



STPS1545D/F

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_F(AV)$	15 A
V_{RRM}	45 V
$T_j(max)$	175 °C
$V_F(max)$	0.57 V

FEATURES AND BENEFITS

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

DESCRIPTION

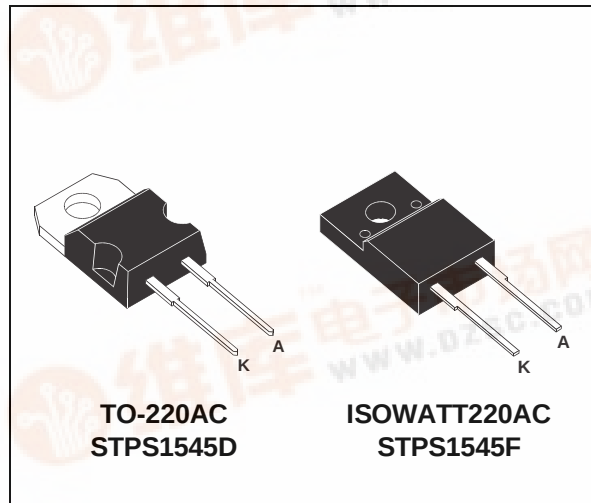
Single chip Schottky rectifier suited for Switch Mode Power Supply and high frequency DC to DC converters.

Packaged in TO-220AC or ISOWATT220AC, 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 δ = 0.5	TO-220AC	T _c = 155°C	15	A
		ISOWATT220AC	T _c = 130°C		
I _{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal		220	A
I _{RRM}	Repetitive peak reverse current	tp = 2 μs square F = 1kHz		1	A
I _{RSM}	Non repetitive peak reverse current	tp = 100 μs square		3	A
T _{stg}	Storage temperature range			- 65 to + 175	°C
T _j	Maximum operating junction temperature *			175	°C
dV/dt	Critical rate of rise of reverse voltage			10000	V/μs

* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$ thermal runaway condition for a diode on its own heatsink



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THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
R _{th (j-c)}	Junction to case	TO-220AC	1.6	°C/W
		ISOWATT220AC	4.0	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I _R *	Reverse leakage current	T _j = 25°C	V _R = V _{RRM}			200	μA
		T _j = 125°C			11	40	mA
V _F *	Forward voltage drop	T _j = 125°C	I _F = 15 A		0.5	0.57	V
		T _j = 25°C	I _F = 30 A			0.84	
		T _j = 125°C	I _F = 30 A		0.65	0.72	

Pulse test : * t_p = 380 μs, δ < 2%

To evaluate the conduction losses use the following equation :

$$P = 0.42 \times I_{F(AV)} + 0.01 \times I_{F(RMS)}^2$$

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

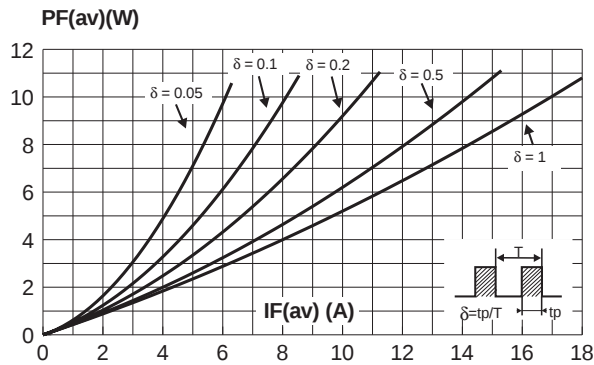


Fig. 2: Average current versus ambient temperature ($\delta : 0.5$).

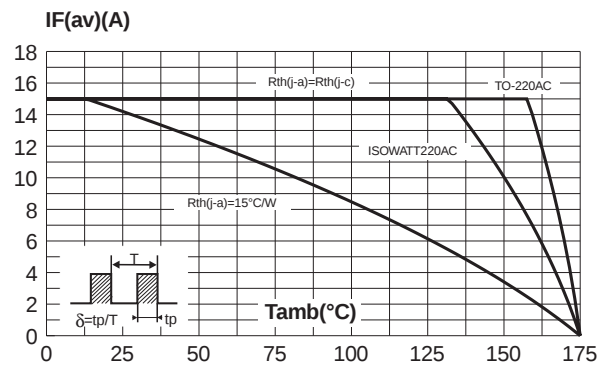


Fig. 3-1: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AC).

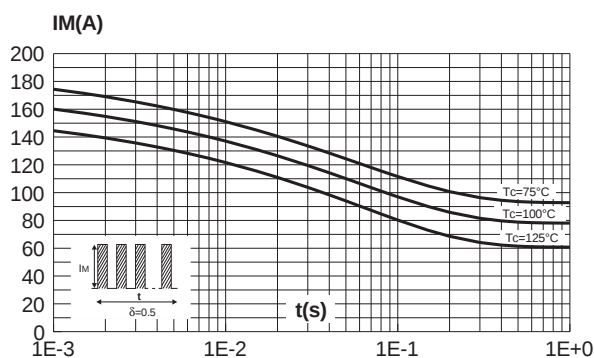


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values) (ISOWATT220AC).

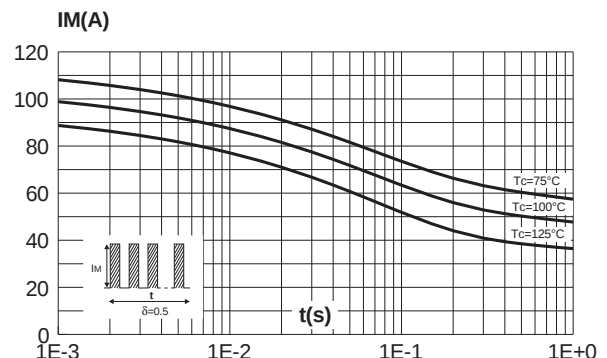


Fig. 4-1: Relative variation of thermal transient impedance junction to case versus pulse duration (TO-220AC).

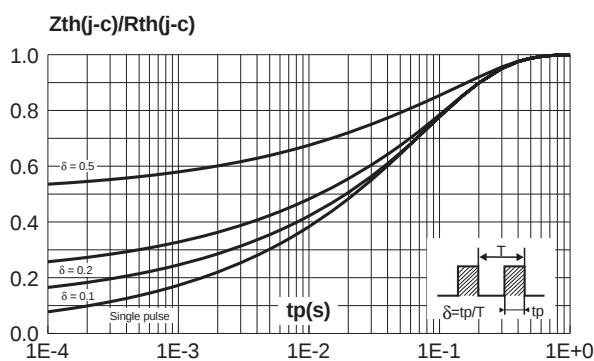


Fig. 4-2: Relative variation of thermal transient impedance junction to case versus pulse duration (ISOWATT220AC).

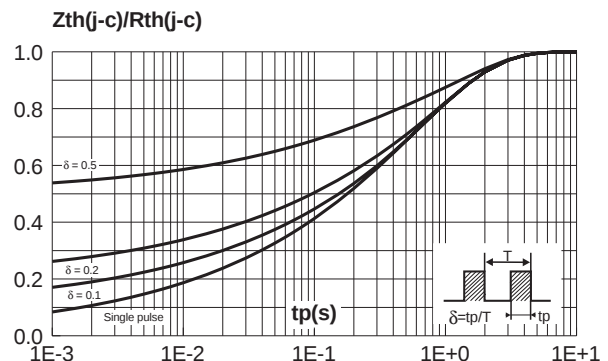


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

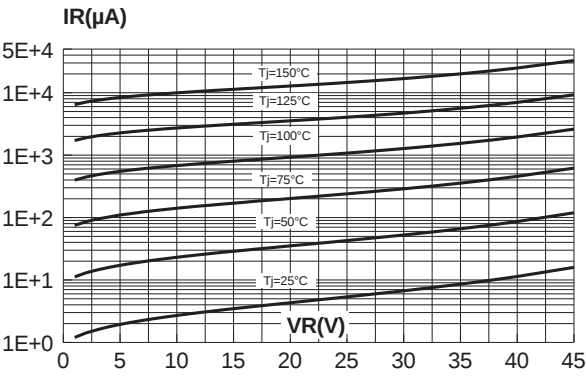


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

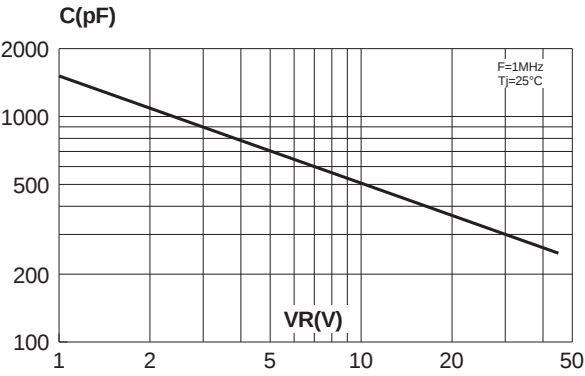
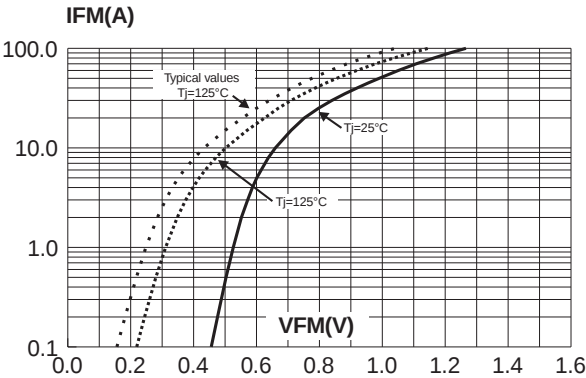


Fig. 7: Forward voltage drop versus forward current (maximum values).

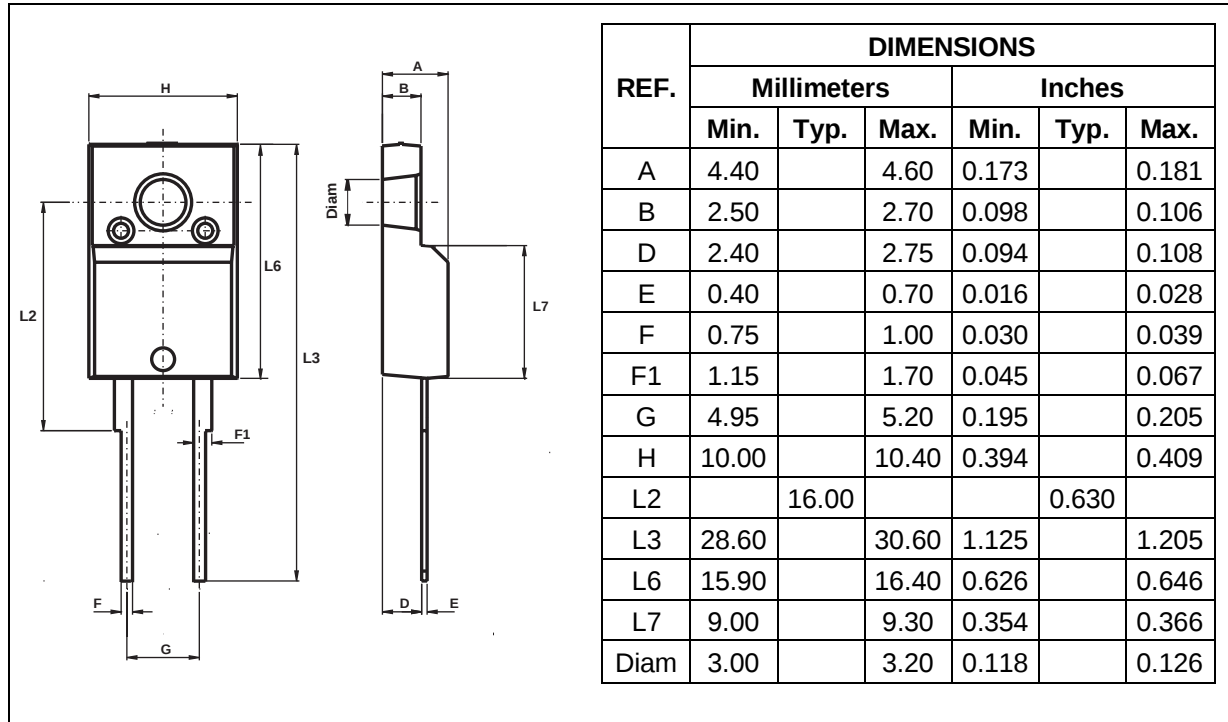


PACKAGE MECHANICAL DATA
 TO-220AC

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

STPS1545D/F

PACKAGE MECHANICAL DATA ISOWATT220AC



Type	Marking	Package	Weight	Base qty	Delivery mode
STPS1545D	STPS1545D	TO-220AC	1.86 g.	50	Tube
STPS1545F	STPS1545F	ISOWATT220AC	2.9 g.	50	Tube

- Cooling method: by conduction (C)
- Recommended torque value: 0.55 N.m.
- Maximum torque value: 0.7 N.m.
- Epoxy meets UL94,V0

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