



# STPS1545CT/CF/CG

## POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

I <sub>F(AV)</sub>	2 x 7.5 A
V <sub>RRM</sub>	45 V
T <sub>j(max)</sub>	175 °C
V <sub>F(max)</sub>	0.57 V

### FEATURES AND BENEFITS

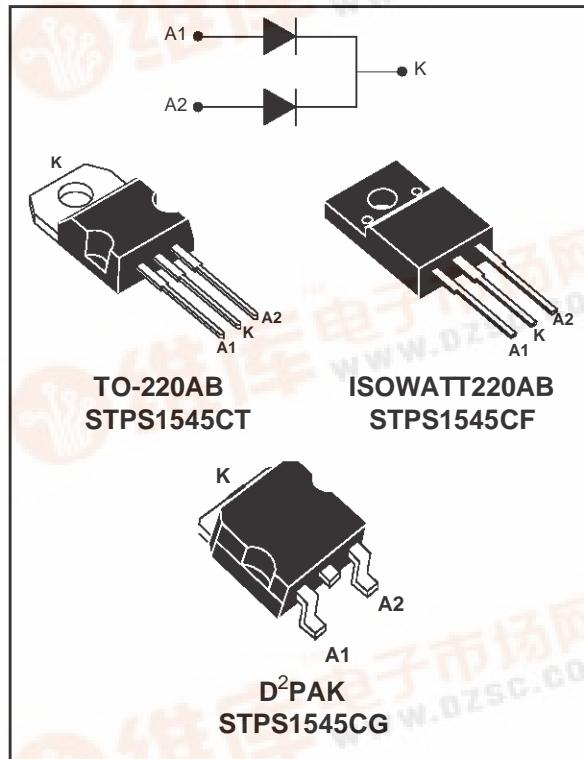
- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING
- INSULATED PACKAGE: ISOWATT220AB  
Insulating voltage = 2000V DC  
Capacitance = 12pF

### DESCRIPTION

Dual center tap Schottky rectifier suited for Switch-Mode Power Supply and high frequency DC to DC converters.

Packaged either in TO-220AB, ISOWATT220AB or D<sup>2</sup>PAK, this device is especially intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

### ABSOLUTE RATINGS (limiting values, per diode)



Symbol	Parameter				Value	Unit
V <sub>RRM</sub>	Repetitive peak reverse voltage				45	V
I <sub>F(RMS)</sub>	RMS forward current				20	A
I <sub>F(AV)</sub>	Average forward current $\delta = 0.5$	TO-220AB/ D <sup>2</sup> PAK	T <sub>c</sub> = 157°C	Per diode	7.5	A
		ISOWATT220AB	T <sub>c</sub> = 130°C	Per device	15	
I <sub>FSM</sub>	Surge non repetitive forward current		tp = 10 ms Sinusoidal		150	A
I <sub>RRM</sub>	Repetitive peak reverse current		tp = 2 μs square F = 1kHz		1	A
I <sub>RSR</sub>	Non repetitive peak reverse current		tp = 100 μs square		2	A
T <sub>stg</sub>	Storage temperature range				-65 to +175	°C
T <sub>j</sub>	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-220AB / D <sup>2</sup> PAK		Per diode	3.0	°C/W
		ISOWATT220AB		Total	1.7	
$R_{th(c)}$		TO-220AB / D <sup>2</sup> PAK		Per diode	5.5	
		ISOWATT220AB		Total	4.2	
				Coupling	0.35	
					2.9	

When the diodes 1 and 2 are used simultaneously:

$$\Delta T_j \text{ (diode 1)} = P \text{ (diode1)} \times R_{th(j-c)} \text{ (per diode)} + P \text{ (diode 2)} \times R_{th(c)}$$

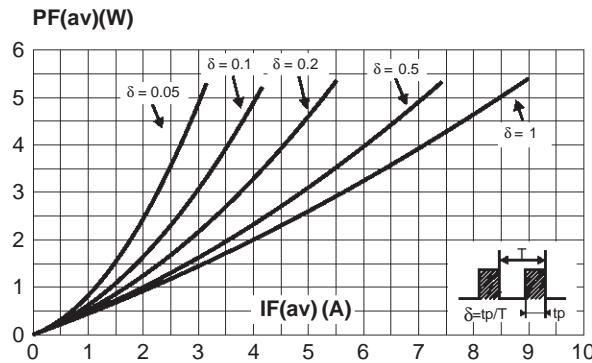
### STATIC ELECTRICAL CHARACTERISTICS (Per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
$I_R$ *	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			100	$\mu\text{A}$
		$T_j = 125^\circ\text{C}$			5	15	$\text{mA}$
$V_F$ *	Forward voltage drop	$T_j = 125^\circ\text{C}$	$I_F = 7.5 \text{ A}$		0.5	0.57	V
		$T_j = 25^\circ\text{C}$	$I_F = 15 \text{ A}$			0.84	
		$T_j = 125^\circ\text{C}$	$I_F = 15 \text{ A}$		0.65	0.72	

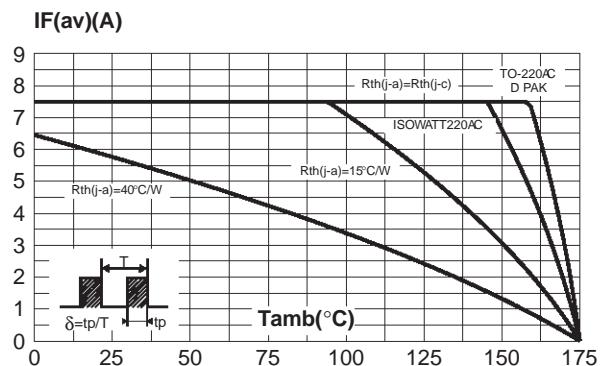
Pulse test : \*  $t_p = 380 \mu\text{s}$ ,  $\delta < 2\%$

To evaluate the conduction losses use the following equation :  
 $P = 0.42 \times I_{F(AV)} + 0.020 I_F^2(\text{RMS})$

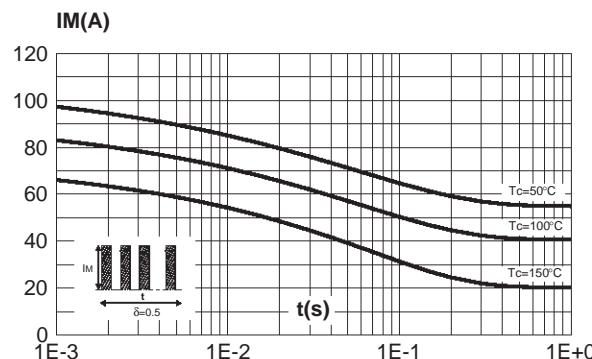
**Fig. 1:** Average forward power dissipation versus average forward current (per diode).



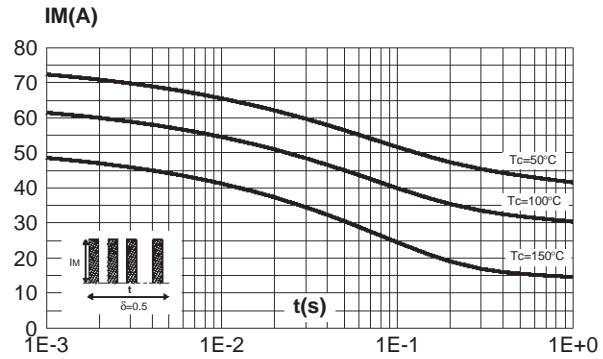
**Fig. 2:** Average current versus ambient temperature ( $\delta = 0.5$ , per diode).



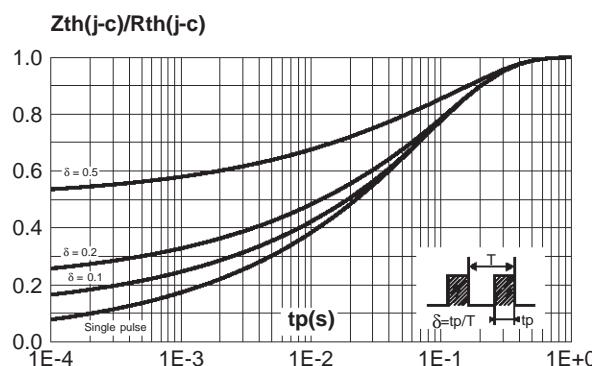
**Fig. 3-1:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (TO-220AB and D<sup>2</sup>PAK).



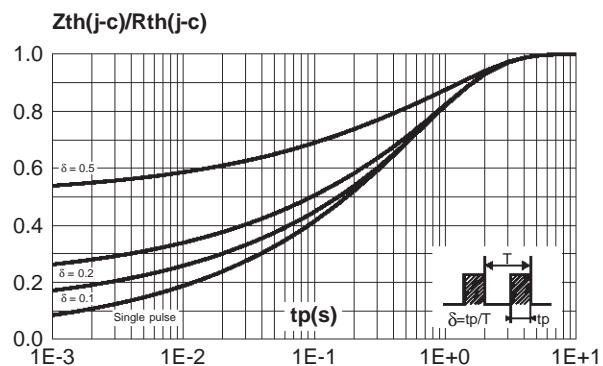
**Fig. 3-2:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (ISOWATT220AB).



**Fig. 4-1:** Relative variation of thermal transient impedance junction to case versus pulse duration (per diode) (TO-220AB and D<sup>2</sup>PAK).

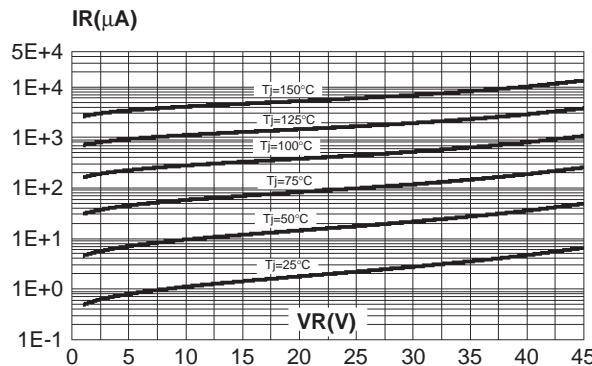


**Fig. 4-2:** Relative variation of thermal transient impedance junction to case versus pulse duration (per diode) (ISOWATT220AB).

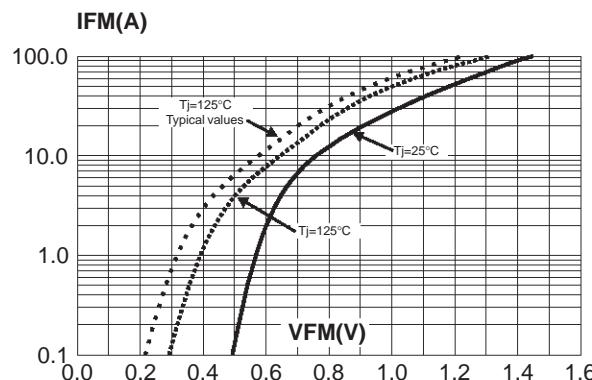


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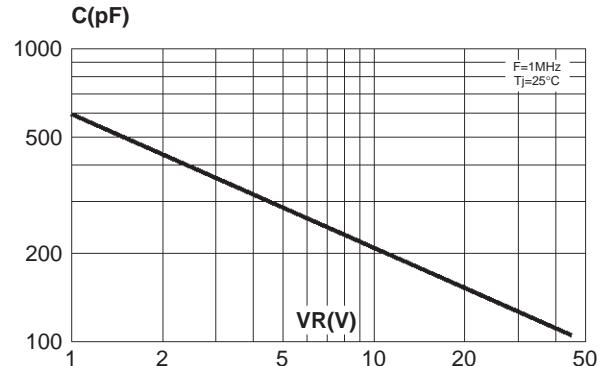
**Fig. 5:** Reverse leakage current versus reverse voltage applied (typical values, per diode).



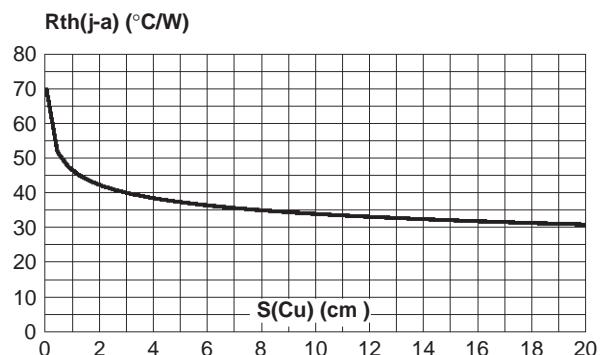
**Fig. 7:** Forward voltage drop versus forward current (maximum values, per diode).

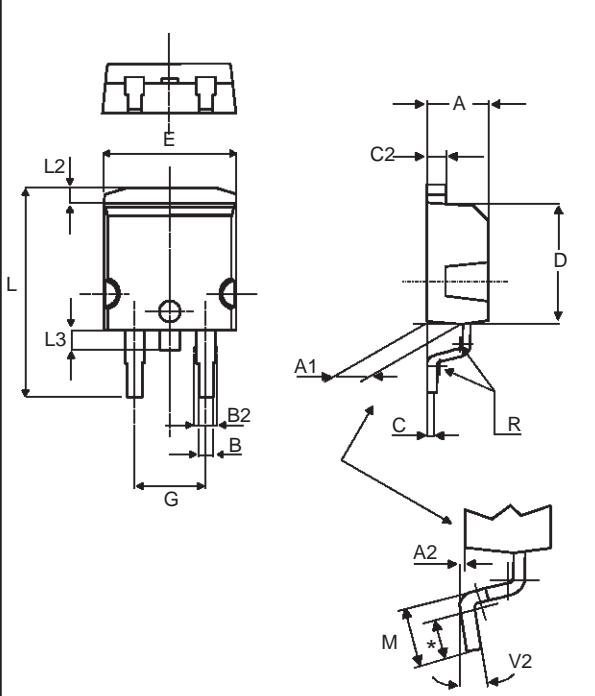


**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values, per diode).



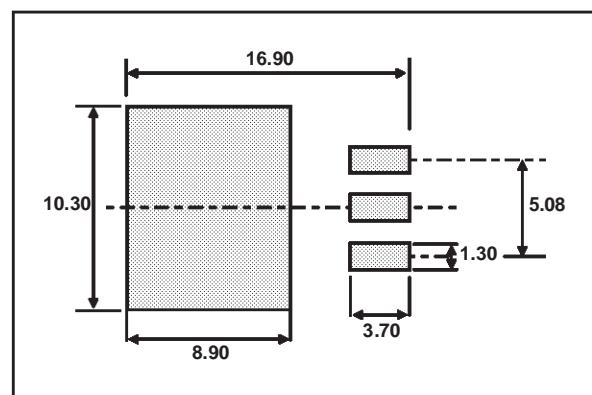
**Fig. 8:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board, copper thickness:  $35\mu m$ ).



**PACKAGE MECHANICAL DATA**  
**D<sup>2</sup>PAK**


\* FLAT ZONE NO LESS THAN 2mm

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.49	2.69	0.098	0.106
A2	0.03	0.23	0.001	0.009
B	0.70	0.93	0.027	0.037
B2	1.14	1.70	0.045	0.067
C	0.45	0.60	0.017	0.024
C2	1.23	1.36	0.048	0.054
D	8.95	9.35	0.352	0.368
E	10.00	10.40	0.393	0.409
G	4.88	5.28	0.192	0.208
L	15.00	15.85	0.590	0.624
L2	1.27	1.40	0.050	0.055
L3	1.40	1.75	0.055	0.069
M	2.40	3.20	0.094	0.126
R	0.40 typ.		0.016 typ.	
V2	0°	8°	0°	8°

**FOOTPRINT DIMENSIONS** (in millimeters)


## STPS1545CT/CF/CG

### PACKAGE MECHANICAL DATA TO-220AB

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
F2	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
G1	2.40	2.70	0.094	0.106
H2	10	10.40	0.393	0.409
L2	16.4 typ.		0.645 typ.	
L4	13	14	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.	3.75	3.85	0.147	0.151

The technical drawing illustrates the physical dimensions of the STPS1545CT/CF/CG package. The front view shows the overall height (L2), lead spacing (L4), lead thickness (L5), lead height (L6), lead gap (L9), lead width (G1), lead thickness (G), lead gap (F), lead width (E), lead thickness (D), lead gap (C), lead width (A), and lead gap (M). The side view shows the chip thickness (H2) and the total chip diameter (Dia). The top view shows the lead pitch (F1, F2) and lead gap (G1).

## PACKAGE MECHANICAL DATA

ISOWATT220AB

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
B	2.50	2.70	0.098	0.106
D	2.50	2.75	0.098	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
F2	1.15	1.70	0.045	0.067
G	4.95	5.20	0.195	0.205
G1	2.40	2.70	0.094	0.106
H	10.00	10.40	0.394	0.409
L2	16.00 typ.		0.630 typ.	
L3	28.60	30.60	1.125	1.205
L4	9.80	10.60	0.386	0.417
L6	15.90	16.40	0.626	0.646

Type	Marking	Package	Weight	Base qty	Delivery mode
STPS1545CT	STPS1545CT	TO-220AB	2.23 g.	50	Tube
STPS1545CF	STPS1545CF	ISOWATT220AB	2.08 g.	50	Tube
STPS1545CG	STPS1545CG	D2PAK	1.48 g.	50	Tube
STPS1545CG-TR	STPS1545CG	D2PAK	1.48 g.	1000	Tape & reel

- Cooling method: by conduction (C)
- Epoxy meets UL94,V0

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