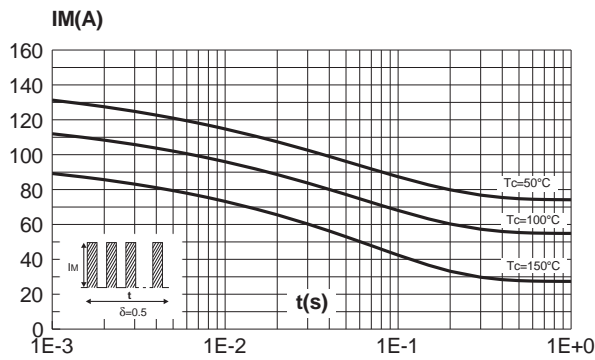


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (maximum values) (ISOWATT220AC, TO-220FPAC).

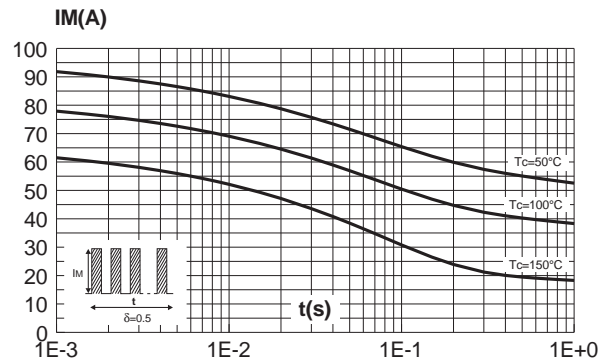


Fig. 6-1: Relative variation of thermal transient impedance junction to case versus pulse duration (TO-220AC).

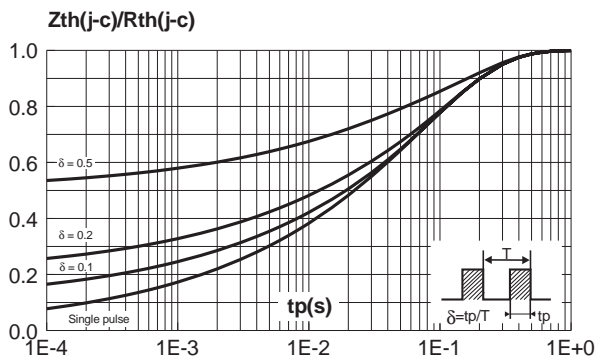


Fig. 6-2: Relative variation of thermal transient impedance junction to case versus pulse duration (ISOWATT220AC, TO-220FPAC).

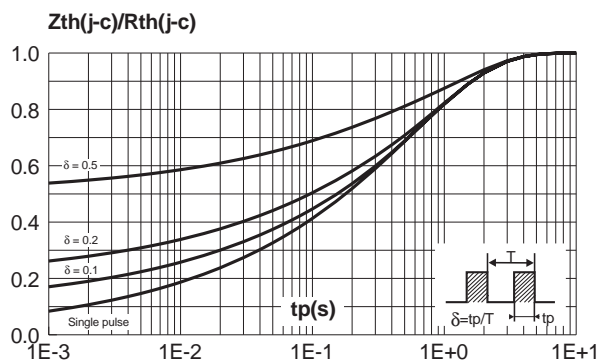


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

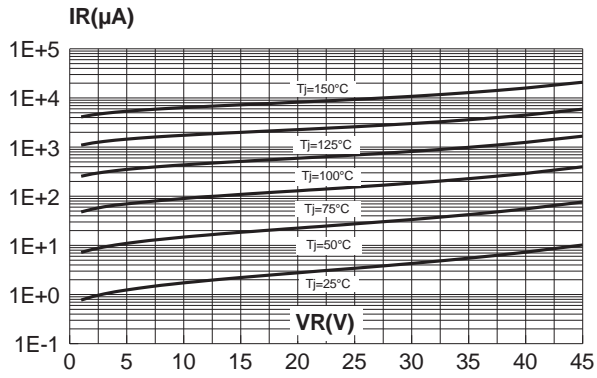


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

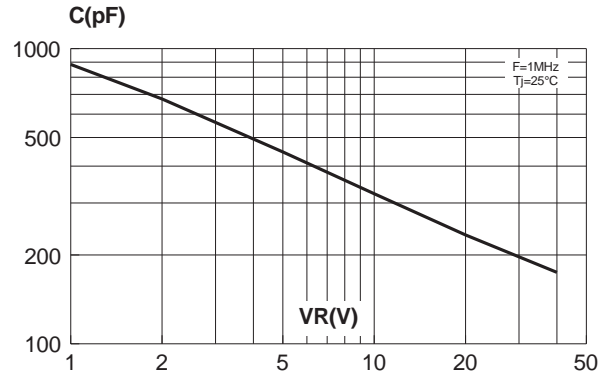
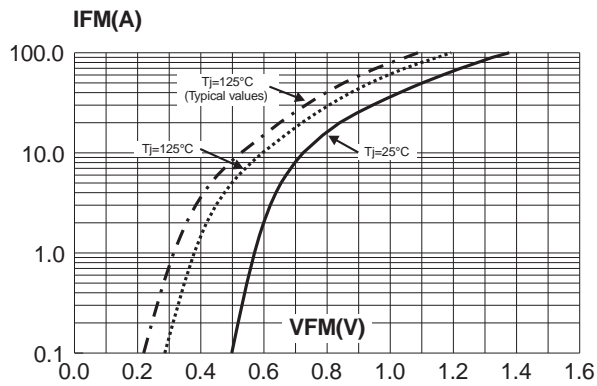
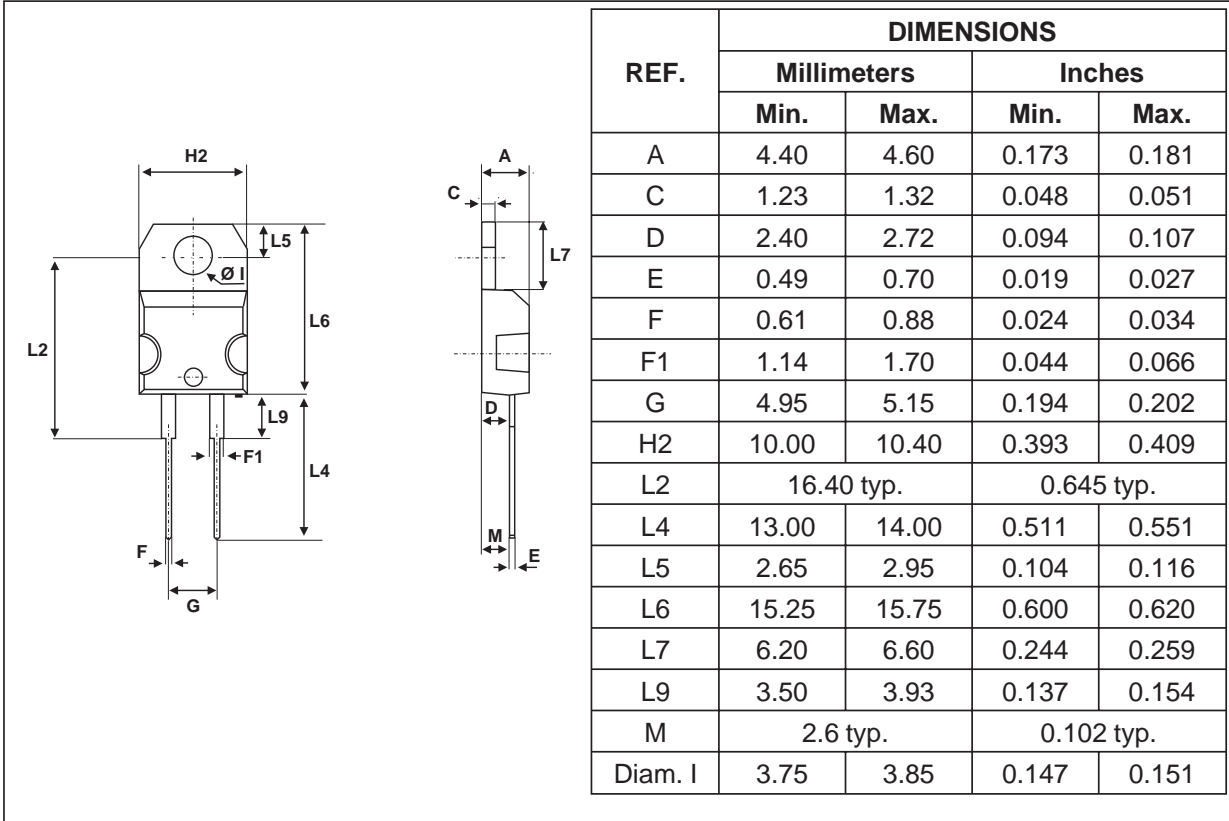


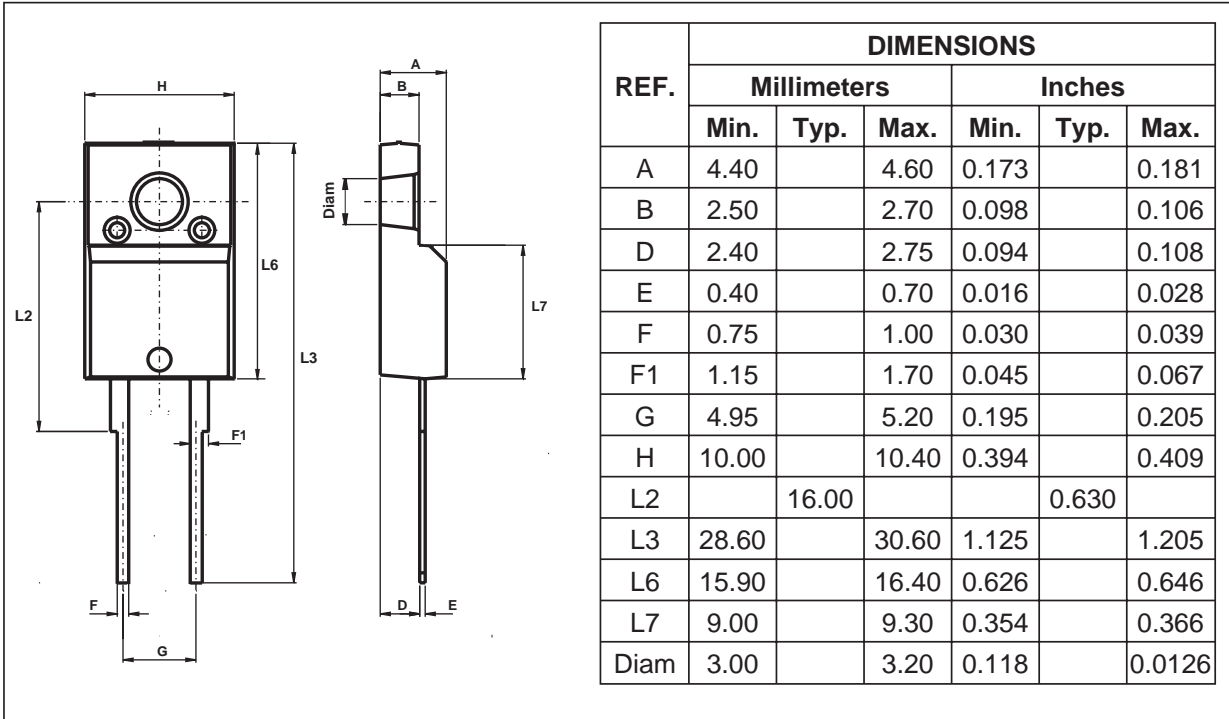
Fig. 9: Forward voltage drop versus forward current (maximum values).



PACKAGE MECHANICAL DATA
TO-220AC

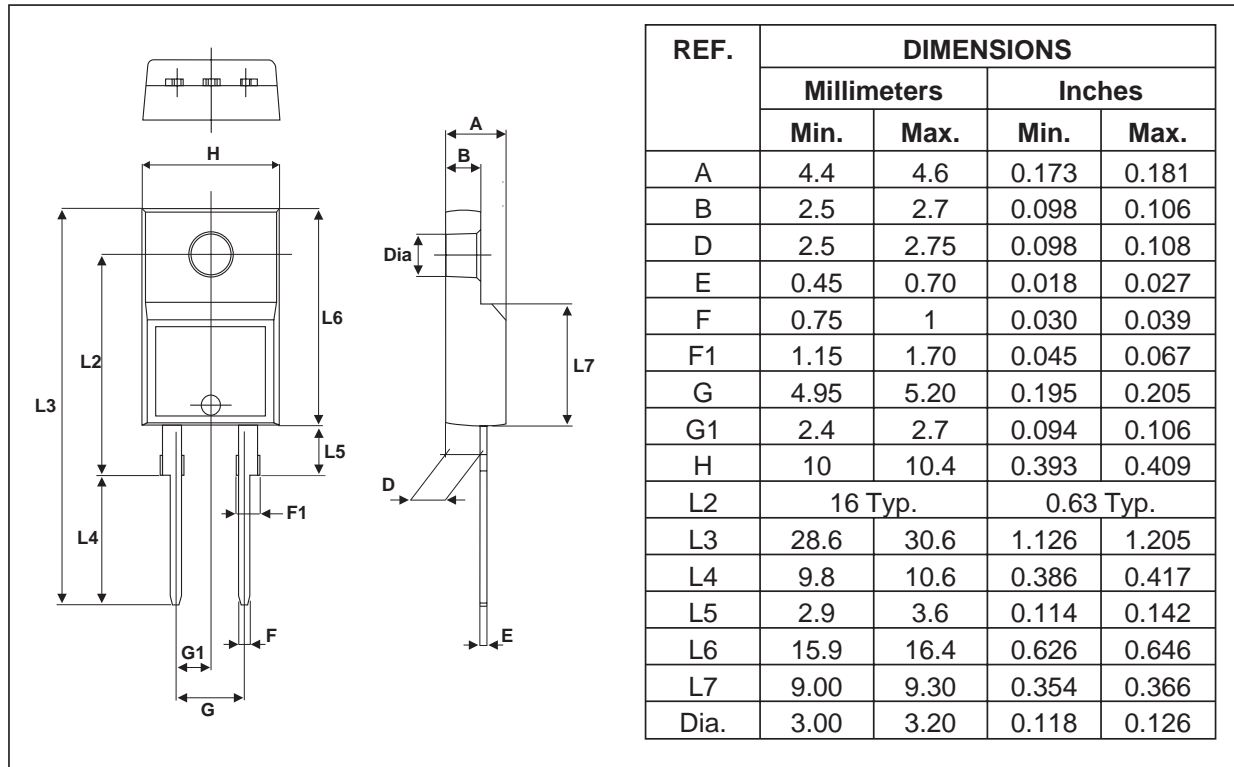


PACKAGE MECHANICAL DATA
ISOWATT220AC



STPS1045D/F/FP

PACKAGE MECHANICAL DATA TO-220FPAC



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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