



STPS160H100TV

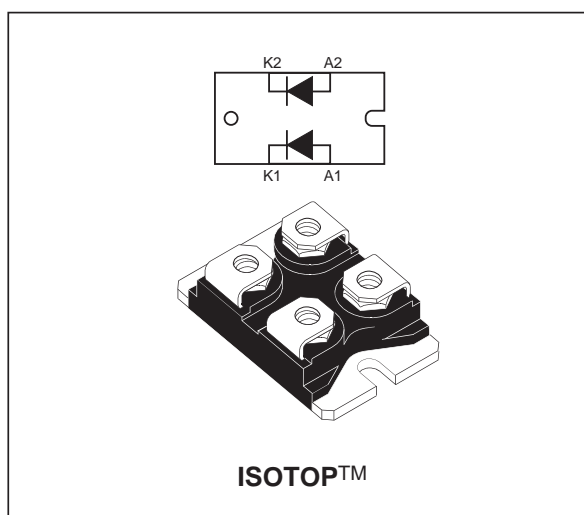
HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

| | |
|-------------|----------|
| $I_{F(AV)}$ | 2 x 80 A |
| V_{RRM} | 100 V |
| T_j (max) | 150 °C |
| V_F (max) | 0.68 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 INDUCTION PACKAGE
- INSULATED PACKAGE:
Insulating Voltage = 2500 V_(RMS)
Capacitance = 45 pF
- AVALANCHE CAPABILITY SPECIFIED



DESCRIPTION

High voltage dual Schottky 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 | | 180 | A |
| $I_{F(AV)}$ | Average forward current | $T_c = 110^\circ\text{C}$ $\delta = 0.5$ | Per diode: 80 Per device: 160 | A |
| I_{FSM} | Surge non repetitive forward current | $t_p = 10 \text{ ms}$ sinusoidal | 1000 | 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 | 10 | A |
| P_{ARM} | Repetitive peak avalanche power | $t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$ | 78400 | W |
| 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

STPS160H100TV

THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|---------------|------------------|----------|-------|------|
| $R_{th(j-c)}$ | Junction to case | Per leg | 0.9 | °C/W |
| | | Total | 0.5 | °C/W |
| $R_{th(c)}$ | | Coupling | 0.14 | °C/W |

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 | $T_j = 25^\circ\text{C}$ | $V_R = V_{RRM}$ | | | 40 | μA |
| | | $T_j = 125^\circ\text{C}$ | | | 13 | 50 | mA |
| V_F^{**} | Forward Voltage drop | $T_j = 25^\circ\text{C}$ | $I_F = 60\text{ A}$ | | | 0.75 | V |
| | | $T_j = 125^\circ\text{C}$ | $I_F = 60\text{ A}$ | | 0.59 | 0.63 | |
| | | $T_j = 25^\circ\text{C}$ | $I_F = 80\text{ A}$ | | | 0.80 | |
| | | $T_j = 125^\circ\text{C}$ | $I_F = 80\text{ A}$ | | 0.63 | 0.68 | |
| | | $T_j = 25^\circ\text{C}$ | $I_F = 120\text{ A}$ | | | 0.87 | |
| | | $T_j = 125^\circ\text{C}$ | $I_F = 120\text{ A}$ | | 0.69 | 0.74 | |
| | | $T_j = 25^\circ\text{C}$ | $I_F = 160\text{ A}$ | | | 0.92 | |
| | | $T_j = 125^\circ\text{C}$ | $I_F = 160\text{ A}$ | | 0.75 | 0.80 | |

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

To evaluate the conduction losses use the following equation :
 $P = 0.56 \times I_{F(AV)} + 0.0015 \times I_{F(RMS)}^2$

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

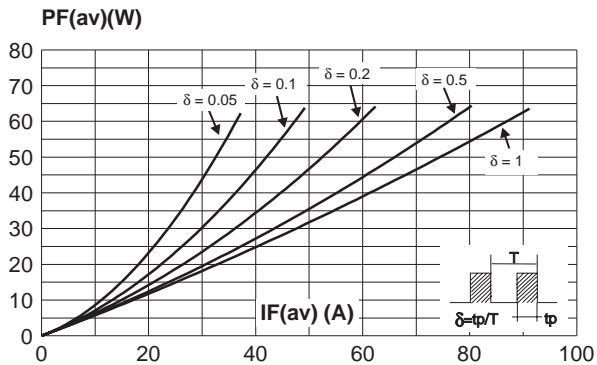


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$, per diode).

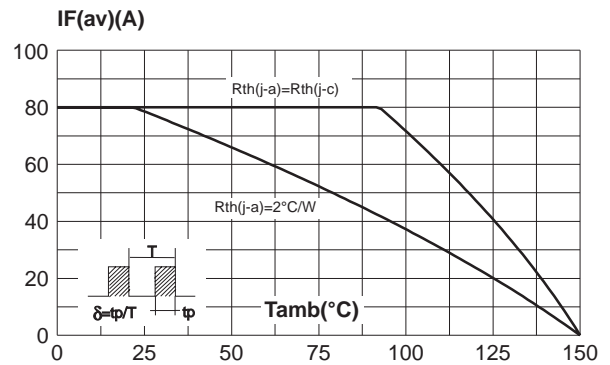


Fig. 3: Normalized avalanche power derating versus pulse duration.

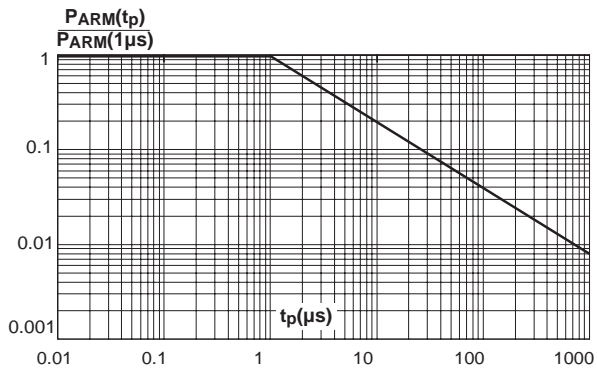


Fig. 4: Normalized avalanche power derating versus junction temperature.

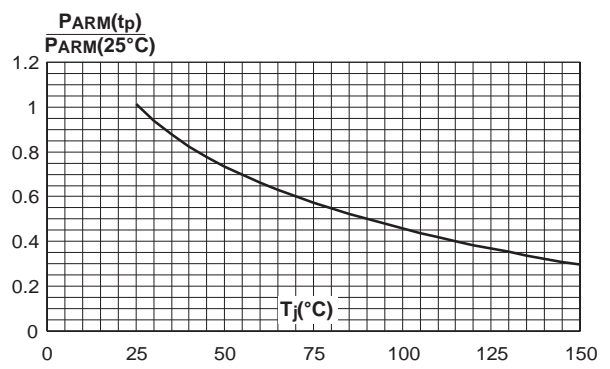


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

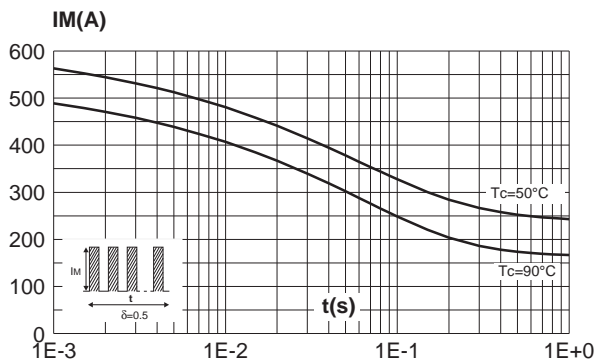
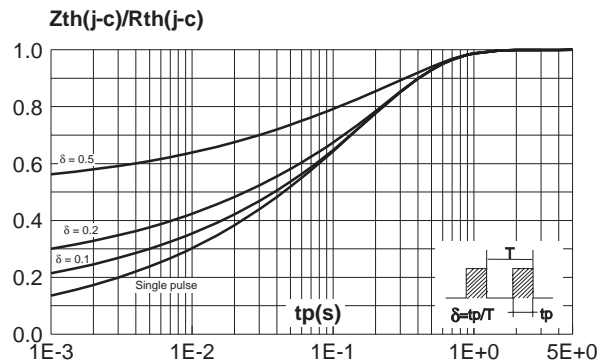


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration (per diode).



STPS160H100TV

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

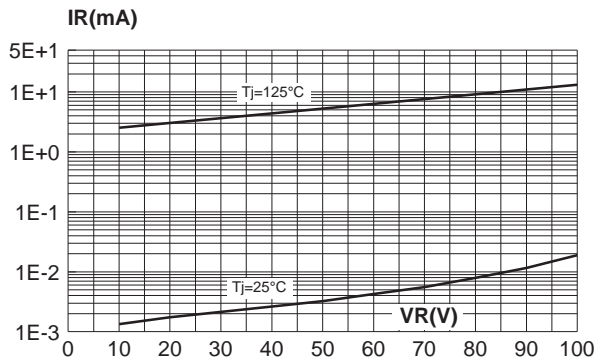


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

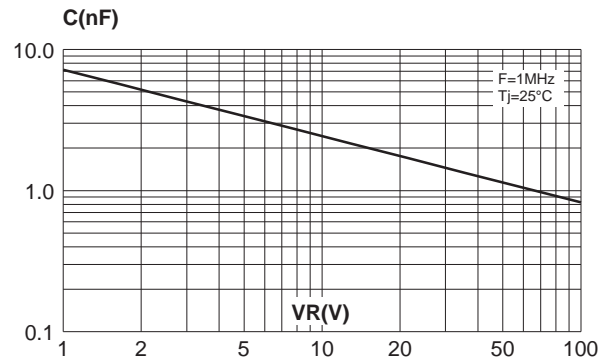
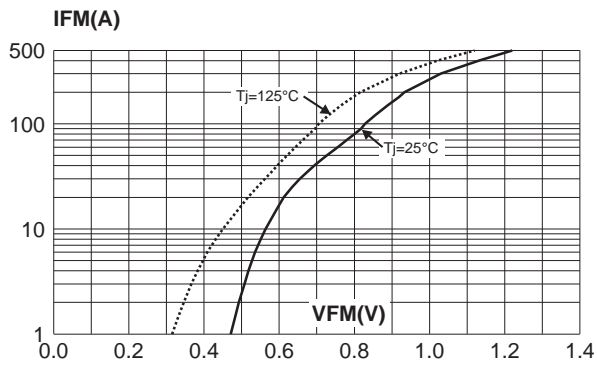
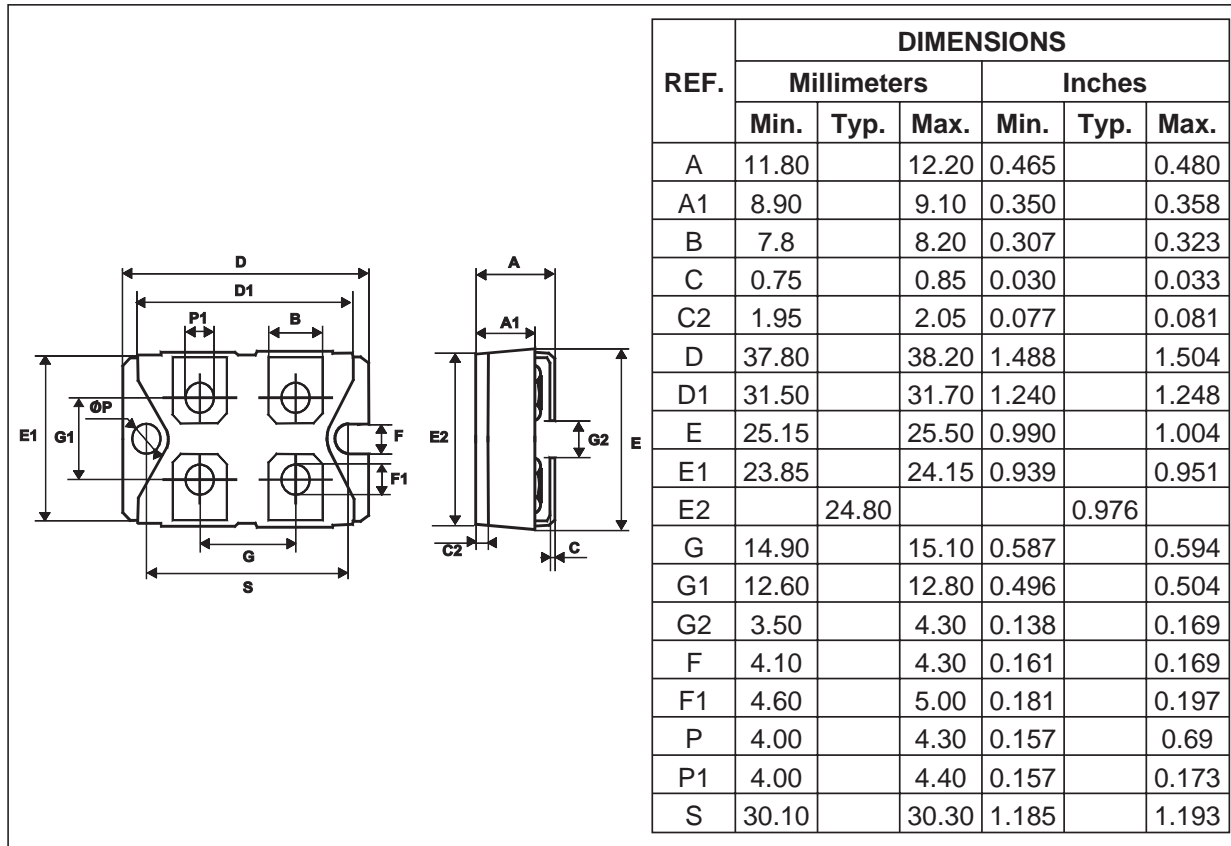


Fig. 9: Forward voltage drop versus forward current (maximum values, per diode).



PACKAGE MECHANICAL DATA
ISOTOP™



- 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 |
|---------------|---------------|---------|-----------------------|----------|---------------|
| STPS160H100TV | STPS160H100TV | ISOTOP | 27g without screws | 10 | 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
 © 2003 STMicroelectronics - Printed in Italy - All rights reserved.
 STMicroelectronics GROUP OF COMPANIES
 Australia - Brazil - Canada - China - Finland - France - Germany
 Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore
 Spain - Sweden - Switzerland - United Kingdom - United States.

<http://www.st.com>



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[STMicroelectronics:](#)

[STPS160H100TV](#)