

## LOW DROP POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

<b>I<sub>F(AV)</sub></b>	<b>2 x 40 A</b>
<b>V<sub>RRM</sub></b>	<b>30 V</b>
<b>T<sub>j (max)</sub></b>	<b>150 °C</b>
<b>V<sub>F (max)</sub></b>	<b>0.38 V</b>

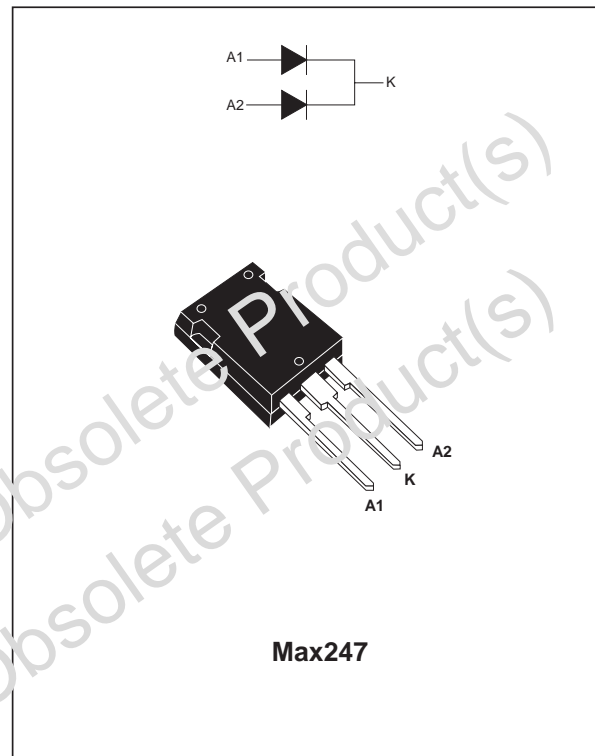
### FEATURES AND BENEFITS

- 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 rectifier suited for CAD computers and servers.

Packaged in Max247, this device is intended for use in low voltage, high frequency switching power supplies, free wheeling and polarity protection applications.



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

Symbol	Parameter		Value	Unit	
V <sub>RRM</sub>	Repetitive peak reverse voltage		30	V	
I <sub>F(RMS)</sub>	RMS forward current		56	A	
I <sub>F(AV)</sub>	Average forward current	T <sub>c</sub> = 130°C	Per diode	40	A
		δ = 0.5	Per device	80	
I <sub>FCM</sub>	Surge non repetitive forward current	tp = 10 ms sinusoidal	400	A	
I <sub>RRM</sub>	Repetitive peak reverse current	tp = 2 μs F = 1kHz square	2	A	
P <sub>ARM</sub>	Repetitive peak avalanche power	tp = 1 μs T <sub>j</sub> = 25°C	13000	W	
T <sub>stg</sub>	Storage temperature range		- 55 to + 150	°C	
T <sub>j</sub>	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

# STPS80L30CY

## 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	
$R_{th(c)}$		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)

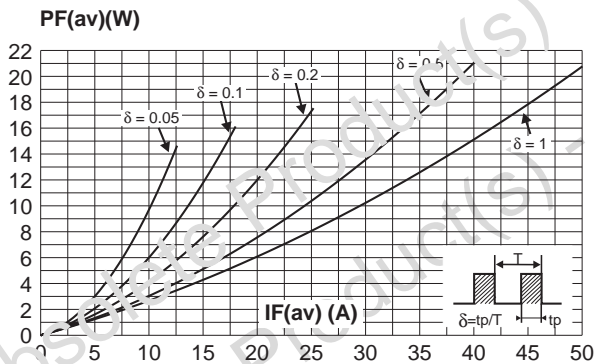
Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			4	$\mu\text{A}$
		$T_j = 125^{\circ}\text{C}$		0.7	1.5		
$V_F^*$	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 40\text{ A}$			0.43	V
		$T_j = 125^{\circ}\text{C}$	$I_F = 40\text{ A}$		0.34	0.38	
		$T_j = 25^{\circ}\text{C}$	$I_F = 80\text{ A}$			0.58	
		$T_j = 125^{\circ}\text{C}$	$I_F = 80\text{ A}$	0.48	0.53		

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

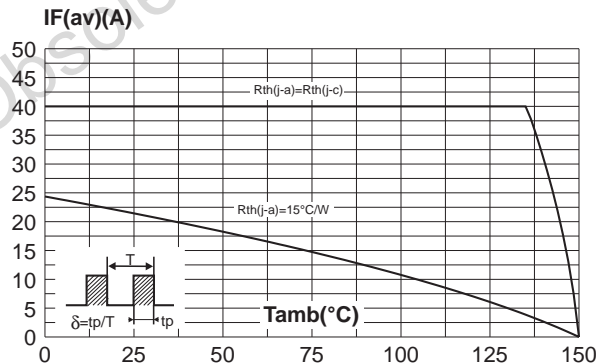
To evaluate the maximum conduction losses use the following equation :  
 $P = 0.23 \times I_{F(AV)} + 0.0037 \times I_{F(RMS)}^2$

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

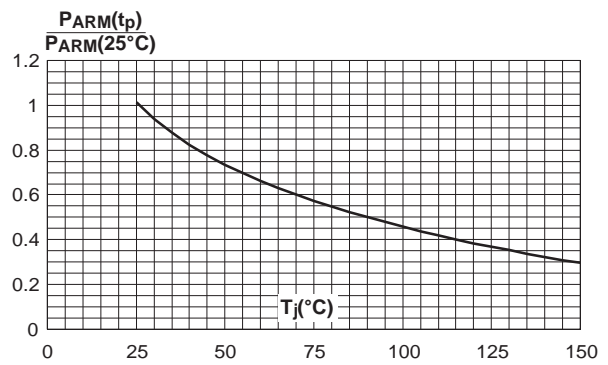
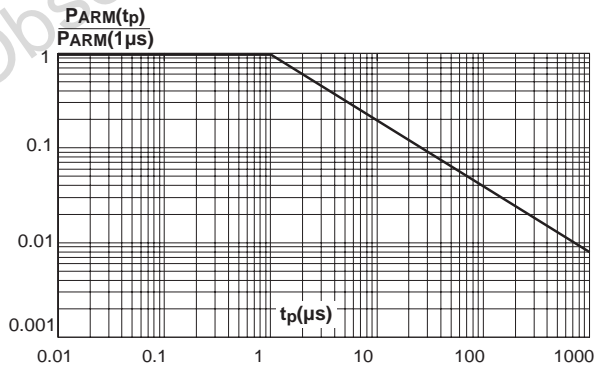
**Fig. 2:** Average forward current versus ambient temperature ( $\delta = 0.5$ , per diode).



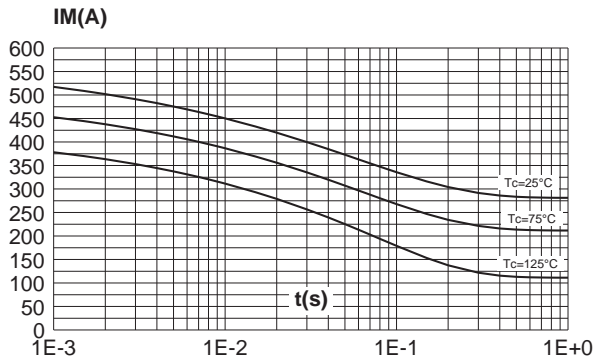
**Fig. 3:** Normalized avalanche power derating versus pulse duration.



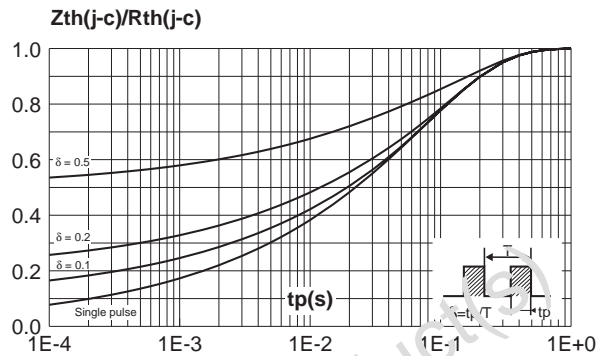
**Fig. 4:** Normalized avalanche power derating versus junction temperature.



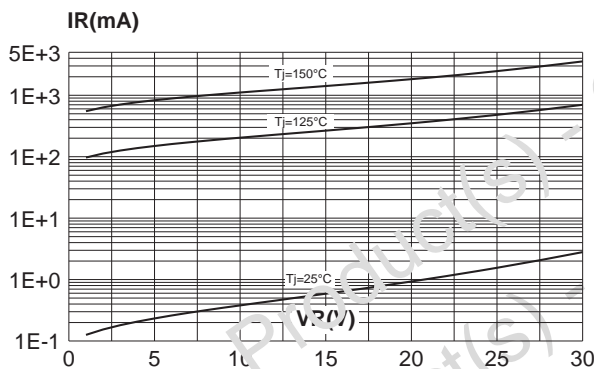
**Fig. 5:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode)



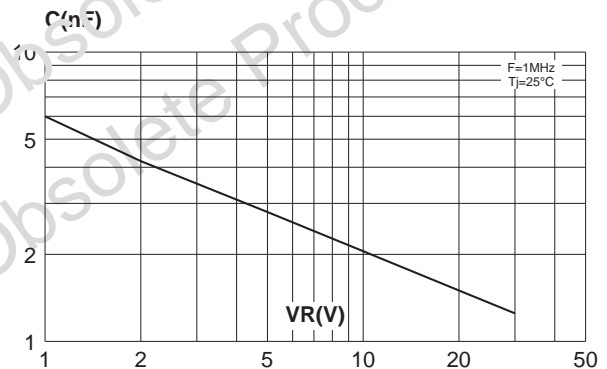
**Fig. 6:** Relative variation of thermal impedance junction to case versus pulse duration.



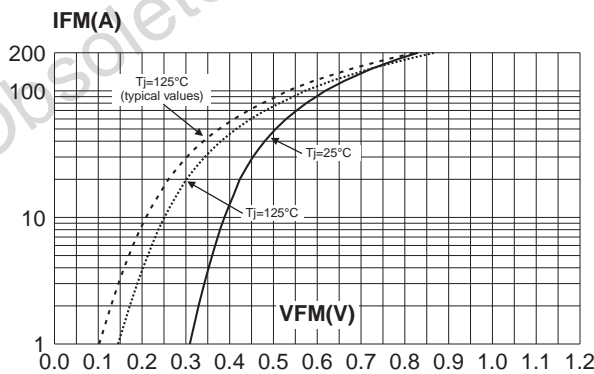
**Fig. 7:** Reverse leakage current versus reverse voltage applied (typical values, per diode).



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



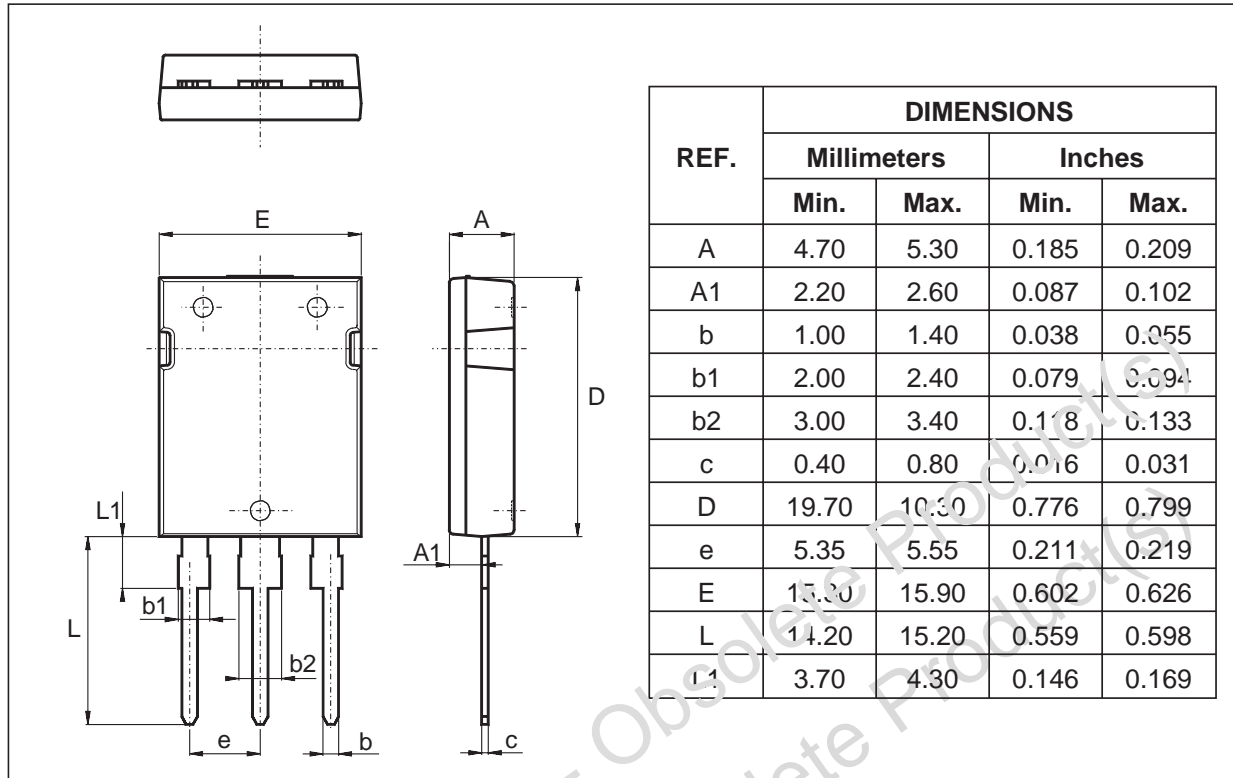
**Fig. 9:** Forward voltage drop versus forward current (maximum values, per diode).



# STPS80L30CY

## PACKAGE MECHANICAL DATA

Max247



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS80L30CY	STPS80L30CY	Max247	4.4 g	30	Tube

- EPOXY MEETS UL94 V0
- COOLING METHOD: C

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