



STPS5H100B/-1

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

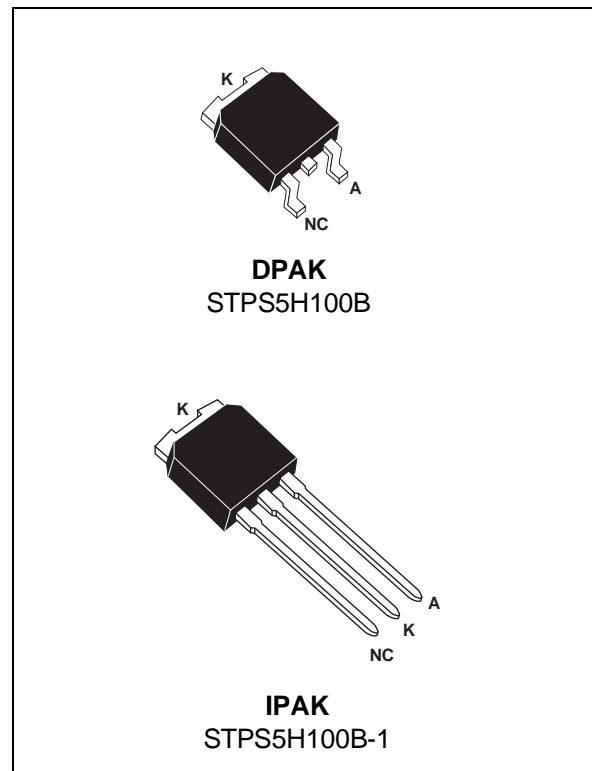
| | |
|-------------------|--------|
| $I_{F(AV)}$ | 5 A |
| V_{RRM} | 100 V |
| $T_j(\text{max})$ | 175 °C |
| $V_F(\text{max})$ | 0.61 V |

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

DESCRIPTION

Schottky barrier rectifier designed for high frequency miniature Switched Mode Power Supplies such as adaptators and on board DC to DC converters.



ABSOLUTE RATINGS (limiting values)

| Symbol | Parameter | | Value | Unit |
|--------------|--|--|---------------|------------------|
| V_{RRM} | Repetitive peak reverse voltage | | 100 | V |
| $I_{F(RMS)}$ | RMS forward current | | 10 | A |
| $I_{F(AV)}$ | Average forward current | $T_c = 165^\circ\text{C} \quad \delta = 0.5$ | 5 | A |
| I_{FSM} | Surge non repetitive forward current | $t_p = 10 \text{ ms}$ sinusoidal | 75 | 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 | 2 | A |
| 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 |

STPS5H100B/-1

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---------------|------------------|-------|-----------------------------|
| $R_{th(j-c)}$ | Junction to case | 2.5 | $^{\circ}\text{C}/\text{W}$ |

STATIC ELECTRICAL CHARACTERISTICS

| Symbol | Parameter | Tests Conditions | | Min. | Typ. | Max. | Unit | |
|------------|-------------------------|-----------------------------|--------------------|---------------------|------|------|---------------|------|
| I_R^* | Reverse leakage current | $T_j = 25^{\circ}\text{C}$ | $V_R = V_{RRM}$ | | | 3.5 | μA | |
| | | $T_j = 125^{\circ}\text{C}$ | | | 1.3 | 4.5 | mA | |
| V_F^{**} | Forward voltage drop | $T_j = 25^{\circ}\text{C}$ | $I_F = 5\text{ A}$ | | | 0.73 | V | |
| | | $T_j = 125^{\circ}\text{C}$ | | | 0.57 | 0.61 | | |
| | | $T_j = 25^{\circ}\text{C}$ | | $I_F = 10\text{ A}$ | | | | 0.85 |
| | | $T_j = 125^{\circ}\text{C}$ | | | | 0.66 | | 0.71 |

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 :

$$P = 0.51 \times I_{F(AV)} + 0.02 \times I_{F(RMS)}^2$$

Fig. 1: Average forward power dissipation versus average forward current.

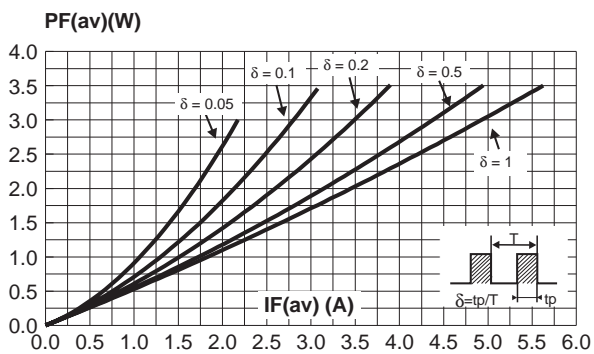


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$).

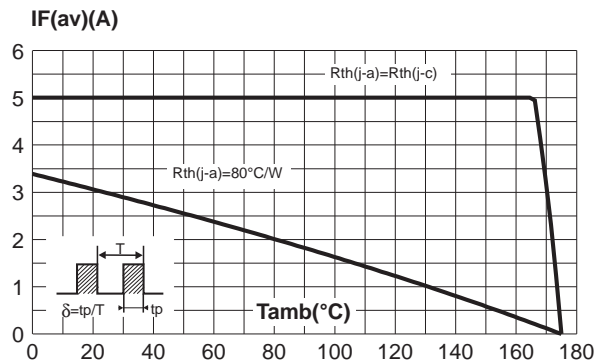


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values).

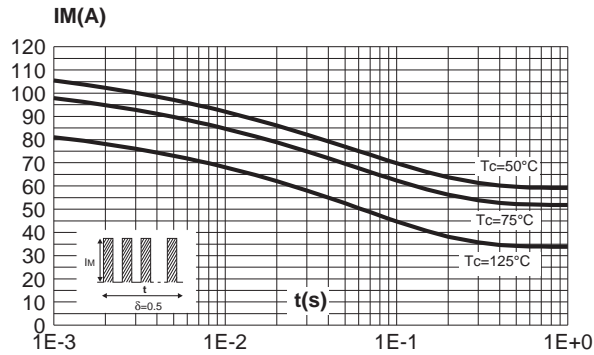


Fig. 4: Relative variation of thermal impedance junction to case versus pulse duration.

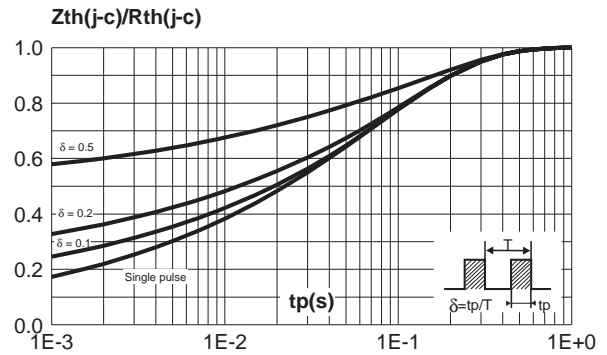


Fig. 5: Reverse leakage current versus reverse voltage applied.

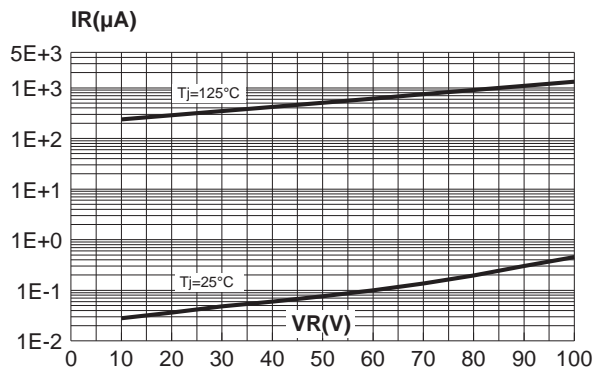


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

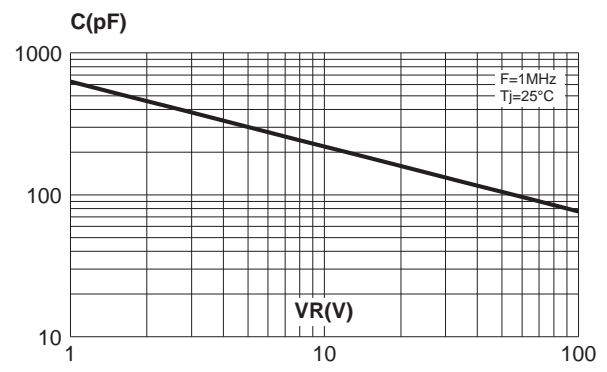


Fig. 7: Forward voltage drop versus forward current (maximum values).

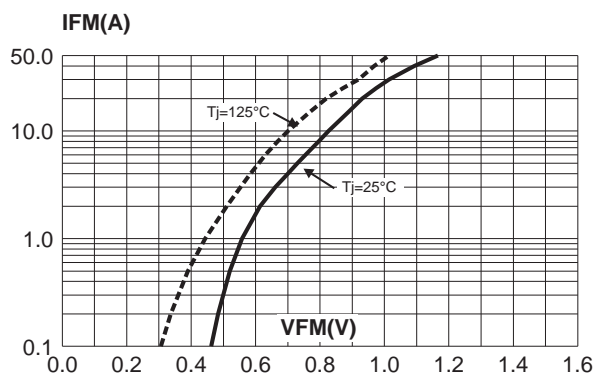
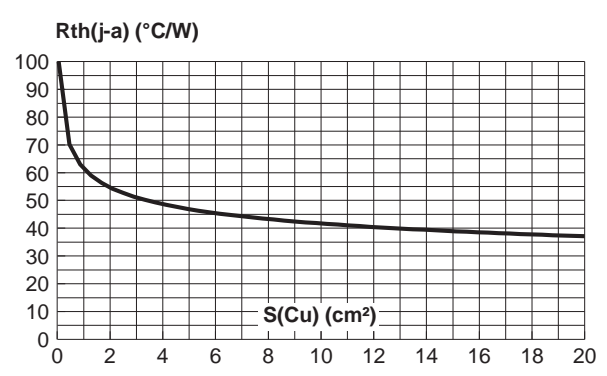
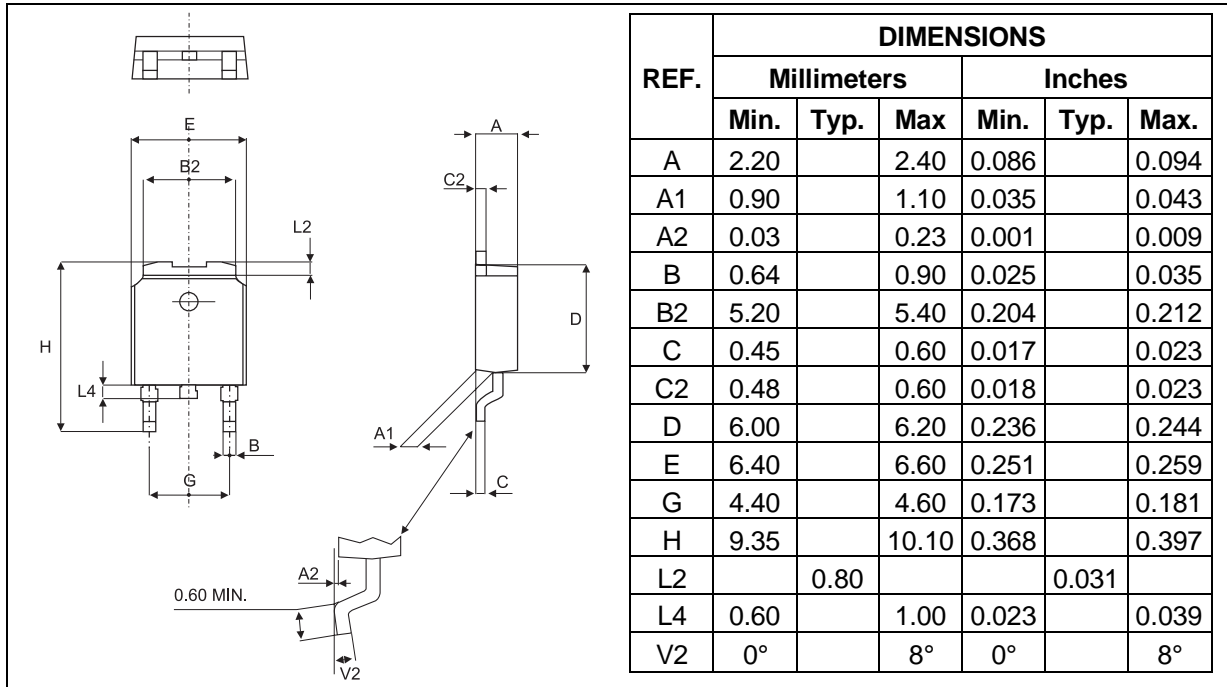


Fig. 8: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 μm) (DPAK).

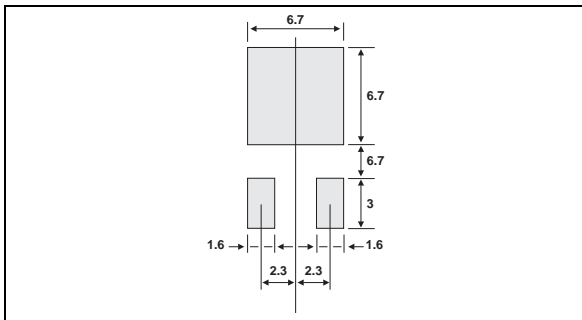


STPS5H100B/-1

PACKAGE MECHANICAL DATA DPAK



FOOT PRINT (in millimeters)



PACKAGE MECHANICAL DATA
IPAK

| REF. | DIMENSIONS | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 2.2 | | 2.4 | 0.086 | | 0.094 |
| A1 | 0.9 | | 1.1 | 0.035 | | 0.043 |
| A3 | 0.7 | | 1.3 | 0.027 | | 0.051 |
| B | 0.64 | | 0.9 | 0.025 | | 0.035 |
| B2 | 5.2 | | 5.4 | 0.204 | | 0.212 |
| B3 | | | 0.85 | | | 0.033 |
| B5 | | 0.3 | | | 0.035 | |
| B6 | | | 0.95 | | | 0.037 |
| C | 0.45 | | 0.6 | 0.017 | | 0.023 |
| C2 | 0.48 | | 0.6 | 0.019 | | 0.023 |
| D | 6 | | 6.2 | 0.236 | | 0.244 |
| E | 6.4 | | 6.6 | 0.252 | | 0.260 |
| G | 4.4 | | 4.6 | 0.173 | | 0.181 |
| H | 15.9 | | 16.3 | 0.626 | | 0.641 |
| L | 9 | | 9.4 | 0.354 | | 0.370 |
| L1 | 0.8 | | 1.2 | 0.031 | | 0.047 |
| L2 | | 0.8 | 1 | | 0.031 | 0.039 |
| V1 | | 10° | | | 10° | |

| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|---------------|---------|---------|--------|----------|---------------|
| STPS5H100B | S5H100 | DPAK | 0.30g | 75 | Tube |
| STPS5H100B-TR | S5H100 | DPAK | 0.30g | 2500 | Tape & reel |
| STPS5H100B-1 | S5H100 | IPAK | 0.35g | 75 | 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

© 1998 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Mexico - Morocco -
The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.

<http://www.st.com>

