



# STPS80150CW

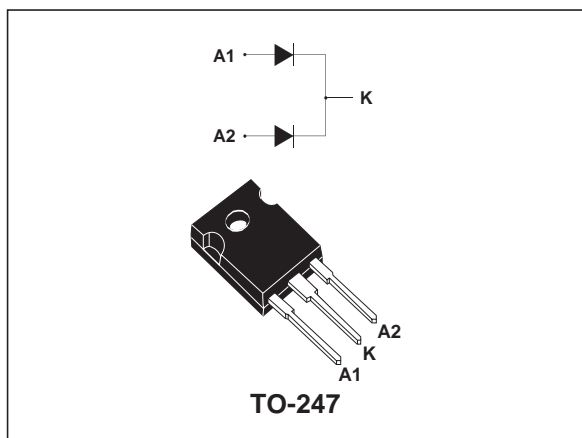
## HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

### MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2 x 40 A
$V_{RRM}$	150 V
$T_j(\text{max})$	175°C
$V_F(\text{max})$	0.74 V

### 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 device is intended for use to enhance the reliability of the application.

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

Symbol	Parameter		Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage		150	V
$I_{F(RMS)}$	RMS forward current		80	A
$I_{F(AV)}$	Average forward current	$T_c = 150^\circ\text{C}$ $\delta = 0.5$	Per diode 80	A
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal	500	A
$P_{ARM}$	Repetitive peak avalanche power	$t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$	38200	W
$T_{stg}$	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/ $\mu\text{s}$

\* :  $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$  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	Per diode	0.7	$^{\circ}\text{C}/\text{W}$
		Total	0.5	
$R_{th(j-c)}$	Junction to case	Coupling	0.3	$^{\circ}\text{C}/\text{W}$

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)

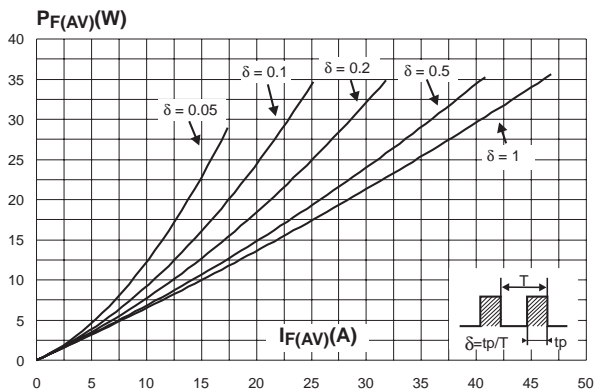
Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$		5	30	$\mu\text{A}$
		$T_j = 125^{\circ}\text{C}$			6	20	$\text{mA}$
$V_F^*$	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 40 \text{ A}$		0.8	0.84	V
		$T_j = 125^{\circ}\text{C}$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

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

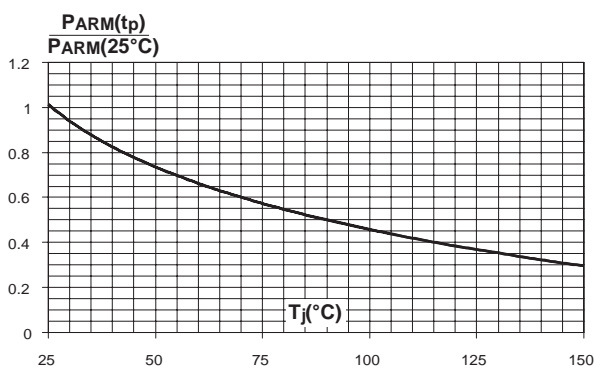
To evaluate the conduction losses use the following equation:

$$P = 0.62 \times I_{F(AV)} + 0.003 I_{F(RMS)}^2$$

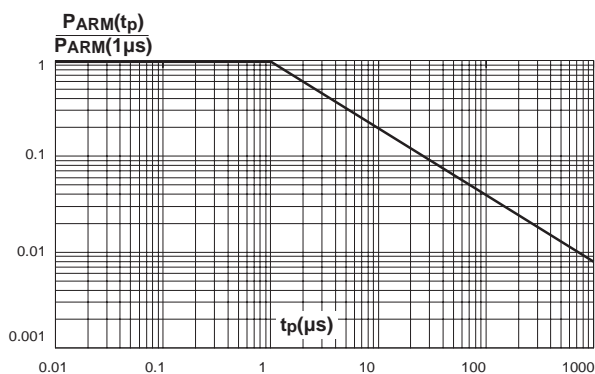
**Fig. 1:** Conduction losses versus average current (per diode).



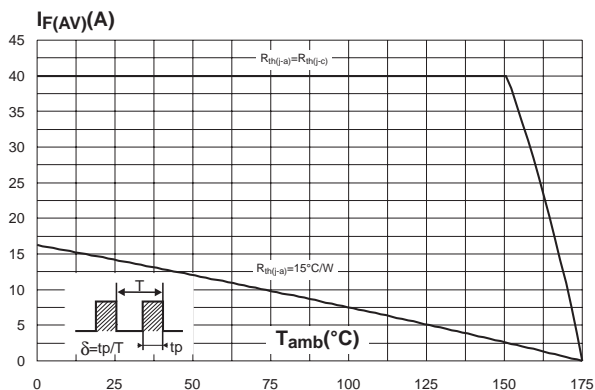
**Fig. 3:** Normalized avalanche power derating versus junction temperature.



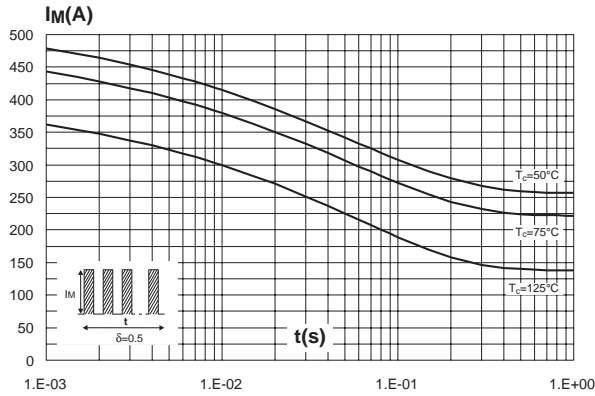
**Fig. 2:** Normalized avalanche power derating versus pulse duration.



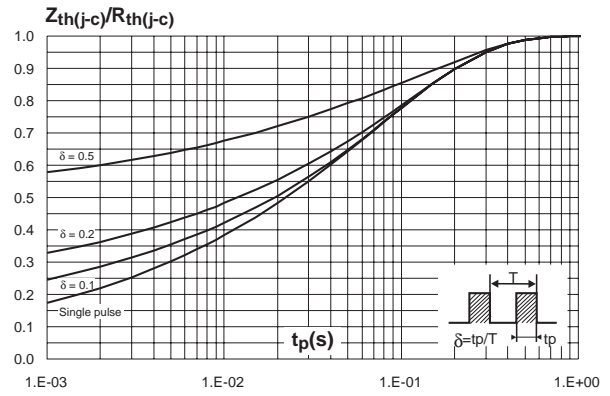
**Fig. 4:** Average forward current versus ambient temperature (delta=0.5, per diode).



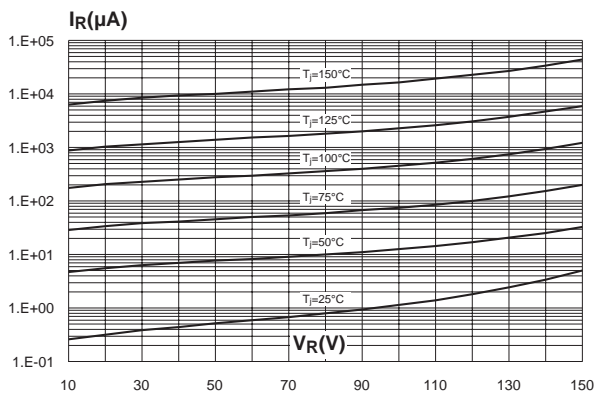
**Fig. 5:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode).



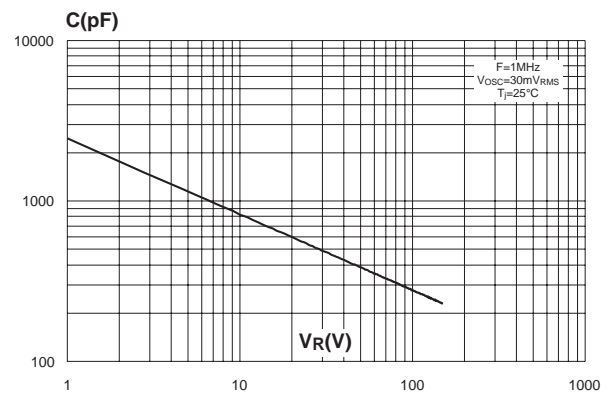
**Fig. 6:** Relative variation of thermal impedance junction to case versus pulse duration.



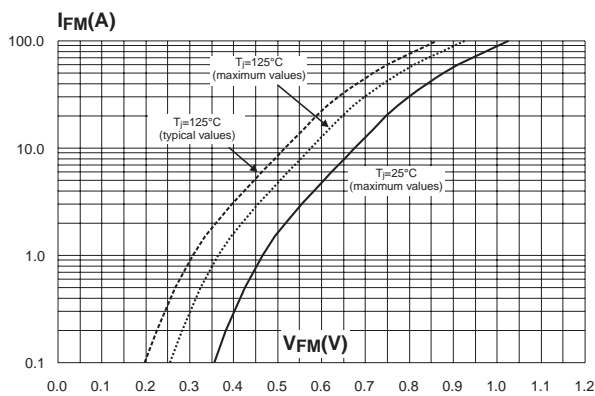
**Fig. 7:** Reverse leakage current versus reverse voltage applied (typical values, per diode).



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

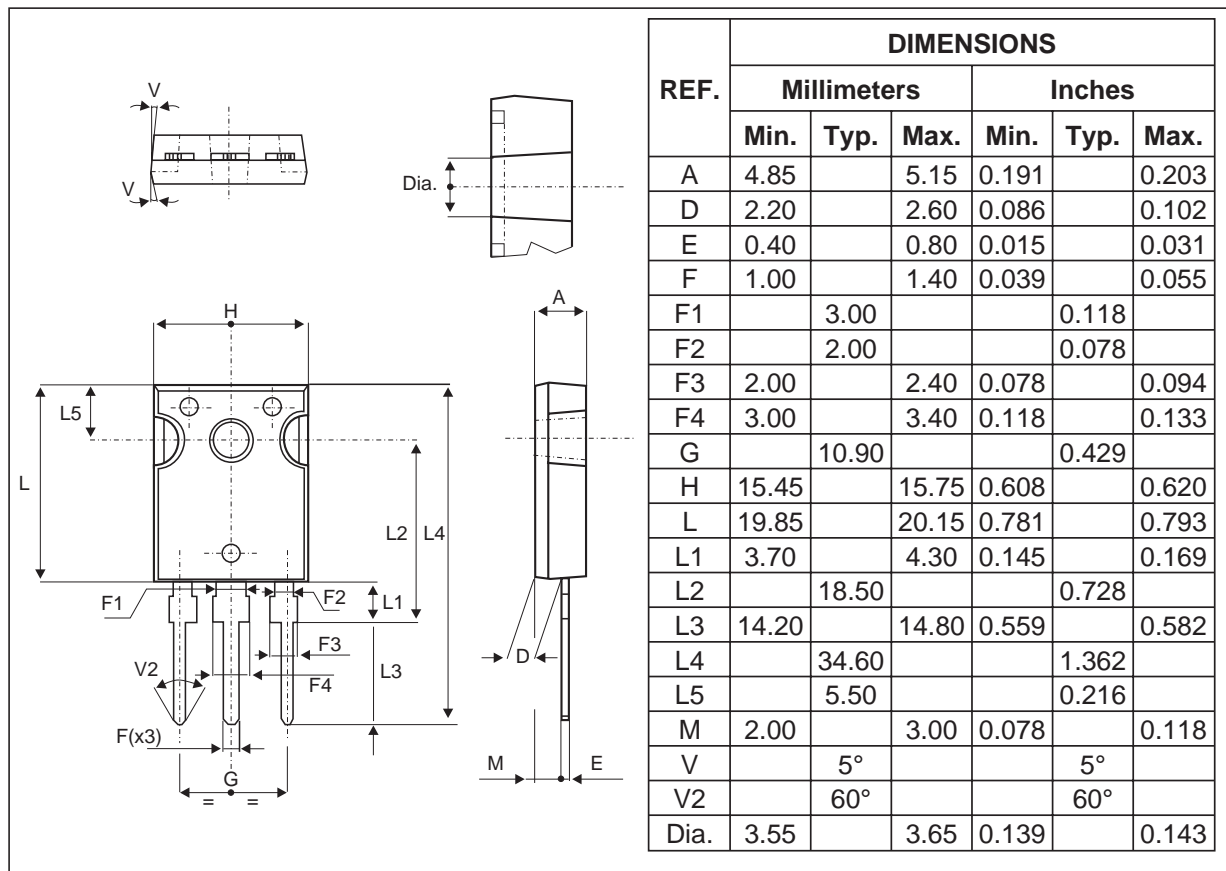


**Fig. 9:** Forward voltage drop versus forward current (per diode).



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## 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

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