

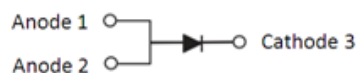
## 10A, 45V Trench Schottky Rectifier

### 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
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21



**TO-277A (SMPC)**



### MECHANICAL DATA

**Case:** TO-277A (SMPC)

Molding compound, UL flammability classification rating 94V-0

Moisture sensitivity level: level 1, per J-STD-020

Packing code with suffix "G" means green compound (halogen-free)

**Terminal:** Matte tin plated leads, solderable per JESD22-B102

Meet JESD 201 class 1A whisker test

**Polarity:** Indicated by cathode band

**Weight:** 0.095 g (approximately)

| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted) |                      |                        |                    |              |      |      |
|----------------------------------------------------------------------------------------------|----------------------|------------------------|--------------------|--------------|------|------|
| PARAMETER                                                                                    |                      |                        | SYMBOL             | TSP10U45S    |      |      |
| Marking code                                                                                 |                      |                        |                    | 10U45        |      |      |
| Maximum repetitive peak reverse voltage                                                      |                      |                        | V <sub>RRM</sub>   | 45           |      |      |
| Maximum average forward rectified current                                                    |                      |                        | I <sub>F(AV)</sub> | 10           |      |      |
| Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load          |                      |                        | I <sub>FSM</sub>   | 275          |      |      |
| Maximum instantaneous forward voltage (Note 1)                                               |                      |                        | V <sub>F</sub>     | MIN          | TYP  | MAX  |
|                                                                                              | I <sub>F</sub> = 5A  | T <sub>J</sub> = 25°C  |                    | -            | 0.37 | -    |
|                                                                                              | I <sub>F</sub> = 10A | T <sub>J</sub> = 25°C  |                    | -            | 0.42 | 0.46 |
|                                                                                              | I <sub>F</sub> = 5A  | T <sub>J</sub> = 125°C |                    | -            | 0.28 | -    |
|                                                                                              | I <sub>F</sub> = 10A | T <sub>J</sub> = 125°C |                    | -            | 0.37 | 0.41 |
| Maximum instantaneous reverse current at rated reverse voltage                               |                      |                        | I <sub>R</sub>     | -            | 150  | 300  |
|                                                                                              |                      |                        |                    | -            | 50   | 140  |
| Maximum DC reverse voltage                                                                   |                      |                        | V <sub>DC</sub>    | 32           |      |      |
| Typical thermal resistance per diode                                                         |                      |                        | R <sub>θJL</sub>   | 25           |      |      |
| Operating temperature range                                                                  |                      |                        | T <sub>J</sub>     | - 55 to +150 |      |      |
| Storage temperature range                                                                    |                      |                        | T <sub>STG</sub>   | - 55 to +150 |      |      |

Note1: Pulse Test with Pulse Width=300μs, 1% Duty Cycle

| ORDERING INFORMATION |              |                     |         |                         |
|----------------------|--------------|---------------------|---------|-------------------------|
| PART NO.             | PACKING CODE | PACKING CODE SUFFIX | PACKAGE | PACKING                 |
| TSP10U45S            | S1           | G                   | SMPC    | 1,500/ 7" Plastic reel  |
|                      | S2           |                     | SMPC    | 6,000/ 13" Plastic reel |

Note: Whole series with green compound

| EXAMPLE            |           |              |                     |                |
|--------------------|-----------|--------------|---------------------|----------------|
| PREFERRED PART NO. | PART NO.  | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION    |
| TSP10U45S S1G      | TSP10U45S | S1           | G                   | Green compound |

## RATINGS AND CHARACTERISTICS CURVES

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

FIG.1 FORWARD CURRENT DERATING CURVE

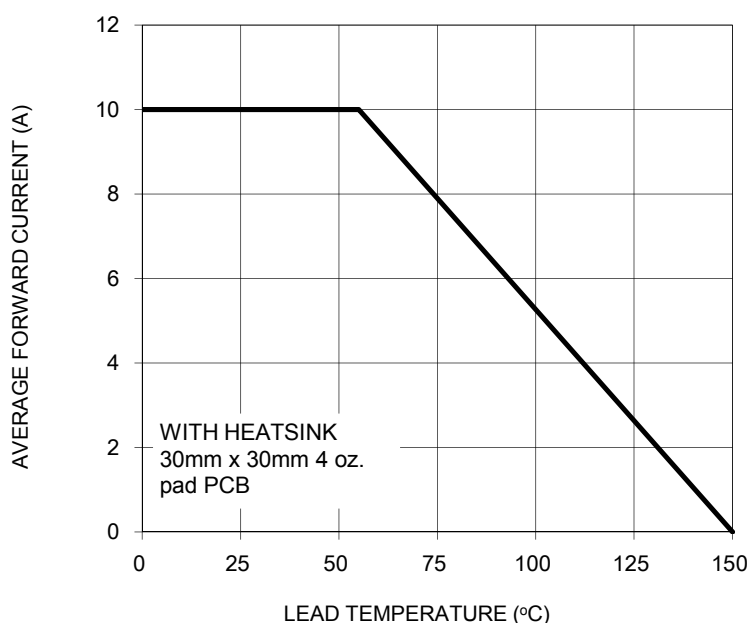


FIG. 2 TYPICAL FORWARD CHARACTERISTICS

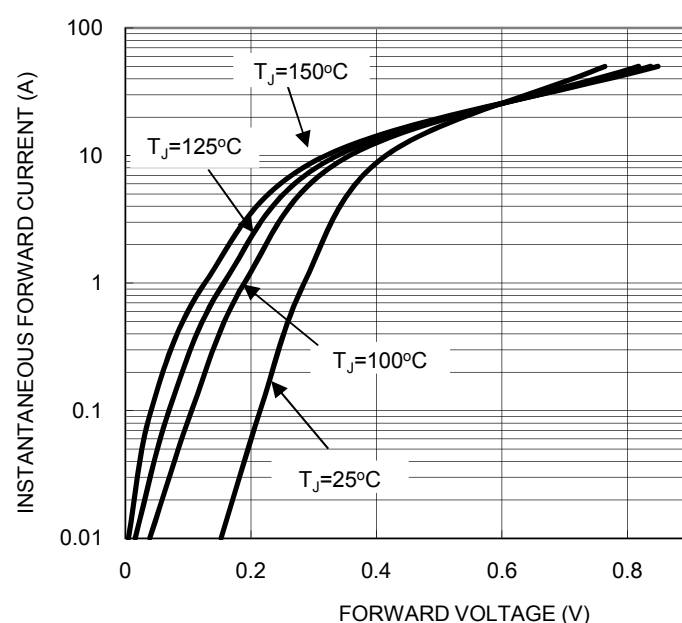


FIG. 3 TYPICAL REVERSE CHARACTERISTICS

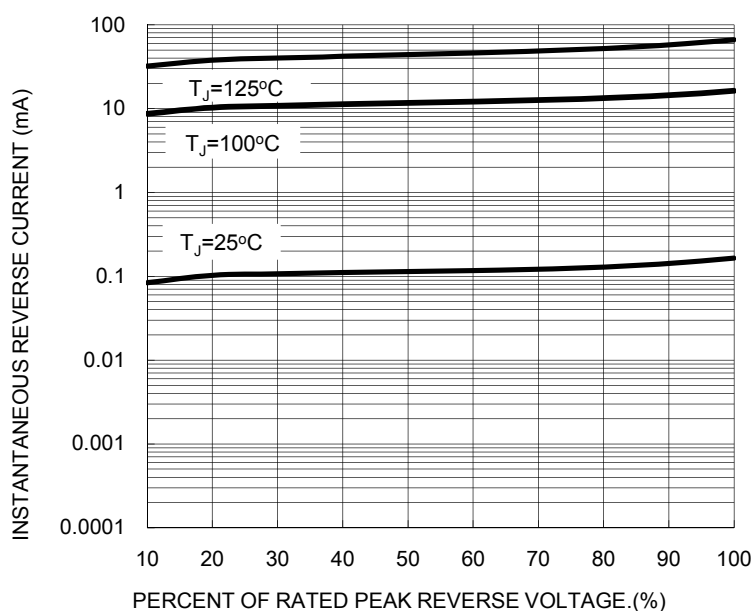
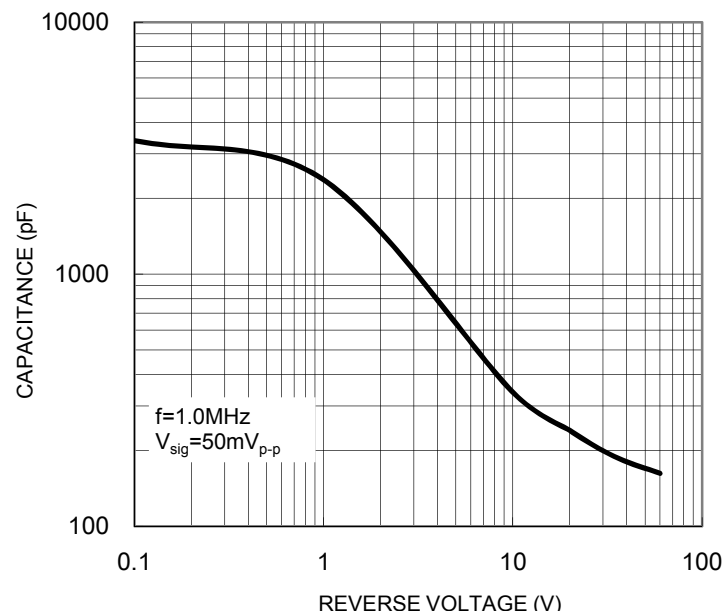
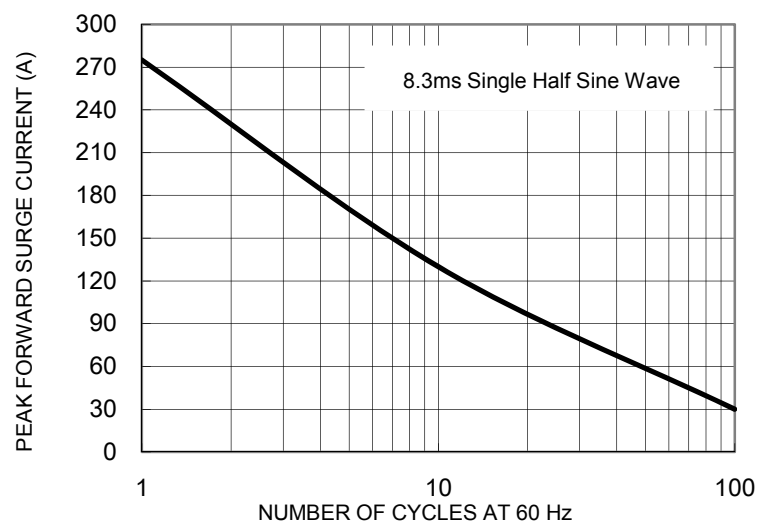


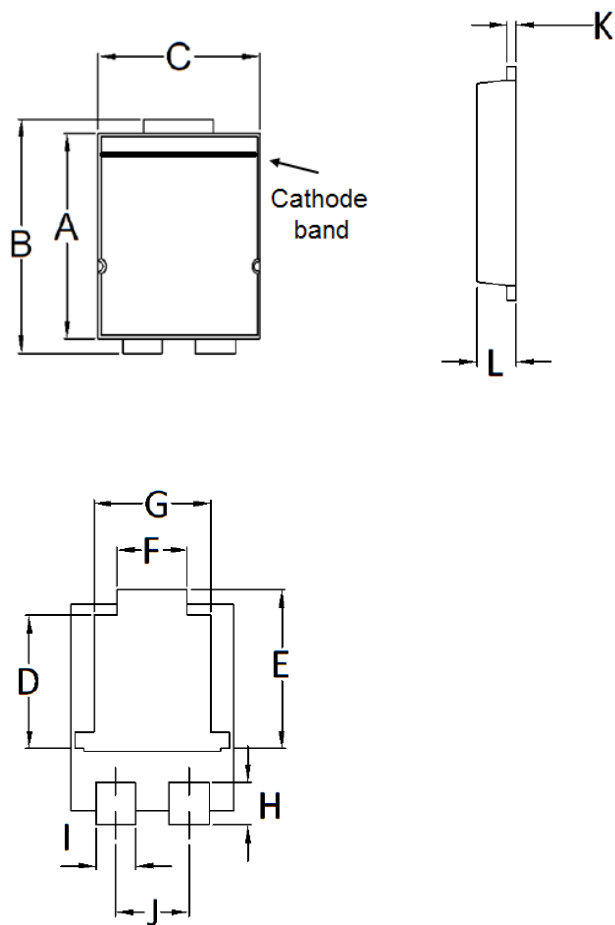
FIG. 4 TYPICAL JUNCTION CAPACITANCE



**FIG. 5 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT**

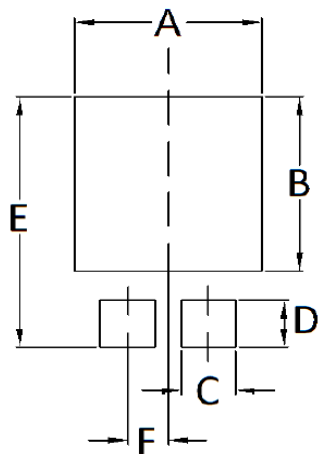


**PACKAGE OUTLINE DIMENSIONS**  
**TO-277A (SMPC)**



| DIM. | Unit (mm) |       | Unit (inch) |       |
|------|-----------|-------|-------------|-------|
|      | Min       | Max   | Min         | Max   |
| A    | 5.650     | 5.750 | 0.222       | 0.226 |
| B    | 6.350     | 6.650 | 0.250       | 0.262 |
| C    | 4.550     | 4.650 | 0.179       | 0.183 |
| D    | 3.540     | 3.840 | 0.139       | 0.151 |
| E    | 4.235     | 4.535 | 0.167       | 0.179 |
| F    | 1.850     | 2.150 | 0.073       | 0.085 |
| G    | 3.170     | 3.470 | 0.125       | 0.137 |
| H    | 1.043     | 1.343 | 0.041       | 0.053 |
| I    | 1.000     | 1.300 | 0.039       | 0.051 |
| J    | 1.930     | 2.230 | 0.076       | 0.088 |
| K    | 0.175     | 0.325 | 0.007       | 0.013 |
| L    | 1.000     | 1.200 | 0.039       | 0.047 |

**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      | 1.04      | 0.041       |

**MARKING DIAGRAM**



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

### **Notice**

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.