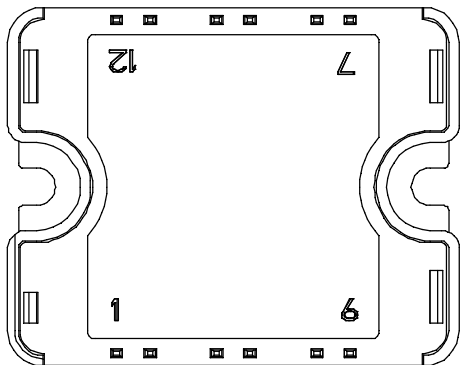
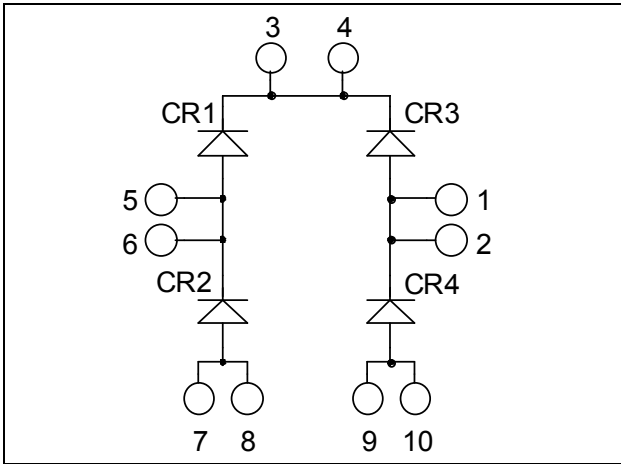


## Fast Diode Full Bridge Power Module

**$V_{RRM} = 600V$**   
 **$I_C = 100A^* @ T_c = 80^\circ C$**



### 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

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

### Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit		
$V_R$	Maximum DC reverse Voltage	600	V		
$V_{RRM}$	Maximum Peak Repetitive Reverse Voltage				
$I_{F(AV)}$	Maximum Average Forward Current	Duty cycle = 50%	$T_C = 25^\circ C$	135 *	A
			$T_C = 80^\circ C$	100 *	
$I_{FSM}$	Non-Repetitive Forward Surge Current	8.3ms	$T_C = 45^\circ C$	500	

\* Specification of diode device but output current must be limited to 75A to not exceed a delta of temperature greater than 30°C for the connectors.

**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**

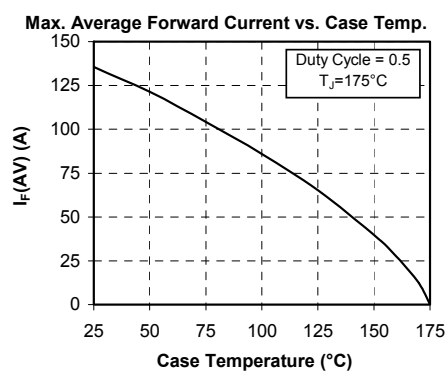
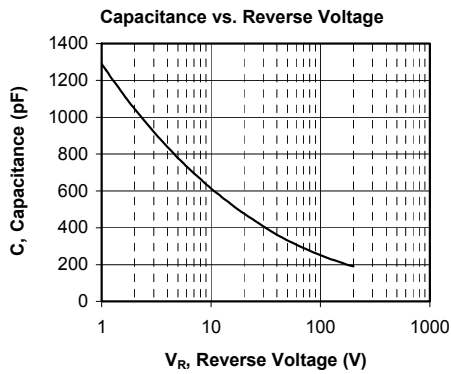
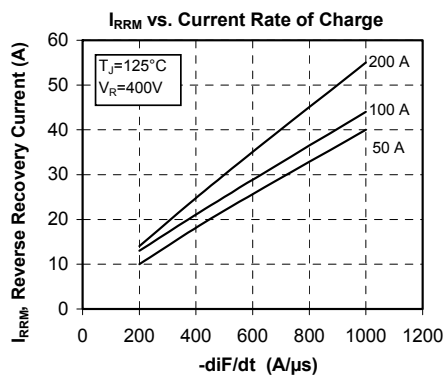
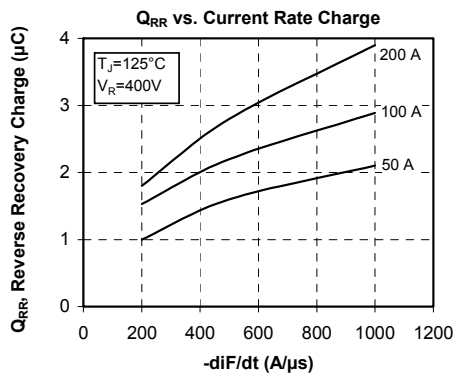
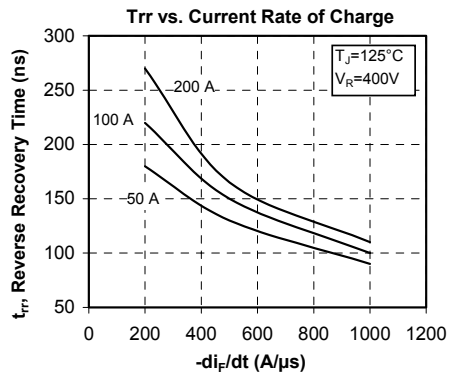
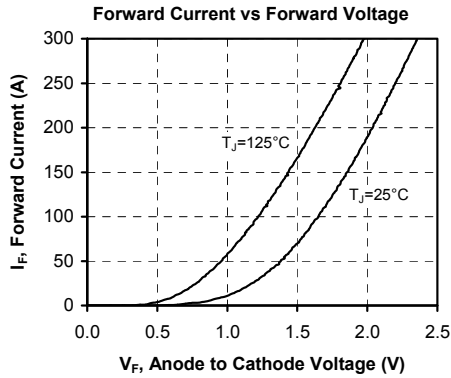
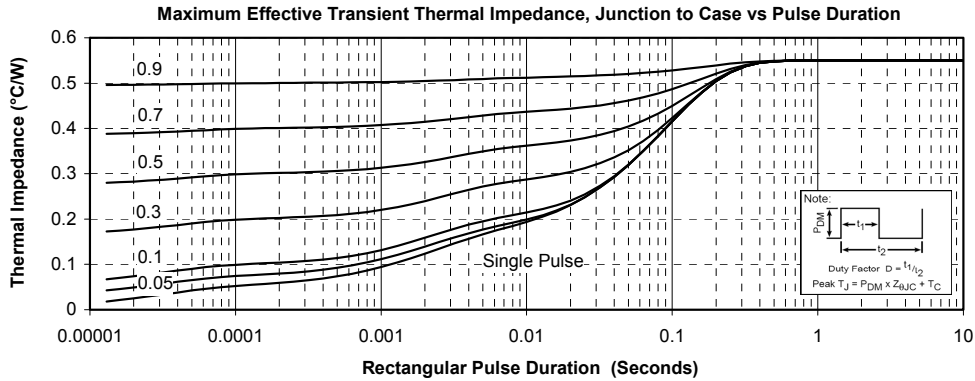
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
$V_F$	Diode Forward Voltage	$I_F = 100\text{A}$		1.6	2.0	V
		$I_F = 200\text{A}$		2.0		
		$I_F = 100\text{A}$	$T_j = 125^\circ\text{C}$	1.3		
$I_{RM}$	Maximum Reverse Leakage Current	$V_R = 600\text{V}$	$T_j = 25^\circ\text{C}$		250	$\mu\text{A}$
			$T_j = 125^\circ\text{C}$		500	
$C_T$	Junction Capacitance	$V_R = 200\text{V}$		190		pF

**Dynamic Characteristics**

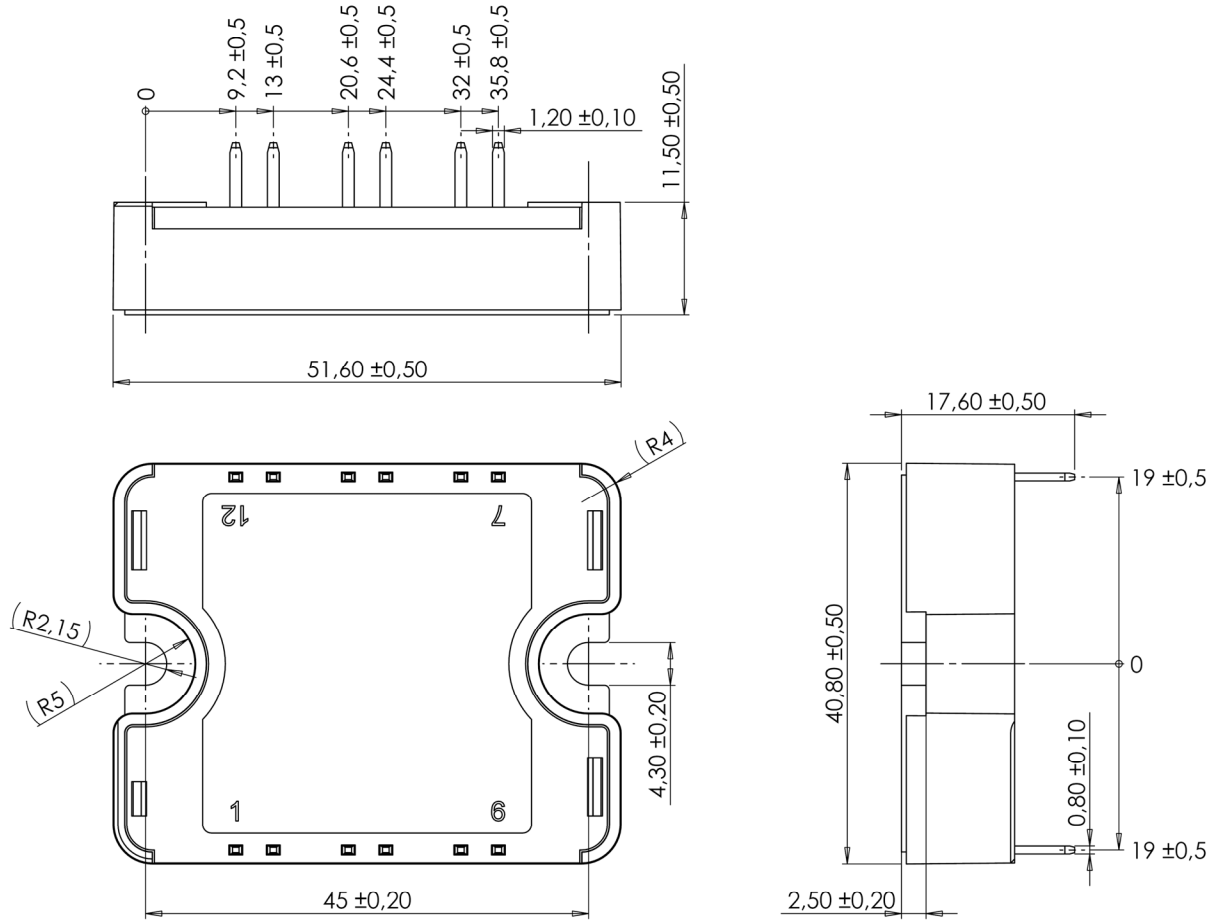
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
$t_{rr}$	Reverse Recovery Time	$I_F = 100\text{A}$ $V_R = 400\text{V}$ $di/dt = 200\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		160	ns
			$T_j = 125^\circ\text{C}$		220	
$Q_{rr}$	Reverse Recovery Charge	$I_F = 100\text{A}$ $V_R = 400\text{V}$ $di/dt = 200\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		290	nC
			$T_j = 125^\circ\text{C}$		1530	
$I_{RRM}$	Reverse Recovery Current	$I_F = 100\text{A}$ $V_R = 400\text{V}$ $di/dt = 200\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		5	A
			$T_j = 125^\circ\text{C}$		13	
$t_{rr}$	Reverse Recovery Time	$I_F = 100\text{A}$ $V_R = 400\text{V}$ $di/dt = 1000\text{A}/\mu\text{s}$	$T_j = 125^\circ\text{C}$		100	ns
$Q_{rr}$	Reverse Recovery Charge				2890	nC
$I_{RRM}$	Reverse Recovery Current				44	A

**Thermal and package characteristics**

Symbol	Characteristic	Min	Typ	Max	Unit	
$R_{thJC}$	Junction to Case Thermal Resistance			0.55	$^\circ\text{C}/\text{W}$	
$V_{ISOL}$	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](http://www.microsemi.com)

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