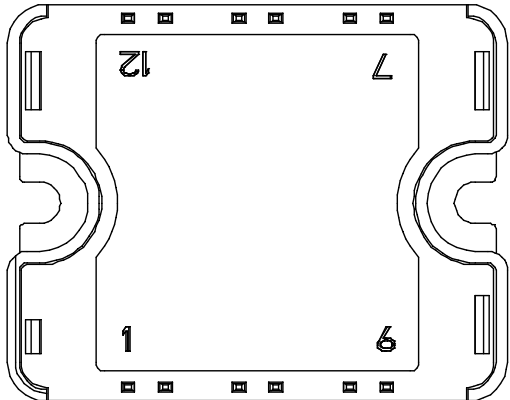
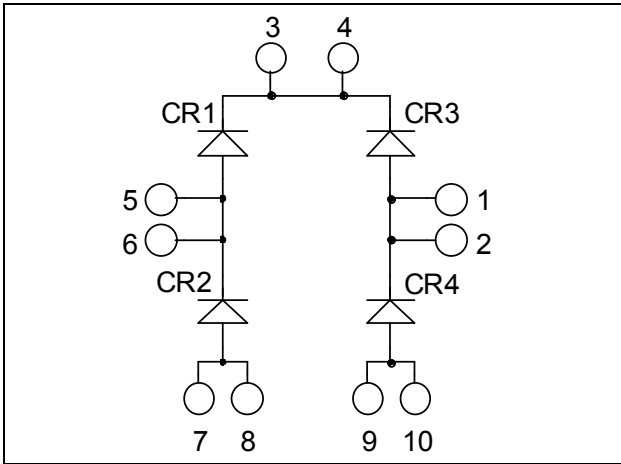


Fast Diode Full Bridge Power Module

$V_{RRM} = 1200V$
 $I_C = 60A @ T_c = 80^{\circ}C$



All multiple inputs and outputs must be shorted together
 3/4 ; 5/6 ; 7/8 ; 1/2 ; 9/10

Application

- Uninterruptible Power Supply (UPS)
- 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

Benefits

- Outstanding performance at high frequency operation
- Low losses
- Low noise switching
- Solderable terminals for easy PCB mounting
- 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 | 1200 | V | |
| V_{RRM} | Maximum Peak Repetitive Reverse Voltage | | | |
| $I_{F(AV)}$ | Maximum Average Forward Current | Duty cycle = 50% | $T_C = 25^{\circ}C$ | A |
| | | | $T_C = 80^{\circ}C$ | |
| I_{FSM} | Non-Repetitive Forward Surge Current | 8.3ms | $T_J = 45^{\circ}C$ | 500 |

CAUTION: These Devices are sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed. See application note APT0502 on 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 | $I_F = 60\text{A}$ | | 2.5 | 3 | V |
| | | $I_F = 120\text{A}$ | | 3 | | |
| | | $I_F = 60\text{A}$ | $T_j = 125^\circ\text{C}$ | 1.8 | | |
| I_{RM} | Maximum Reverse Leakage Current | $V_R = 1200\text{V}$ | $T_j = 25^\circ\text{C}$ | | 100 | μA |
| | | | $T_j = 125^\circ\text{C}$ | | 500 | |
| C_T | Junction Capacitance | $V_R = 200\text{V}$ | | 70 | | pF |

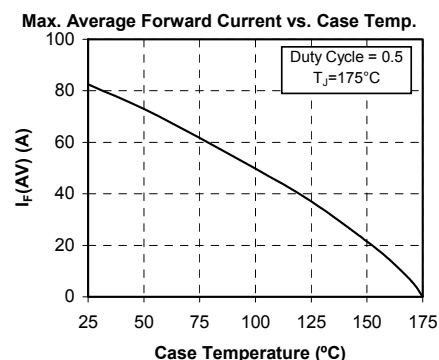
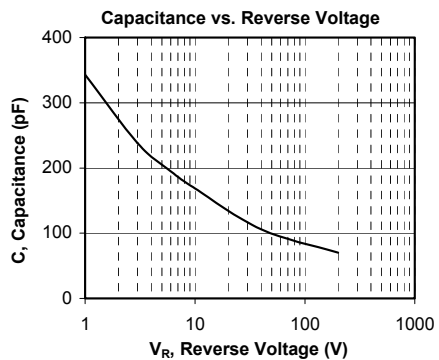
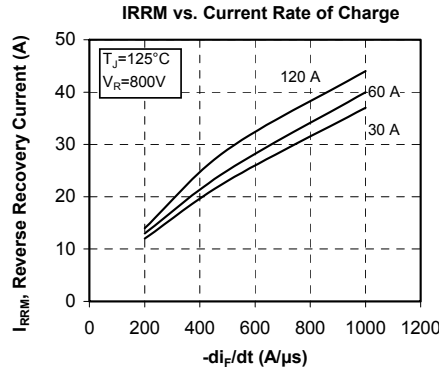
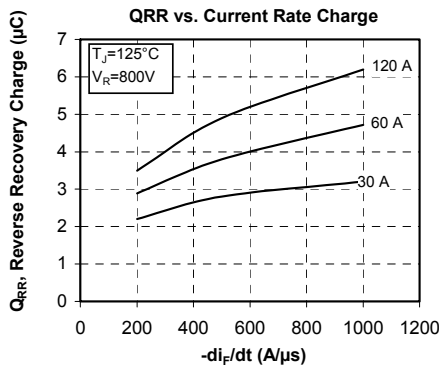
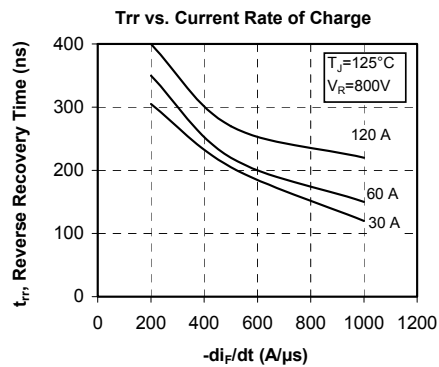
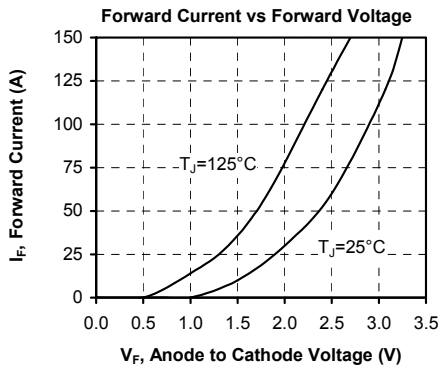
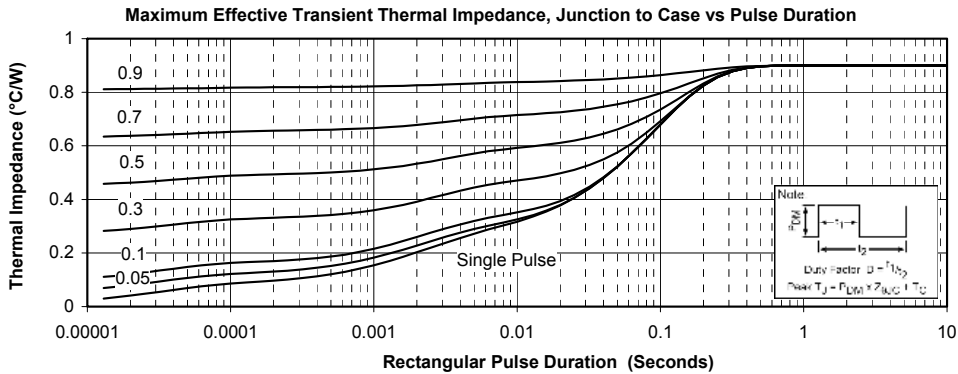
Dynamic Characteristics

| Symbol | Characteristic | Test Conditions | Min | Typ | Max | Unit |
|-----------|--------------------------|---|---------------------------|-----|------|------|
| t_{rr} | Reverse Recovery Time | $I_F = 60\text{A}$ $V_R = 800\text{V}$ $di/dt = 200\text{A}/\mu\text{s}$ | $T_j = 25^\circ\text{C}$ | | 265 | ns |
| | | | $T_j = 125^\circ\text{C}$ | | 350 | |
| Q_{rr} | Reverse Recovery Charge | | $T_j = 25^\circ\text{C}$ | | 560 | nC |
| | | | $T_j = 125^\circ\text{C}$ | | 2890 | |
| 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 | $I_F = 60\text{A}$ $V_R = 800\text{V}$ $di/dt = 1000\text{A}/\mu\text{s}$ | $T_j = 125^\circ\text{C}$ | | 150 | ns |
| Q_{rr} | Reverse Recovery Charge | | | | 4700 | nC |
| I_{RRM} | Reverse Recovery Current | | | | 40 | A |

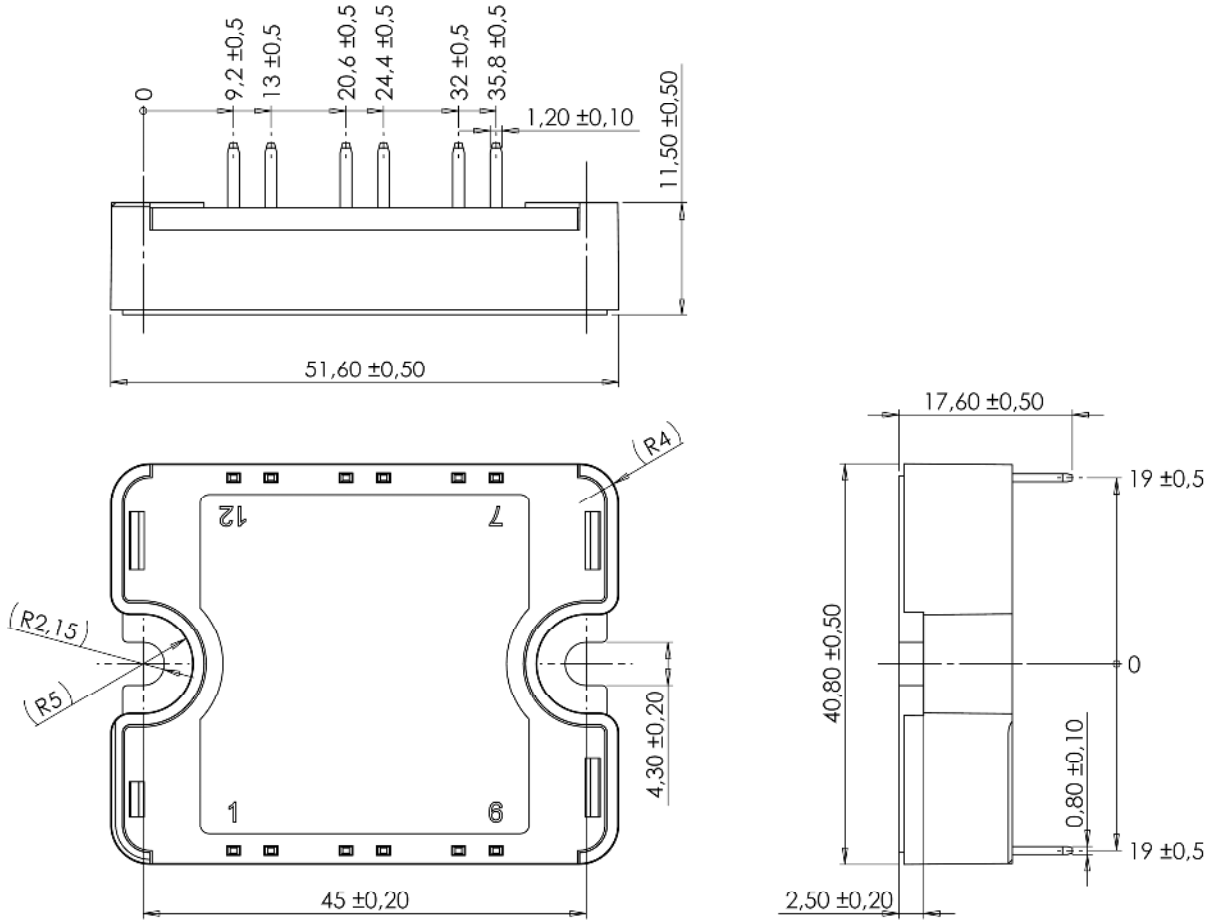
Thermal and package characteristics

| Symbol | Characteristic | Min | Typ | Max | Unit | |
|------------|--|-------------|-----|-----|---------------------------|-----|
| R_{thJC} | Junction to Case Thermal Resistance | | | 0.9 | $^\circ\text{C}/\text{W}$ | |
| V_{ISOL} | RMS Isolation Voltage, any terminal to case $t = 1\text{ min}$, 50/60Hz | 4000 | | | V | |
| T_j | Operating junction temperature range | -40 | | 175 | $^\circ\text{C}$ | |
| T_{STG} | Storage Temperature Range | -40 | | 125 | | |
| T_C | Operating Case Temperature | -40 | | 100 | | |
| Torque | Mounting torque | To heatsink | M4 | 2 | 3 | N.m |
| Wt | Package Weight | | | | 80 | g |

Typical Performance Curve



SP1 Package outline (dimensions in mm)



See application note 1904 - Mounting Instructions for SP1 Power Modules on www.microsemi.com

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