

STPS20L45CF/CW/CT/CFP/CG

LOW DROP POWER SCHOTTKY RECTIFIER

MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2 x 10 A
V_{RRM}	45 V
T_j (max)	150°C
V_F (max)	0.5 V

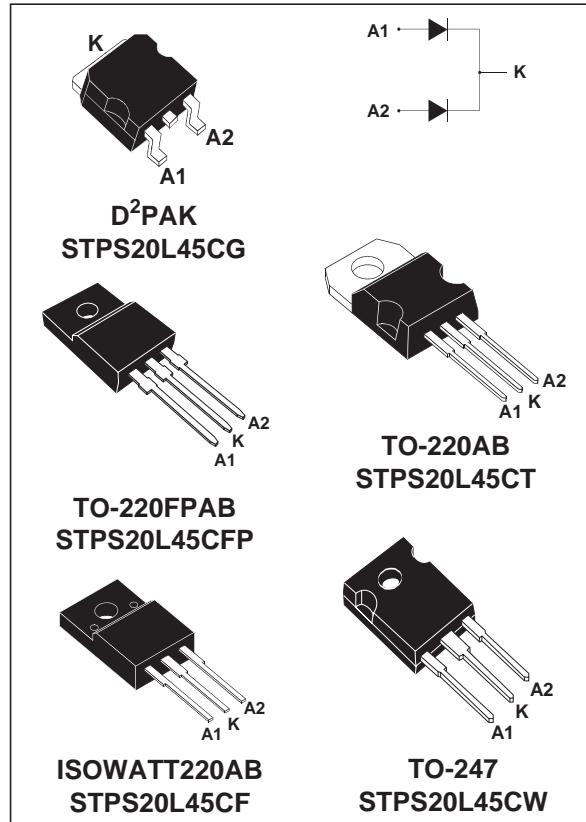
FEATURES AND BENEFITS

- LOW FORWARD VOLTAGE DROP MEANING VERY SMALL CONDUCTION LOSSES
- LOW SWITCHING LOSSES ALLOWING HIGH FREQUENCY OPERATION
- INSULATED PACKAGE: ISOWATT220AB, TO-220FPAB
Insulating voltage = 2000V DC
Capacitance = 12pF
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Dual center tap Schottky rectifiers designed for high frequency switched mode power supplies and DC to DC converters.

These devices are 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				30	A
$I_{F(AV)}$	Average forward current	TO-220AB / D ² PAK	$T_c = 135^\circ C$	Per diode	10	A
		TO-247	$\delta = 0.5$	Per device	20	
		ISOWATT220AB	$T_c = 115^\circ C$	Per diode	10	A
		TO-220FPAB	$\delta = 0.5$	Per device	20	
I_{FSM}	Surge non repetitive forward current				180	A
I_{RRM}	Peak repetitive reverse current				1	A
I_{RSR}	Non repetitive peak reverse current				2	A
P_{ARM}	Repetitive peak avalanche power				4000	W
T_{stg}	Storage temperature range				- 65 to + 150	°C
T_j	Maximum operating junction temperature *				150	°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	ISOWATT220AB TO-220FPAB	Per diode	4.5	°C/W
			Total	3.5	
			Coupling	2.5	
$R_{th(j-c)}$	Junction to case	TO-247	Per diode	2.2	°C/W
			Total	1.20	
			Coupling	0.3	
$R_{th(j-c)}$	Junction to case	TO-220AB D ² PAK	Per diode	2.2	°C/W
			Total	1.3	
			Coupling	0.3	

When the diodes 1 and 2 are used simultaneously :

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

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			0.2	mA
		$T_j = 125^\circ\text{C}$			65	130	mA
V_F *	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 10 \text{ A}$			0.55	V
		$T_j = 125^\circ\text{C}$	$I_F = 10 \text{ A}$			0.44	
		$T_j = 25^\circ\text{C}$	$I_F = 20 \text{ A}$			0.73	
		$T_j = 125^\circ\text{C}$	$I_F = 20 \text{ A}$			0.62	

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

To evaluate the conduction losses use the following equation :

$$P = 0.28 \times I_{F(AV)} + 0.022 I_{F}^2(\text{RMS})$$

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

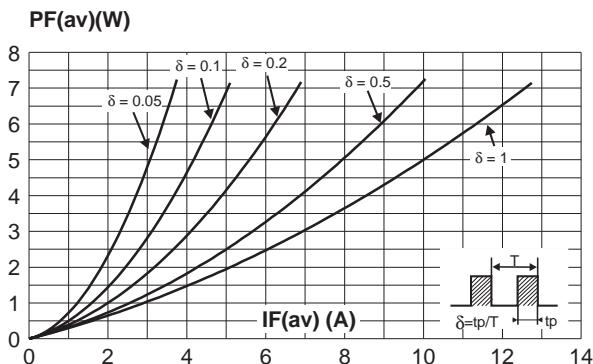
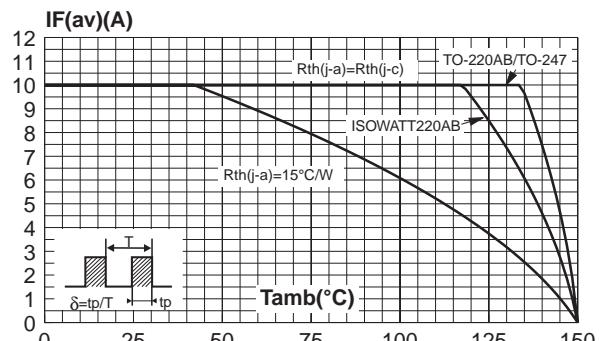


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$, per diode).



PACKAGE MECHANICAL DATA
TO-247

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.85		5.15	0.191		0.203
D	2.20		2.60	0.086		0.102
E	0.40		0.80	0.015		0.031
F	1.00			1.40	0.039	0.055
F1		3.00			0.118	
F2		2.00			0.078	
F3	2.00			2.40	0.078	0.094
F4	3.00			3.40	0.118	0.133
G		10.90			0.429	
H	15.45		15.75	0.608		0.620
L	19.85		20.15	0.781		0.793
L1	3.70			4.30	0.145	0.169
L2		18.50			0.728	
L3	14.20			14.80	0.559	0.582
L4		34.60				1.362
L5		5.50				0.216
M	2.00			3.00	0.078	0.118
V		5°			5°	
V2		60°			60°	
Dia.	3.55			3.65	0.139	0.143

- Cooling method : C
- Recommended torque value : 0.8m.N
- Maximum torque value : 1.0m.N

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS20L45CF	STPS20L45CF	ISOWATT220AB	2.1g	50	Tube
STPS20L45CFP	STPS20L45CFP	TO-220FPAB	2g	50	Tube
STPS20L45CT	STPS20L45CT	TO-220AB	2g	50	Tube
STPS20L45CW	STPS20L45CW	TO-247	4.4g	30	Tube
STPS20L45CG	STPS20L45CG	D ² PAK	1.48g	50	Tube
STPS20L45CG-TR	STPS20L45CG	D ² PAK	1.48g	1000	Tape & Reel

- Epoxy meets UL94, V0