

## Features

- 1.7kV Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching
- Extremely Fast Switching
- Positive Temperature Coefficient on  $V_F$

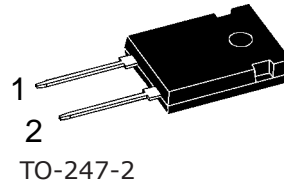
## Benefits

- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

## Applications

- Switch Mode Power Supplies (SMPS)
- Boost diodes in PFC or DC/DC stages
- Free Wheeling Diodes in Inverter stages
- 1500V Solar Inverter

## Package



## Maximum Ratings (T<sub>c</sub>=25°C unless otherwise specified)

| Symbol                            | Parameter                                  | Value              | Unit         | Test Conditions   | Note   |
|-----------------------------------|--|--------------------|--------------|---|--------|
| V <sub>RRM</sub>                  | Repetitive Peak Reverse Voltage            | 2000               | V            |   |        |
| V <sub>R</sub>                    | DC Peak Reverse Voltage                    | 1700               | V            |   |        |
| I <sub>F</sub>                    | Continuous Forward Current                 | 70<br>33.6<br>25.6 | A            | T <sub>c</sub> =25°C<br>T <sub>c</sub> =135°C<br>T <sub>c</sub> =150°C  | Fig. 3 |
| I <sub>FRM</sub>                  | Repetitive Peak Forward Surge Current      | 99<br>57           | A            | T <sub>c</sub> =25°C, t <sub>p</sub> =10 ms, Half Sine Pulse<br>T <sub>c</sub> =110°C, t <sub>p</sub> =10 ms, Half Sine Pulse |        |
| I <sub>FSM</sub>                  | Non-Repetitive Forward Surge Current       | 117<br>88          | A            | T <sub>c</sub> =25°C, t <sub>p</sub> =10 ms, Half Sine Pulse<br>T <sub>c</sub> =110°C, t <sub>p</sub> =10 ms, Half Sine Pulse |        |
| P <sub>tot</sub>                  | Power Dissipation                          | 384<br>167         | W            | T <sub>c</sub> =25°C<br>T <sub>c</sub> =110°C   | Fig. 4 |
| T <sub>J</sub> , T <sub>stg</sub> | Operating Junction and Storage Temperature | -55 to<br>+175     | °C           |   |        |
|                                   | TO-247 Mounting Torque                     | 1<br>8.8           | Nm<br>lbf-in | M3 Screw<br>6-32 Screw  |        |

**Electrical Characteristics**

| Symbol | Parameter                 | Typ.               | Max.       | Unit          | Test Conditions   | Note   |
|--------|---------------------------|--------------------|------------|---------------|---|--------|
| $V_F$  | Forward Voltage           | 1.5<br>2.5         | 1.8<br>3.0 | V             | $I_F = 25\text{ A } T_J = 25^\circ\text{C}$<br>$I_F = 25\text{ A } T_J = 175^\circ\text{C}$   | Fig. 1 |
| $I_R$  | Reverse Current           | 20<br>120          | 200<br>300 | $\mu\text{A}$ | $V_R = 1700\text{ V } T_J = 25^\circ\text{C}$<br>$V_R = 1700\text{ V } T_J = 175^\circ\text{C}$   | Fig. 2 |
| $Q_C$  | Total Capacitive Charge   | 255                |            | nC            | $V_R = 1700\text{ V}, I_F = 25\text{ A}$<br>$di/dt = 200\text{ A}/\mu\text{s}$<br>$T_J = 25^\circ\text{C}$  | Fig. 5 |
| C      | Total Capacitance         | 1950<br>190<br>140 |            | pF            | $V_R = 0\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$<br>$V_R = 800\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$<br>$V_R = 1700\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$ | Fig. 6 |
| $E_C$  | Capacitance Stored Energy | 175                |            | $\mu\text{J}$ | $V_R = 1700\text{ V}$   | Fig. 7 |

Note: This is a majority carrier diode, so there is no reverse recovery charge.

**Thermal Characteristics**

| Symbol          | Parameter                                | Typ. | Unit                      | Note   |
|-----------------|--|------|---------------------------|--------|
| $R_{\theta JC}$ | Thermal Resistance from Junction to Case | 0.39 | $^\circ\text{C}/\text{W}$ | Fig. 8 |

**Typical Performance**

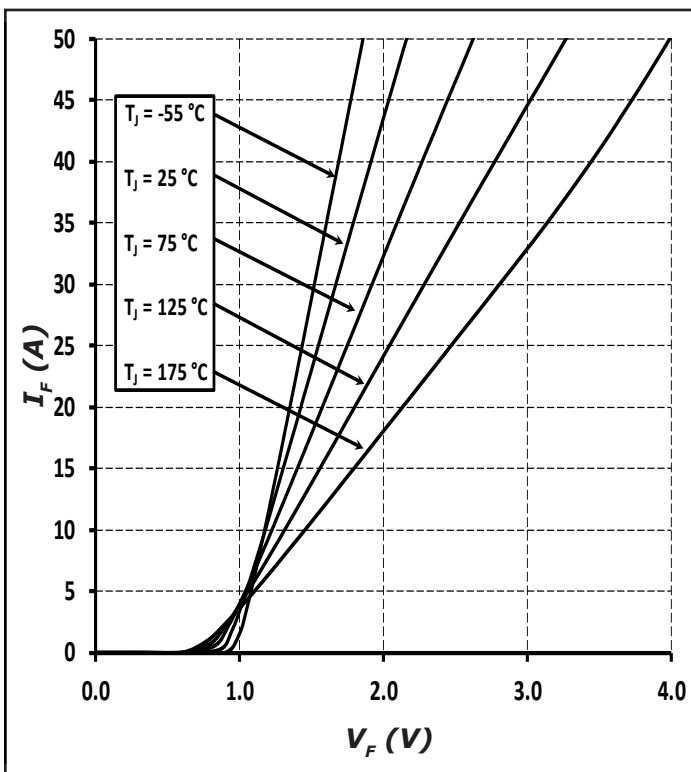


Figure 1. Forward Characteristics

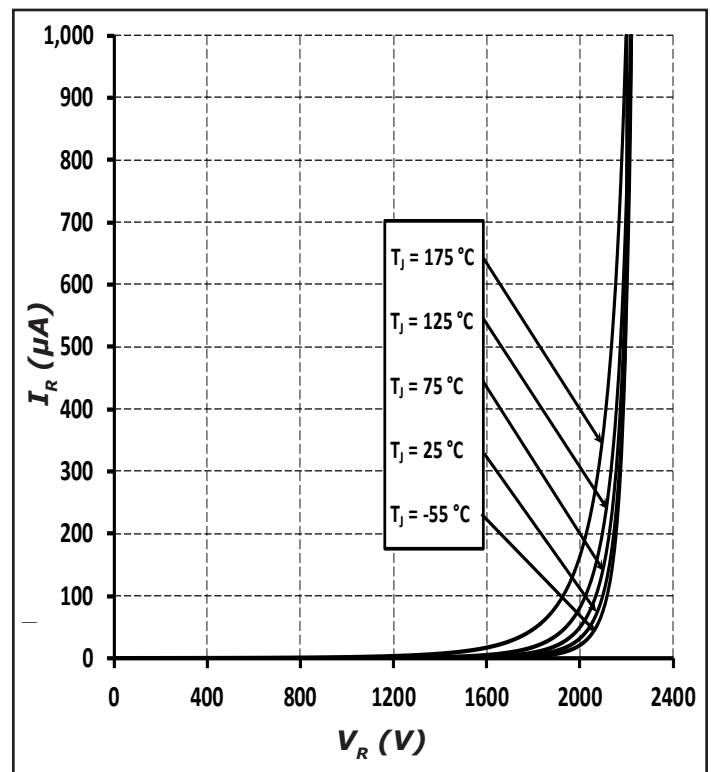


Figure 2. Reverse Characteristics

Typical Performance

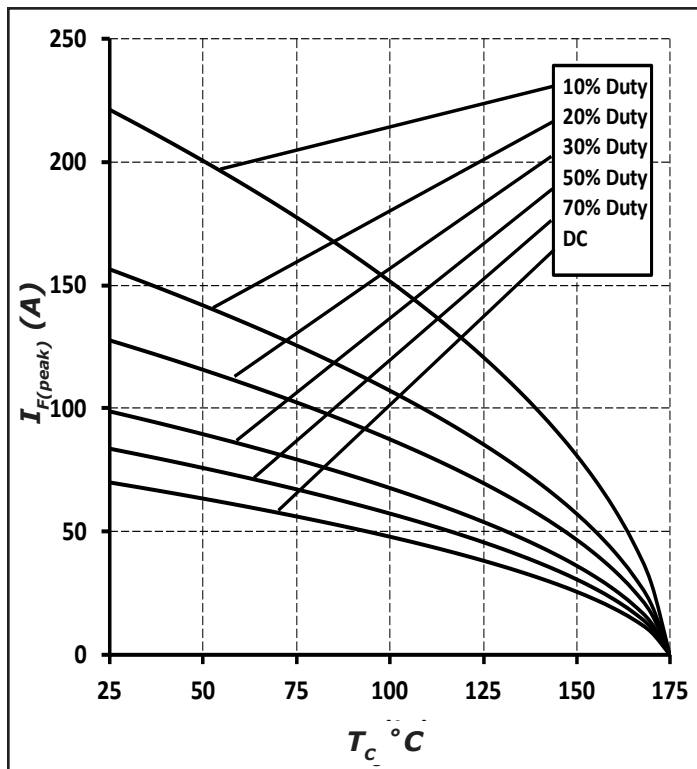


Figure 3. Current Derating

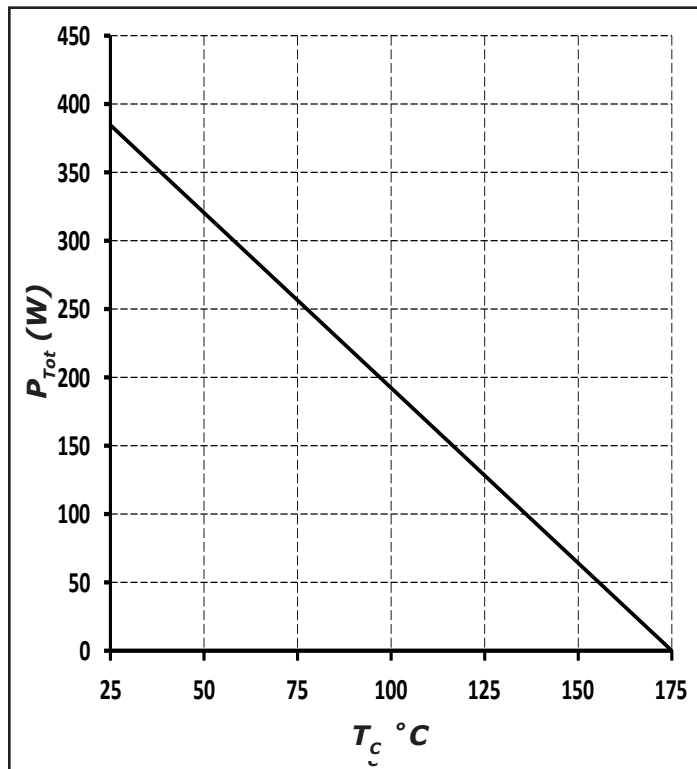


Figure 4. Power Derating

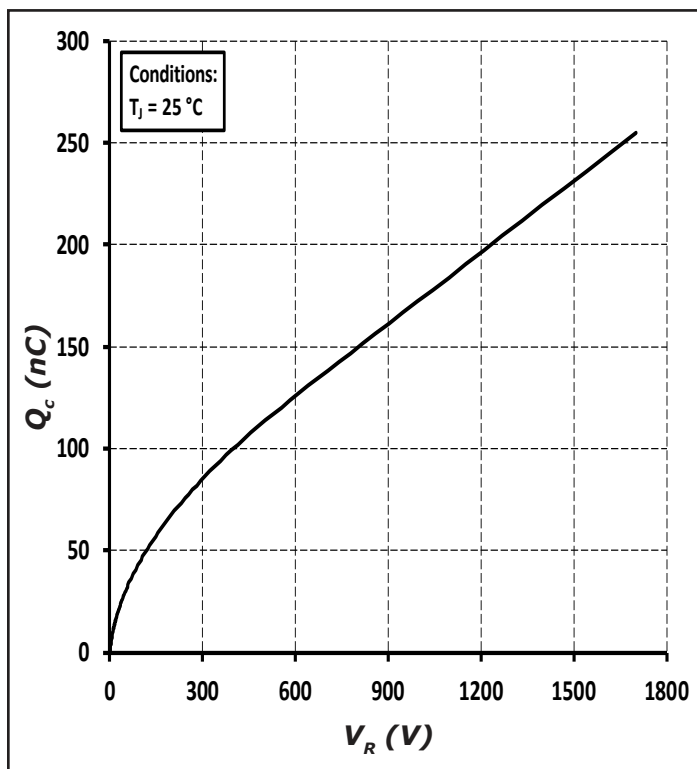


Figure 5. Recovery Charge vs. Reverse Voltage

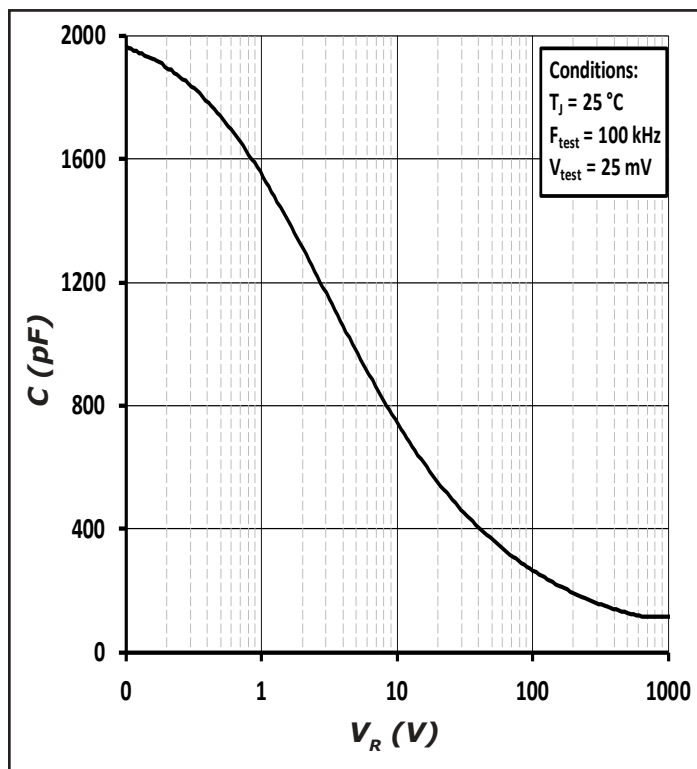


Figure 6. Capacitance vs. Reverse Voltage

Typical Performance

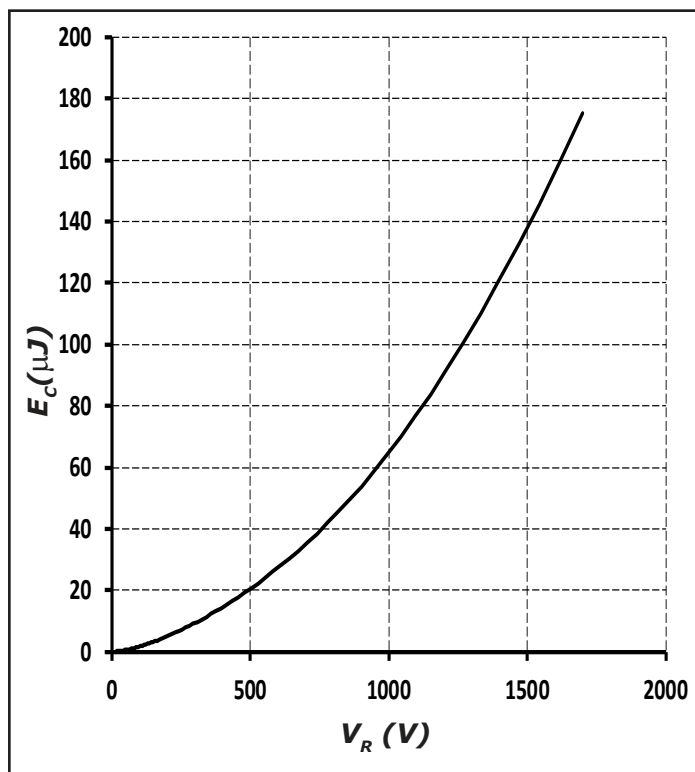


Figure 7. Typical Capacitance Stored Energy

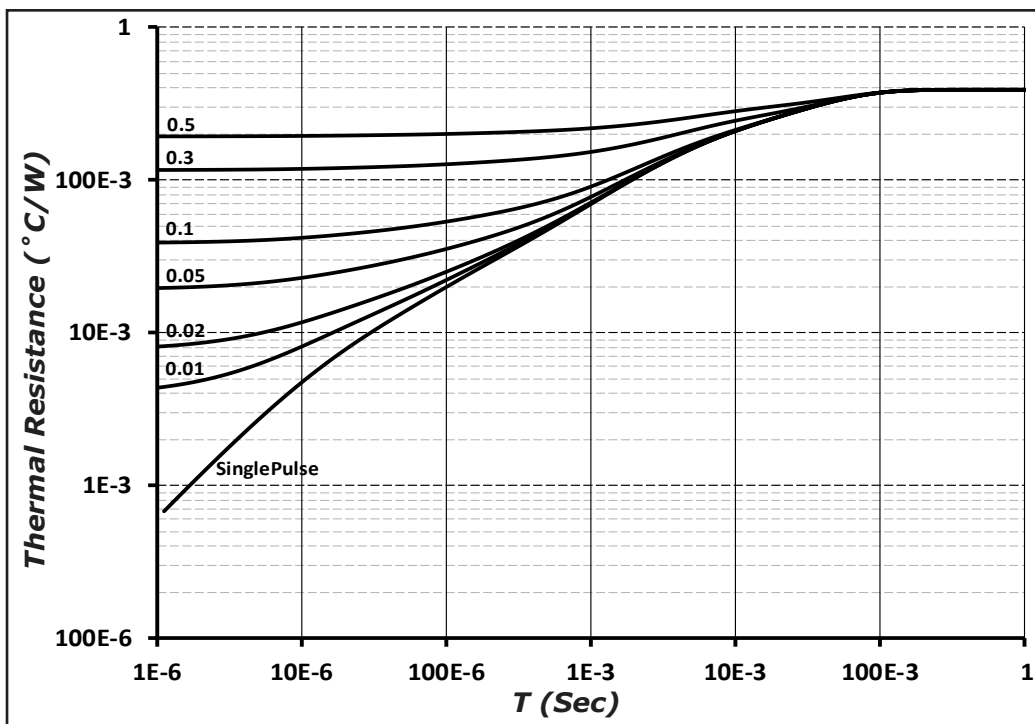
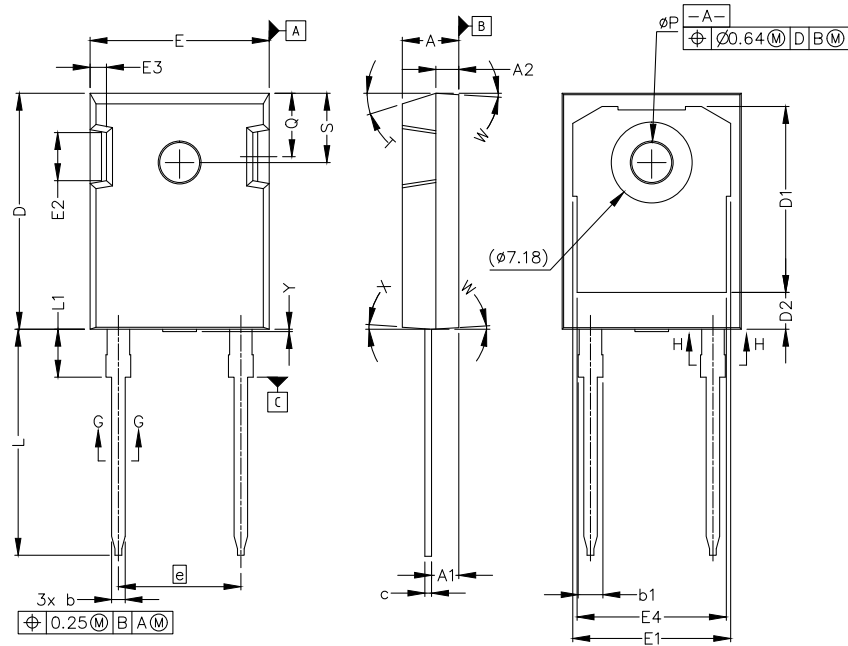


Figure 8. Transient Thermal Impedance

**Package Dimensions**

Package TO-247-2



| POS | Inches     |       | Millimeters |       |
|-----|------------|-------|-------------|-------|
|     | Min        | Max   | Min         | Max   |
| A   | 0.190      | 0.205 | 4.70        | 5.31  |
| A1  | 0.087      | 0.102 | 2.21        | 2.59  |
| A2  | 0.059      | 0.098 | 1.50        | 2.49  |
| b   | 0.039      | 0.055 | 0.99        | 1.40  |
| b1  | 0.065      | 0.095 | 1.65        | 2.41  |
| c   | 0.015      | 0.035 | 0.38        | 0.89  |
| D   | 0.819      | 0.845 | 20.80       | 21.46 |
| D1  | 0.640      | 0.683 | 16.25       | 17.35 |
| D2  | 0.112      | 0.124 | 2.86        | 3.16  |
| E   | 0.620      | 0.640 | 15.49       | 16.26 |
| E1  | 0.516      | 0.557 | 13.10       | 14.15 |
| E2  | 0.135      | 0.201 | 3.43        | 5.10  |
| E3  | 0.039      | 0.075 | 1.00        | 1.90  |
| E4  | 0.487      | 0.529 | 12.38       | 13.43 |
| e   | 0.428 BSC  |       | 10.88 BSC   |       |
| L   | 0.78       | 0.80  | 19.81       | 20.32 |
| L1  | -          | 0.177 | -           | 4.50  |
| ØP  | 0.138      | 0.144 | 3.51        | 3.66  |
| Q   | 0.212      | 0.244 | 5.38        | 6.20  |
| S   | 0.238      | 0.248 | 6.04        | 6.3   |
| T   | 17.5° REF. |       |             |       |
| W   | 3.5° REF.  |       |             |       |
| X   | 4° REF.    |       |             |       |
| Y   | 0          | 0.5   | 0           | 0.02  |

**Recommended Solder Pad Layout**

