



STPS80H100TV

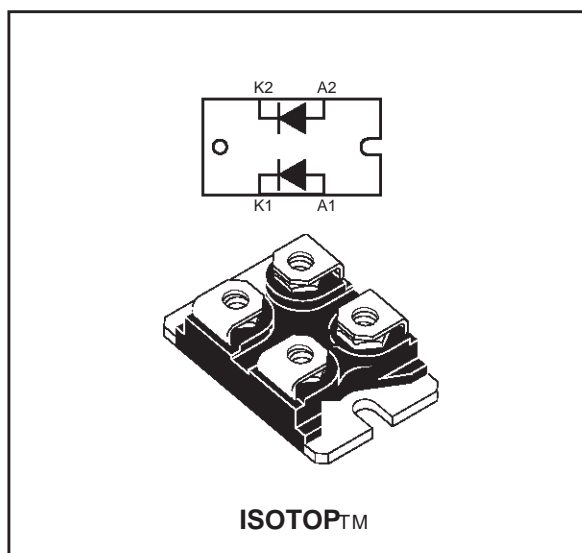
HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

| | |
|-------------------|-----------------|
| $I_{F(AV)}$ | 2 x 40 A |
| V_{RRM} | 100 V |
| $T_j(\text{max})$ | 150 °C |
| $V_F(\text{max})$ | 0.65 V |

FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- HIGH JUNCTION TEMPERATURE CAPABILITY
- LOW LEAKAGE CURRENT
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- AVALANCHE RATED
- LOW INDUCTANCE PACKAGE
- INSULATED PACKAGE :
Insulated voltage = 2500 V_(RMS)
Capacitance = 45 pF



DESCRIPTION

High voltage dual Schottky barrier rectifier designed for high frequency telecom and computer Switched Mode Power Supplies and other power converters.

Packaged in ISOTOP, this device is intended for use in medium voltage operation, and particularly, in high frequency circuitries where low switching losses and low noise are required.

ABSOLUTE RATINGS (limiting values, per diode)

| Symbol | Parameter | | Value | Unit |
|--------------|--|--|-----------------|------------------|
| V_{RRM} | Repetitive peak reverse voltage | | 100 | V |
| $I_{F(RMS)}$ | RMS forward current | | 125 | A |
| $I_{F(AV)}$ | Average forward current | $T_c = 120^\circ\text{C}$ $\delta = 0.5$ | Per diode 80 | A |
| I_{FSM} | Surge non repetitive forward current | $t_p = 10 \text{ ms sinusoidal}$ | 700 | 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 | $t_p = 100 \mu\text{s square}$ | 5 | A |
| T_{stg} | Storage temperature range | | -55 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

STPS80H100TV**THERMAL RESISTANCES**

| Symbol | Parameter | | Value | Unit |
|---------------|------------------|----------|-------|-----------------------------|
| $R_{th(j-c)}$ | Junction to case | Per leg | 1 | $^{\circ}\text{C}/\text{W}$ |
| | | 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 (per diode)

| Symbol | Parameter | Tests Conditions | | Min. | Typ. | Max. | Unit |
|------------|-------------------------|-----------------------------|---------------------|------|------|------|---------------|
| I_R^* | Reverse leakage current | $T_j = 25^{\circ}\text{C}$ | $V_R = V_{RRM}$ | | | 20 | μA |
| | | $T_j = 125^{\circ}\text{C}$ | | | 7 | 25 | mA |
| V_F^{**} | Forward voltage drop | $T_j = 25^{\circ}\text{C}$ | $I_F = 40\text{ A}$ | | | 0.78 | V |
| | | $T_j = 125^{\circ}\text{C}$ | $I_F = 40\text{ A}$ | | 0.61 | 0.65 | |
| | | $T_j = 25^{\circ}\text{C}$ | $I_F = 80\text{ A}$ | | | 0.89 | |
| | | $T_j = 125^{\circ}\text{C}$ | $I_F = 80\text{ A}$ | | 0.7 | 0.74 | |

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 :

$$P = 0.56 \times I_{F(AV)} + 0.0022 \times I_F^2(RMS)$$

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

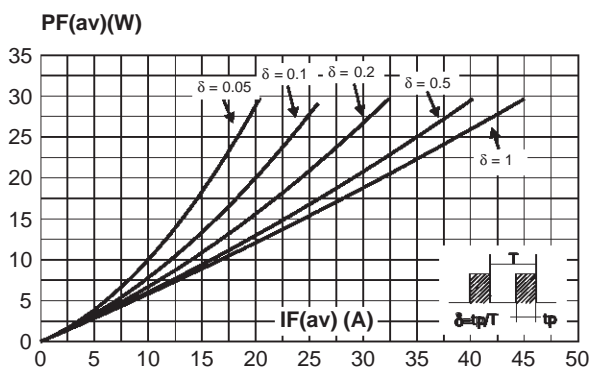


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$, per diode).

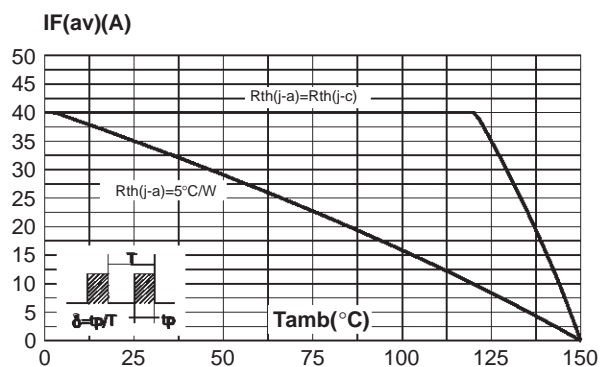


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

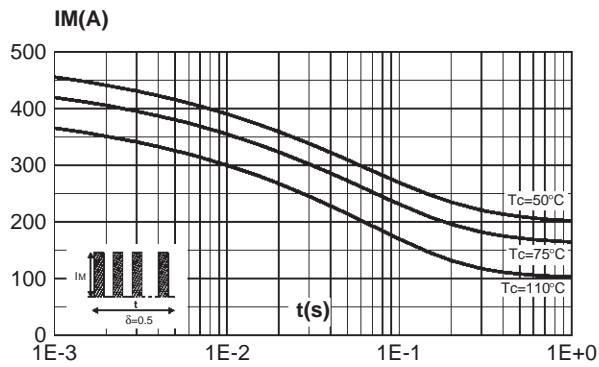


Fig. 4: Relative variation of thermal impedance junction to case versus pulse duration (per diode).

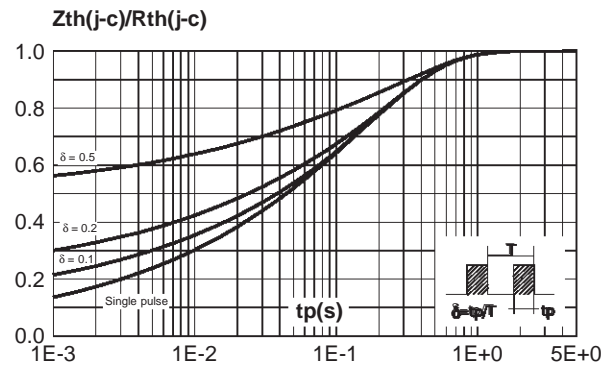


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values, per diode).

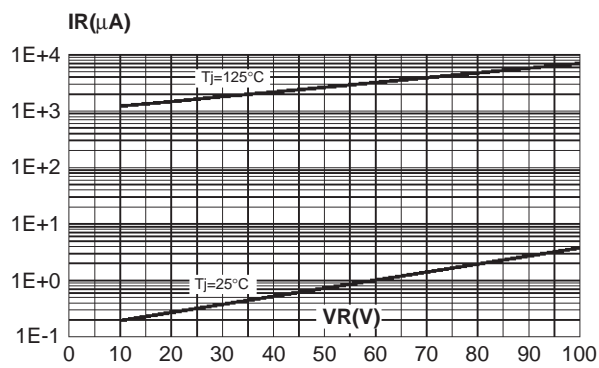


Fig. 6: Junction capacitance versus reverse voltage applied (typical values, per diode).

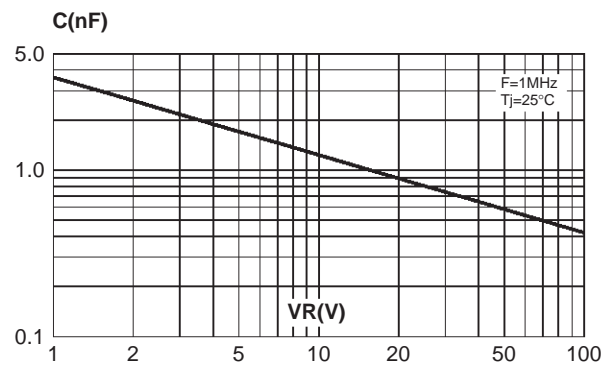
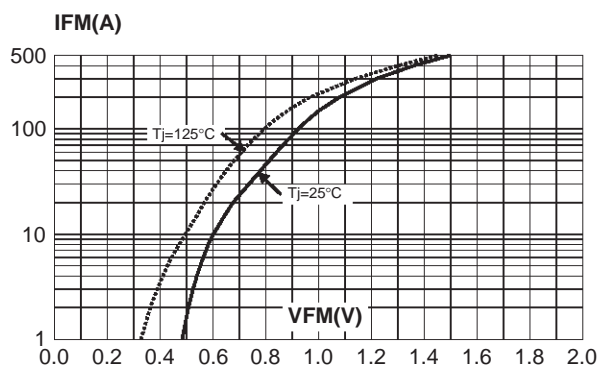


Fig. 7: Forward voltage drop versus forward current (maximum values, per diode).



STPS80H100TV**PACKAGE MECHANICAL DATA**
ISOTOP™

| REF. | DIMENSIONS | | | |
|------|-------------|-------|------------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 11.80 | 12.20 | 0.465 | 0.480 |
| A1 | 8.90 | 9.10 | 0.350 | 0.358 |
| B | 7.8 | 8.20 | 0.307 | 0.323 |
| C | 0.75 | 0.85 | 0.030 | 0.033 |
| C2 | 1.95 | 2.05 | 0.077 | 0.081 |
| D | 37.80 | 38.20 | 1.488 | 1.504 |
| D1 | 31.50 | 31.70 | 1.240 | 1.248 |
| E | 25.15 | 25.50 | 0.990 | 1.004 |
| E1 | 23.85 | 24.15 | 0.939 | 0.951 |
| E2 | 24.80 typ. | | 0.976 typ. | |
| G | 14.90 | 15.10 | 0.587 | 0.594 |
| G1 | 12.60 | 12.80 | 0.496 | 0.504 |
| G2 | 3.50 | 4.30 | 0.138 | 0.169 |
| F | 4.10 | 4.30 | 0.161 | 0.169 |
| F1 | 4.60 | 5.00 | 0.181 | 0.197 |
| P | 4.00 | 4.30 | 0.157 | 0.69 |
| P1 | 4.00 | 4.40 | 0.157 | 0.173 |
| S | 30.10 | 30.30 | 1.185 | 1.193 |

- Cooling method: C
- Recommended torque value: 1.3 N.m.
- Maximum torque value: 1.5 N.m.

| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|---------------|--------------|---------|-----------------------|----------|---------------|
| STPS80H100TV | STPS80H100TV | ISOTOP | 27g without screws | 10 | Tube |

- Epoxy meets UL94,V0

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