

## 10A, 100V - 200V Trench Schottky Rectifier

### FEATURES

- Patented Trench Schottky technology
- Low power loss / high efficiency
- Ideal for automated placement
- Guard ring for over-voltage protection
- High forward surge capability
- Compliant to RoHS directive 2011/65/EU and In accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

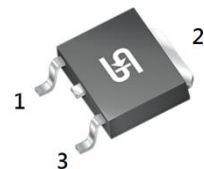
### APPLICATIONS

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

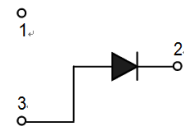
### MECHANICAL DATA

- Case: TO-252 (D-PAK)
- Molding compound meets UL 94V-0 flammability rating
- Packing code with suffix "G" means green compound (halogen-free)
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Polarity: As marked
- Weight: 0.4 g (approximately)

| KEY PARAMETERS |                |      |
|----------------|----------------|------|
| PARAMETER      | VALUE          | UNIT |
| $I_{F(AV)}$    | 10             | A    |
| $V_{RRM}$      | 100 - 200      | V    |
| $I_{FSM}$      | 120            | A    |
| $T_{JMAX}$     | 150            | °C   |
| Package        | TO-252 (D-PAK) |      |
| Configuration  | Single die     |      |



TO-252 (D-PAK)



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)                   |             |                  |                  |                  |                  |
|---|-------------|------------------|------------------|------------------|------------------|
| PARAMETER   | SYMBOL      | TSSD10L<br>100SW | TSSD10L<br>150SW | TSSD10L<br>200SW | UNIT             |
| Marking code on the device  |             | 10L100SW         | 10L150SW         | 10L200SW         |                  |
| Repetitive peak reverse voltage   | $V_{RRM}$   | 100              | 150              | 200              | V                |
| Forward current   | $I_{F(AV)}$ | 10               |                  |                  | A                |
| Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$   | 200              |                  |                  | 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          | LIMIT | UNIT |
|--|-----------------|-------|------|
| Junction-to-lead thermal resistance    | $R_{\theta JL}$ | 13    | °C/W |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 59    | °C/W |
| Junction-to-case thermal resistance    | $R_{\theta JC}$ | 15    | °C/W |

**Thermal Performance Note:** Units mounted on recommended PCB (16mm x 16mm Cu pad test board)

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

| PARAMETER   | CONDITIONS                   | SYMBOL                     | TYP   | MAX  | UNIT |               |
|---|------------------------------|----------------------------|---|------|------|---------------|
| Forward voltage per diode<br>( <sup>1</sup> )               | TSSD10L100SW                 | $V_F$                      | $I_F = 5\text{A}, T_J = 25^\circ\text{C}$   | 0.56 | -    | V             |
|   |                              |                            | $I_F = 10\text{A}, T_J = 25^\circ\text{C}$  | 0.70 | 0.80 | V             |
|   |                              |                            | $I_F = 5\text{A}, T_J = 125^\circ\text{C}$  | 0.51 | -    | V             |
|   |                              |                            | $I_F = 10\text{A}, T_J = 125^\circ\text{C}$ | 0.62 | 0.71 | V             |
|   | TSSD10L150SW<br>TSSD10L200SW |                            | $I_F = 5\text{A}, T_J = 25^\circ\text{C}$   | 0.81 | -    | V             |
|   |                              |                            | $I_F = 10\text{A}, T_J = 25^\circ\text{C}$  | 0.91 | 1.05 | V             |
|   |                              |                            | $I_F = 5\text{A}, T_J = 125^\circ\text{C}$  | 0.63 | -    | V             |
|   |                              |                            | $I_F = 10\text{A}, T_J = 125^\circ\text{C}$ | 0.72 | 0.83 | V             |
| Reverse current @ rated<br>$V_R$ per diode ( <sup>2</sup> ) | TSSD10L100SW                 | $I_R$                      | $T_J = 25^\circ\text{C}$                    | -    | 50   | $\mu\text{A}$ |
|   |                              |                            | $T_J = 125^\circ\text{C}$                   | -    | 20   | $\text{mA}$   |
|   | TSSD10L150SW<br>TSSD10L200SW |                            | $T_J = 25^\circ\text{C}$                    | -    | 20   | $\mu\text{A}$ |
|   |                              |                            | $T_J = 125^\circ\text{C}$                   | -    | 1    | $\text{mA}$   |
| Junction capacitance  | TSSD10L100SW                 | 1 MHz, $V_R = 4.0\text{V}$ | $C_J$                                       | 540  | -    | $\text{pF}$   |
|   | TSSD10L150SW                 |                            |   | 325  | -    | $\text{pF}$   |
|   | TSSD10L200SW                 |                            |   |      |      |               |

**Notes:**

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

**ORDERING INFORMATION**

| PART NO.                   | PACKING CODE | PACKING CODE SUFFIX | PACKAGE        | PACKING           |
|----------------------------|--------------|---------------------|----------------|-------------------|
| TSSD10LxxSW<br>(Note 1, 2) | RO           | G                   | TO-252 (D-PAK) | 2.5KPCS / 13"Reel |

**Notes:**

1. "xx" defines voltage from 100V (TSSD10L100SW) to 200V (TSSD10L200SW)
2. Whole series with green compound (halogen-free)

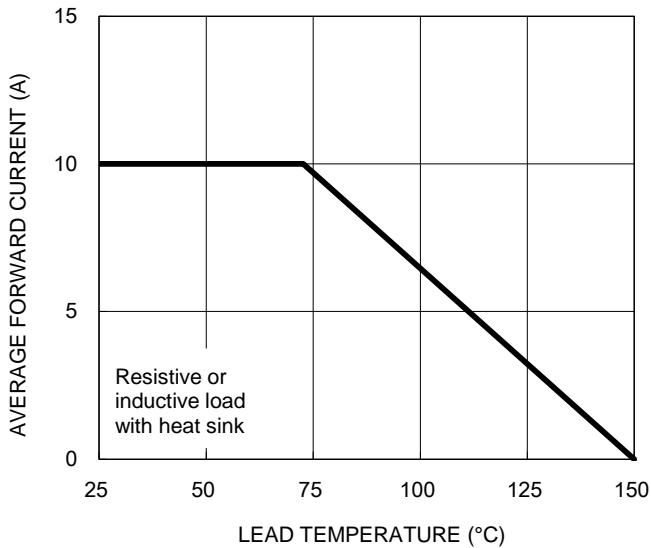
**EXAMPLE**

| EXAMPLE P/N      | PART NO.     | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION    |
|------------------|--------------|--------------|---------------------|----------------|
| TSSD10L100SW ROG | TSSD10L100SW | RO           | G                   | Green compound |

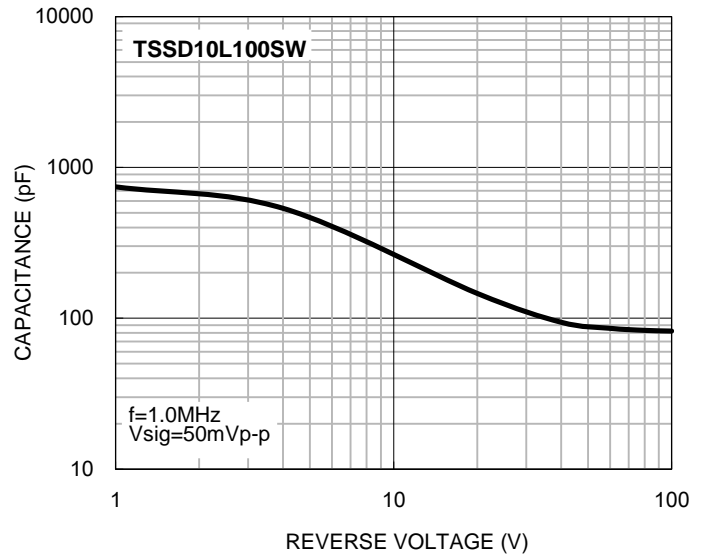
**CHARACTERISTICS CURVES**

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

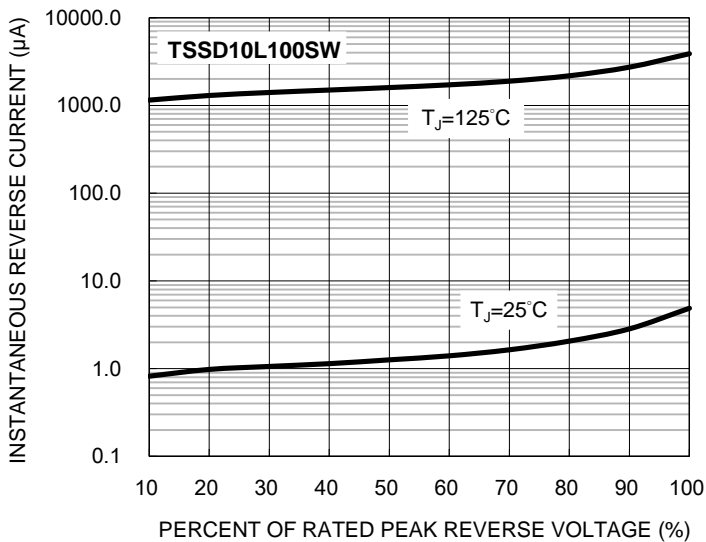
**Fig.1 Forward Current Derating Curve**



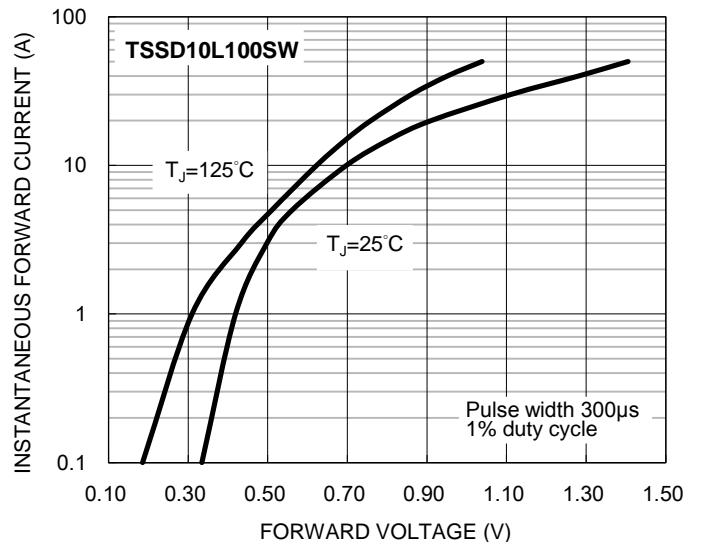
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**



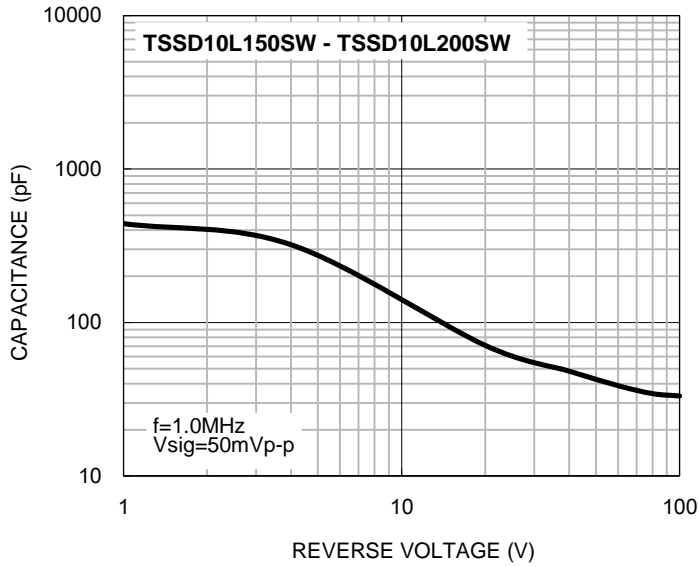
**Fig.4 Typical Forward Characteristics**



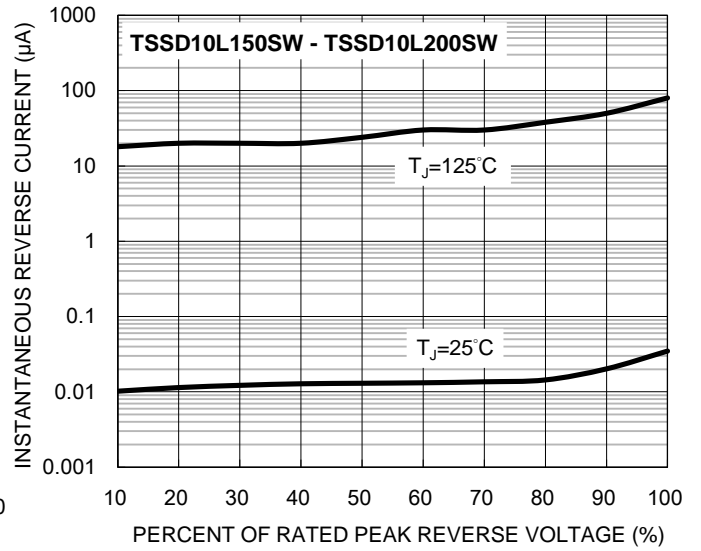
**CHARACTERISTICS CURVES**

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

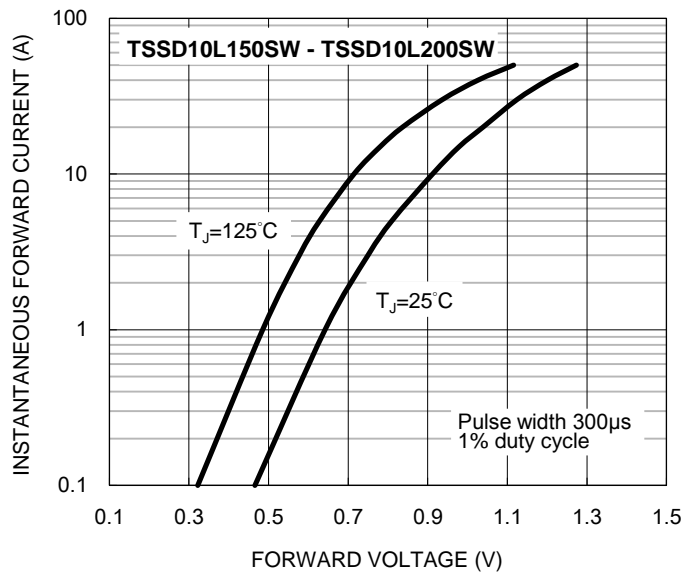
**Fig.5 Typical Junction Capacitance**



**Fig.6 Typical Reverse Characteristics**

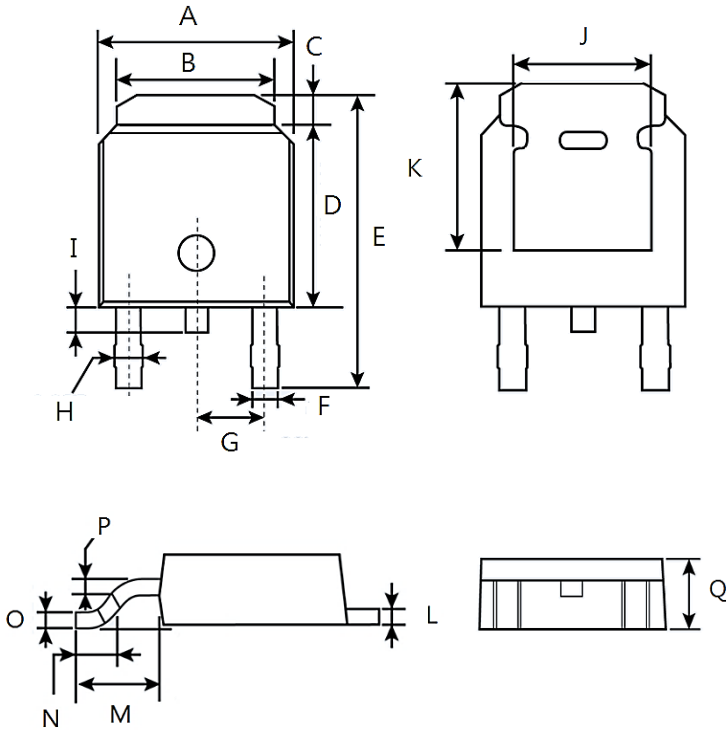


**Fig.7 Typical Forward Characteristics**



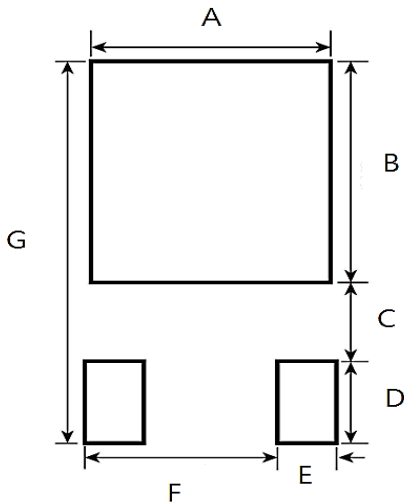
**PACKAGE OUTLINE DIMENSIONS**

**TO-252 (D-PAK)**



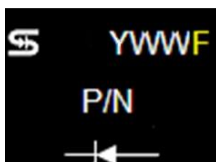
| DIM. | Unit (mm)  |       | Unit (inch) |       |
|------|------------|-------|-------------|-------|
|      | Min        | Max   | Min         | Max   |
| A    | 6.41       | 6.73  | 0.252       | 0.265 |
| B    | 5.21       | 5.47  | 0.205       | 0.215 |
| C    | 0.89       | 1.27  | 0.035       | 0.050 |
| D    | 6.00       | 6.22  | 0.236       | 0.245 |
| E    | 9.40       | 10.40 | 0.370       | 0.409 |
| F    | 0.64       | 0.88  | 0.025       | 0.035 |
| G    | 2.286(REF) |       | 0.090       |       |
| H    | 0.77       | 1.14  | 0.030       | 0.045 |
| I    | 0.64       | 1.01  | 0.025       | 0.040 |
| J    | 4.40       | -     | 0.173       | -     |
| K    | 5.30       | -     | 0.209       | -     |
| L    | 0.45       | 0.58  | 0.018       | 0.023 |
| M    | 2.743(REF) |       | 0.107       |       |
| N    | 1.40       | 1.77  | 0.055       | 0.070 |
| O    | 0.508(REF) |       | 0.020       |       |
| P    | 0.45       | 0.60  | 0.018       | 0.024 |
| Q    | 2.20       | 2.38  | 0.087       | 0.094 |

**SUGGESTED PAD LAYOUT**



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 5.69      | 0.224       |
| B      | 6.18      | 0.243       |
| C      | 2.20      | 0.087       |
| D      | 2.29      | 0.090       |
| E      | 1.40      | 0.055       |
| F      | 4.57      | 0.180       |
| G      | 10.67     | 0.420       |

**MARKING DIAGRAM**



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

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