



# STPS80150CW

## HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

### MAJOR PRODUCTS CHARACTERISTICS

<b>I<sub>F(AV)</sub></b>	<b>2 x 40 A</b>
<b>V<sub>RRM</sub></b>	<b>150 V</b>
<b>T<sub>j</sub> (max)</b>	<b>175°C</b>
<b>V<sub>F</sub> (max)</b>	<b>0.74 V</b>

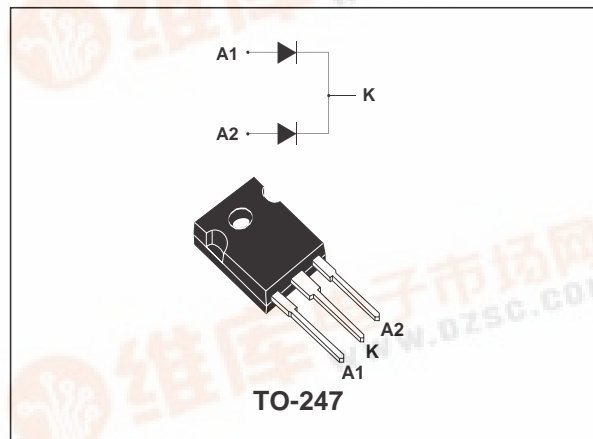
### FEATURES AND BENEFITS

- HIGH JUNCTION TEMPERATURE CAPABILITY
- LOW LEAKAGE CURRENT
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- LOW THERMAL RESISTANCE
- HIGH FREQUENCY OPERATION

### DESCRIPTION

Dual center tap Schottky rectifiers suited for high frequency switch mode power supply.

Packaged in TO-247, this devices is intended for use to enhance the reliability of the application.



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

Symbol	Parameter		Value	Unit
V <sub>RRM</sub>	Repetitive peak reverse voltage		150	V
I <sub>F(RMS)</sub>	RMS forward current		80	A
I <sub>F(AV)</sub>	Average forward current	T <sub>c</sub> = 150°C	40	A
		δ = 0.5	80	A
I <sub>FSM</sub>	Surge non repetitive forward current	t <sub>p</sub> = 10 ms Sinusoidal	500	A
P <sub>ARM</sub>	Repetitive peak avalanche power	t <sub>p</sub> = 1μs T <sub>j</sub> = 25°C	38200	W
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

# STPS80150CW

## THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	0.7	$^{\circ}C/W$
		Total	0.5	
$R_{th(j-c)}$	Junction to case	Coupling	0.3	$^{\circ}C/W$

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)

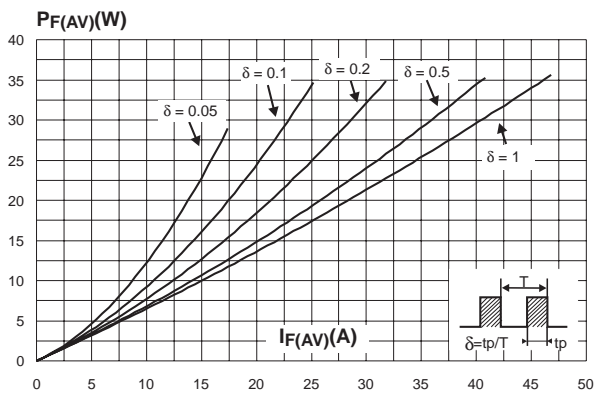
Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit	
$I_R^*$	Reverse leakage current	$T_j = 25^{\circ}C$	$V_R = V_{RRM}$		5	30	$\mu A$	
		$T_j = 125^{\circ}C$			6	20	mA	
$V_F^*$	Forward voltage drop	$T_j = 25^{\circ}C$	$I_F = 40 A$		0.8	0.84	V	
		$T_j = 125^{\circ}C$		$I_F = 40 A$		0.68		0.74
		$T_j = 25^{\circ}C$		$I_F = 80 A$		0.9		0.96
		$T_j = 125^{\circ}C$		$I_F = 80 A$		0.8		0.86

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

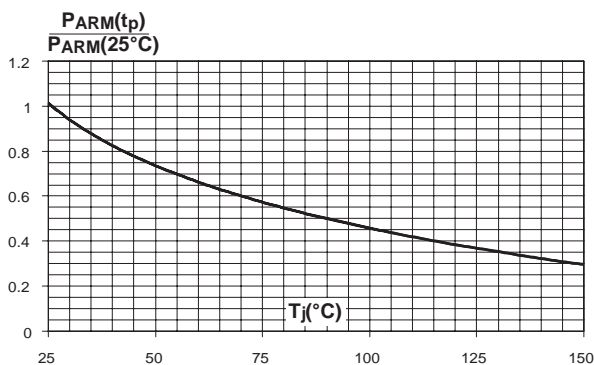
To evaluate the conduction losses use the following equation:

$$P = 0.62 \times I_F(AV) + 0.003 I_F^2(RMS)$$

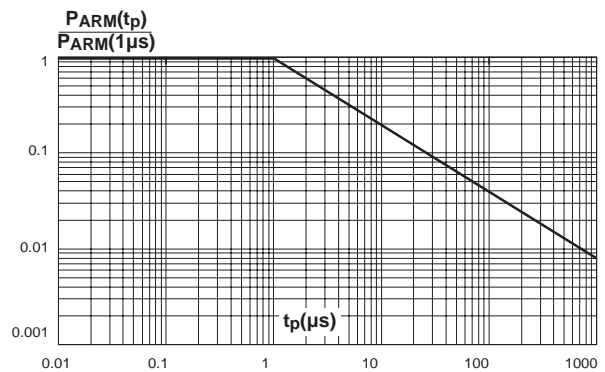
**Fig. 1:** Conduction losses versus average current (per diode).



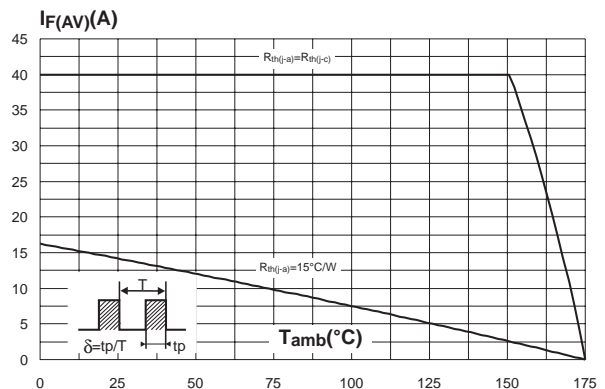
**Fig. 3:** Normalized avalanche power derating versus junction temperature.



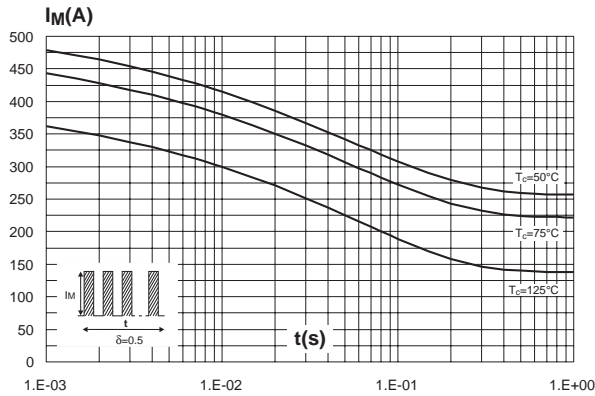
**Fig. 2:** Normalized avalanche power derating versus pulse duration.



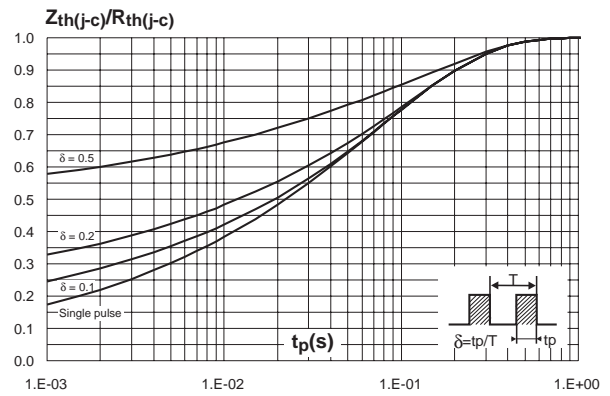
**Fig. 4:** Average forward current versus ambient temperature (delta=0.5, per diode).



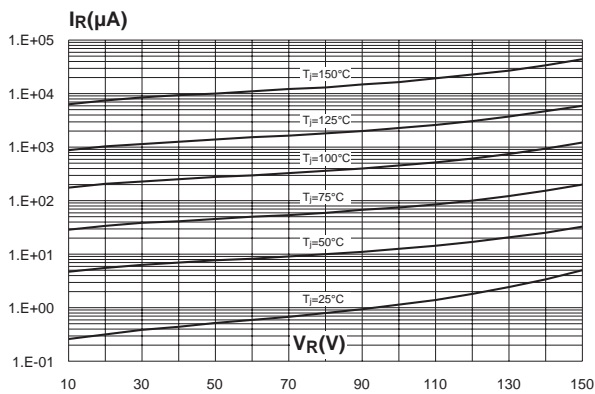
**Fig. 5:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode).



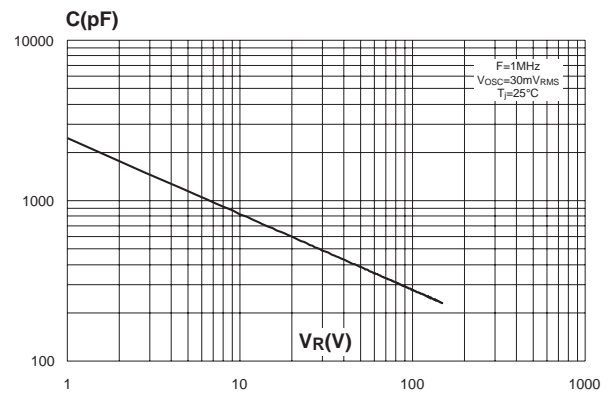
**Fig. 6:** Relative variation of thermal impedance junction to case versus pulse duration.



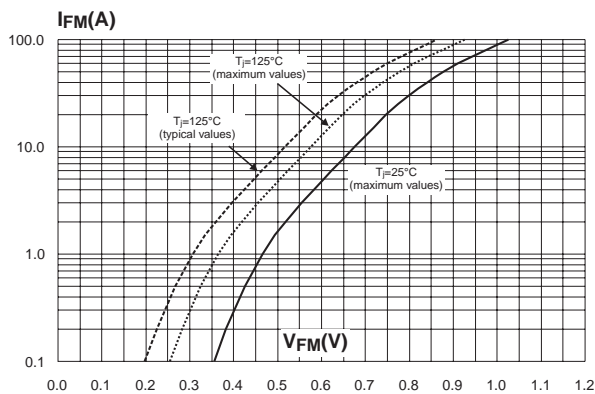
**Fig. 7:** Reverse leakage current versus reverse voltage applied (typical values, per diode).



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

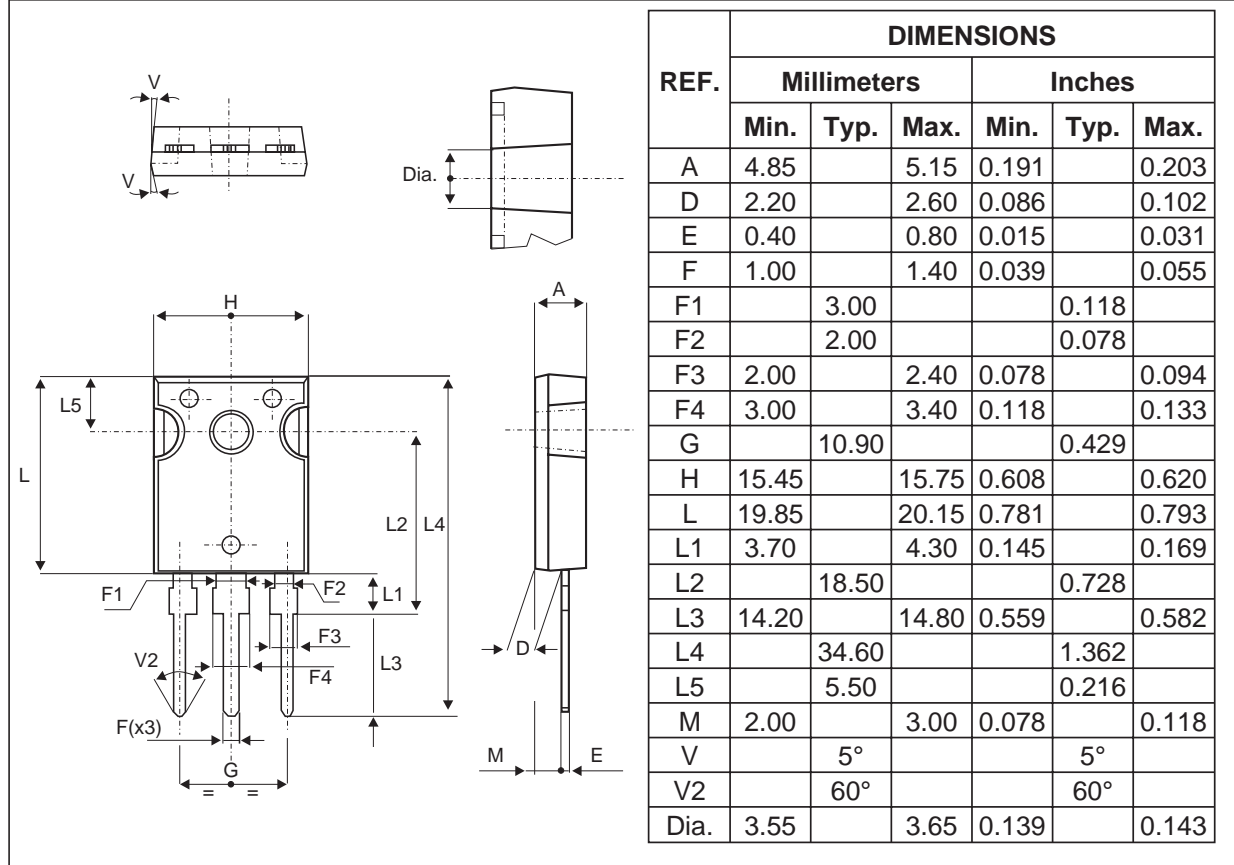


**Fig. 9:** Forward voltage drop versus forward current (per diode).



# STPS80150CW

## PACKAGE MECHANICAL DATA TO-247



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

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS80150CW	STPS80150CW	TO-247	4.4g	30	Tube

- Epoxy meets UL94,V0

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics.

All other names are the property of their respective owners.

© 2003 STMicroelectronics - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States

www.st.com