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## LOW DROP POWER SCHOTTKY RECTIFIER

### MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2 x 30 A
$T_j$ (max)	150°C
$V_{RRM}$	45 V
$V_F$ (max)	0.50 V

### FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING
- LOW FORWARD VOLTAGE DROP
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED

### DESCRIPTION

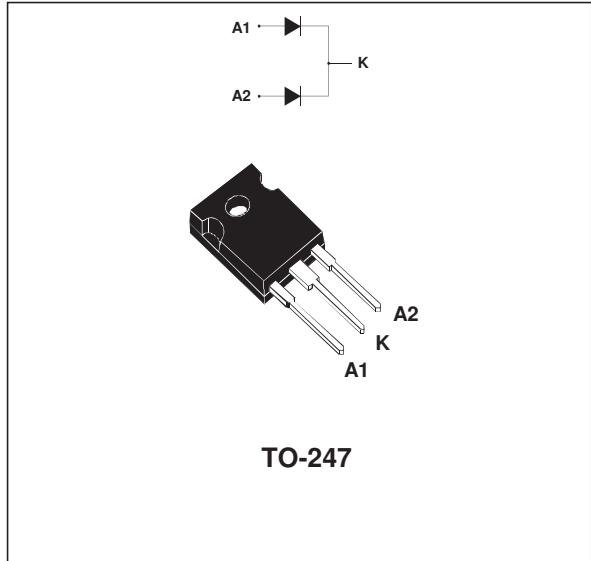
Dual center tap schottky barrier rectifier suited for 5V output in off line AC/DC power supplies.

Packaged in TO-247, this device is intended for use in low voltage, high frequency converters, 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			50	A
$I_{F(AV)}$	Average forward current	$T_c = 135^\circ C$ $\delta = 0.5$	Per diode Per device	30 60	A
$I_{FSM}$	Surge non repetitive forward current	tp = 10 ms Sinusoidal		600	A
$I_{RRM}$	Repetitive peak reverse current	tp = 2 $\mu s$ square F=1kHz		2	A
$I_{RSM}$	Non repetitive peak reverse current	tp = 100 $\mu s$ square		4	A
$P_{ARM}$	Repetitive peak avalanche power	tp = 1 $\mu s$ $T_j = 25^\circ C$		12300	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/ $\mu s$

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



## STPS60L45CW

### THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	0.75 Per diode	°C/W
	Total	0.42	
$R_{th(c)}$	Coupling	0.1	°C/W

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)

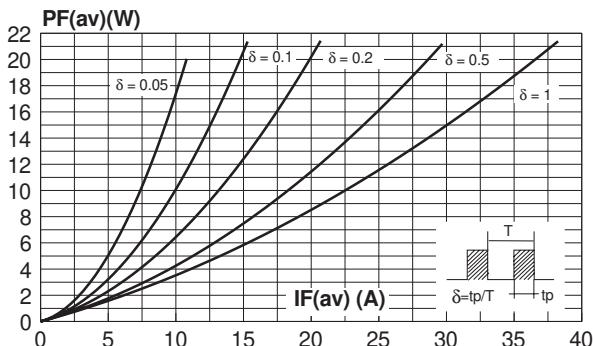
Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = 45 \text{ V}$			1.5	mA
		$T_j = 125^\circ\text{C}$				175	
$V_F^*$	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 30 \text{ A}$			0.55	V
		$T_j = 125^\circ\text{C}$	$I_F = 30 \text{ A}$			0.44	
		$T_j = 25^\circ\text{C}$	$I_F = 60 \text{ A}$			0.73	
		$T_j = 125^\circ\text{C}$	$I_F = 60 \text{ A}$			0.64	

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

To evaluate the conduction losses use the following equation :

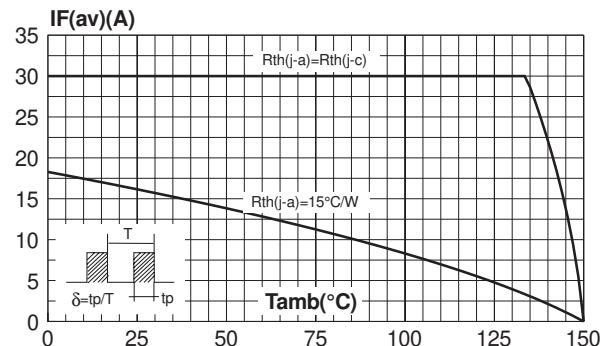
$$P = 0.28 \times I_{F(AV)} + 0.0073 I_{F(RMS)}^2$$

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

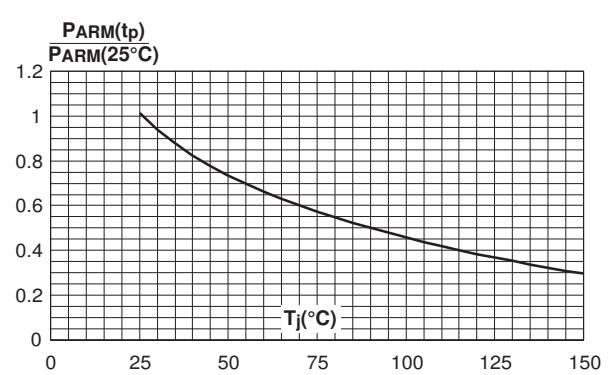
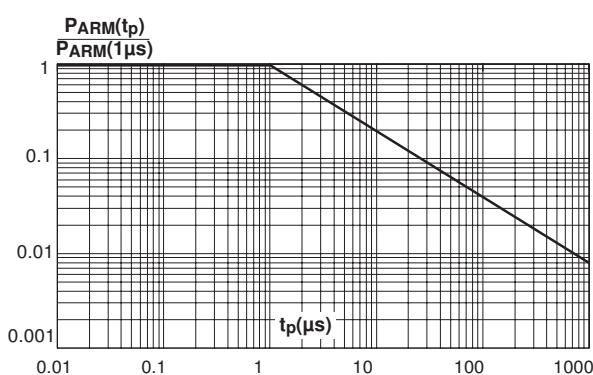


**Fig. 3:** Normalized avalanche power derating versus pulse duration.

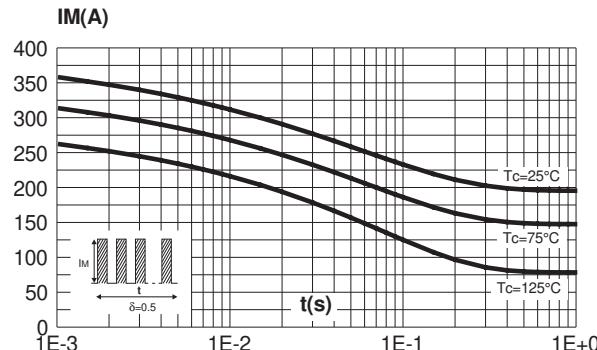
**Fig. 2:** Average current versus ambient temperature ( $\delta=0.5$ , per diode).



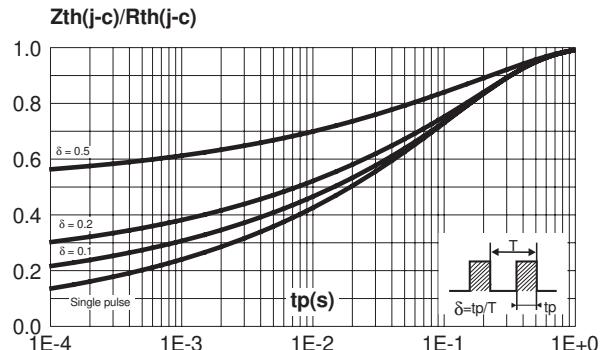
**Fig. 4:** Normalized avalanche power derating versus junction temperature.



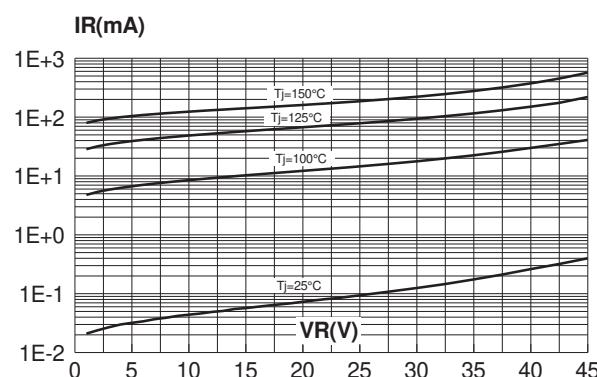
**Fig. 5:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode).



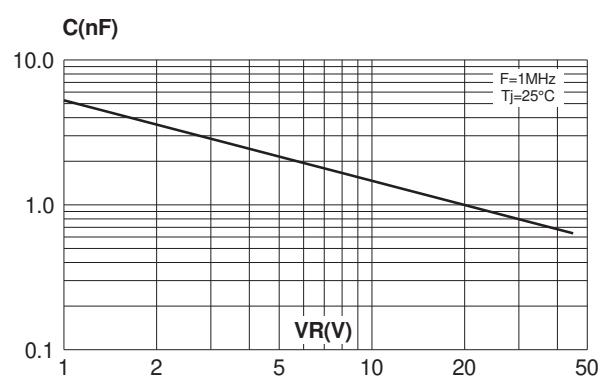
**Fig. 6:** Relative variation of thermal transient impedance junction to case versus pulse duration.



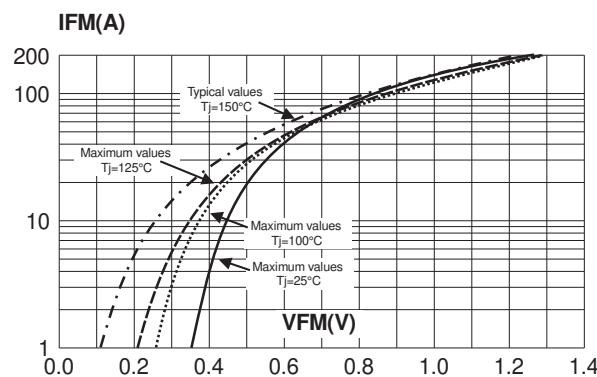
**Fig. 7:** Reverse leakage current versus reverse voltage applied (typical values, per diode).



**Fig. 8:** Junction capacitance versus reverse voltage applied (typical values, per diode).

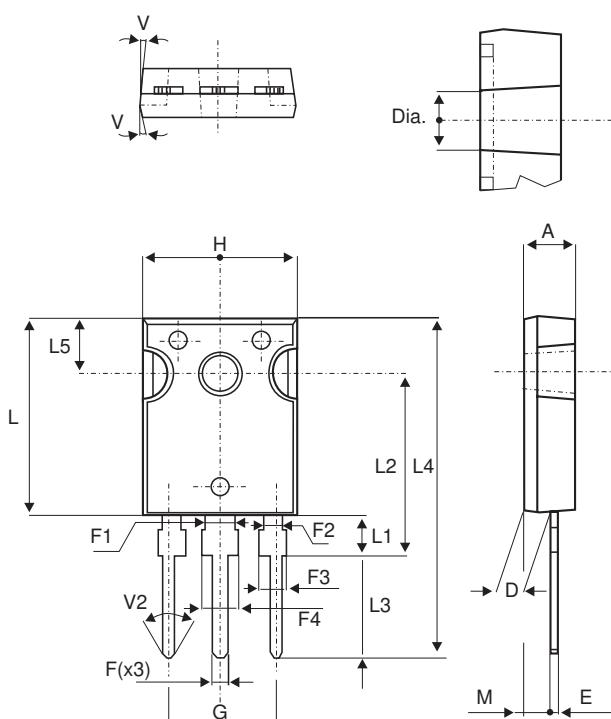


**Fig. 9:** Forward voltage drop versus forward current (per diode).



## STPS60L45CW

### 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

Type	Marking	Package	Weight	Base qty	Delivery mode
STPS60L45CW	STPS60L45CW	TO-247	4.36 g	30	Tube

- Cooling method : C
- RECOMMENDED TORQUE VALUE : 0.8M.N
- MAXIMUM TORQUE VALUE : 1.0M.N
- EPOXY MEETS UL94,V0

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