

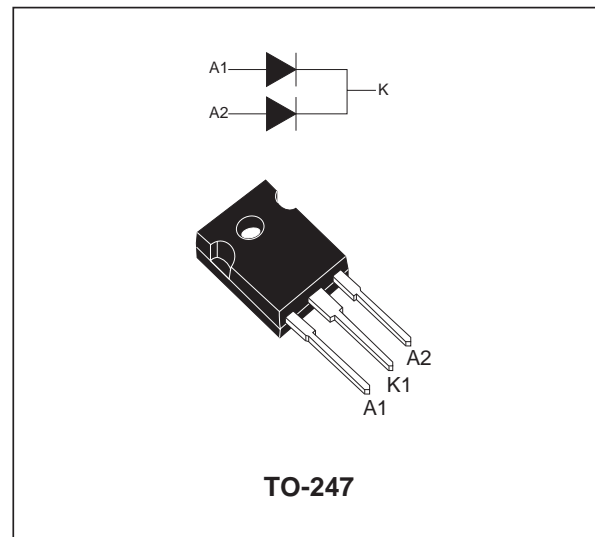
HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

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 CAPABILITY SPECIFIED



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	$T_c = 160^\circ\text{C}$ $\delta = 0.5$	Per diode: 20 Per device: 40	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ sinusoidal	300	A
I_{RRM}	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$ $F = 1\text{kHz}$ square	1	A
I_{RSM}	Non repetitive peak reverse current	$t_p = 100 \mu\text{s}$ square	4	A
E_{AS}	Non repetitive avalanche energy	$T_j = 25^\circ\text{C}$ $L = 60 \text{ mH}$ $I_{as} = 3 \text{ A}$	36	mJ
P_{ARM}	Repetitive peak avalanche power	$t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$	26400	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 rise voltage		10000	V/ μs

STPS40H100CW

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
R _{th(j-c)}	Junction to case	Per diode	0.9	°C/W
		Total	0.55	
R _{th(c)}		Coupling	0.1	

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

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I _R *	Reverse leakage current	T _j = 25°C	V _R = V _{RRM}			10	µA
		T _j = 125°C			5	15	mA
V _F **	Forward voltage drop	T _j = 25°C	I _F = 20 A			0.73	V
		T _j = 125°C	I _F = 20 A		0.58	0.61	
		T _j = 25°C	I _F = 40 A			0.85	
		T _j = 125°C	I _F = 40 A		0.67	0.72	

Pulse test : * t_p = 5 ms, δ < 2%
 ** t_p = 380 µs, δ < 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).

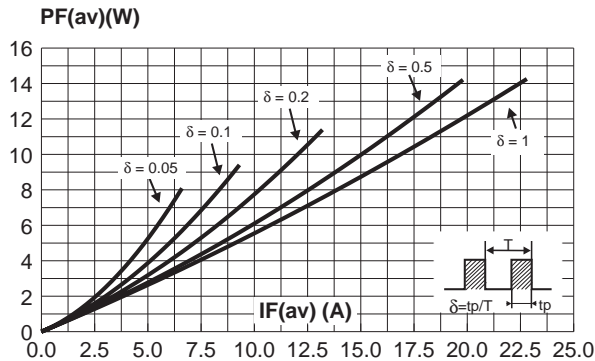


Fig. 3: Normalized avalanche power derating versus pulse duration.

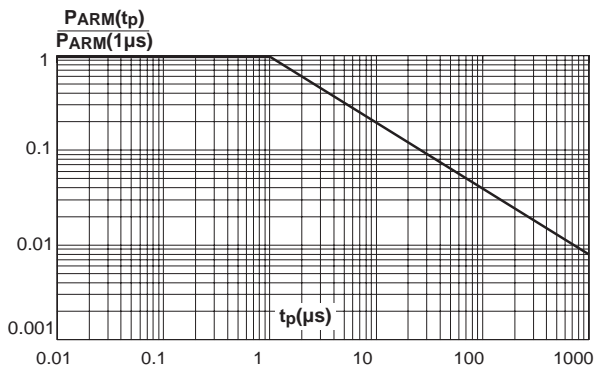


Fig. 2: Average forward current versus ambient temperature (δ=0.5, per diode).

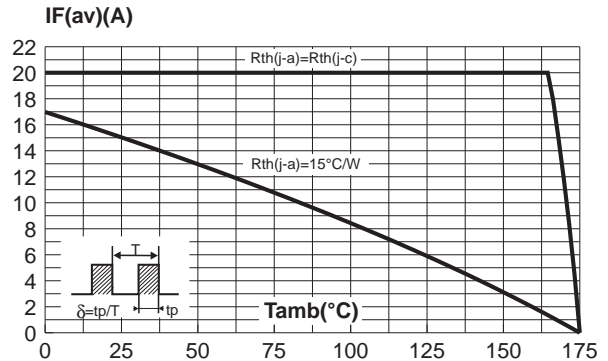


Fig. 4: Normalized avalanche power derating versus junction temperature.

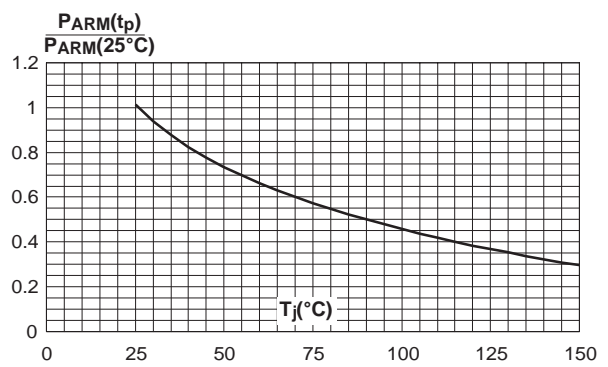


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

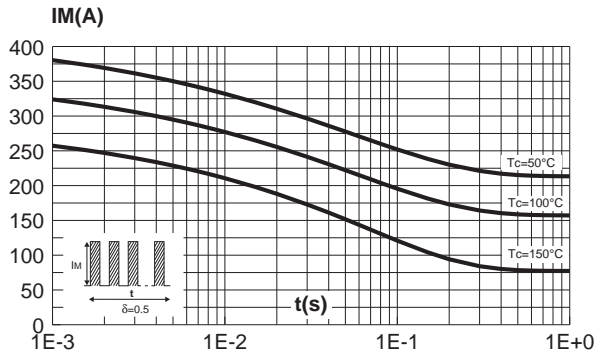


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

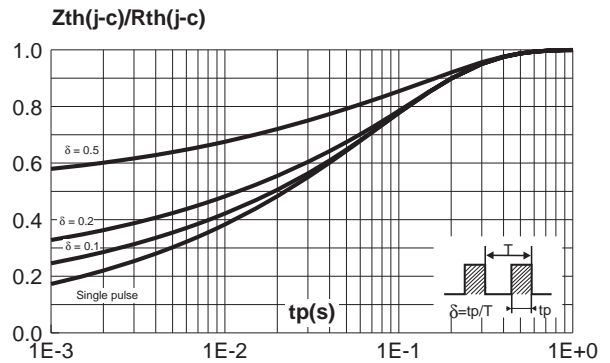


Fig. 7: Reverse leakage current versus reverse voltage applied (maximum values, per diode).

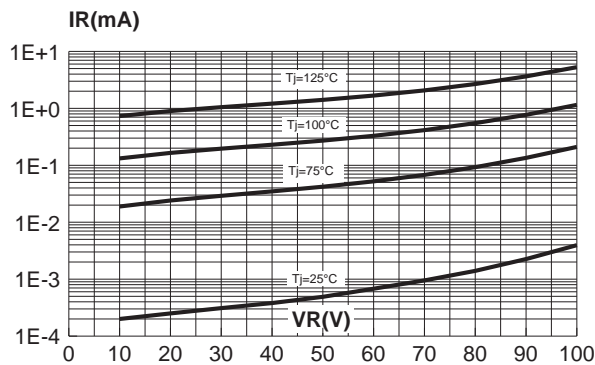


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

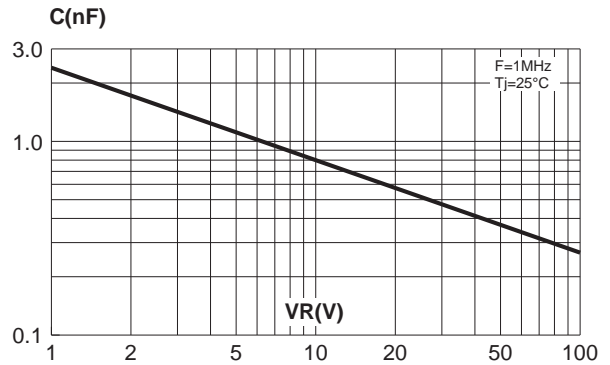
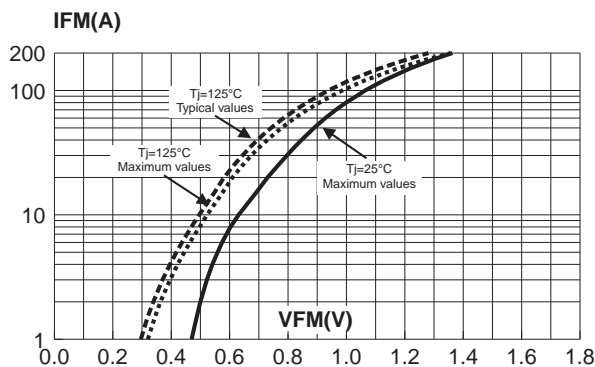
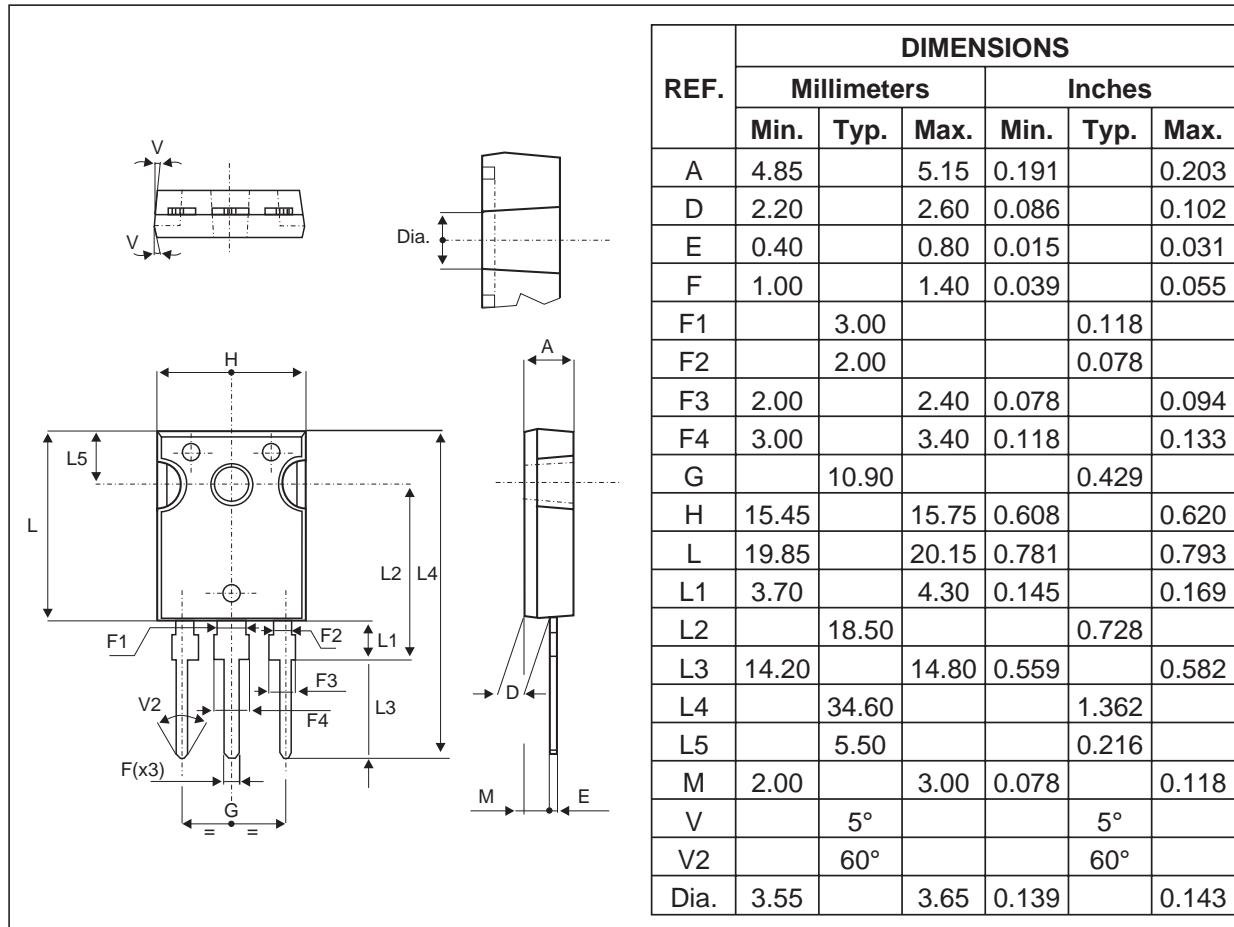


Fig. 9: Forward voltage drop versus forward current (per diode).



STPS40H100CW

PACKAGE MECHANICAL DATA TO-247



- 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

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