

## 30A, 100V - 200V Trench Schottky Rectifier

### FEATURES

- Patented Trench Schottky technology
- Excellent high temperature stability
- Low forward voltage
- Low power loss/ high efficiency
- High forward surge capability
- Compliant RoHS
- Halogen-free according to IEC 61249-2-21

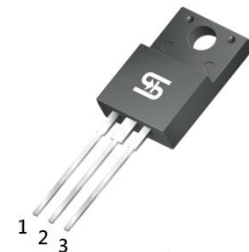
### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board DC/DC converter

### MECHANICAL DATA

- Case: ITO-220AB
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Mounting torque: 0.56 N·m maximum
- Polarity: As marked
- Weight: 1.70g (approximately)

| KEY PARAMETERS |           |      |
|----------------|-----------|------|
| PARAMETER      | VALUE     | UNIT |
| $I_F$          | 30        | A    |
| $V_{RRM}$      | 100 - 200 | V    |
| $I_{FSM}$      | 150       | A    |
| $T_{JMAX}$     | 150       | °C   |
| Package        | ITO-220AB |      |
| Configuration  | Dual dies |      |



ITO-220AB



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)        |              |             |             |             |             |                  |
|--|--------------|-------------|-------------|-------------|-------------|------------------|
| PARAMETER  | SYMBOL       | TSF30H 100C | TSF30H 120C | TSF30H 150C | TSF30H 200C | UNIT             |
| Marking code on the device   |              | TSF30H 100C | TSF30H 120C | TSF30H 150C | TSF30H 200C |                  |
| Repetitive peak reverse voltage  | $V_{RRM}$    | 100         | 120         | 150         | 200         | V                |
| Reverse voltage, total rms value   | $V_{R(RMS)}$ | 70          | 84          | 105         | 140         | V                |
| Isolation voltage from terminal to heatsink $t = 1$ min                            | $V_{AC}$     | 1500        |             |             |             | V                |
| Forward current  | $I_F$        | 30          |             |             |             | A                |
| Surge peak forward current, 8.3ms single half sine-wave superimposed on rated load | $I_{FSM}$    | 150         |             |             |             | A                |
| Critical rate of rise of off-state voltage   | dv/dt        | 10,000      |             |             |             | V/ $\mu\text{s}$ |
| Junction temperature   | $T_J$        | -55 to +150 |             |             |             | °C               |
| Storage temperature  | $T_{STG}$    | -55 to +150 |             |             |             | °C               |

**THERMAL PERFORMANCE**

| PARAMETER                           | SYMBOL          | TYP | UNIT |
|-------------------------------------|-----------------|-----|------|
| Junction-to-case thermal resistance | $R_{\theta JC}$ | 4.5 | °C/W |

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

| PARAMETER  | CONDITIONS                                  | SYMBOL | TYP        | MAX  | UNIT          |   |
|--|---|--------|------------|------|---------------|---|
| Forward voltage per diode <sup>(1)</sup>               | $I_F = 15\text{A}, T_J = 25^\circ\text{C}$  | $V_F$  | 0.76       | 0.82 | V             |   |
|  |   |        | TSF30H120C | 0.80 | 0.88          | V |
|  |   |        | TSF30H150C | 0.81 | 0.90          | V |
|  |   |        | TSF30H200C | 0.84 | 0.92          | V |
|  | $I_F = 30\text{A}, T_J = 25^\circ\text{C}$  |        | 0.86       | 0.92 | V             |   |
|  |   |        | TSF30H120C | 0.90 | 0.96          | V |
|  |   |        | TSF30H150C | 0.89 | 0.98          | V |
|  |   |        | TSF30H200C | 0.91 | 1.00          | V |
|  | $I_F = 15\text{A}, T_J = 125^\circ\text{C}$ |        | 0.64       | 0.69 | V             |   |
|  |   |        | TSF30H120C | 0.65 | 0.73          | V |
|  |   |        | TSF30H150C | 0.68 | 0.77          | V |
|  |   |        | TSF30H200C | 0.70 | 0.79          | V |
|  | $I_F = 30\text{A}, T_J = 125^\circ\text{C}$ |        | 0.75       | 0.80 | V             |   |
|  |   |        | TSF30H120C | 0.78 | 0.86          | V |
|  |   |        | TSF30H150C | 0.77 | 0.86          | V |
|  |   |        | TSF30H200C | 0.80 | 0.89          | V |
| Reverse current @ rated $V_R$ per diode <sup>(2)</sup> | $T_J = 25^\circ\text{C}$                    | $I_R$  | -          | 150  | $\mu\text{A}$ |   |
|  | $T_J = 125^\circ\text{C}$                   |        | -          | 20   | mA            |   |

**Notes:**

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

**ORDERING INFORMATION**

| ORDERING CODE <sup>(1)</sup> | PACKAGE   | PACKING   |
|------------------------------|-----------|-----------|
| TSF30HxC                     | ITO-220AB | 50 / Tube |

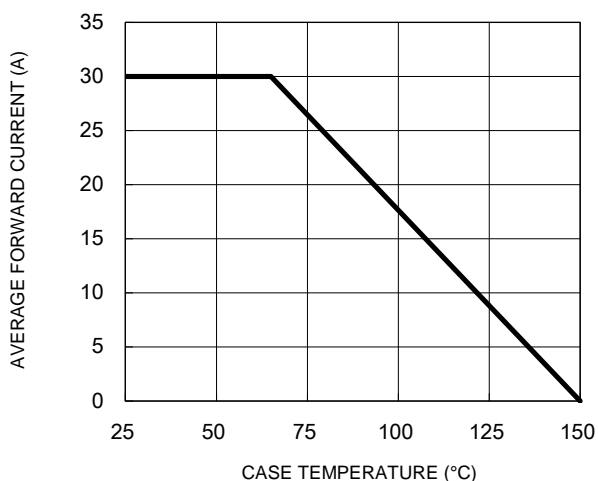
**Notes:**

1. "x" defines voltage from 100V(TSF30H100C) to 200V(TSF30H200C)

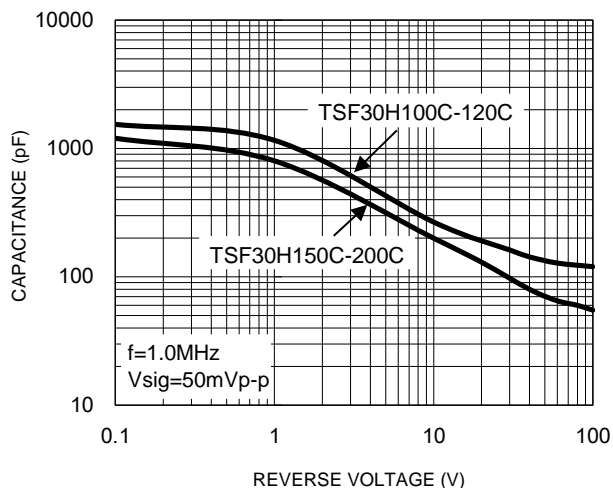
**CHARACTERISTICS CURVES**

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

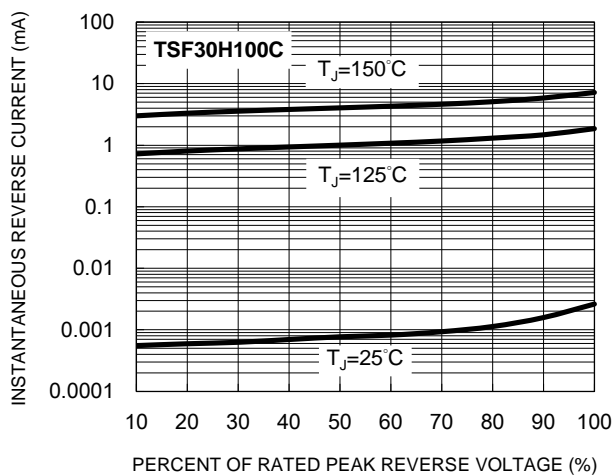
**Fig.1 Forward Current Derating Curve**



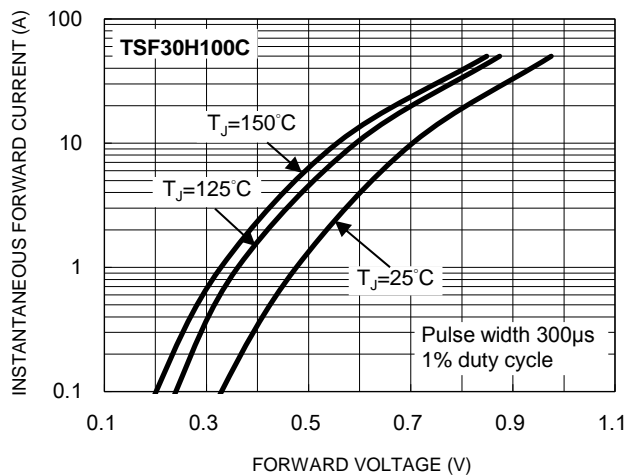
**Fig.2 Typical Junction Capacitance**



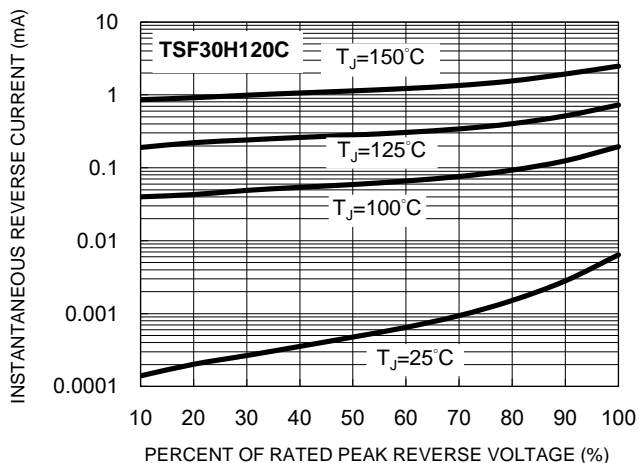
**Fig.3 Typical Reverse Characteristics**



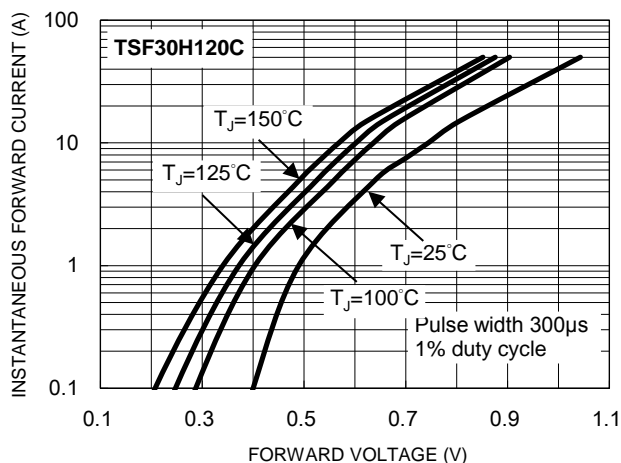
**Fig.4 Typical Forward Characteristics**



**Fig.5 Typical Reverse Characteristics**



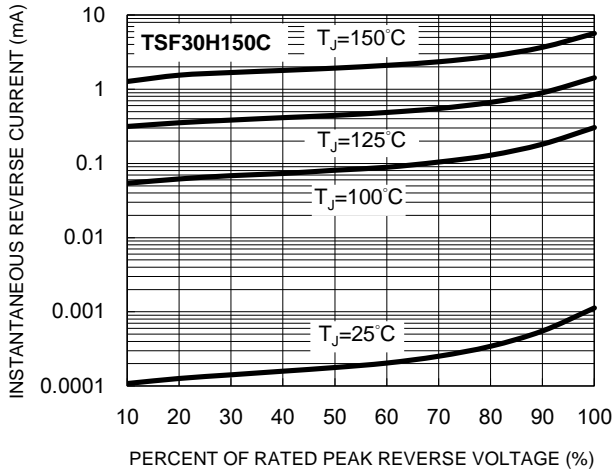
**Fig.6 Typical Forward Characteristics**



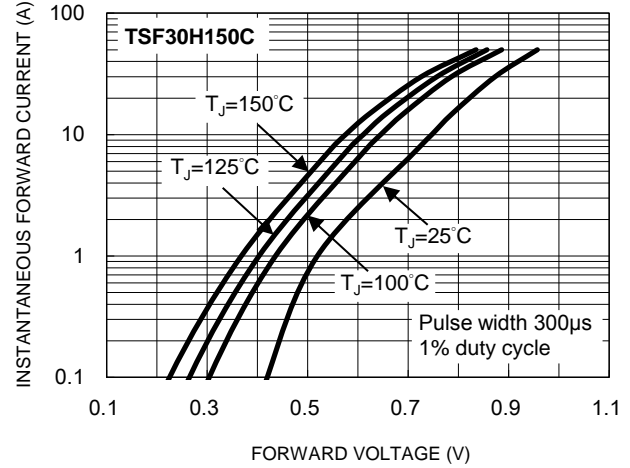
**CHARACTERISTICS CURVES**

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

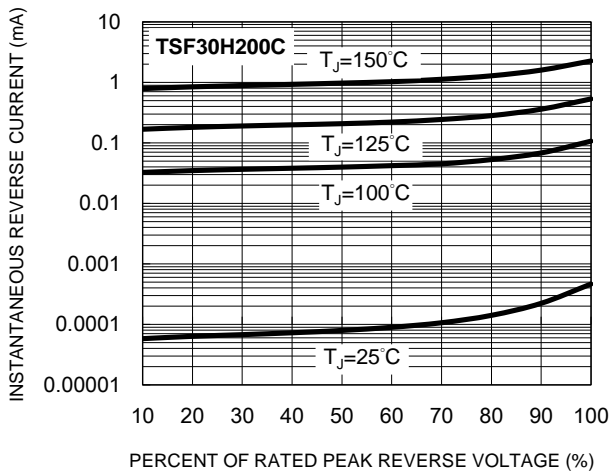
**Fig.7 Typical Reverse Characteristics**



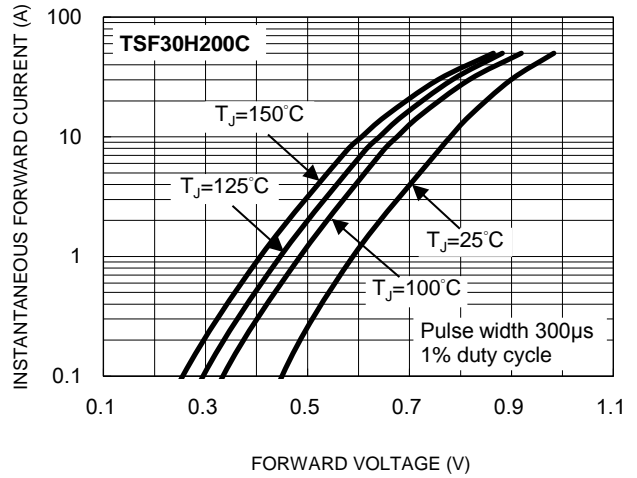
**Fig.8 Typical Forward Characteristics**



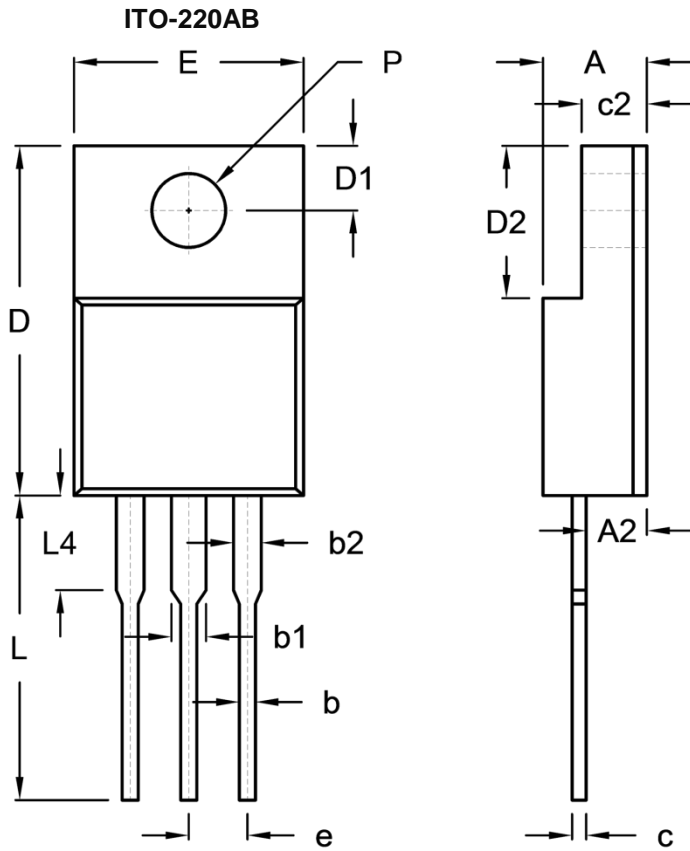
**Fig.9 Typical Reverse Characteristics**



**Fig.10 Typical Forward Characteristics**



**PACKAGE OUTLINE DIMENSIONS**



| DIM. | Unit (mm) |       | Unit (inch) |       |
|------|-----------|-------|-------------|-------|
|      | Min.      | Max.  | Min.        | Max.  |
| A    | 4.30      | 4.70  | 0.169       | 0.185 |
| A2   | 2.30      | 2.96  | 0.091       | 0.117 |
| b    | 0.50      | 0.90  | 0.020       | 0.035 |
| b1   | -         | 1.80  | -           | 0.071 |
| b2   | 0.95      | 1.45  | 0.037       | 0.057 |
| c    | 0.46      | 0.76  | 0.018       | 0.030 |
| c2   | 2.50      | 3.16  | 0.098       | 0.124 |
| D    | 14.80     | 15.50 | 0.583       | 0.610 |
| D1   | 2.40      | 3.20  | 0.094       | 0.126 |
| D2   | 6.30      | 6.90  | 0.248       | 0.272 |
| E    | 9.60      | 10.30 | 0.378       | 0.406 |
| e    | 2.41      | 2.67  | 0.095       | 0.105 |
| L    | 12.60     | 13.80 | 0.496       | 0.543 |
| L4   | -         | 4.10  | -           | 0.161 |
| P    | 3.00      | 3.40  | 0.118       | 0.134 |

**MARKING DIAGRAM**



- P/N = Marking Code
- G = Green Compound
- YWW = Date Code
- F = Factory Code