

## LOW DROP POWER SCHOTTKY RECTIFIER

### MAIN PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2 x 30 A
$V_{RRM}$	40 V
$T_j (max)$	150°C
$V_F (max)$	0.50 V

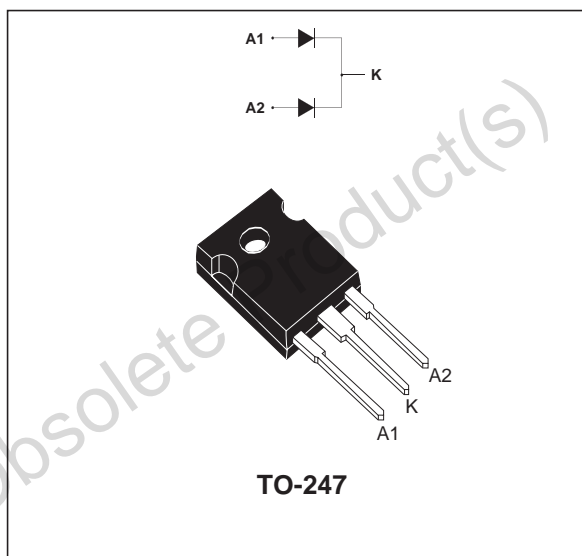
### FEATURES AND BENEFITS

- LOW FORWARD VOLTAGE DROP FOR LESS POWER DISSIPATION
- NEGLIGIBLE SWITCHING LOSSES ALLOWING HIGH FREQUENCY OPERATION
- AVALANCHE CAPABILITY SPECIFIED

### DESCRIPTION

Dual center tap Schottky barrier rectifier designed for high frequency Switched Mode Power Supplies and DC to DC converters.

Packaged in TO-247 this device is intended for use in low voltage, high frequency inverters, free-wheeling and polarity protection applications.



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

Symbol	Parameter	Value	Unit	
$V_{RRM}$	Repetitive peak reverse voltage	40	V	
$I_{F(RMS)}$	RMS forward current	50	A	
$I_{F(AV)}$	Average forward current	$T_c = 135^\circ\text{C}$ $\delta = 0.5$ Per diode	30	A
		Per device	60	
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal	600	A
$I_{RRM}$	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$ square $F=1\text{kHz}$	2	A
$I_{RSM}$	Non repetitive peak reverse current	$t_p = 100 \mu\text{s}$ square	4	A
$P_{ARM}$	Repetitive peak avalanche power	$t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$	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/ $\mu\text{s}$

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

# STPS60L40CW

## THERMAL RESISTANCES

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

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	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			1.5	mA
		$T_j = 100^{\circ}\text{C}$			30	110	
$V_F^*$	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	0.5	
		$T_j = 25^{\circ}\text{C}$	$I_F = 60\text{ A}$			0.73	
		$T_j = 125^{\circ}\text{C}$	$I_F = 60\text{ A}$		0.64	0.72	

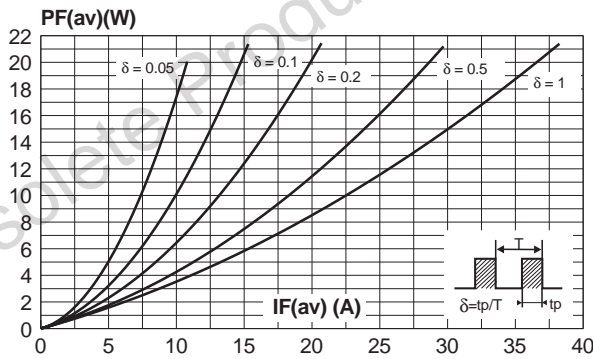
Pulse test : \*  $t_p = 380\ \mu\text{s}$ ,  $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation :

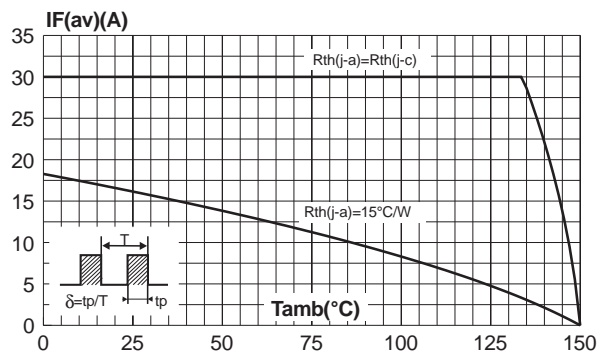
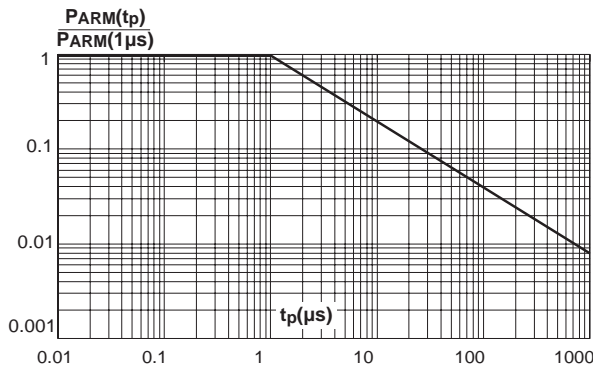
$$P = 0.28 \times I_{F(AV)} + 0.0073 I_{F(RMS)}^2$$

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

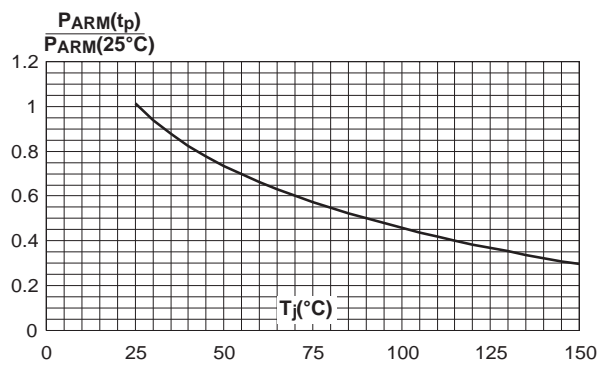
**Fig. 2:** Average current versus ambient temperature ( $\delta = 0.5$ ) (per diode).



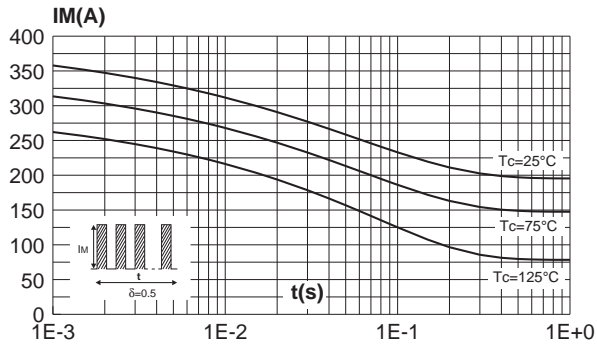
**Fig. 3:** Normalized avalanche power derating versus pulse duration.



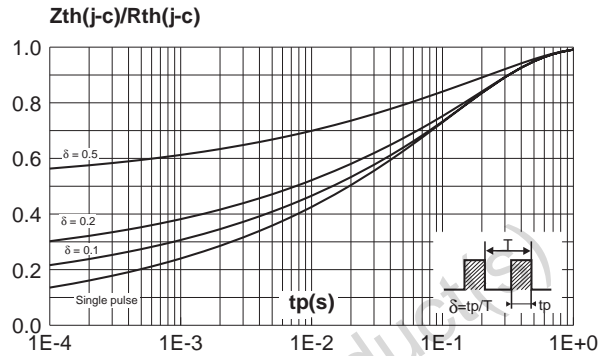
**Fig. 4:** Normalized avalanche power derating versus junction temperature.



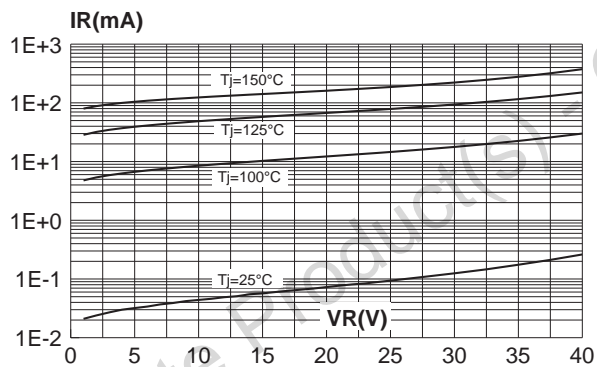
**Fig. 5:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode).



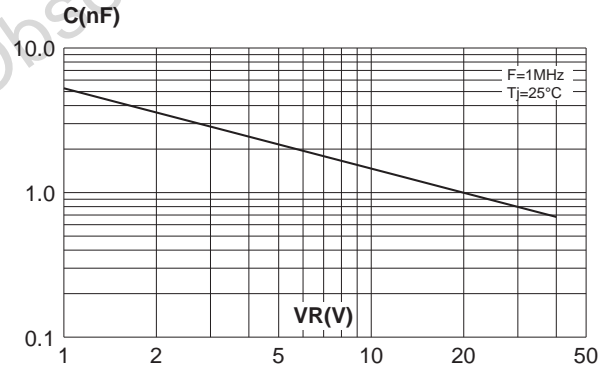
**Fig. 6:** Relative variation of thermal impedance junction to case versus pulse duration.



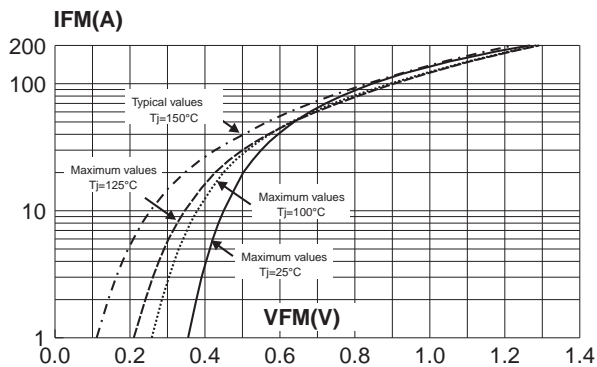
**Fig. 7:** Reverse leakage current versus reverse voltage applied (typical values, per diode).



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

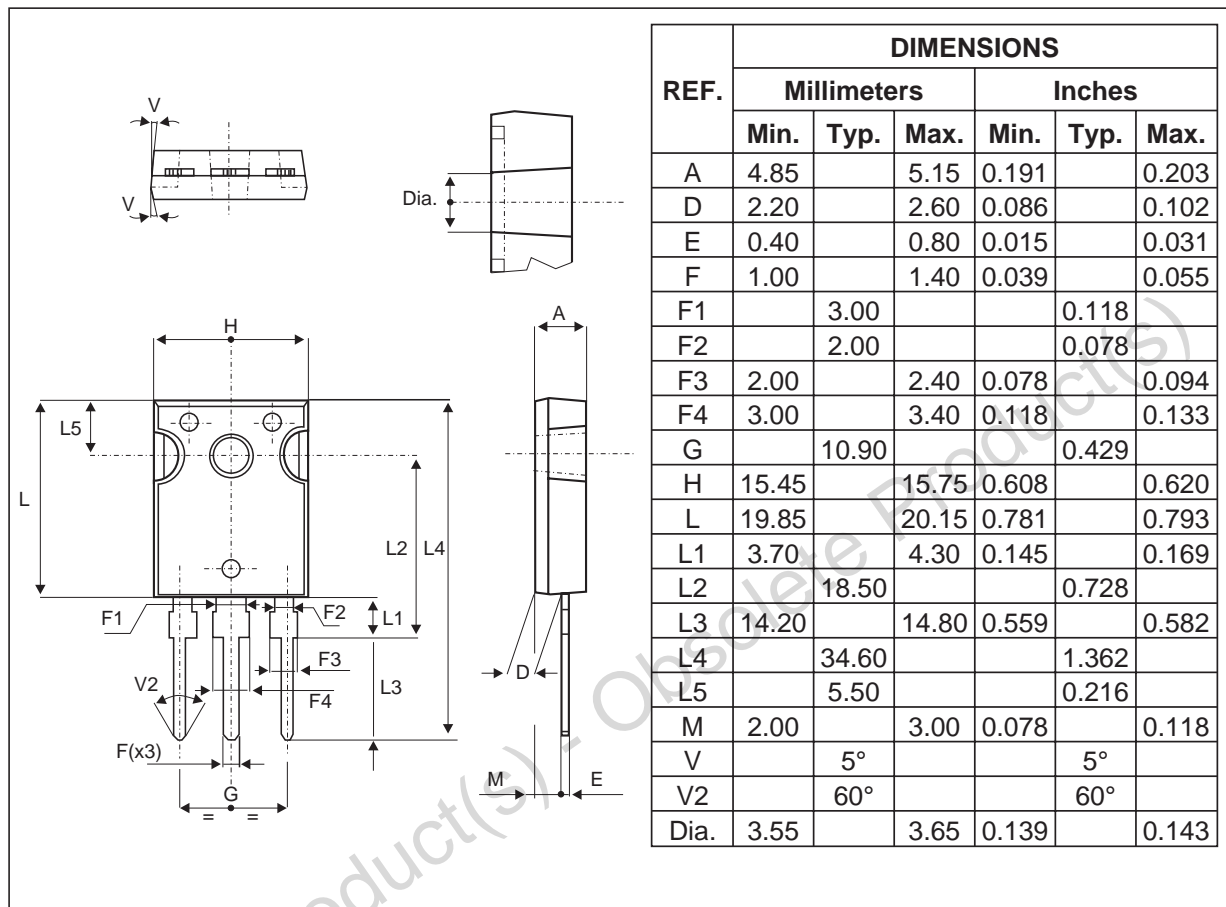


**Fig. 9:** Forward voltage drop versus forward current (per diode).



# STPS60L40CW

## 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
STPS60L40CW	STPS60L40CW	TO-247	4.4g	30	Tube

- EPOXY MEETS UL94,V0

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