

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAJOR PRODUCTS CHARACTERISTICS

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

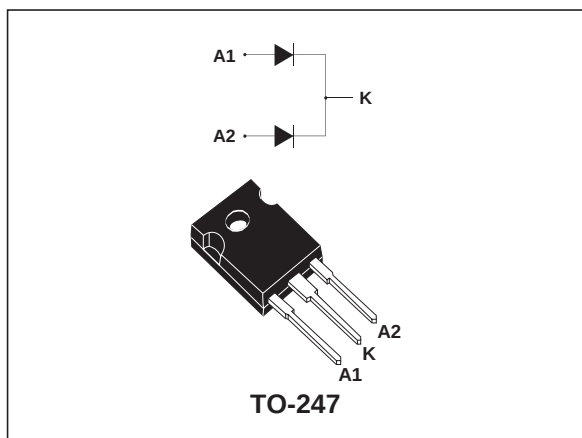
FEATURES AND BENEFITS

- 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 devices 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 Per device	40 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/ μs

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

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	0.7	°C/W
		Total	0.5	
$R_{th(j-c)}$	Junction to case	Coupling	0.3	°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	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$		5	30	μA
		$T_j = 125^\circ\text{C}$			6	20	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 : * $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the conduction losses use the following equation:

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

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

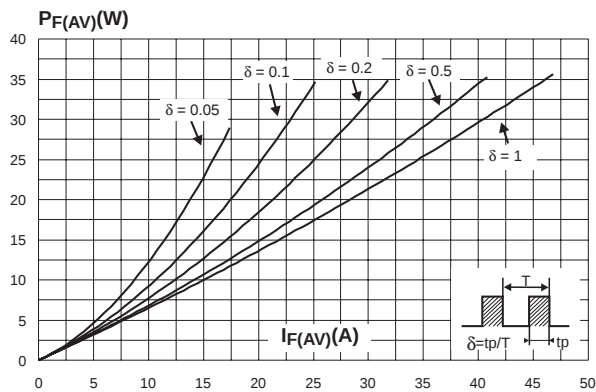


Fig. 2: Normalized avalanche power derating versus pulse duration.

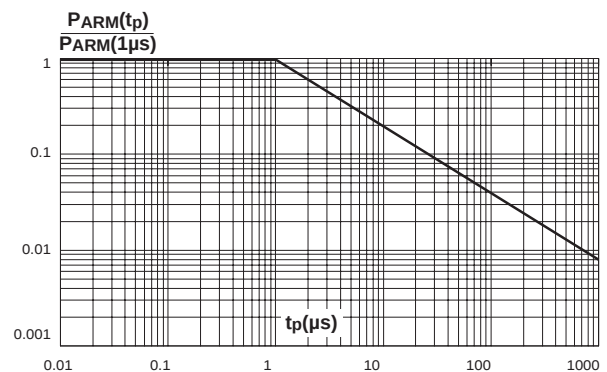


Fig. 3: Normalized avalanche power derating versus junction temperature.

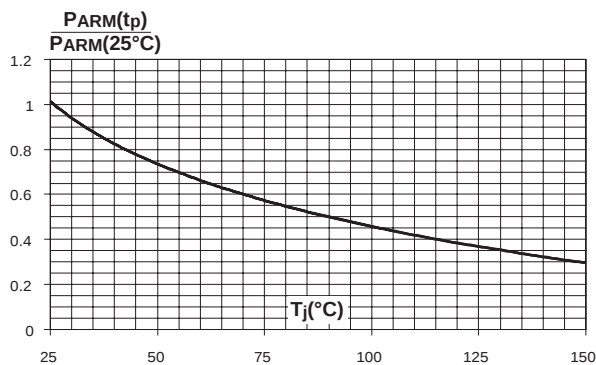


Fig. 4: Average forward current versus ambient temperature ($\delta=0.5$, per diode).

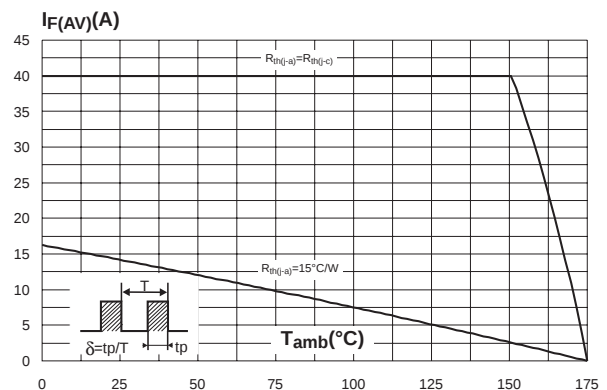


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

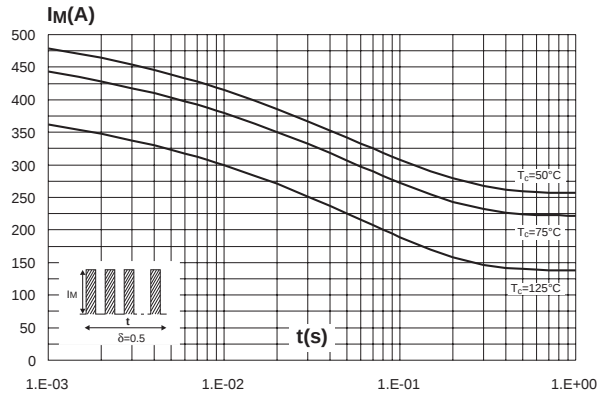


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

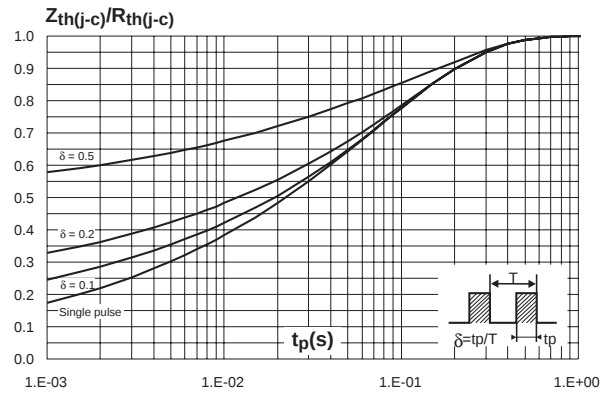


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

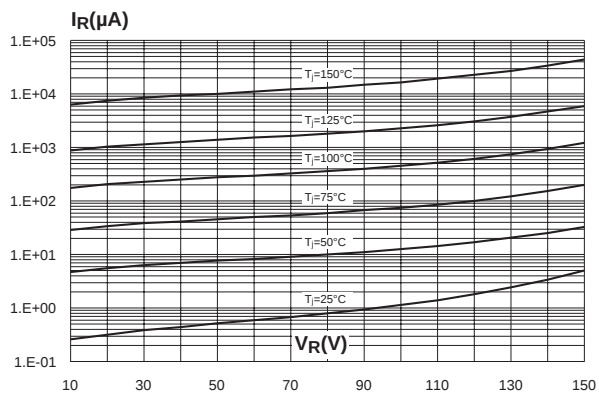


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

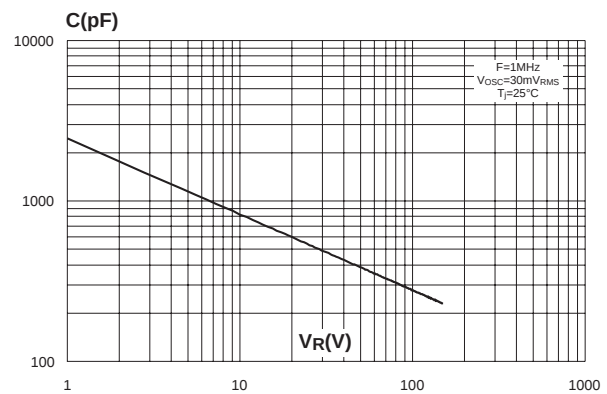
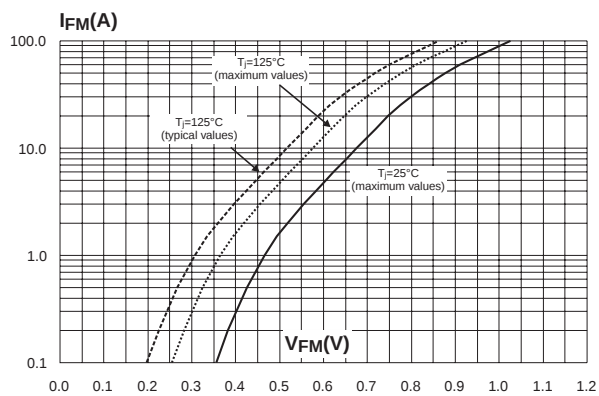
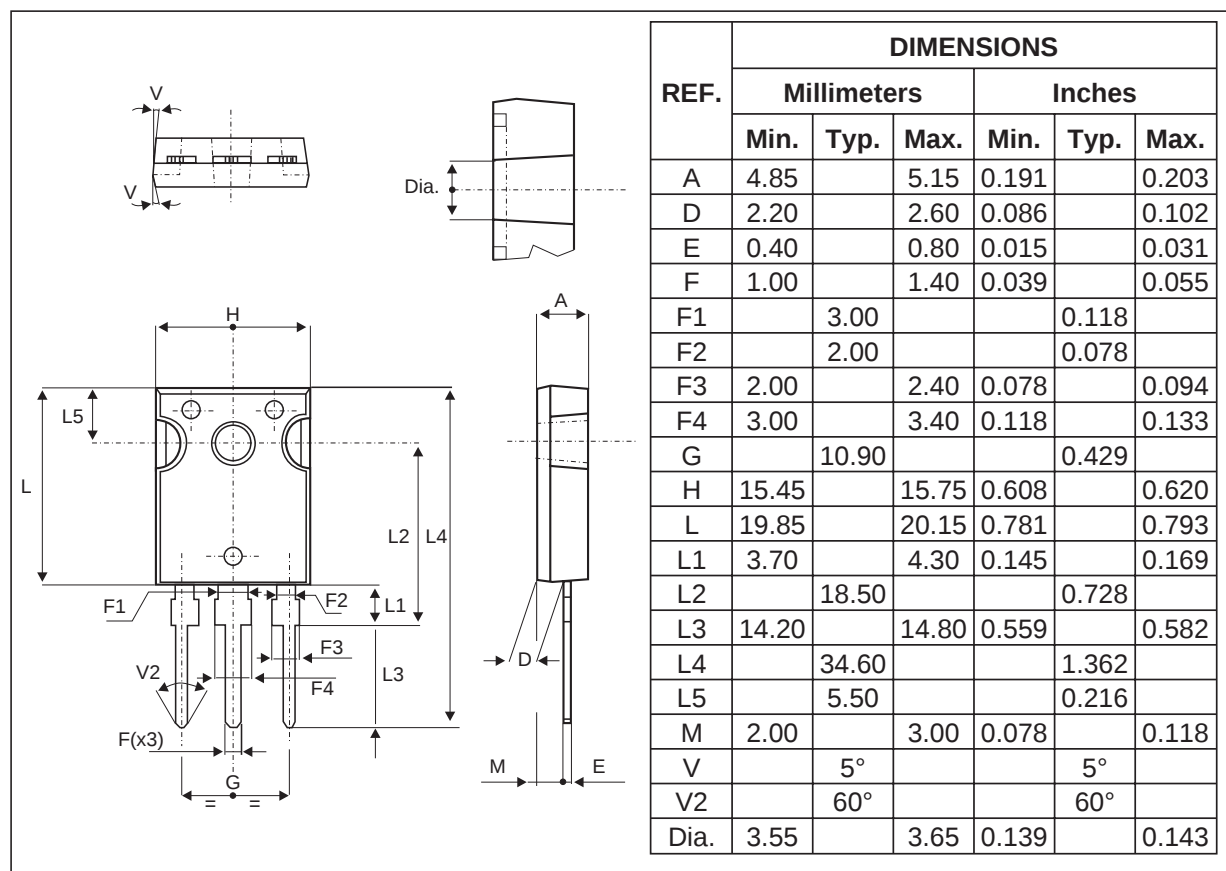


Fig. 9: Forward voltage drop versus forward current (per diode).



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

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