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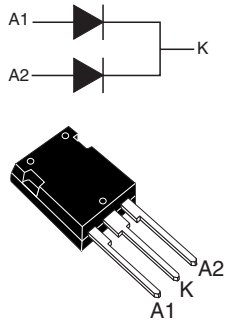
STPS80H100C

High voltage power Schottky rectifier

Features

- High reverse voltage
- Negligible switching losses
- Low forward voltage drop
- Low leakage current
- High temperature
- Low thermal resistance
- Avalanche capability specified



Max247
STPS80H100CY

Description

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

Packaged in Max247, this device is intended for use in high frequency computer and telecom converters.

Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	2 x 40 A
V_{RRM}	100 V
T_j (max)	175 °C
V_F(max)	0.70 V

1 Characteristics

Table 2. Absolute ratings (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			100	V
$I_{F(RMS)}$	Forward rms current			50	A
$I_{F(AV)}$	Average forward current	T_c = 155 °C δ = 0.5	Per diode Per device	40 80	A
I_{FSM}	Surge non repetitive forward current	t_p = 10 ms sinusoidal		400	A
I_{RRM}	Repetitive peak reverse current	t_p = 2 µs, F= 1 kHz		2	A
P_{ARM}	Repetitive peak avalanche power	t_p = 1 µs, T_j = 25 °C		39200	W
T_{stg}	Storage temperature range			-65 to + 175	°C
T_j	Maximum operating junction temperature(1)			175	°C
dV/dt	Critical rate of rise of reverse voltage			10000	V/µs

1. $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ condition to avoid thermal runaway for a diode on its own heatsink

Table 3. Thermal resistance

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode Total	0.7 0.5	°C/W
$R_{th(c)}$	Coupling		0.3	

When the diodes 1 and 2 are used simultaneously :

ΔTj(diode 1) = P(diode1) x $R_{th(j-c)}$(Per diode) + P(diode 2) x $R_{th(c)}$

Table 4. Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I_R(1)	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$			20	µA
		T_j = 125 °C			7	20	mA
V_F(2)	Forward voltage drop	T_j = 25 °C	I_F = 40 A			0.8	V
		T_j = 125 °C	I_F = 40 A		0.65	0.7	
		T_j = 25 °C	I_F = 80 A			0.94	
		T_j = 125 °C	I_F = 80 A		0.79	0.84	

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

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

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

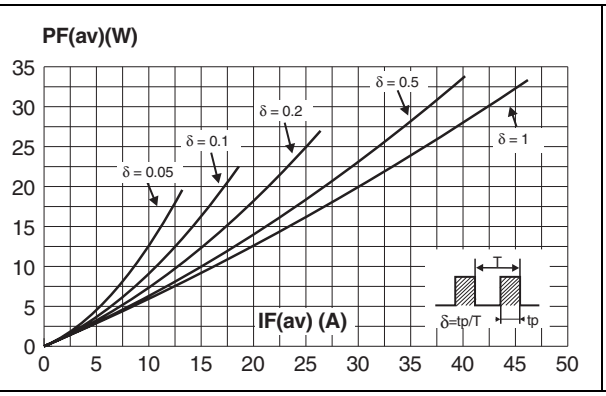


Figure 2. Average forward current versus ambient temperature (δ = 0.5, per diode)

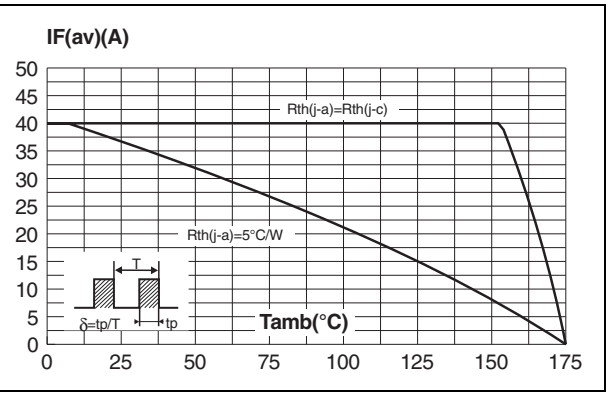


Figure 3. Normalized avalanche power derating versus pulse duration

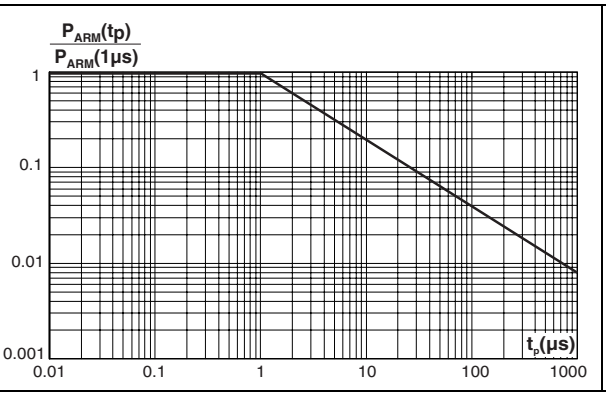


Figure 4. Normalized avalanche power derating versus junction temperature

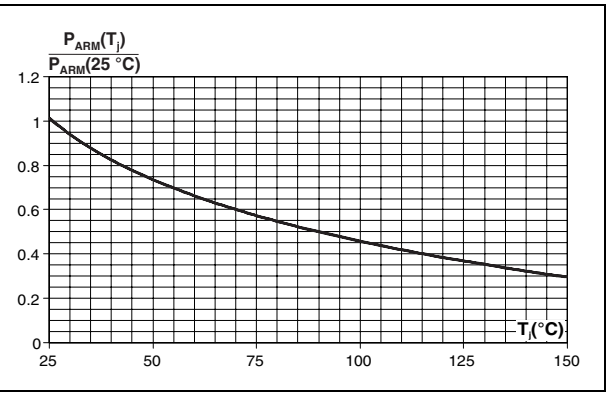


Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values, per diode)

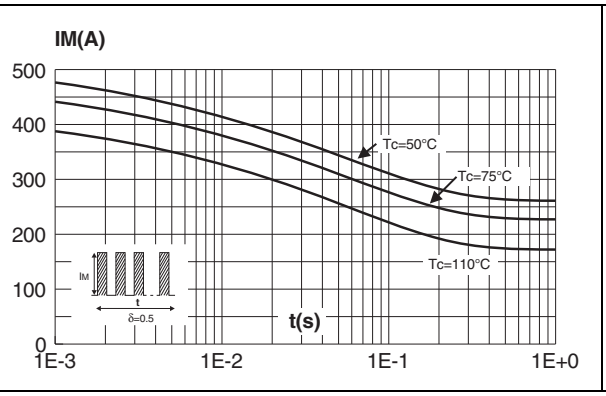


Figure 6. Relative variation of thermal impedance junction to case versus pulse duration (per diode)

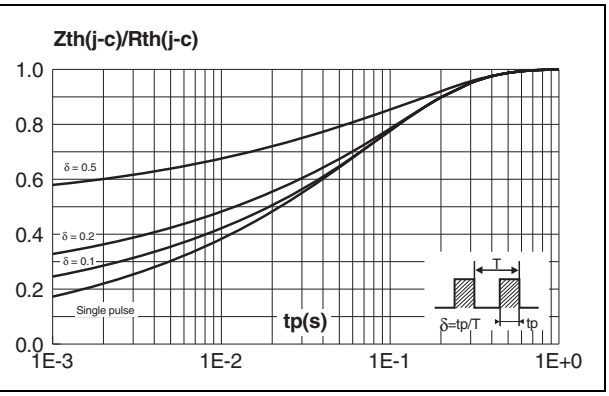


Figure 7. Reverse leakage current versus reverse voltage applied (typical values, per diode)

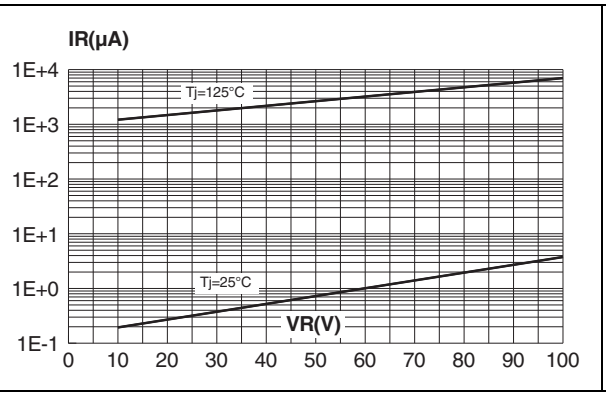


Figure 8. Junction capacitance versus reverse voltage applied (typical values, per diode)

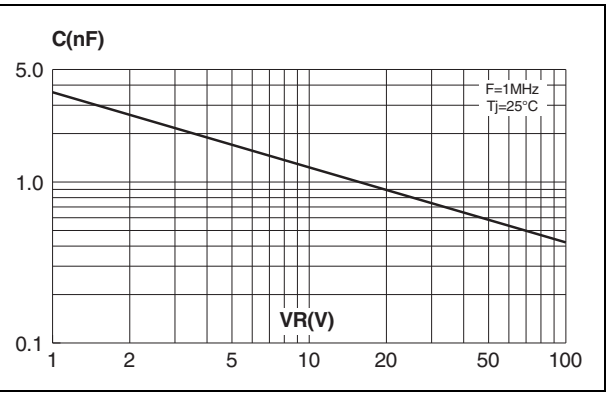
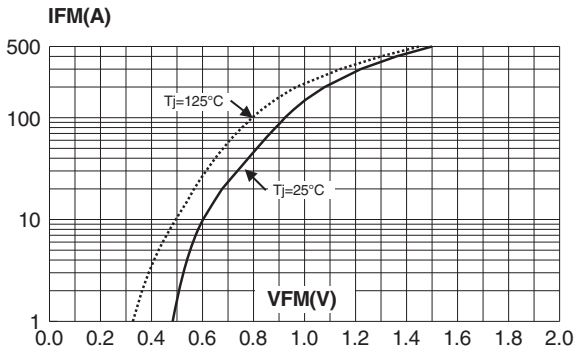


Figure 9. Forward voltage drop versus forward current (maximum value, per diode)

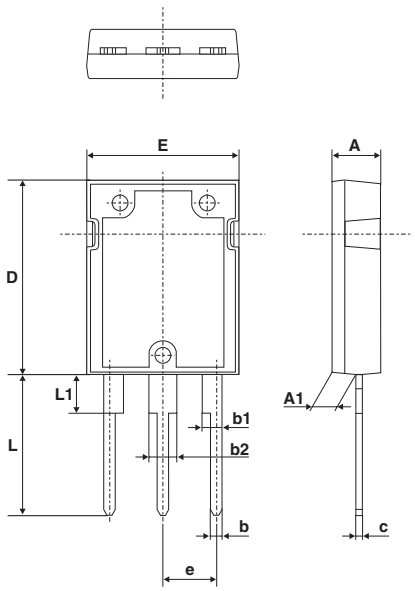


2 Package information

- Epoxy meets UL94, V0
- Lead-free packages

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

Table 5. Max247 dimensions



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.70	5.30	0.185	0.209
A1	2.20	2.60	0.087	0.102
b	1.00	1.40	0.038	0.055
b1	2.00	2.40	0.079	0.094
b2	3.00	3.40	0.118	0.133
c	0.40	0.80	0.016	0.031
D	19.70	20.30	0.776	0.799
e	5.35	5.55	0.211	0.219
E	15.30	15.90	0.602	0.626
L	14.20	15.20	0.559	0.598
L1	3.70	4.30	0.146	0.169

3 Ordering information

Table 6. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
STPS80H100CY	STPS80H100CY	Max247	4.4 g	30	Tube

4 Revision history

Table 7. Document revision history

Date	Revision	Change
July-2003	2B	Last release.
21-Jun-2010	3	Updated package illustration on page 1 and *Section 2: Package information on page 5*.

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