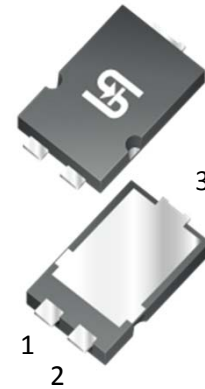


## 10A, 45V Trench Schottky Rectifier

### FEATURES

- Patented Trench Schottky technology
- Excellent high temperature stability
- Low forward voltage
- Low 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



**SMPC4.0**



### TYPICAL APPLICATIONS

Trench Schottky barrier rectifier is designed for high frequency switched mode power supplies such as adapters, lighting, and DC/DC converters.

### MECHANICAL DATA

**Case:** SMPC4.0

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 2 whisker test

**Polarity:** Indicated by cathode band

**Weight:** 95mg (approximately)

| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted) |                      |                        |                    |              |      |      |      |
|----------------------------------------------------------------------------------------------|----------------------|------------------------|--------------------|--------------|------|------|------|
| PARAMETER                                                                                    |                      |                        | SYMBOL             | TSPB10U45S   |      |      | UNIT |
| Marking code                                                                                 |                      |                        |                    | B10U45       |      |      |      |
| Maximum repetitive peak reverse voltage                                                      |                      |                        | V <sub>RRM</sub>   | 45           |      |      | V    |
| Maximum average forward rectified current                                                    |                      |                        | I <sub>F(AV)</sub> | 10           |      |      | A    |
| Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load          |                      |                        | I <sub>FSM</sub>   | 275          |      |      | A    |
|                                                                                              |                      |                        |                    | MIN          | TYP  | MAX  |      |
| Maximum instantaneous forward voltage (Note 1)                                               | I <sub>F</sub> = 5A  | T <sub>J</sub> = 25°C  | V <sub>F</sub>     | -            | 0.37 | -    | V    |
|                                                                                              | I <sub>F</sub> = 10A |                        |                    | -            | 0.42 | 0.46 |      |
|                                                                                              | I <sub>F</sub> = 5A  | T <sub>J</sub> = 125°C |                    | -            | 0.28 | -    |      |
|                                                                                              | I <sub>F</sub> = 10A |                        |                    | -            | 0.37 | 0.41 |      |
| Maximum instantaneous reverse current at rated reverse voltage                               |                      | T <sub>J</sub> = 25°C  | I <sub>R</sub>     | -            | 150  | 300  | μA   |
|                                                                                              |                      | T <sub>J</sub> = 125°C |                    | -            | 50   | 140  | mA   |
| Maximum DC reverse voltage                                                                   |                      |                        | V <sub>DC</sub>    | 32           |      |      | V    |
| Typical thermal resistance per diode                                                         |                      |                        | R <sub>θJL</sub>   | 25           |      |      | °C/W |
| Operating temperature range                                                                  |                      |                        | T <sub>J</sub>     | - 55 to +150 |      |      | °C   |
| Storage temperature range                                                                    |                      |                        | T <sub>STG</sub>   | - 55 to +150 |      |      | °C   |

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

| ORDERING INFORMATION |              |                     |         |                         |
|----------------------|--------------|---------------------|---------|-------------------------|
| PART NO.             | PACKING CODE | PACKING CODE SUFFIX | PACKAGE | PACKING                 |
| TSPB10U45S           | S1           | G                   | SMPC4.0 | 1,500/ 7" Plastic reel  |
|                      | S2           |                     | SMPC4.0 | 6,000/ 13" Plastic reel |

Note: Whole series with green compound

| EXAMPLE            |            |              |                     |                |
|--------------------|------------|--------------|---------------------|----------------|
| PREFERRED PART NO. | PART NO.   | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION    |
| TSPB10U45S S1G     | TSPB10U45S | S1           | G                   | Green compound |

### RATINGS AND CHARACTERISTICS CURVES

(T<sub>A</sub>=25°C unless otherwise noted)

FIG.1 FORWARD CURRENT DERATING CURVE

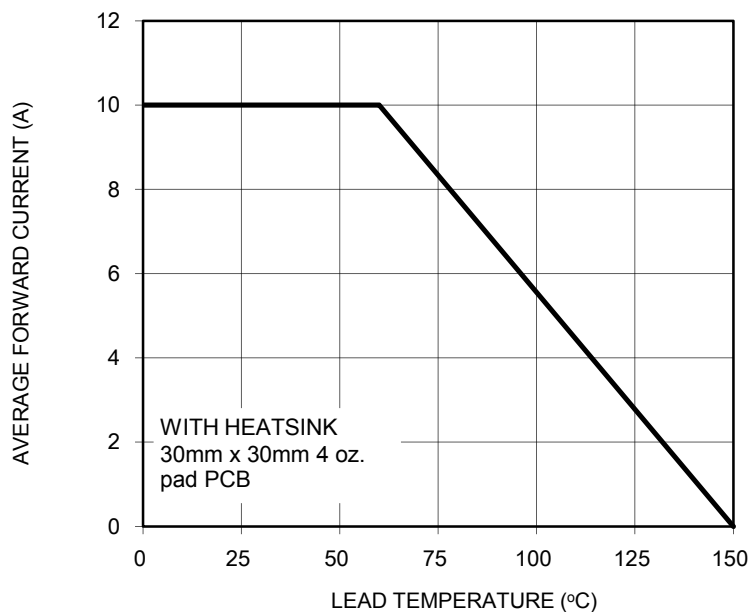


FIG. 2 TYPICAL FORWARD CHARACTERISTICS

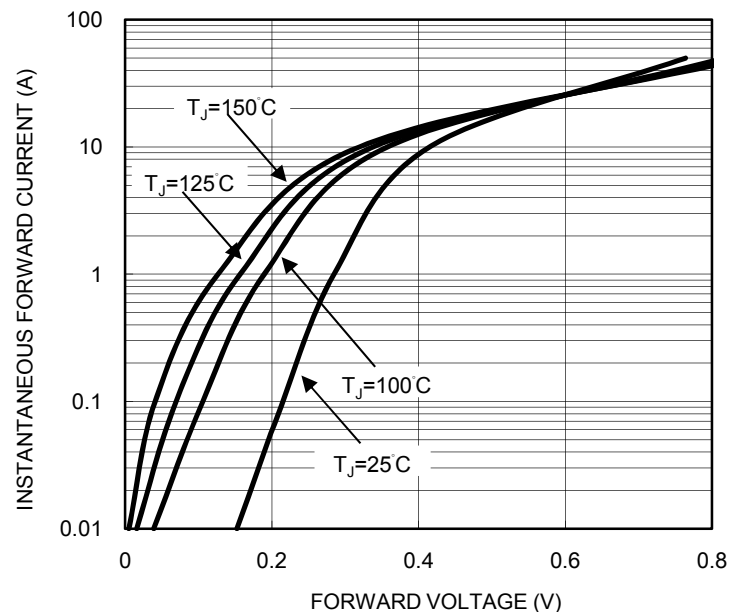


FIG. 3 TYPICAL REVERSE CHARACTERISTICS

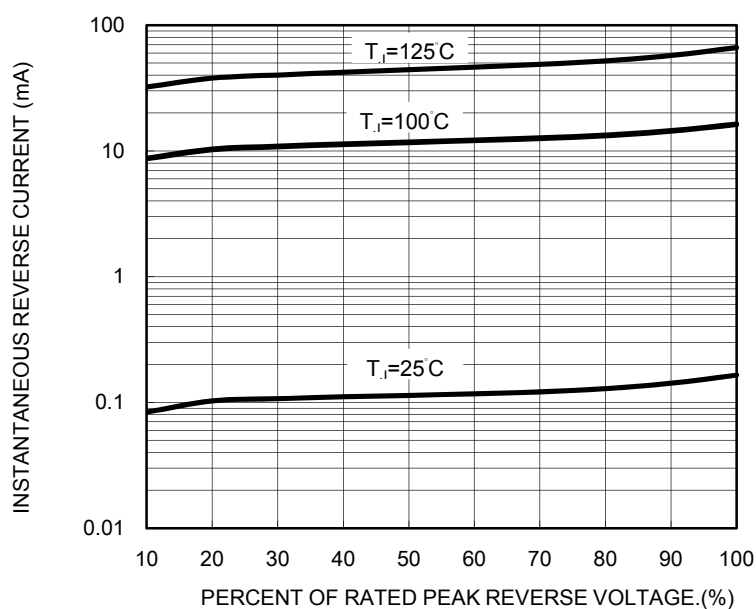
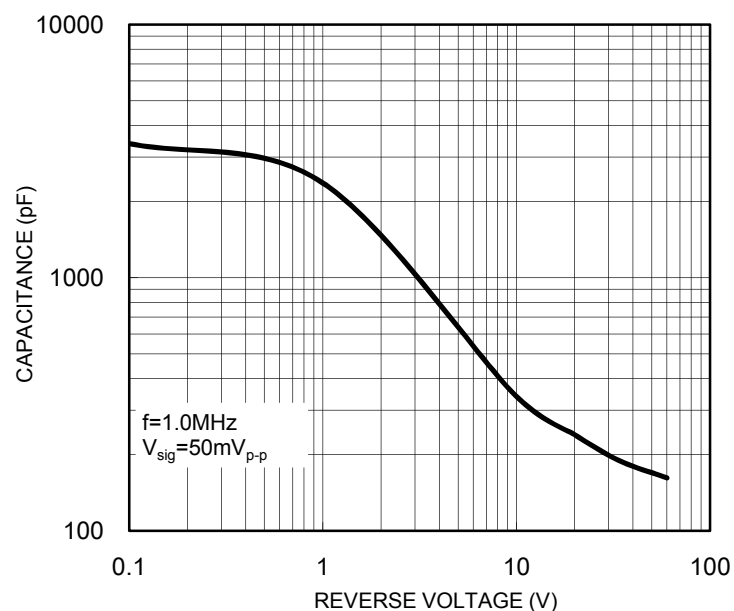
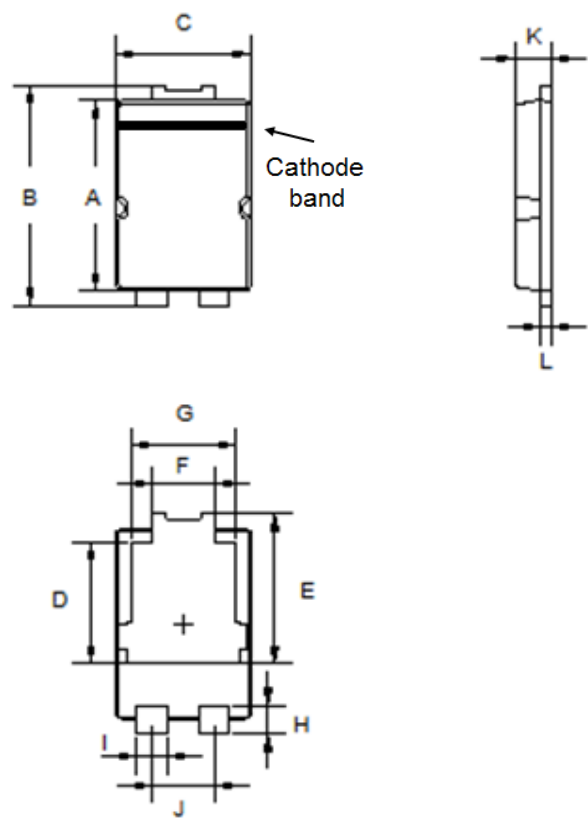


FIG. 4 TYPICAL JUNCTION CAPACITANCE

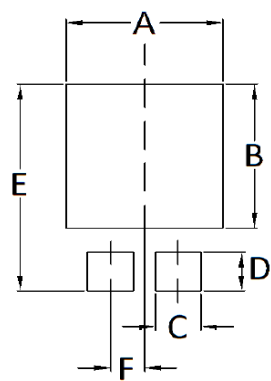


**PACKAGE OUTLINE DIMENSIONS**  
**SMPC4.0**



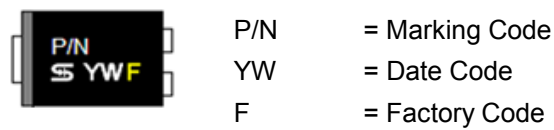
| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min       | Max  | Min         | Max   |
| A    | 5.55      | 5.65 | 0.219       | 0.222 |
| B    | 6.35      | 6.65 | 0.250       | 0.262 |
| C    | 3.95      | 4.05 | 0.156       | 0.159 |
| D    | 3.40      | 3.70 | 0.134       | 0.146 |
| E    | 4.25      | 4.55 | 0.167       | 0.179 |
| F    | 1.69      | 1.99 | 0.067       | 0.078 |
| G    | 2.95      | 3.25 | 0.116       | 0.128 |
| H    | 0.70      | 1.00 | 0.028       | 0.039 |
| I    | 0.75      | 1.05 | 0.030       | 0.041 |
| J    | 1.69      | 1.99 | 0.067       | 0.078 |
| K    | 1.00      | 1.20 | 0.039       | 0.047 |
| L    | 0.20      | 0.40 | 0.008       | 0.016 |

**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**



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