

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 7.5 A
V_{RRM}	45 V
$T_j(\max)$	175 °C
$V_F(\max)$	0.57 V

FEATURES AND BENEFITS

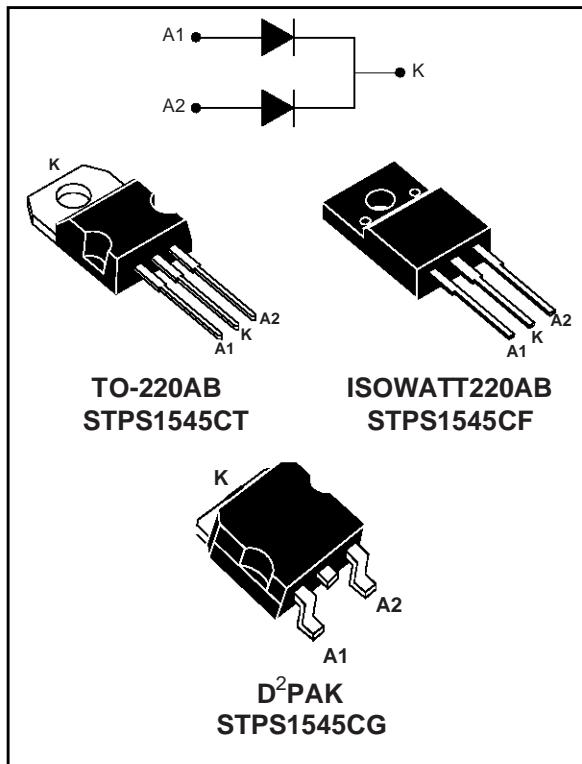
- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING
- INSULATED PACKAGE: ISOWATT220AB
Insulating voltage = 2000V DC
Capacitance = 12pF

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 D²PAK, 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_{RRM}	Repetitive peak reverse voltage				45	V		
$I_{F(RMS)}$	RMS forward current				20	A		
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO-220AB / D ² PAK	$T_c = 157^\circ\text{C}$	Per diode	7.5	A		
		ISOWATT220AB	$T_c = 130^\circ\text{C}$	Per device	15			
I_{FSM}	Surge non repetitive forward current		$t_p = 10 \mu\text{s}$ Sinusoidal		150	A		
I_{RRM}	Repetitive peak reverse current		$t_p = 2 \mu\text{s}$ square $F = 1\text{kHz}$		1	A		
I_{RSR}	Non repetitive peak reverse current		$t_p = 100 \mu\text{s}$ square		2	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

STPS1545CT/CF/CG

THERMAL RESISTANCES

Symbol	Parameter			Value	Unit
$R_{th(j-c)}$	Junction to case	TO-220AB / D ² PAK	Per diode Total	3.0 1.7	°C/W
		ISOWATT220AB	Per diode Total	5.5 4.2	
$R_{th(c)}$		TO-220AB / D ² PAK	Coupling	0.35	
		ISOWATT220AB		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	μA
		$T_j = 125^\circ\text{C}$			5	15	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).

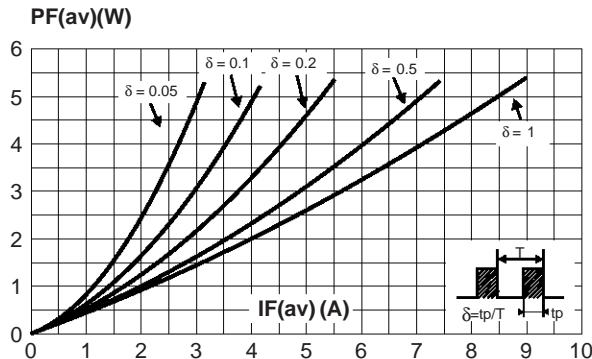


Fig. 2: Average current versus ambient temperature ($\delta = 0.5$, per diode).

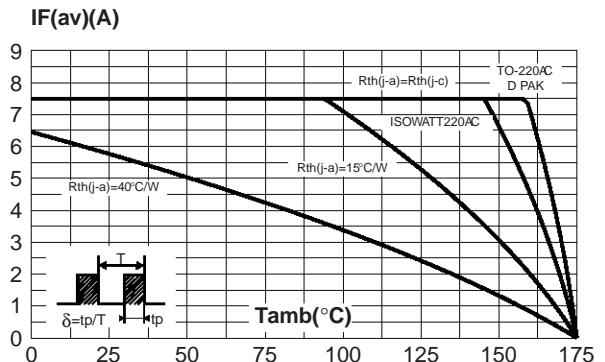


Fig. 3-1: Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (TO-220AB and D²PAK).

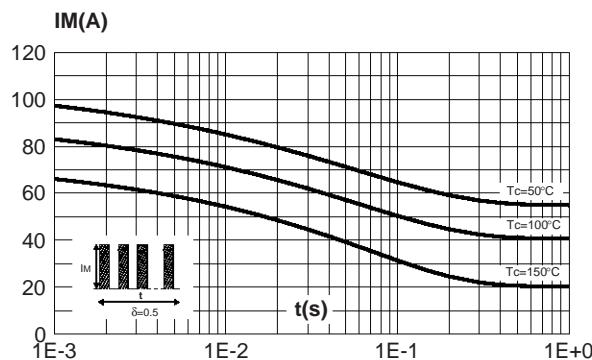


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (ISOWATT220AB).

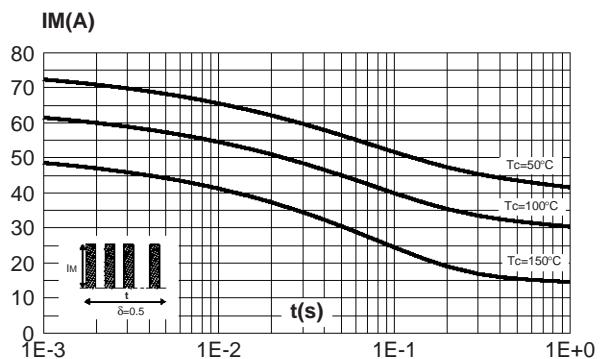


Fig. 4-1: Relative variation of thermal transient impedance junction to case versus pulse duration (per diode) (TO-220AB and D²PAK).

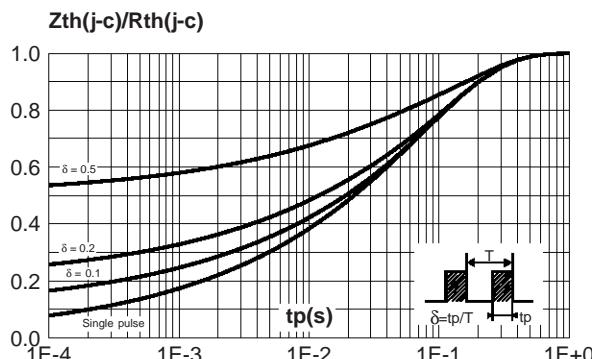
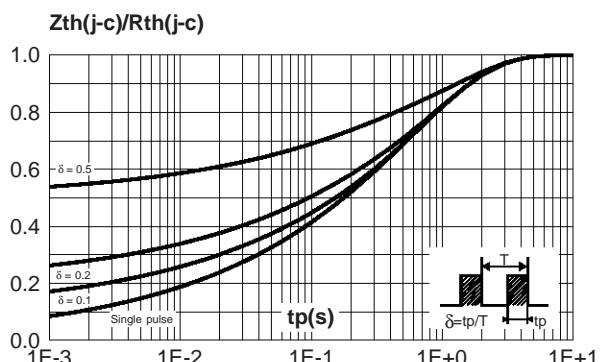


Fig. 4-2: Relative variation of thermal transient impedance junction to case versus pulse duration (per diode) (ISOWATT220AB).



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