

5A, 100V - 150V Trench Schottky Surface Mount Rectifier

FEATURES

- Patented Trench Schottky technology
- Excellent high temperature stability
- Low forward voltage
- Lower power loss/ high efficiency
- High forward surge capability
- Ideal for automated placement
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

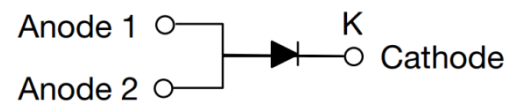
APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- DC to DC converter

MECHANICAL DATA

- Case: SMPC4.0
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Polarity: Indicated by cathode band
- Weight: 0.090g (approximately)

| KEY PARAMETERS | | |
|----------------|------------|------|
| PARAMETER | VALUE | UNIT |
| I_F | 5 | A |
| V_{RRM} | 100 - 150 | V |
| I_{FSM} | 100 | A |
| T_{JMAX} | 150 | °C |
| Package | SMPC4.0 | |
| Configuration | Single die | |


SMPC4.0


| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | |
|--|--------------|----------------|----------------|----------------|------------------|
| PARAMETER | SYMBOL | TSPB5H 100S | TSPB5H 120S | TSPB5H 150S | UNIT |
| Marking code on the device | | B5H100 | B5H120 | B5H150 | |
| Repetitive peak reverse voltage | V_{RRM} | 100 | 120 | 150 | V |
| Reverse voltage, total rms value | $V_{R(RMS)}$ | 70 | 84 | 105 | V |
| Forward current | I_F | 5 | | | A |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load | I_{FSM} | 100 | | | A |
| Critical rate of rise of off-state voltage | dv/dt | 10,000 | | | V/ μs |
| Junction temperature | T_J | - 55 to +150 | | | °C |
| Storage temperature | T_{STG} | - 55 to +150 | | | °C |

| THERMAL PERFORMANCE | | | |
|-------------------------------------|-----------------|------------|-------------|
| PARAMETER | SYMBOL | TYP | UNIT |
| Junction-to-lead thermal resistance | $R_{\theta JL}$ | 15 | °C/W |

| ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | | |
|---|------------|--|---------------|------------|------------|---------------|
| PARAMETER | | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
| Forward voltage ⁽¹⁾ | TSPB5H100S | $I_F = 5\text{A}, T_J = 25^\circ\text{C}$ | V_F | 0.59 | 0.66 | V |
| | TSPB5H120S | | | 0.66 | 0.74 | V |
| | TSPB5H150S | | | 0.74 | 0.84 | V |
| | TSPB5H100S | $I_F = 5\text{A}, T_J = 125^\circ\text{C}$ | | 0.53 | 0.60 | V |
| | TSPB5H120S | | | 0.56 | 0.64 | V |
| | TSPB5H150S | | | 0.60 | 0.70 | V |
| Reverse current @ rated V_R ⁽²⁾ | TSPB5H100S | $T_J = 25^\circ\text{C}$ | I_R | - | 150 | μA |
| | TSPB5H120S | | | - | 100 | μA |
| | TSPB5H150S | | | - | 18 | mA |
| | TSPB5H100S | $T_J = 125^\circ\text{C}$ | | - | 18 | mA |
| | TSPB5H120S | | | - | 12 | mA |
| | TSPB5H150S | | | - | 12 | mA |

Notes:

1. Pulse test with $PW = 0.3\text{ms}$
2. Pulse test with $PW = 30\text{ms}$

| ORDERING INFORMATION | | |
|-------------------------------------|----------------|---------------------|
| ORDERING CODE ⁽¹⁾ | PACKAGE | PACKING |
| TSPB5HxS | SMPC4.0 | 6,000 / Tape & Reel |

Notes:

1. "x" defines voltage from 100V(TSPB5H100S) to 150V(TSPB5H150S)

CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 Forward Current Derating Curve

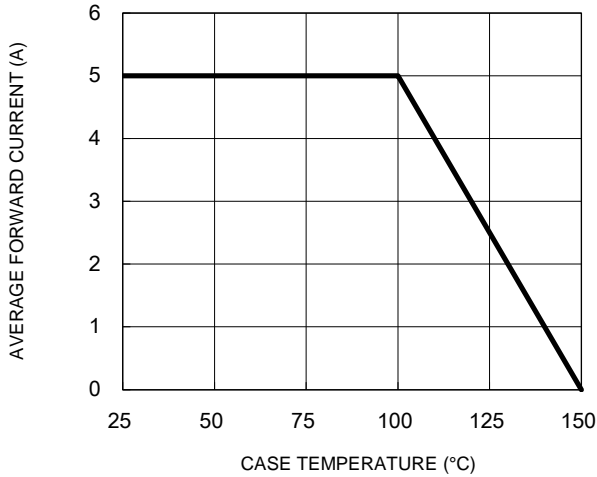


Fig.2 Typical Junction Capacitance

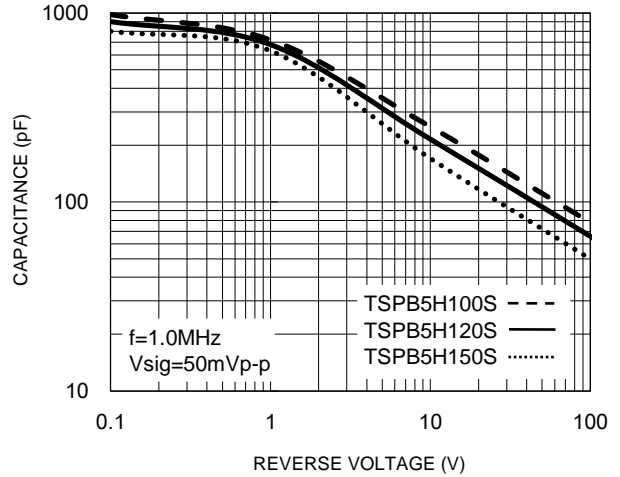


Fig.3 Typical Reverse Characteristics

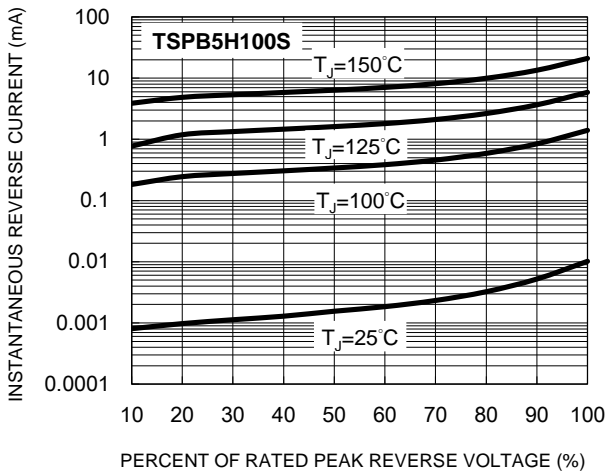


Fig.4 Typical Forward Characteristics

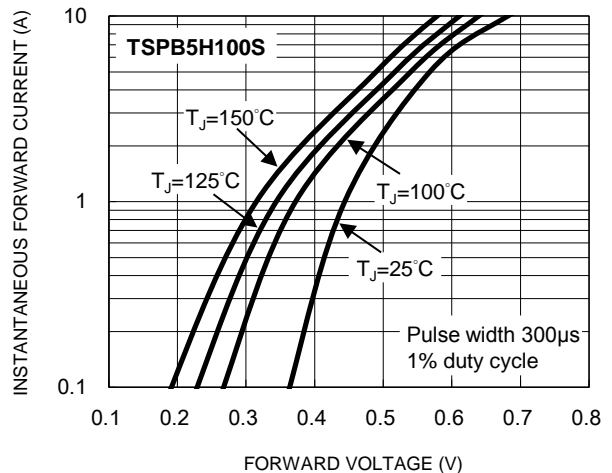


Fig.5 Typical Reverse Characteristics

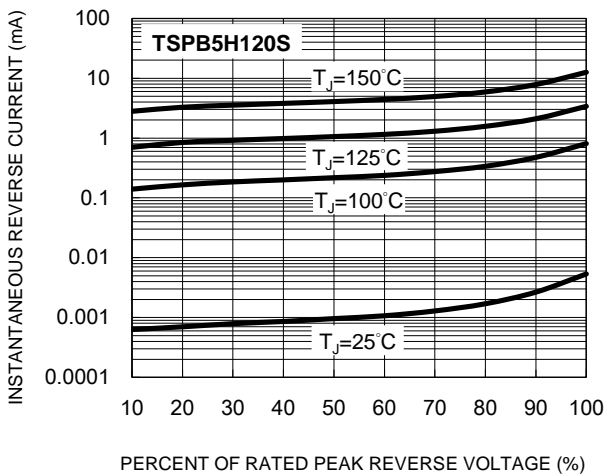
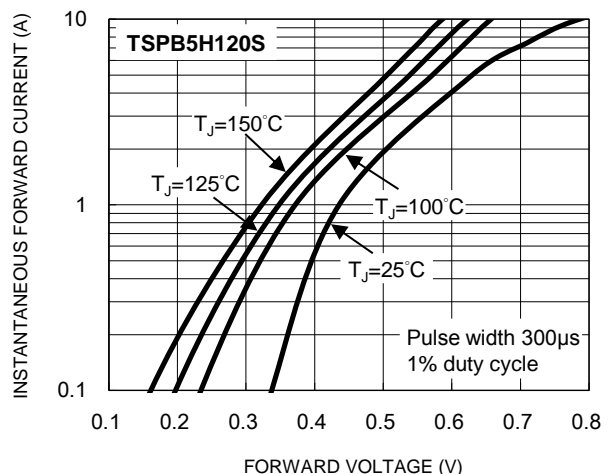


Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.7 Typical Reverse Characteristics

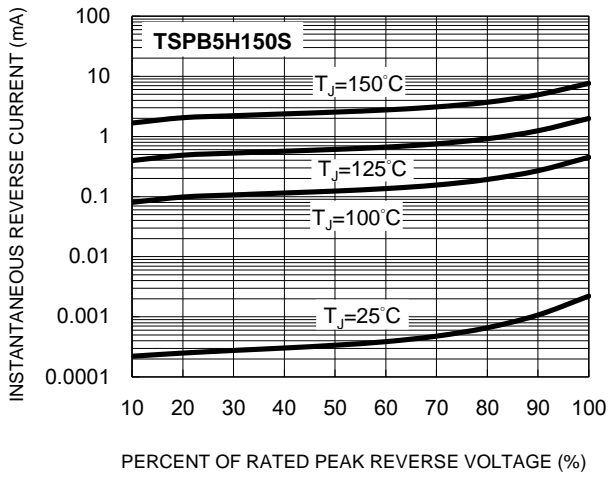
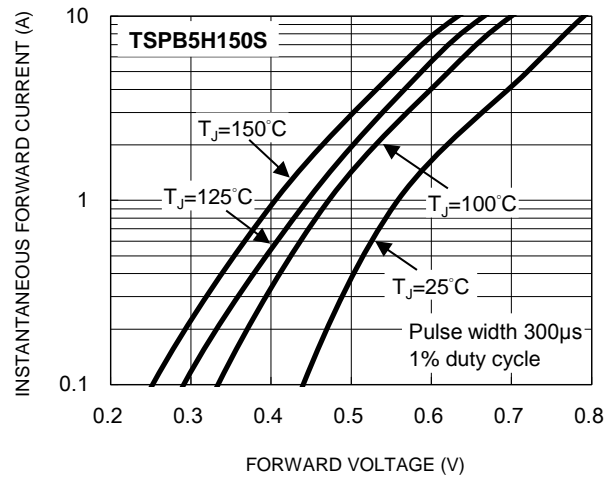
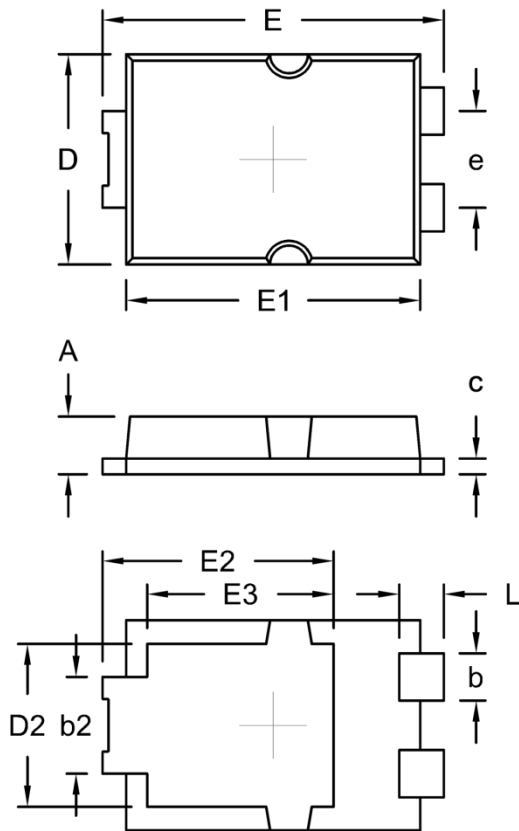


Fig.8 Typical Forward Characteristics



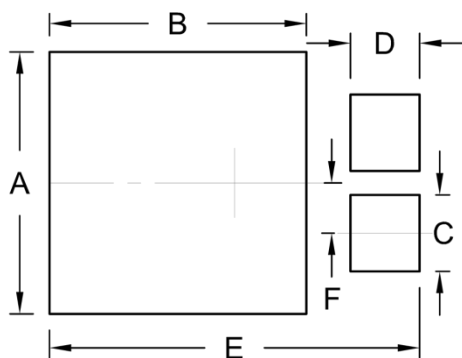
PACKAGE OUTLINE DIMENSIONS

SMPC4.0



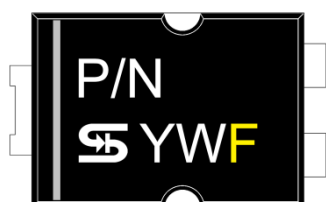
| DIM. | Unit (mm) | | Unit (inch) | |
|------|-----------|------|-------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 1.00 | 1.20 | 0.039 | 0.047 |
| b | 0.75 | 1.05 | 0.030 | 0.041 |
| b2 | 1.69 | 1.99 | 0.067 | 0.078 |
| c | 0.20 | 0.40 | 0.008 | 0.016 |
| D | 3.95 | 4.05 | 0.156 | 0.159 |
| D2 | 2.95 | 3.25 | 0.116 | 0.128 |
| E | 6.35 | 6.65 | 0.250 | 0.262 |
| E1 | 5.55 | 5.65 | 0.219 | 0.222 |
| E2 | 4.25 | 4.55 | 0.167 | 0.179 |
| E3 | 3.40 | 3.70 | 0.134 | 0.146 |
| e | 1.69 | 1.99 | 0.067 | 0.078 |
| L | 0.70 | 1.00 | 0.028 | 0.039 |

SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A | 4.80 | 0.189 |
| B | 4.72 | 0.186 |
| C | 1.40 | 0.055 |
| D | 1.27 | 0.050 |
| E | 6.80 | 0.268 |
| F | 0.92 | 0.036 |

MARKING DIAGRAM



P/N = Marking Code
 YW = Date Code
 F = Factory Code

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