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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

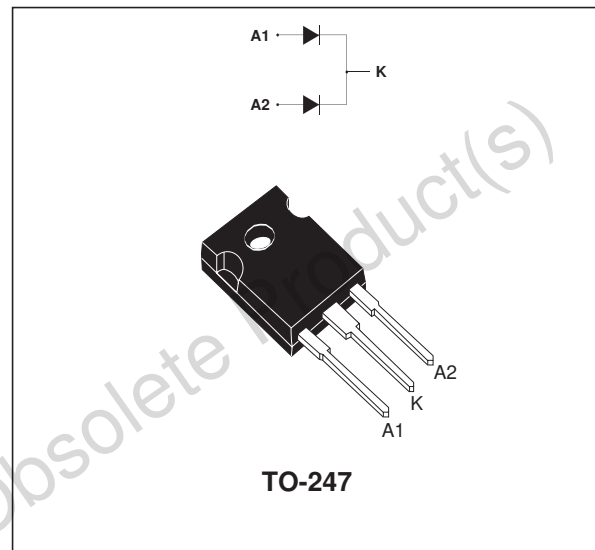
FEATURES AND BENEFITS

- 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/ μs

* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$ 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	$^{\circ}\text{C}/\text{W}$
		Total	0.42	
$R_{th(c)}$		Coupling	0.1	$^{\circ}\text{C}/\text{W}$

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	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			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).

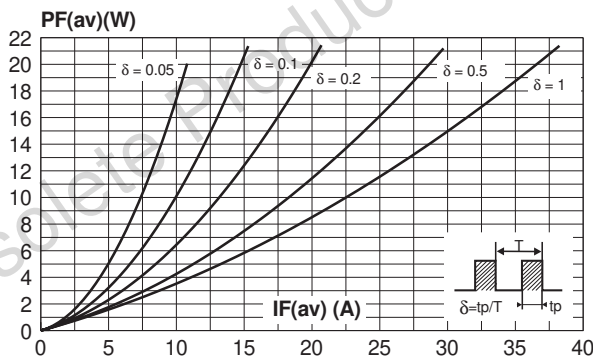


Fig. 3: Normalized avalanche power derating versus pulse duration.

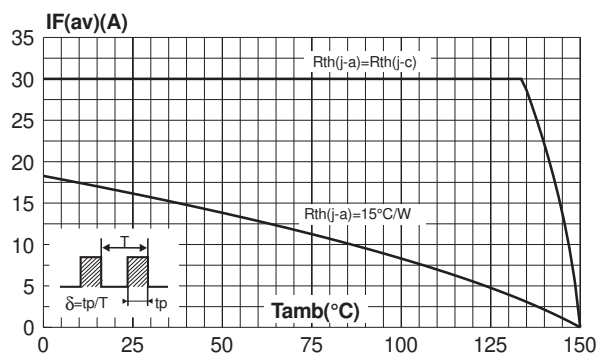
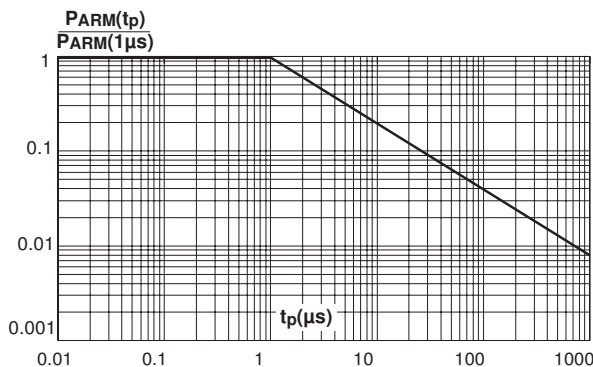


Fig. 4: Normalized avalanche power derating versus junction temperature.

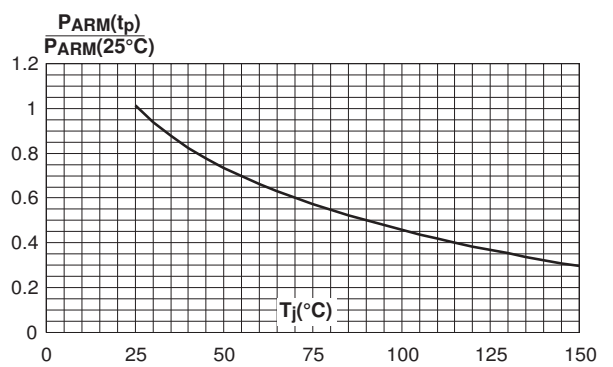


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

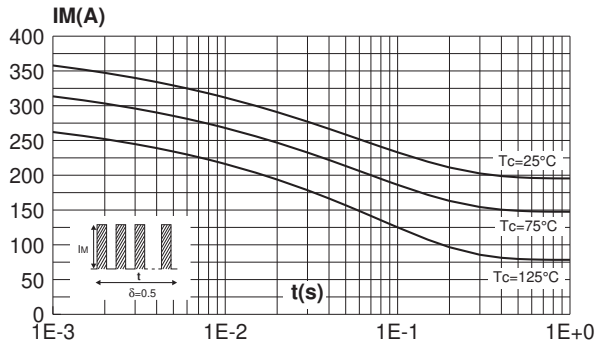


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

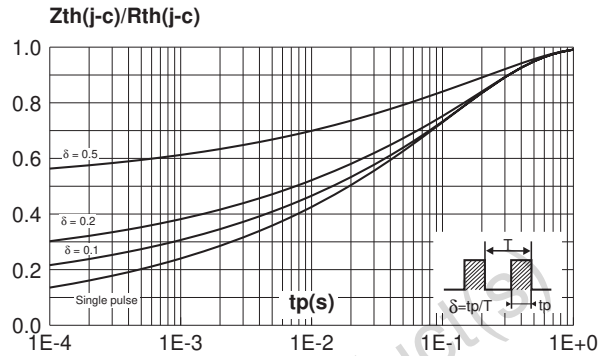


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

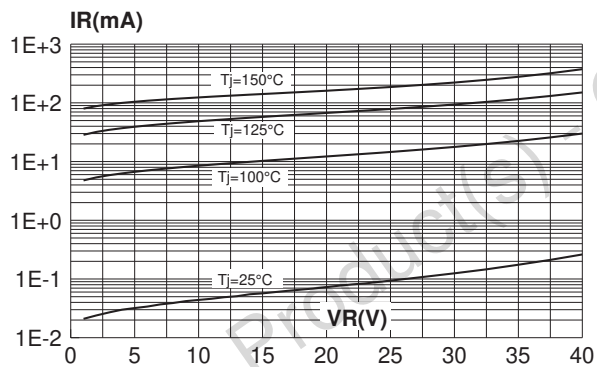


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

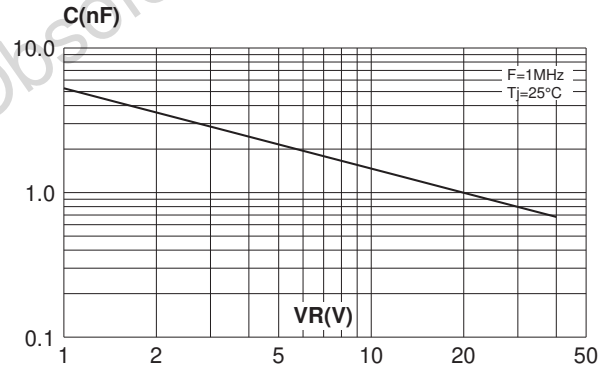
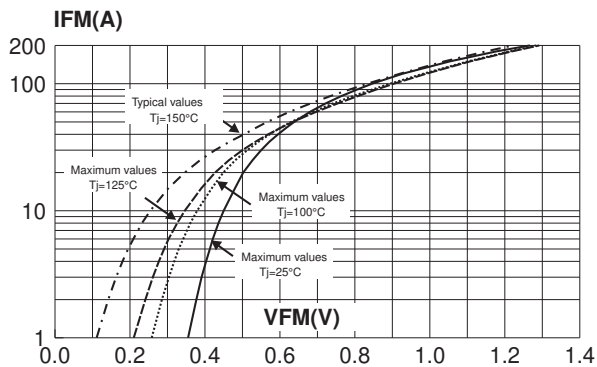
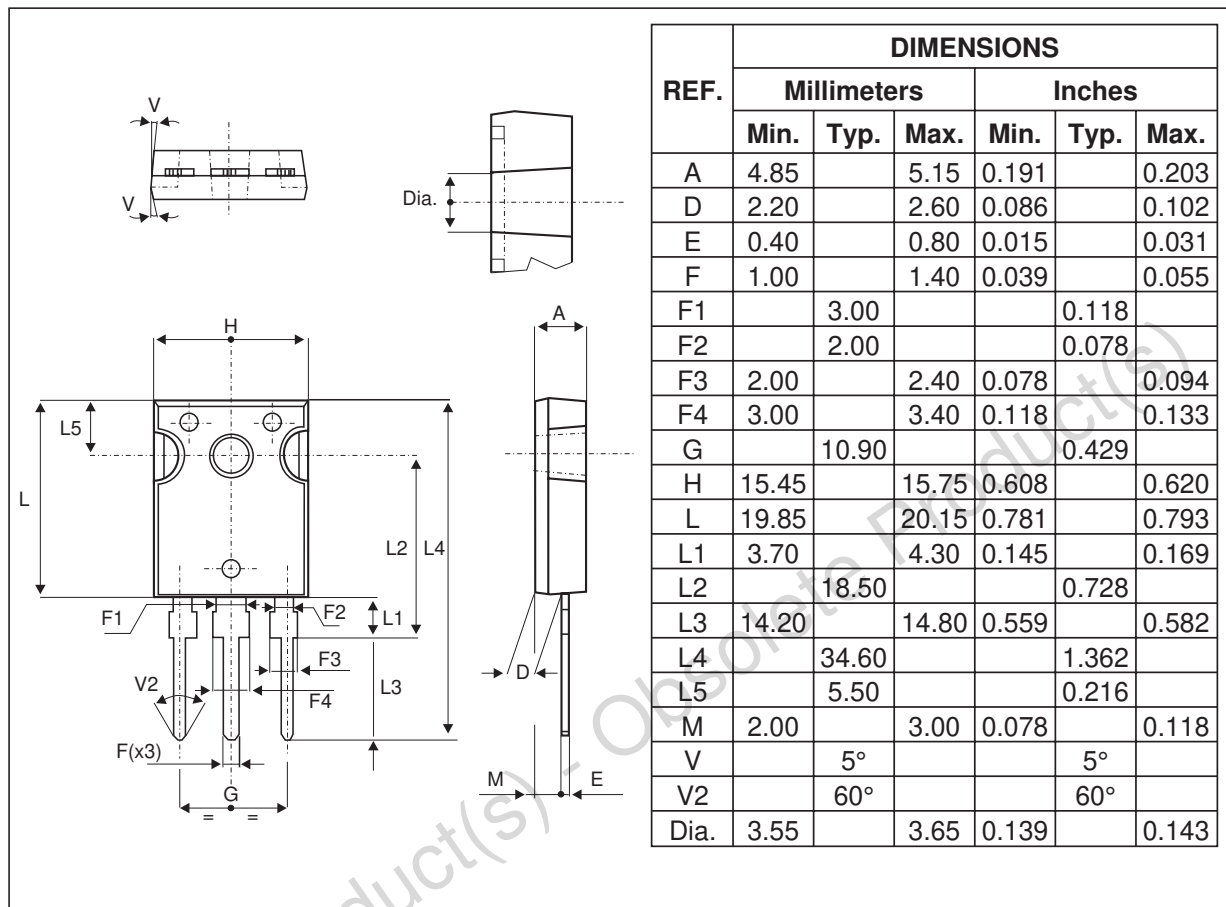


Fig. 9: Forward voltage drop versus forward current (per diode).



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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