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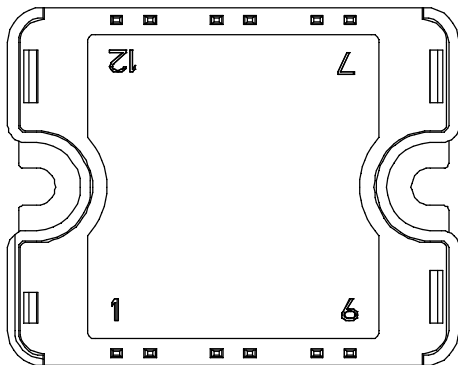
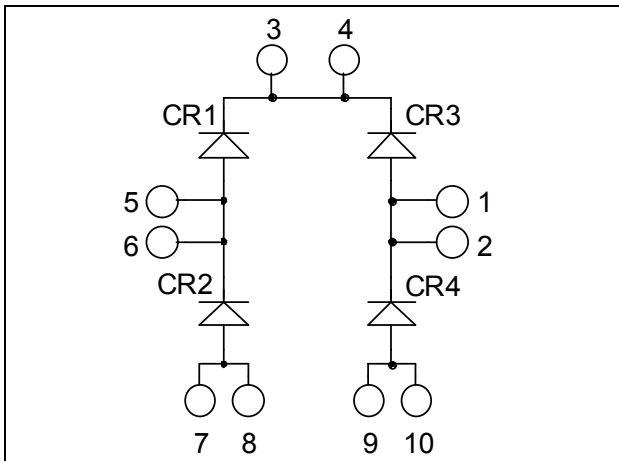
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Fast Diode Full Bridge Power Module

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



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	600	V	
V_{RRM}	Maximum Peak Repetitive Reverse Voltage			
$I_{F(AV)}$	Maximum Average Forward Current	Duty cycle = 50%	A	
		$T_C = 25^\circ C$		135 *
		$T_C = 80^\circ C$	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

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

Electrical Characteristics

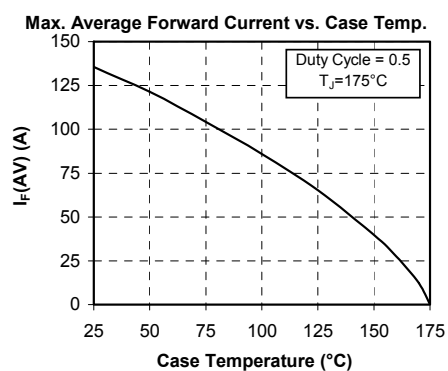
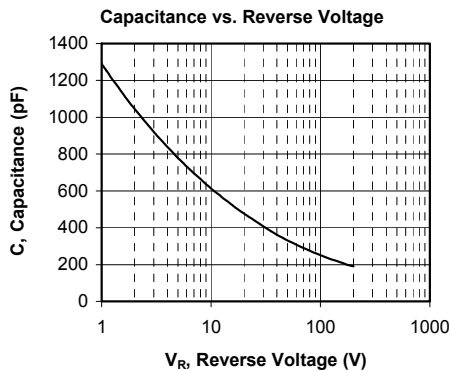
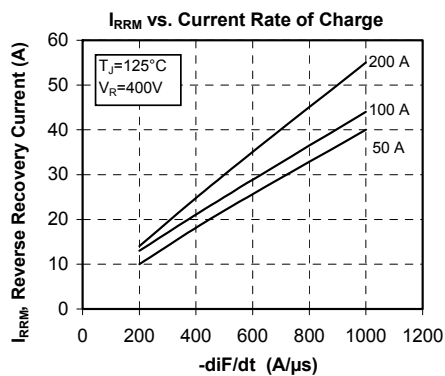
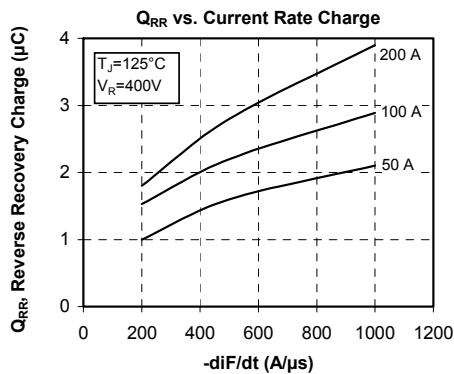
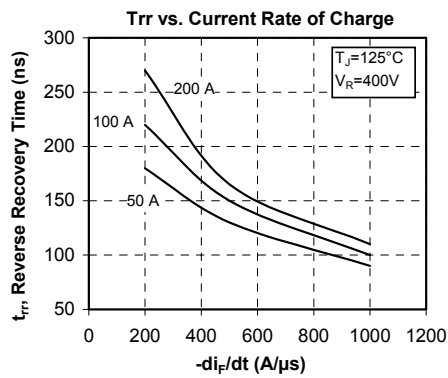
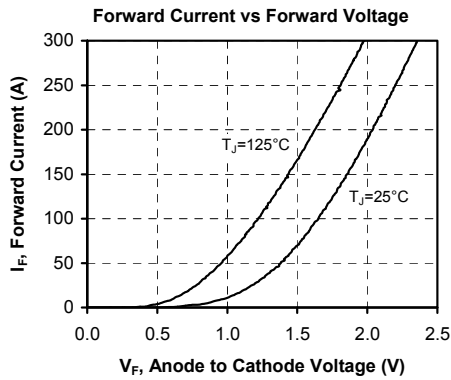
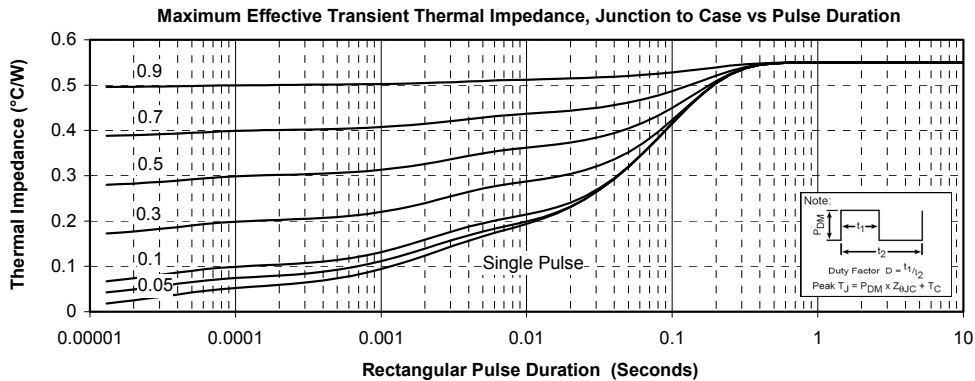
Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit
V_F	Diode Forward Voltage	$I_F = 100\text{A}$			1.6	2.0	V
		$I_F = 200\text{A}$			2.0		
		$I_F = 100\text{A}$	$T_j = 125^\circ\text{C}$		1.3		
I_{RM}	Maximum Reverse Leakage Current	$V_R = 600\text{V}$	$T_j = 25^\circ\text{C}$			250	μA
			$T_j =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

Dynamic Characteristics

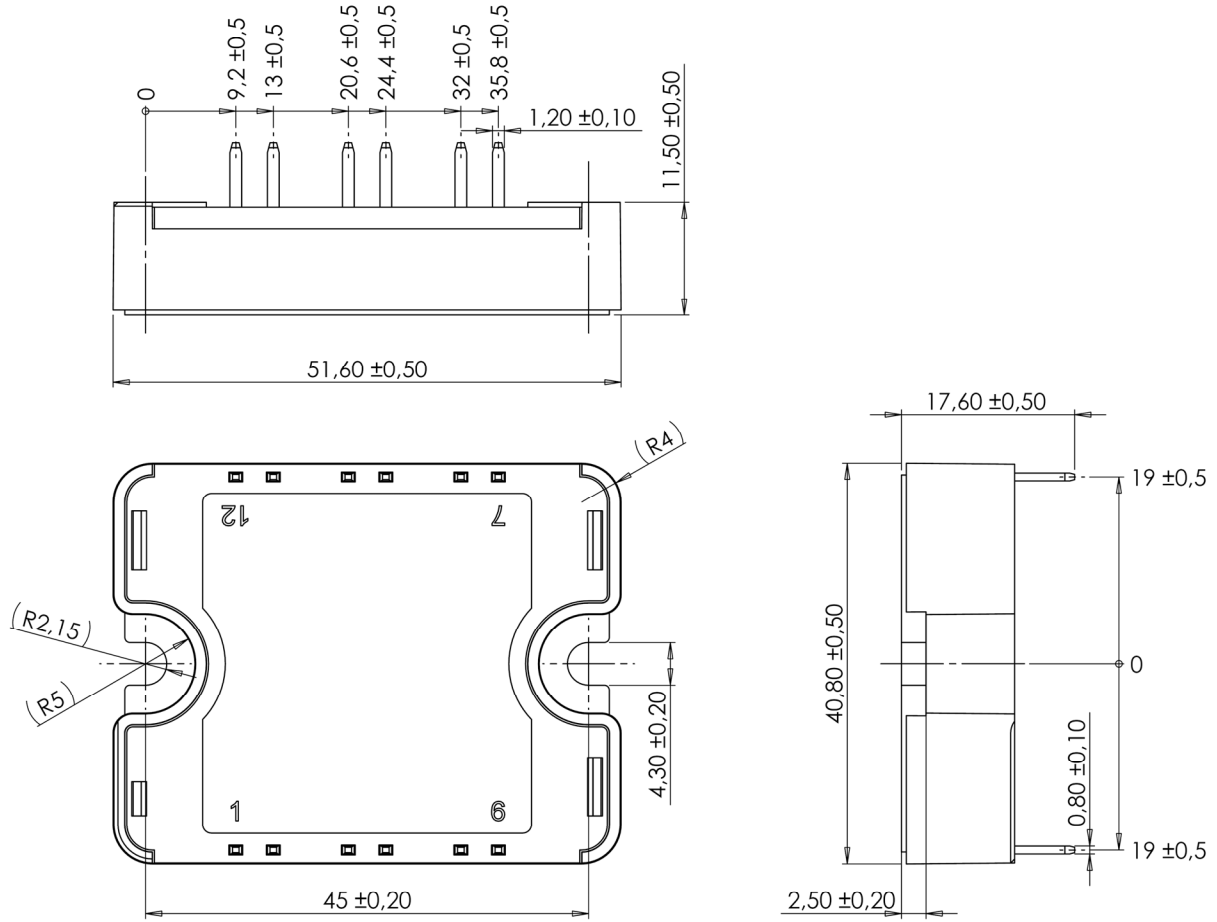
Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit
t_{rr}	Reverse Recovery Time	$I_F = 100\text{A}$ $V_R = 400\text{V}$ $di/dt = 200\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		160		ns
			$T_j = 125^\circ\text{C}$		220		
Q_{rr}	Reverse Recovery Charge	$I_F = 100\text{A}$ $V_R = 400\text{V}$ $di/dt = 200\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		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

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