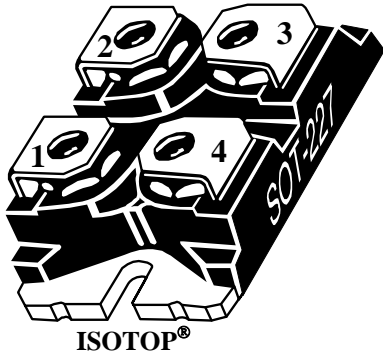
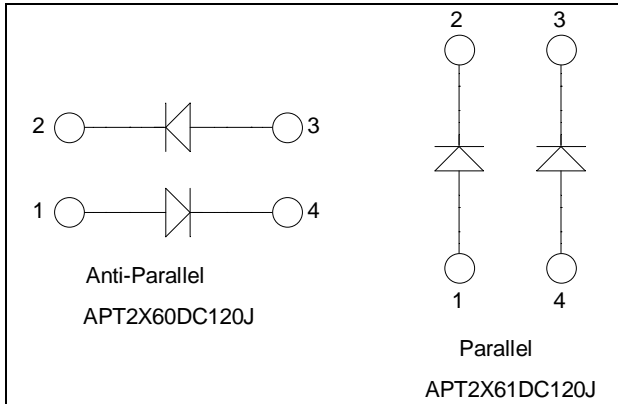


## ISOTOP<sup>®</sup> SiC Diode Power Module

$V_{RRM} = 1200V$   
 $I_F = 60A @ T_C = 100^{\circ}C$



### Application

- Uninterruptible Power Supply (UPS)
- Induction heating
- Welding equipment
- High speed rectifiers

### Features

- **SiC Schottky Diode**
  - Zero reverse recovery
  - Zero forward recovery
  - Temperature Independent switching behavior
  - Positive temperature coefficient on VF
- ISOTOP<sup>®</sup> Package (SOT-227)
- Very low stray inductance
- High level of integration

### Benefits

- Outstanding performance at high frequency operation
- Low losses
- Low noise switching
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- RoHS Compliant

### Absolute maximum ratings (per leg)

| Symbol      | Parameter                               | Max ratings | Unit                |     |  |
|-------------|-----------------------------------------|-------------|---------------------|-----|--|
| $V_R$       | Maximum DC reverse Voltage              | 1200        | V                   |     |  |
| $V_{RRM}$   | Maximum Peak Repetitive Reverse Voltage |             |                     |     |  |
| $I_{F(AV)}$ | Maximum Average Forward Current         | 60          | A                   |     |  |
| $I_{FSM}$   | Non-Repetitive Forward Surge Current    |             |                     |     |  |
|             |                                         | 10 $\mu s$  | $T_C = 25^{\circ}C$ | 750 |  |

**CAUTION:** These Devices are sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed. See application note APT0502 on [www.microsemi.com](http://www.microsemi.com)

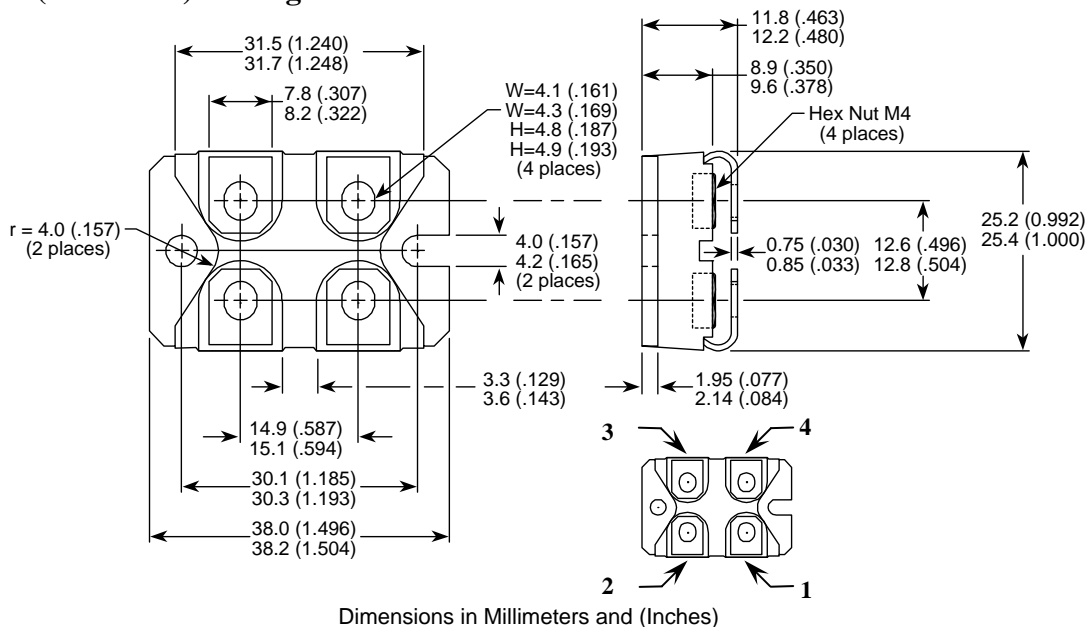
All ratings @  $T_j = 25^\circ\text{C}$  unless otherwise specified

**Electrical Characteristics (per leg)**

| Symbol   | Characteristic                  | Test Conditions                                                             | Min                       | Typ | Max | Unit |               |
|----------|---------------------------------|-----------------------------------------------------------------------------|---------------------------|-----|-----|------|---------------|
| $V_F$    | Diode Forward Voltage           | $I_F = 60\text{A}$                                                          | $T_j = 25^\circ\text{C}$  |     | 1.6 | 1.8  | V             |
|          |                                 |                                                                             | $T_j = 175^\circ\text{C}$ |     | 2.3 | 3.0  |               |
| $I_{RM}$ | Maximum Reverse Leakage Current | $V_R = 1200\text{V}$                                                        | $T_j = 25^\circ\text{C}$  |     | 192 | 1200 | $\mu\text{A}$ |
|          |                                 |                                                                             | $T_j = 175^\circ\text{C}$ |     | 336 | 6000 |               |
| $Q_C$    | Total Capacitive Charge         | $I_F = 60\text{A}, V_R = 600\text{V}$<br>$di/dt = 3000\text{A}/\mu\text{s}$ |                           | 240 |     | nC   |               |
| C        | Total Capacitance               | $f = 1\text{MHz}, V_R = 200\text{V}$                                        |                           | 576 |     | pF   |               |
|          |                                 | $f = 1\text{MHz}, V_R = 400\text{V}$                                        |                           | 414 |     |      |               |

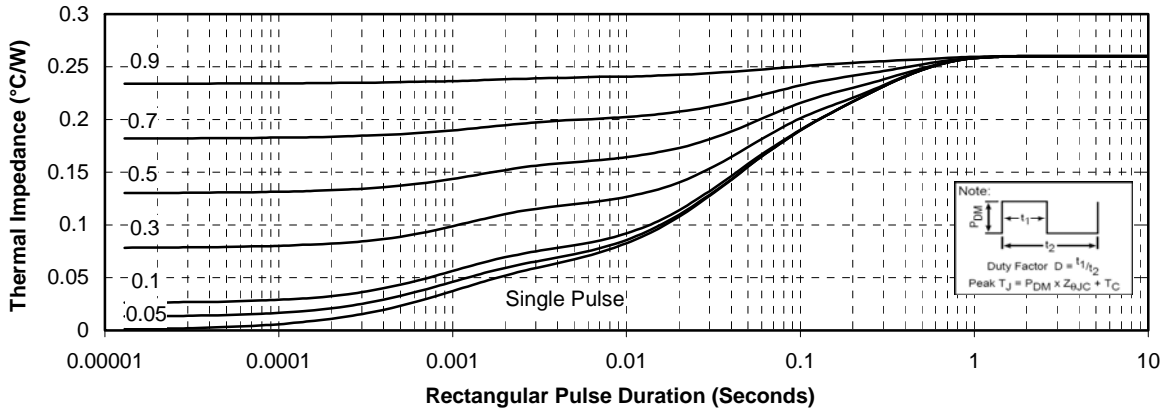
**Thermal and package characteristics (per leg)**

| Symbol         | Characteristic                                                                           | Min  | Typ  | Max  | Unit                      |
|----------------|------------------------------------------------------------------------------------------|------|------|------|---------------------------|
| $R_{thJC}$     | Junction to Case Thermal resistance                                                      |      |      | 0.26 | $^\circ\text{C}/\text{W}$ |
| $R_{thJA}$     | Junction to Ambient (IGBT & Diode)                                                       |      |      | 20   |                           |
| $V_{ISOL}$     | RMS Isolation Voltage, any terminal to case $t=1$ min, $I_{isol} < 1\text{mA}$ , 50/60Hz | 2500 |      |      | V                         |
| $T_J, T_{STG}$ | Storage Temperature Range                                                                | -55  |      | 175  | $^\circ\text{C}$          |
| $T_L$          | Max Lead Temp for Soldering: 0.063" from case for 10 sec                                 |      |      | 300  |                           |
| Torque         | Mounting torque (Mounting = 8-32 or 4mm Machine and terminals = 4mm Machine)             |      |      | 1.5  | N.m                       |
| Wt             | Package Weight                                                                           |      | 29.2 |      | g                         |

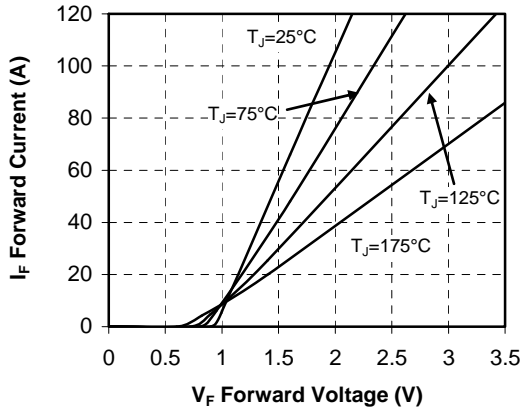
**SOT-227 (ISOTOP<sup>®</sup>) Package Outline**


**Typical Diode Performance Curve**

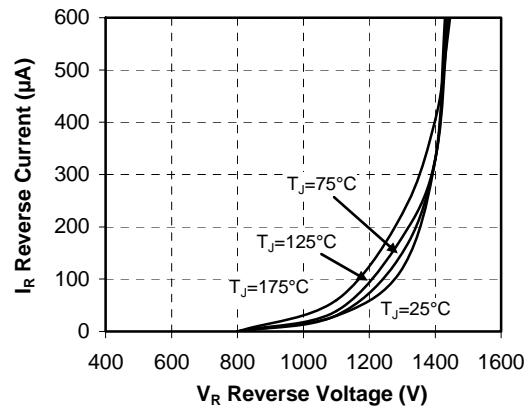
**Maximum Effective Transient Thermal Impedance, Junction to Case vs Pulse Duration**



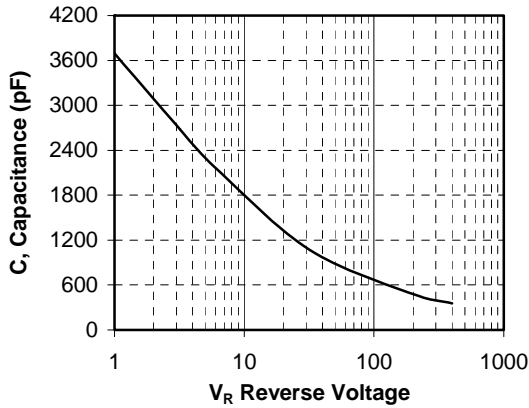
**Forward Characteristics**



**Reverse Characteristics**



**Capacitance vs. Reverse Voltage**



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Microsemi's products are covered by one or more of U.S. patents 4,895,810 5,045,903 5,089,434 5,182,234 5,019,522 5,262,336 6,503,786 5,256,583 4,748,103 5,283,202 5,231,474 5,434,095 5,528,058 and foreign patents. U.S and Foreign patents pending. All Rights Reserved.