



STPS40H100CW

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 20 A
V_{RRM}	100 V
T_j (max)	175 °C
V_F (max)	0.61 V

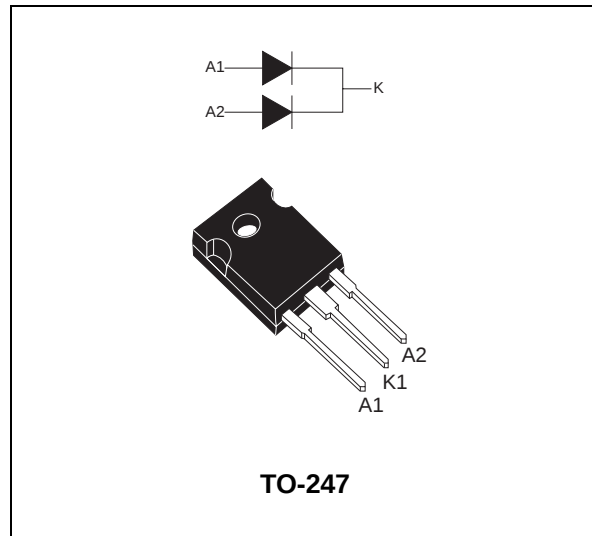
FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- LOW LEAKAGE CURRENT
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- LOW THERMAL RESISTANCE
- AVALANCHE RATED

DESCRIPTION

Dual center tap Schottky rectifier suited for Switch Mode Power Supplies and high frequency DC to DC converters.

Packaged in TO-247, this device is intended for use in high frequency inverters.



ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V _{RRM}	Repetitive peak reverse voltage			100	V
I _{F(RMS)}	RMS forward current			30	A
I _{F(AV)}	Average forward current	T _c = 160°C δ = 0.5	Per diode Per device	20 40	A
I _{FSM}	Surge non repetitive forward current	t _p = 10 ms sinusoidal		300	A
I _{RRM}	Repetitive peak reverse current	t _p = 2 μs F = 1kHz square		1	A
I _{RSM}	Non repetitive peak reverse current	t _p = 100 μs square		4	A
E _{AS}	Non repetitive avalanche energy	T _j = 25°C L= 60 mH I _{as} = 3 A		36	mJ
T _{stg}	Storage temperature range			- 65 to + 175	°C
T _j	Maximum operating junction temperature			175	°C
dV/dt	Critical rate of rise of rise voltage			10000	V/μs

STPS40H100CW

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	0.9	$^{\circ}\text{C/W}$
		Total	0.55	
$R_{th(c)}$		Coupling	0.1	

When the diodes 1 and 2 are used simultaneously :
 $\Delta T_j(\text{diode 1}) = P(\text{diode 1}) \times R_{th(j-c)} + P(\text{diode 2}) \times R_{th(c)}$

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			10	μA
		$T_j = 125^{\circ}\text{C}$			5	15	mA
V_F^{**}	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 20\text{ A}$			0.73	V
		$T_j = 125^{\circ}\text{C}$	$I_F = 20\text{ A}$		0.58	0.61	
		$T_j = 25^{\circ}\text{C}$	$I_F = 40\text{ A}$			0.85	
		$T_j = 125^{\circ}\text{C}$	$I_F = 40\text{ A}$		0.67	0.72	

Pulse test : * $t_p = 5\text{ ms}$, $\delta < 2\%$
 ** $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation :
 $P = 0.5 \times I_{F(AV)} + 0.0055 \times I_{F(RMS)}^2$

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

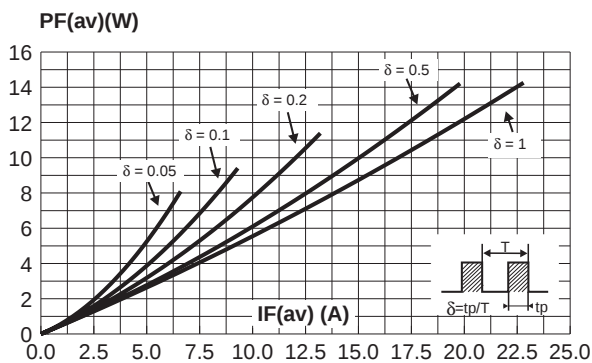


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$, per diode).

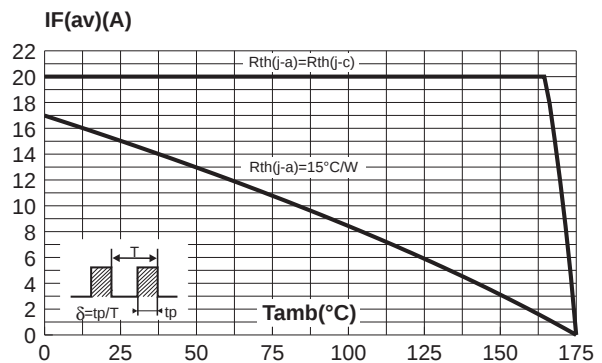


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

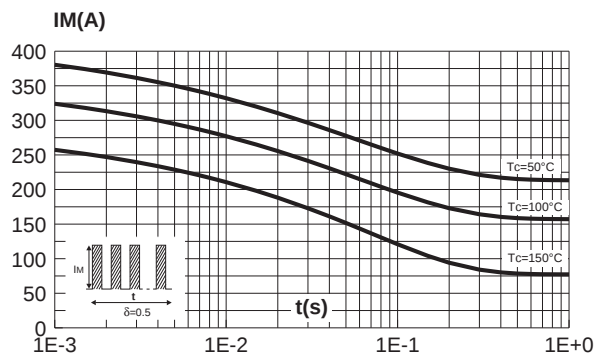


Fig. 4: Relative variation of thermal impedance junction to case versus pulse duration.

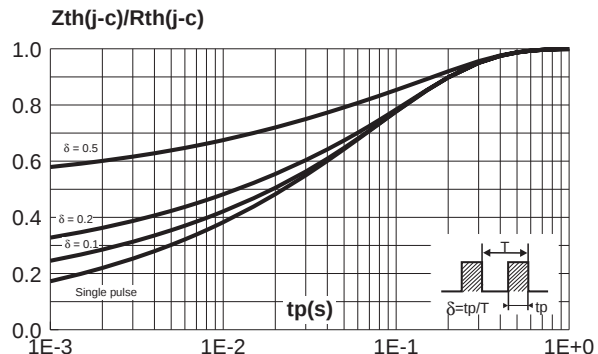


Fig. 5: Reverse leakage current versus reverse voltage applied (maximum values, per diode).

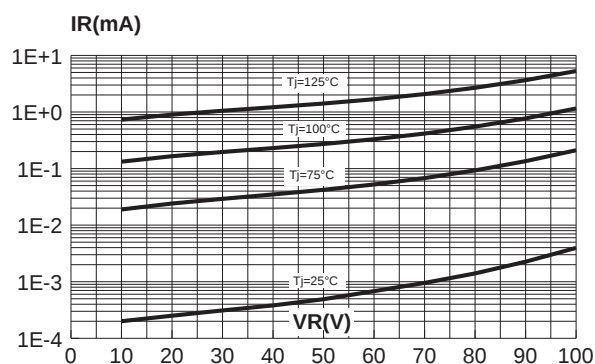


Fig. 6: Junction capacitance versus reverse voltage applied (typical values, per diode).

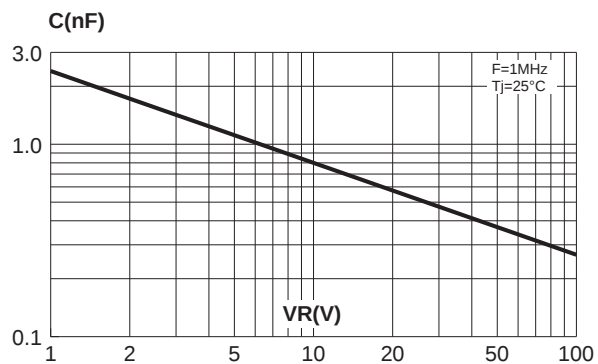
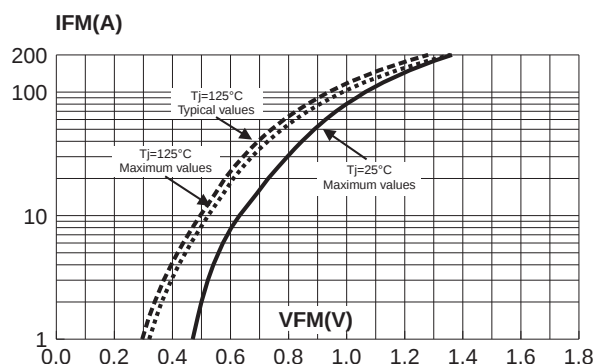


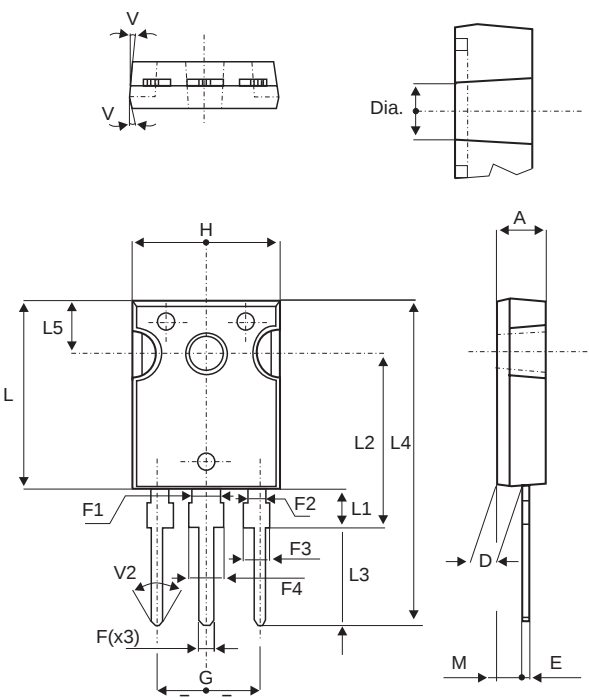
Fig. 7: Forward voltage drop versus forward current (per diode).



STPS40H100CW

PACKAGE MECHANICAL DATA TO-247

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.85		5.15	0.191		0.203
D	2.20		2.60	0.086		0.102
E	0.40		0.80	0.015		0.031
F	1.00		1.40	0.039		0.055
F1		3.00			0.118	
F2		2.00			0.078	
F3	2.00		2.40	0.078		0.094
F4	3.00		3.40	0.118		0.133
G		10.90			0.429	
H	15.45		15.75	0.608		0.620
L	19.85		20.15	0.781		0.793
L1	3.70		4.30	0.145		0.169
L2		18.50			0.728	
L3	14.20		14.80	0.559		0.582
L4		34.60			1.362	
L5		5.50			0.216	
M	2.00		3.00	0.078		0.118
V		5°			5°	
V2		60°			60°	
Dia.	3.55		3.65	0.139		0.143



- Cooling method: C
- Recommended torque value: 0.8 N.m.
- Maximum torque value: 1 N.m.

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS40H100CW	STPS40H100CW	TO-247	4.36g	30	Tube

- Epoxy meets UL94,V0

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 1998 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Mexico - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.

<http://www.st.com>