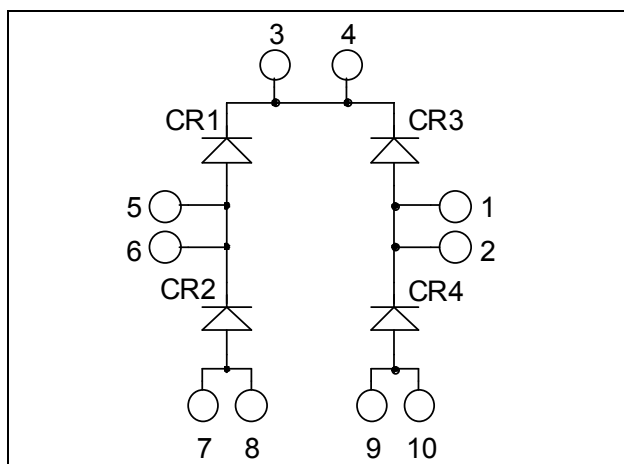


## Fast Diode Full Bridge Power Module

**$V_{RRM} = 1200V$**   
 **$I_C = 30A @ T_C = 80^\circ C$**



### Application

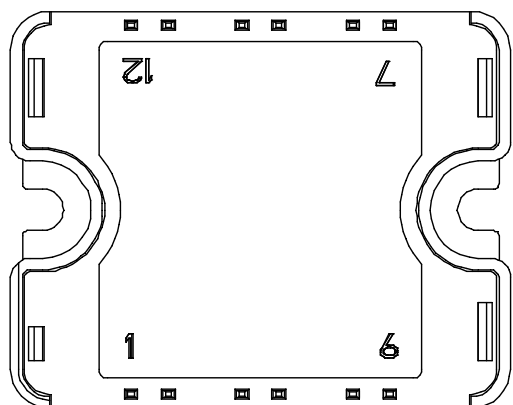
- Uninterruptible Power Supply (UPS)
- Induction heating
- Welding equipment
- High speed rectifiers

### 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 <sub>R</sub>	Maximum DC reverse Voltage			1200	V
V <sub>RRM</sub>	Maximum Peak Repetitive Reverse Voltage				
I <sub>F(AV)</sub>	Maximum Average Forward Current	Duty cycle = 50%	T <sub>C</sub> = 25°C	43	A
			T <sub>C</sub> = 80°C	30	
I <sub>FSM</sub>	Non-Repetitive Forward Surge Current	8.3ms	T <sub>J</sub> = 45°C	210	

**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**

<i>Symbol</i>	<i>Characteristic</i>	<i>Test Conditions</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>
$V_F$	Diode Forward Voltage	$I_F = 30\text{A}$		2.6	3.1	V
		$I_F = 60\text{A}$		3.2		
		$I_F = 30\text{A}$ $T_j = 125^\circ\text{C}$		1.8		
$I_{RM}$	Maximum Reverse Leakage Current	$V_R = 1200\text{V}$	$T_j = 25^\circ\text{C}$		100	$\mu\text{A}$
			$T_j = 125^\circ\text{C}$		500	
$C_T$	Junction Capacitance	$V_R = 200\text{V}$		36		pF

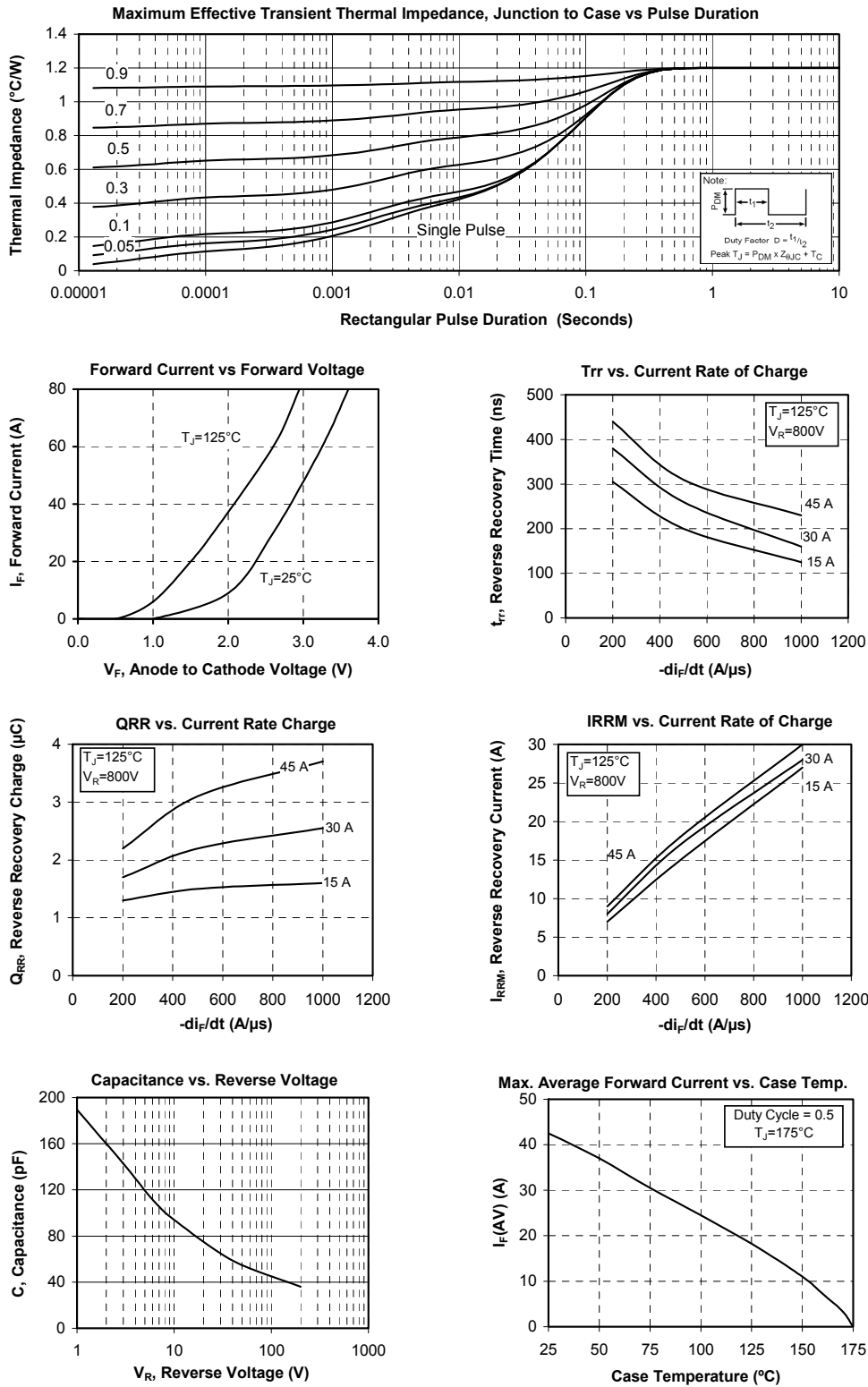
**Dynamic Characteristics**

<i>Symbol</i>	<i>Characteristic</i>	<i>Test Conditions</i>		<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>
t <sub>rr</sub>	Reverse Recovery Time	I <sub>F</sub> = 30A V <sub>R</sub> = 800V di/dt = 200A/μs	T <sub>j</sub> = 25°C		300		ns
			T <sub>j</sub> = 125°C		380		
Q <sub>rr</sub>	Reverse Recovery Charge		T <sub>j</sub> = 25°C		360		nC
			T <sub>j</sub> = 125°C		1700		
I <sub>RRM</sub>	Reverse Recovery Current		T <sub>j</sub> = 25°C		4		A
			T <sub>j</sub> = 125°C		8		
t <sub>rr</sub>	Reverse Recovery Time	I <sub>F</sub> = 30A V <sub>R</sub> = 800V di/dt=1000A/μs	T <sub>j</sub> = 125°C		160		ns
Q <sub>rr</sub>	Reverse Recovery Charge				2550		nC
I <sub>RRM</sub>	Reverse Recovery Current				28		A

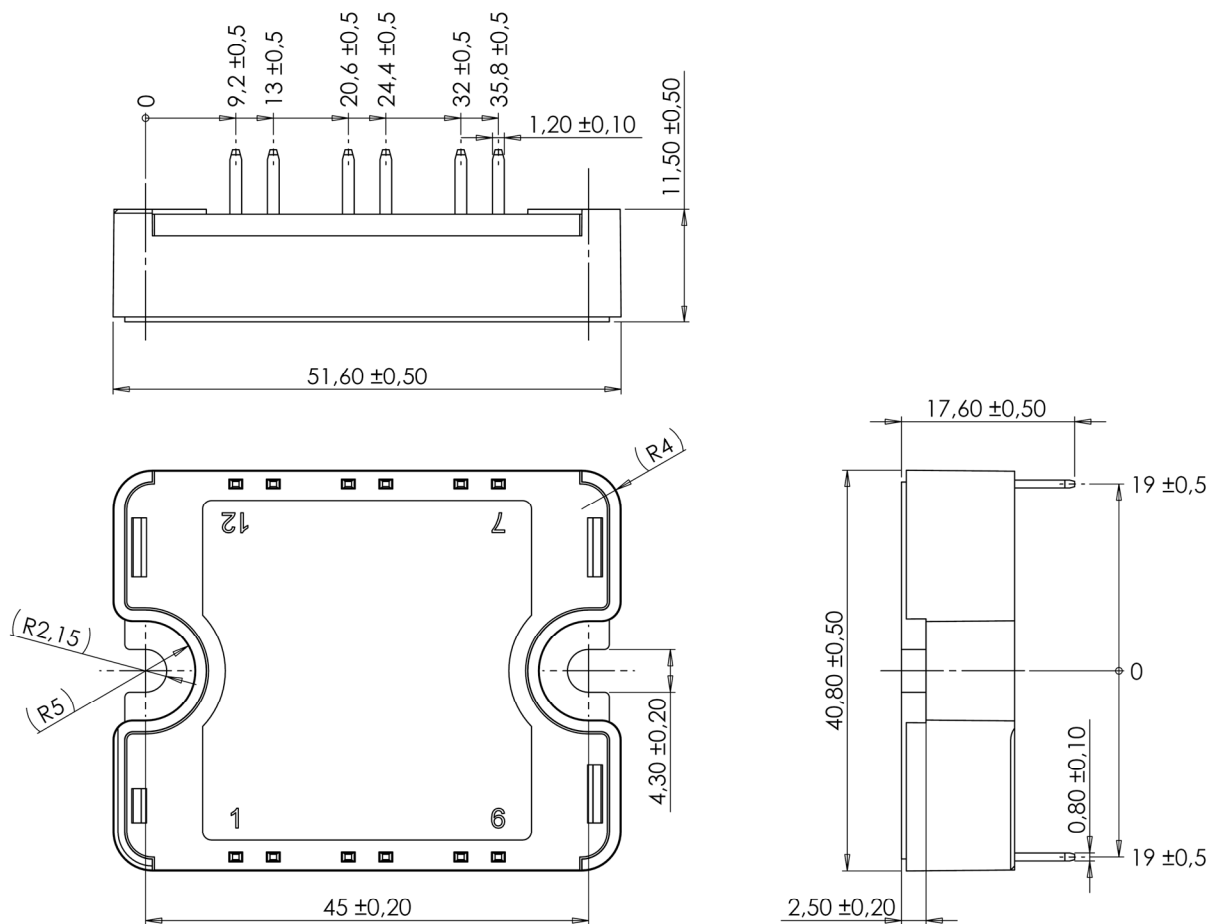
**Thermal and package characteristics**

<i>Symbol</i>	<i>Characteristic</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>	
R <sub>thJC</sub>	Junction to Case Thermal Resistance			1.2	°C/W	
V <sub>ISOL</sub>	RMS Isolation Voltage, any terminal to case t =1 min, 50/60Hz	4000			V	
T <sub>J</sub>	Operating junction temperature range	-40		175	°C	
T <sub>STG</sub>	Storage Temperature Range	-40		125		
T <sub>C</sub>	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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