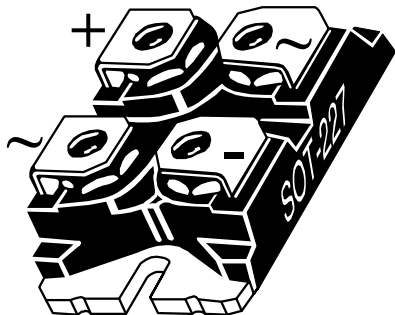
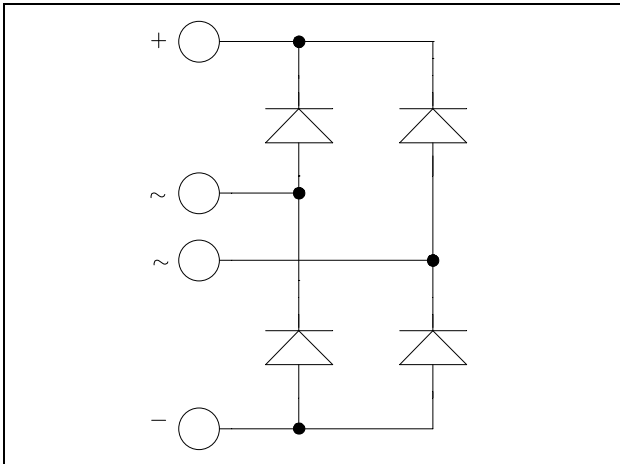


## ISOTOP<sup>®</sup> Fast Diode Full Bridge Power Module

$V_{RRM} = 1000V$   
 $I_C = 60A @ T_c = 80^{\circ}C$



### Application

- Switch mode power supplies rectifier
- Induction heating
- Welding equipment
- High speed rectifiers

### Features

- Ultra fast recovery times
- Soft recovery characteristics
- High blocking voltage
- High current
- Low leakage current
- Very low stray inductance
- High level of integration
- ISOTOP<sup>®</sup> Package (SOT-227)

### 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

| Symbol      | Parameter                               | Max ratings      | Unit                |     |   |
|-------------|---|------------------|---------------------|-----|---|
| $V_R$       | Maximum DC reverse Voltage              | 1000             | V                   |     |   |
| $V_{RRM}$   | Maximum Peak Repetitive Reverse Voltage |                  |                     |     |   |
| $I_{F(AV)}$ | Maximum Average Forward Current         | Duty cycle = 50% | $T_C = 25^{\circ}C$ | 90  | A |
|             |   |                  | $T_C = 80^{\circ}C$ | 60  |   |
| $I_{FSM}$   | Non-Repetitive Forward Surge Current    | 8.3ms            | $T_J = 45^{\circ}C$ | 540 |   |

**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**

| Symbol   | Characteristic                  | Test Conditions      | Min                       | Typ | Max | Unit          |
|----------|---------------------------------|----------------------|---------------------------|-----|-----|---------------|
| $V_F$    | Diode Forward Voltage           | $I_F = 60\text{A}$   |                           | 2.2 | 2.8 | V             |
|          |                                 | $I_F = 120\text{A}$  |                           | 2.7 |     |               |
|          |                                 | $I_F = 60\text{A}$   | $T_j = 125^\circ\text{C}$ | 1.7 |     |               |
| $I_{RM}$ | Maximum Reverse Leakage Current | $V_R = 1000\text{V}$ | $T_j = 25^\circ\text{C}$  |     | 100 | $\mu\text{A}$ |
|          |                                 |                      | $T_j = 125^\circ\text{C}$ |     | 500 |               |
| $C_T$    | Junction Capacitance            | $V_R = 200\text{V}$  |                           | 80  |     | pF            |

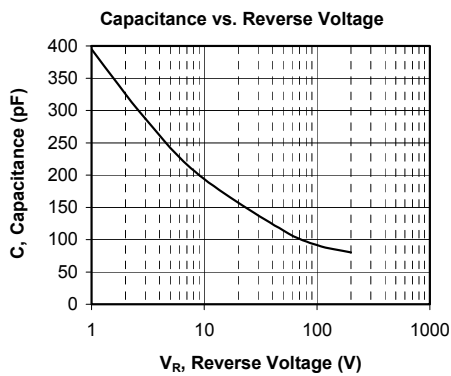
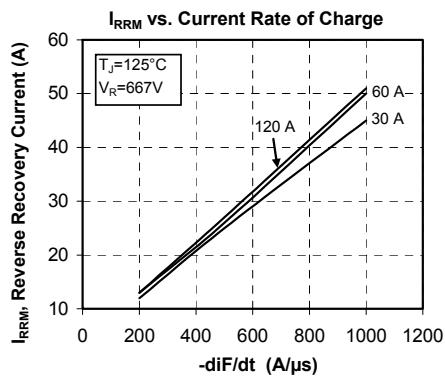
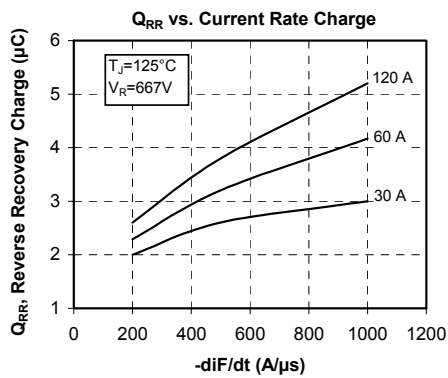
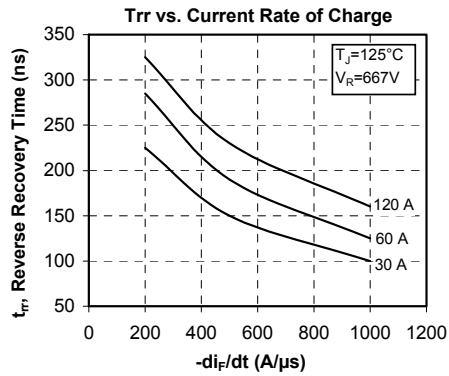
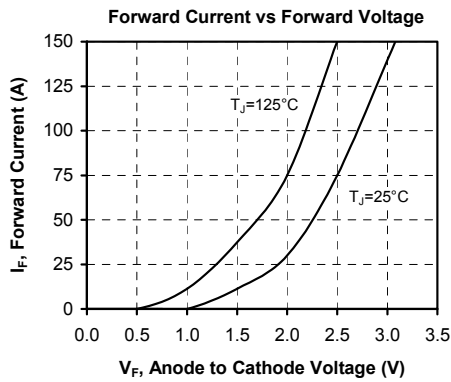
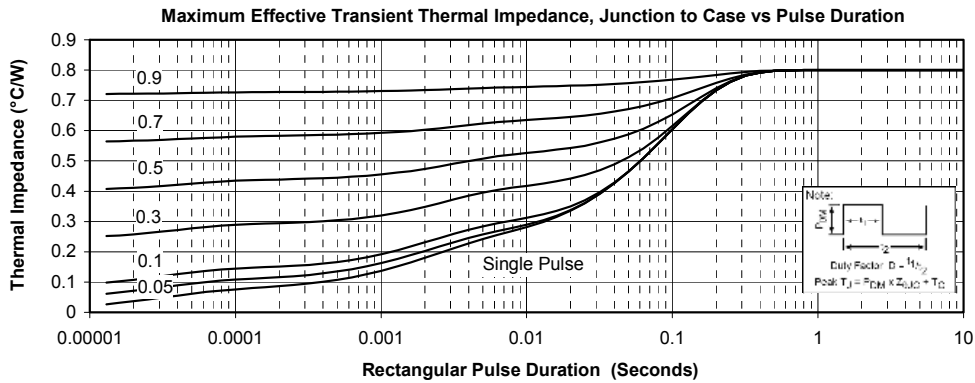
**Dynamic Characteristics**

| Symbol    | Characteristic           | Test Conditions   | Min                       | Typ | Max  | Unit |
|-----------|--------------------------|---|---------------------------|-----|------|------|
| $t_{rr}$  | Reverse Recovery Time    | $I_F = 60\text{A}$<br>$V_R = 667\text{V}$<br>$di/dt = 200\text{A}/\mu\text{s}$  | $T_j = 25^\circ\text{C}$  |     | 235  | ns   |
|           |                          |   | $T_j = 125^\circ\text{C}$ |     | 285  |      |
| $Q_{rr}$  | Reverse Recovery Charge  |   | $T_j = 25^\circ\text{C}$  |     | 445  | nC   |
|           |                          |   | $T_j = 125^\circ\text{C}$ |     | 2290 |      |
| $I_{RRM}$ | Reverse Recovery Current |   | $T_j = 25^\circ\text{C}$  |     | 5    | A    |
|           |                          |   | $T_j = 125^\circ\text{C}$ |     | 13   |      |
| $t_{rr}$  | Reverse Recovery Time    | $I_F = 60\text{A}$<br>$V_R = 667\text{V}$<br>$di/dt = 1000\text{A}/\mu\text{s}$ | $T_j = 125^\circ\text{C}$ |     | 125  | ns   |
| $Q_{rr}$  | Reverse Recovery Charge  |   |                           |     | 4170 | nC   |
| $I_{RRM}$ | Reverse Recovery Current |   |                           |     | 50   | A    |

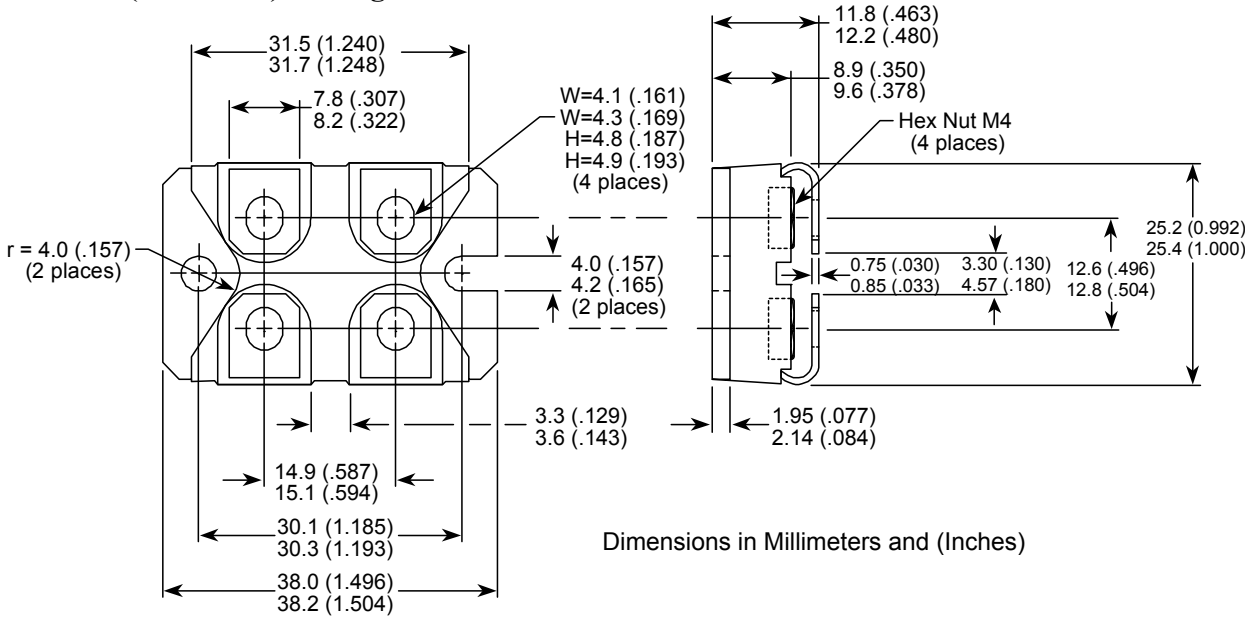
**Thermal and package characteristics**

| Symbol         | Characteristic   | Min  | Typ  | Max | Unit                      |
|----------------|--|------|------|-----|---------------------------|
| $R_{thJC}$     | Junction to Case Thermal resistance  |      |      | 0.9 | $^\circ\text{C}/\text{W}$ |
| $R_{thJA}$     | Junction to Ambient  |      |      | 20  | $^\circ\text{C}/\text{W}$ |
| $V_{ISOL}$     | RMS Isolation Voltage, any terminal to case $t = 1$ min, 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 | $^\circ\text{C}$          |
| Torque         | Mounting torque (Mounting = 8-32 or 4mm Machine and terminals = 4mm Machine) |      |      | 1.5 | N.m                       |
| Wt             | Package Weight   |      | 29.2 |     | g                         |

## Typical Performance Curve



## SOT-227 (ISOTOP®) Package Outline



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