

Zero Recovery Silicon Carbide Schottky Diode

PRODUCT APPLICATIONS

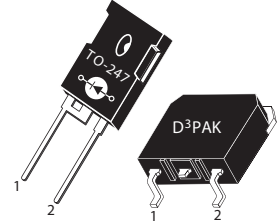
- Anti-Parallel Diode
- Switchmode Power Supply
- Inverters
- Power Factor Correction (PFC)

PRODUCT FEATURES

- Zero Recovery Times (t_{rr})
- Popular TO-247 Package or surface mount D³PAK package
- Low Forward Voltage
- Low Leakage Current

PRODUCT BENEFITS

- Higher Reliability Systems
- Minimizes or eliminates snubber



1 - Cathode
2 - Anode
Back of Case - Cathode

MAXIMUM RATINGS
 $T_C = 25^\circ\text{C}$ unless otherwise specified.

| Symbol | Characteristic / Test Conditions | Ratings | Unit |
|----------------|--|---------------------------|------------------|
| V_R | Maximum D.C. Reverse Voltage | 1200 | Volts |
| V_{RRM} | Maximum Peak Repetitive Reverse Voltage | | |
| V_{RWM} | Maximum Working Peak Reverse Voltage | | |
| I_F | Maximum D.C. Forward current | $T_C = 25^\circ\text{C}$ | 99 |
| | | $T_C = 135^\circ\text{C}$ | 29 |
| I_{FRM} | Repetitive Peak Forward Surge Current ($T_J = 45^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Wave) | 150 | Amps |
| I_{FSM} | Non-Repetitive Forward Surge Current ($T_J = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine) | 330 | |
| P_{tot} | Power Dissipation | $T_C = 25^\circ\text{C}$ | 291 |
| | | $T_C = 125^\circ\text{C}$ | 93 |
| T_J, T_{STG} | Operating and Storage Junction Temperature Range | -55 to 150 | $^\circ\text{C}$ |
| T_L | Lead Temperature for 10 Seconds | 300 | |

STATIC ELECTRICAL CHARACTERISTICS

| Symbol | Characteristic / Test Conditions | Min | Typ | Max | Unit |
|----------|--|-----|--|-----|------|
| V_F | Forward Voltage | | $I_F = 30\text{A}$, $T_J = 25^\circ\text{C}$ | 1.5 | 1.8 |
| | | | $I_F = 30\text{A}$, $T_J = 150^\circ\text{C}$ | 2.1 | |
| I_{RM} | Maximum Reverse Leakage Current | | $V_R = 1200\text{V}$, $T_J = 25^\circ\text{C}$ | | 600 |
| | | | $V_R = 1200\text{V}$, $T_J = 150^\circ\text{C}$ | | 3000 |
| Q_c | Total Capacitive Charge $V_R = 800\text{V}$, $I_F = 30\text{A}$, $di/dt = -100\text{A}/\mu\text{s}$, $T_J = 25^\circ\text{C}$ | | 200 | | nC |
| C_T | Junction Capacitance $V_R = 0\text{V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{MHz}$ | | 2100 | | pF |
| | Junction Capacitance $V_R = 200\text{V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{MHz}$ | | 228 | | |
| | Junction Capacitance $V_R = 400\text{V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{MHz}$ | | 167 | | |

| Symbol | Characteristic / Test Conditions | Min | Typ | Max | Unit |
|-----------------|-------------------------------------|-----|------|------|-------|
| $R_{\theta JC}$ | Junction-to-Case Thermal Resistance | | | 0.43 | °C/W |
| W_T | Package Weight | | 0.22 | | oz |
| | | | 5.9 | | g |
| Torque | Maximum Mounting Torque | | | 10 | lb-in |
| | | | | 1.1 | N-m |

Microsemi reserves the right to change, without notice, the specifications and information contained herein.

TYPICAL PERFORMANCE CURVES

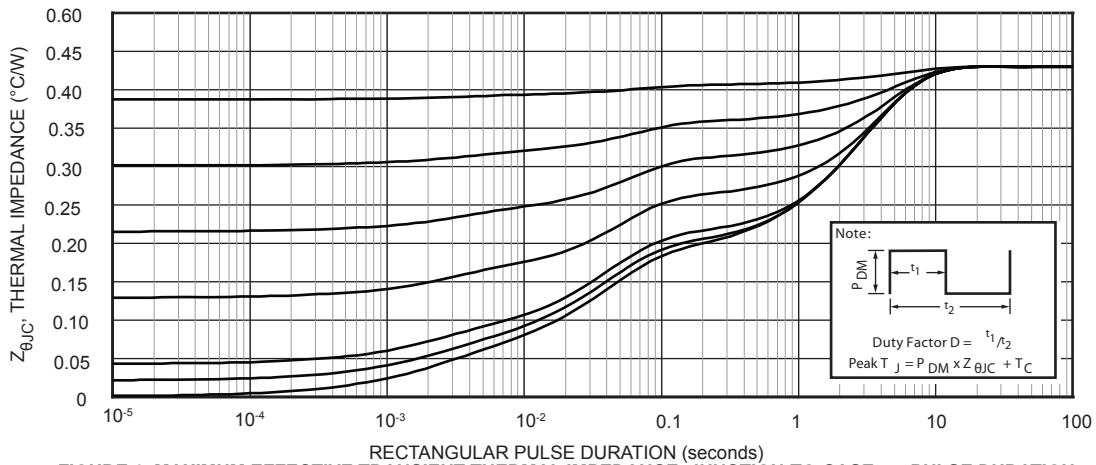


FIGURE 1. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

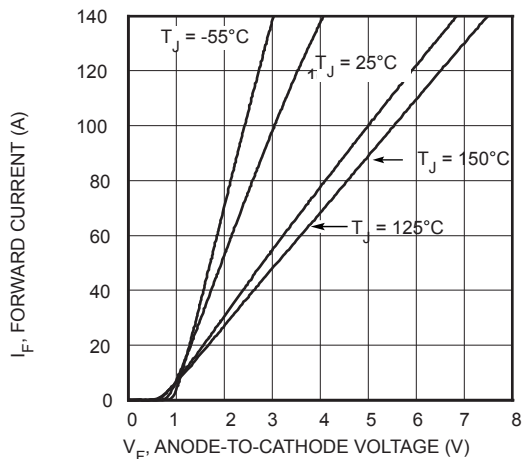


FIGURE 2, Forward Current vs. Forward Voltage

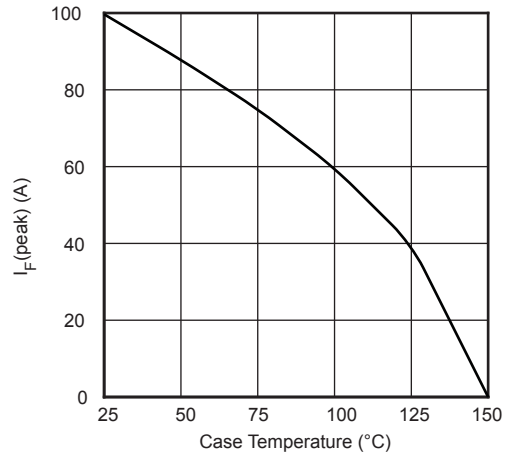


FIGURE 3, Maximum Forward Current vs. Case Temperature

TYPICAL PERFORMANCE CURVES

APT30SCD120B_S

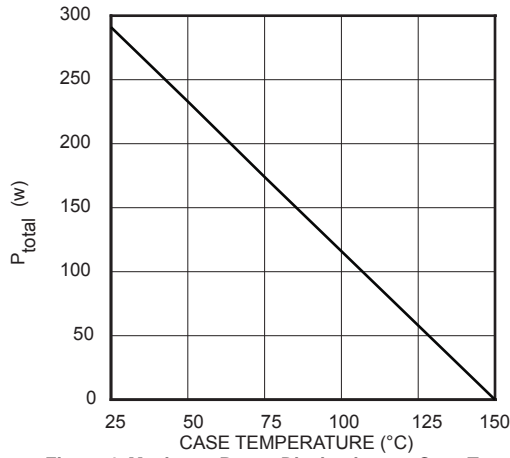


Figure 4. Maximum Power Dissipation vs. Case Temperature

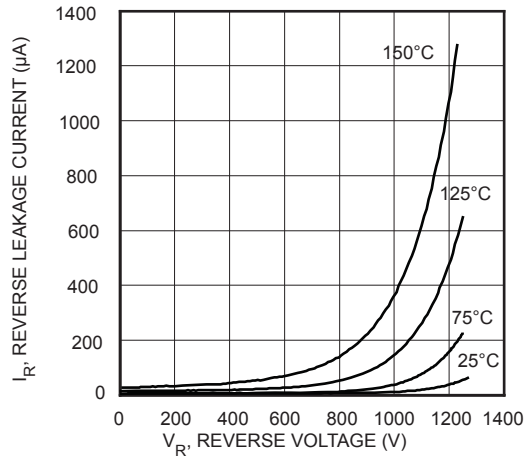


Figure 5. Reverse Leakage Currents vs. Reverse Voltage

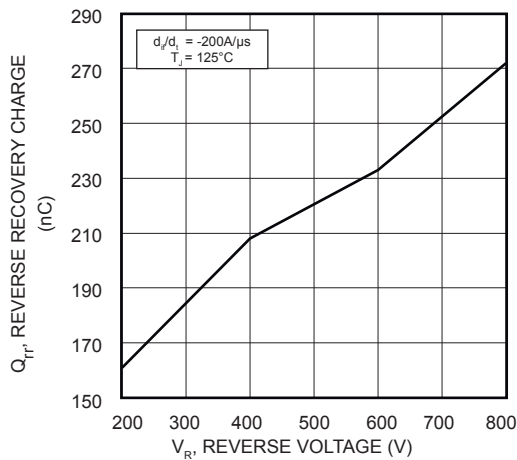


Figure 6. Reverse Recovery Charge vs. V_R

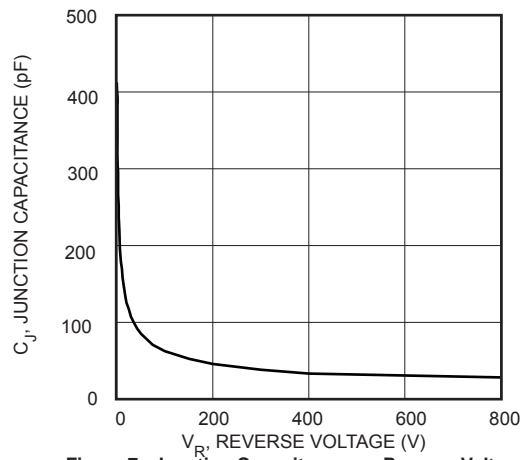
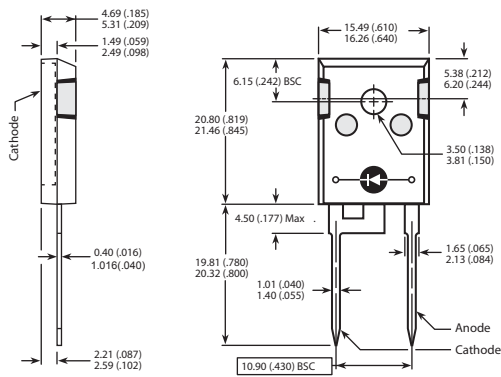


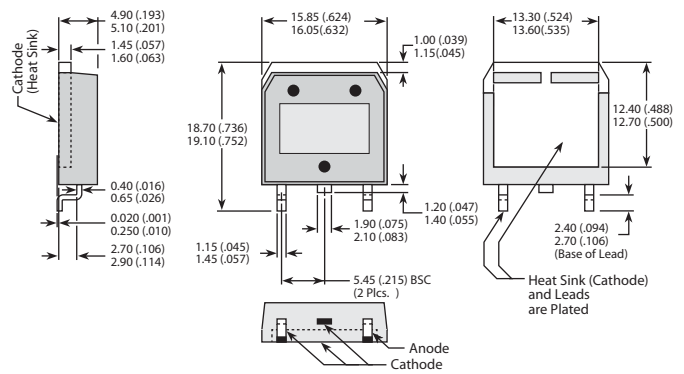
Figure 7. Junction Capacitance vs. Reverse Voltage

TO-247 Package Outline



Dimensions in Millimeters and (Inches)

D³PAK Package Outline



Dimensions in Millimeters and (Inches)

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