

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	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: ISOWATT220AC
Insulating voltage = 2000V DC
Capacitance = 12pF

DESCRIPTION

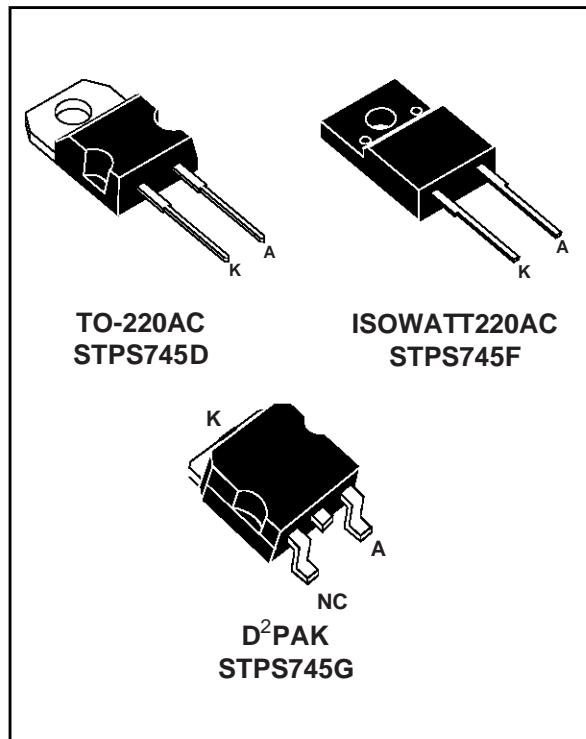
Single Schottky rectifier suited for Switch Mode Power Supply and high frequency DC to DC converters.

Packaged either in TO-220AC, ISOWATT220AC or D²PAK, 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			20	A		
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO-220AC / D ² PAK	$T_c = 160^\circ\text{C}$	7.5	A		
		ISOWATT220AC	$T_c = 145^\circ\text{C}$				
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms sinusoidal}$		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



STPS745D/F/G

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
R _{th} (j-c)	Junction to case	TO-220AC / D ² PAK	3.0	°C/W
		ISOWATT220AC	5.5	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I _R *	Reverse leakage current	T _j = 25°C	V _R = V _{RRM}			100	µA
		T _j = 125°C			5	15	mA
V _F *	Forward voltage drop	T _j = 125°C	I _F = 7.5 A		0.5	0.57	V
		T _j = 25°C	I _F = 15 A			0.84	
		T _j = 125°C	I _F = 15 A		0.65	0.72	

Pulse test : * tp = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation :

$$P = 0.42 \times I_{F(AV)} + 0.020 I_F^2(RMS)$$

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

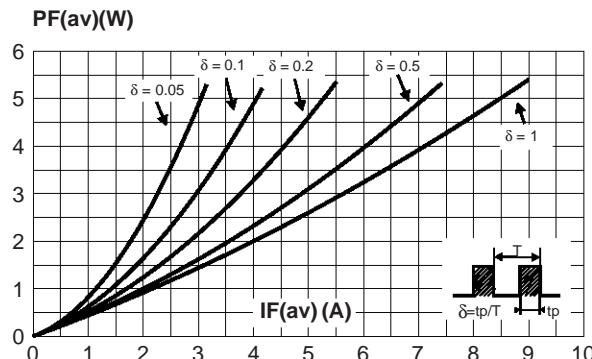


Fig. 3-1: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AC and D²PAK).

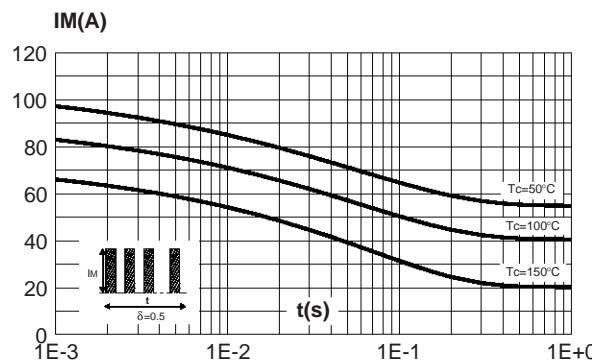


Fig. 4-1: Relative variation of thermal transient impedance junction to case versus pulse duration (TO-220AC and D²PAK).

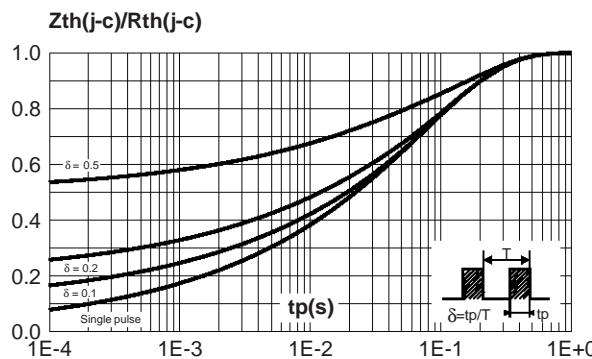


Fig. 2: Average current versus ambient temperature ($\delta = 0.5$).

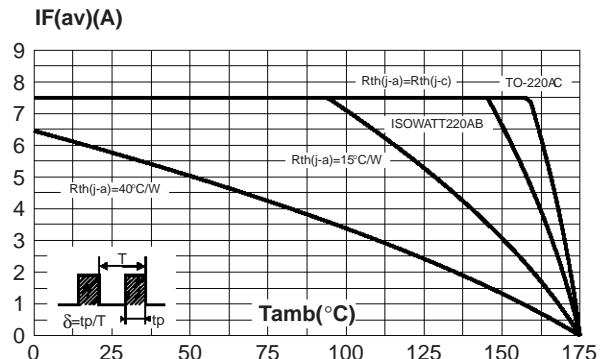


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values) (ISOwatt220AC).

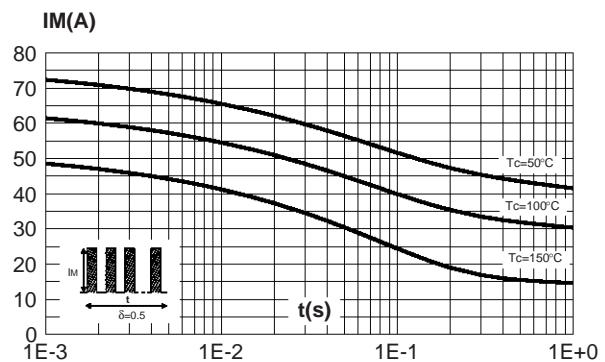
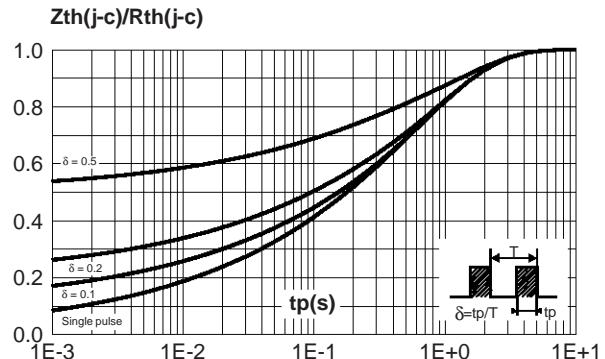


Fig. 4-2: Relative variation of thermal transient impedance junction to case versus pulse duration (ISOwatt220AC).



PACKAGE MECHANICAL DATA
ISOWATT220AC

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	2.50		2.70	0.098		0.106
D	2.40		2.75	0.094		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
G	4.95		5.20	0.195		0.205
H	10.00		10.40	0.394		0.409
L2		16.00			0.630	
L3	28.60		30.60	1.125		1.205
L6	15.90		16.40	0.626		0.646
L7	9.00		9.30	0.354		0.366
Diam	3.00		3.20	0.118		0.126

Type	Marking	Package	Weight	Base qty	Delivery mode
STPS745D	STPS745D	TO-220AC	1.86 g.	50	Tube
STPS745F	STPS745F	ISOWATT220AC	2 g.	50	Tube
STPS745G	STPS745G	D ² PAK	1.48 g.	50	Tube
STPS745G-TR	STPS745G	D ² PAK	1.48 g.	1000	Tape & reel

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