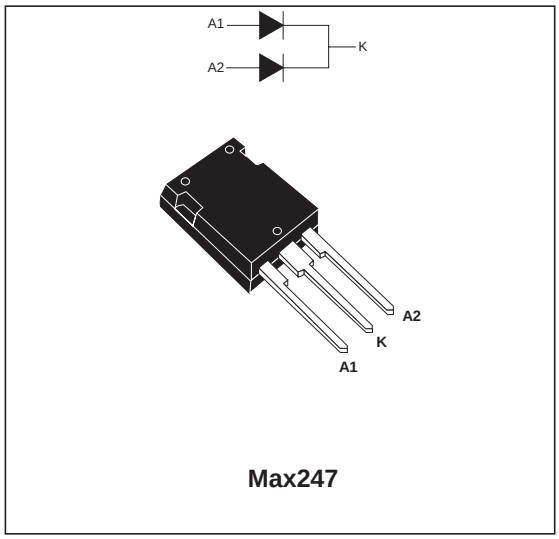
# STPS80H100CY

## HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

**PRELIMINARY DATASHEET**

### MAIN PRODUCT CHARACTERISTICS

| | |
|---|---|
| $I_{F(AV)}$ | 2 x 40 A |
| $V_{RRM}$ | 100 V |
| Tj (max) | 175 °C |
| $V_F$ (max) | 0.70 V |




**Max247**

### FEATURES AND BENEFITS

- HIGH REVERSE VOLTAGE
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- LOW LEAKAGE CURRENT
- HIGH TEMPERATURE
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED

### 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.

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

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| $V_{RRM}$ | Repetitive peak reverse voltage | | | 100 | V |
| $I_{F(RMS)}$ | RMS forward current | | | 50 | A |
| $I_{F(AV)}$ | Average forward current | Tc = 155°C<br>δ = 0.5 | Per diode<br>Per device | 40<br>80 | A |
| $I_{FSM}$ | Surge non repetitive forward current | tp = 10 ms sinusoidal | | 400 | A |
| $I_{RRM}$ | Repetitive peak reverse current | tp = 2 µs square F = 1kHz | | 2 | A |
| $P_{ARM}$ | Repetitive peak avalanche power | tp = 1µs Tj = 25°C | | 39200 | 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 reverse voltage | | | 10000 | V/µs |

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

## THERMAL RESISTANCES

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

When the diodes 1 and 2 are used simultaneously :
$\Delta$ Tj(diode 1) = P(diode1) x $R_{th(j-c)}$(Per diode) + P(diode 2) x $R_{th(c)}$

## STATIC ELECTRICAL CHARACTERISTICS (per diode)

| Symbol | Parameter | Tests conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $I_R$ * | Reverse leakage current | Tj = 25°C | $V_R = V_{RRM}$ | | | 20 | µA |
| | | Tj = 125°C | | | 7 | 20 | mA |
| $V_F$ ** | Forward voltage drop | Tj = 25°C | $I_F$ = 40 A | | | 0.8 | V |
| | | Tj = 125°C | $I_F$ = 40 A | | 0.65 | 0.7 | |
| | | Tj = 25°C | $I_F$ = 80 A | | | 0.94 | |
| | | Tj = 125°C | $I_F$ = 80 A | | 0.79 | 0.84 | |

Pulse test : * tp = 5 ms, δ < 2 %
** tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation :
$P = 0.56 \times I_{F(AV)} + 0.0035 \times I_F{}^2{}_{(RMS)}$

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

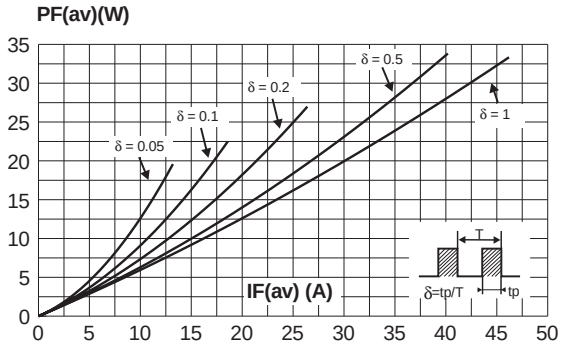



**Fig. 2:** Average forward current versus ambient temperature (δ=0.5, per diode).

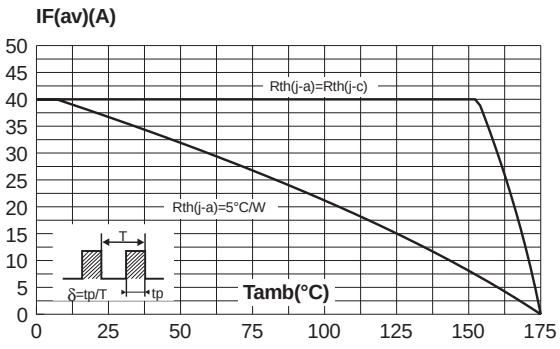



**Fig. 3:** Normalized avalanche power derating versus pulse duration.

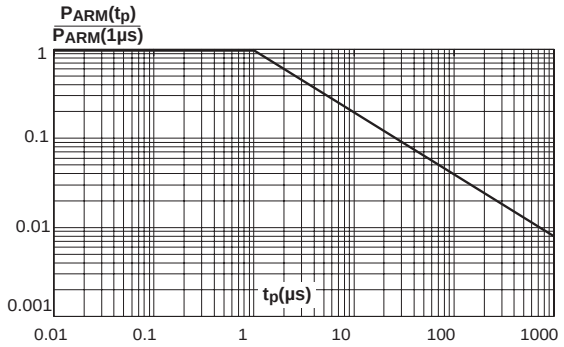



**Fig. 4:** Normalized avalanche power derating versus junction temperature.

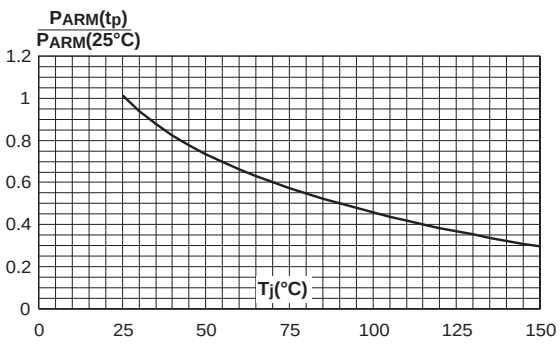


**Fig. 5:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

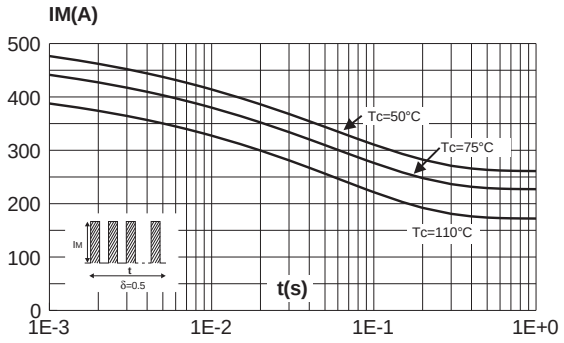



**Fig. 6:** Relative variation of thermal impedance junction to case versus pulse (per diode).

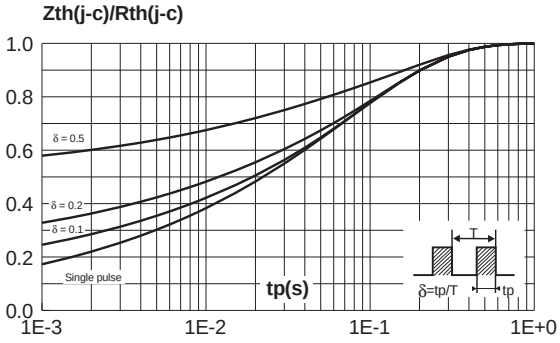



**Fig. 7:** Reverse leakage current versus reverse voltage applied (typical values, per diode).

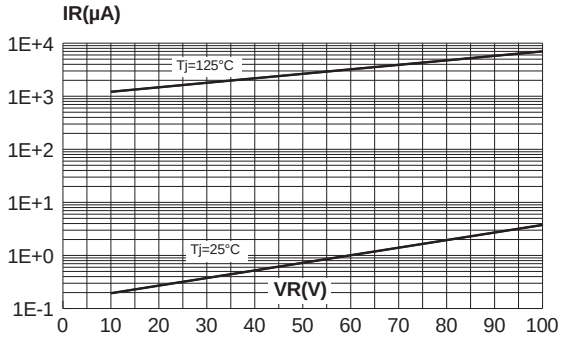



**Fig. 8:** Junction capacitance versus reverse voltage applied (typical values, per diode).

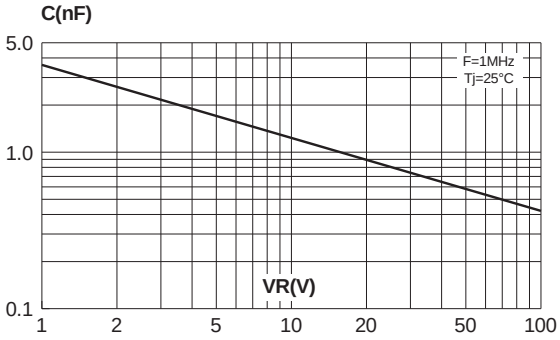
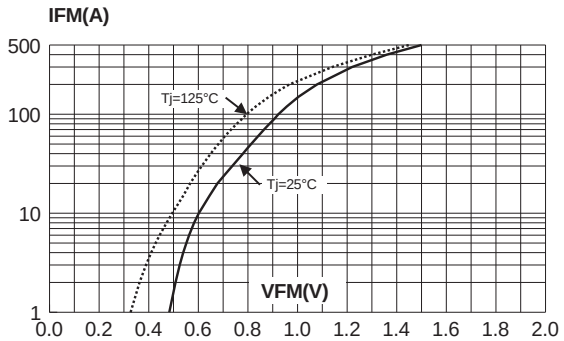
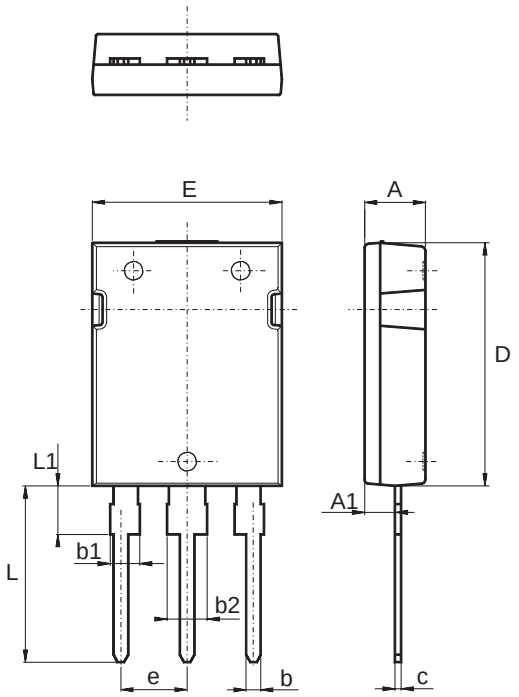



**Fig. 9:** Forward voltage drop versus forward current (maximum values, per diode).



## PACKAGE MECHANICAL DATA

Max247




| 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 | 10.30 | 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 |

| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|---|---|---|---|---|---|
| STPS80H100CY | STPS80H100CY | Max247 | 4.4g | 30 | Tube |

- EPOXY MEETS UL94,V0