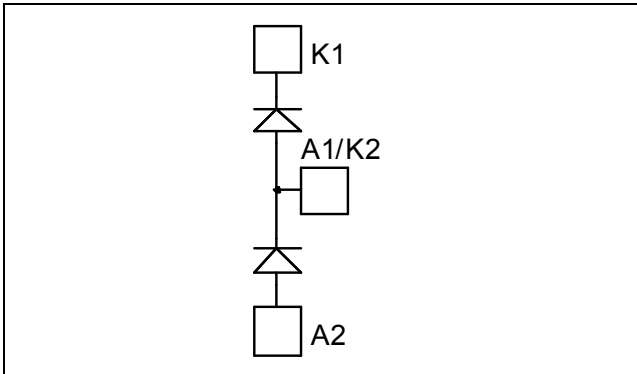


## Diode Phase leg Power Module

**$V_{RRM} = 1000V$**   
 **$I_C = 400A @ T_c = 70^\circ C$**



### Application

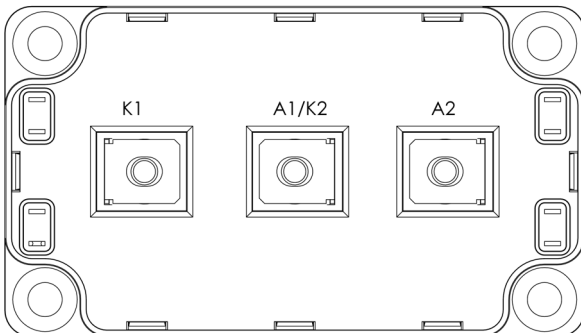
- Anti-Parallel diode
- Uninterruptible Power Supply (UPS)
- Induction heating
- Welding equipment
- High speed rectifiers

### Features

- Ultra fast recovery times
- Soft recovery characteristics
- High blocking voltage
- High current
- Low leakage current
- Very low stray inductance
  - Symmetrical design
  - M5 power connectors
- High level of integration

### 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%	$T_C = 25^\circ C$	500	A
			$T_C = 70^\circ C$	400	
$I_{F(RMS)}$	RMS Forward Current	Duty cycle = 50%	$T_C = 45^\circ C$	500	
$I_{FSM}$	Non-Repetitive Forward Surge Current	8.3ms	$T_C = 45^\circ C$	3000	

**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	$I_F = 400\text{A}$			2.1	2.7	V
		$I_F = 600\text{A}$			2.3		
		$I_F = 400\text{A}$	$T_j = 125^\circ\text{C}$		1.7		
$I_{RM}$	Maximum Reverse Leakage Current	$V_R = 1000\text{V}$	$T_j = 25^\circ\text{C}$			250	$\mu\text{A}$
			$T_j = 125^\circ\text{C}$			1000	
$C_T$	Junction Capacitance	$V_R = 1000\text{V}$			480		pF

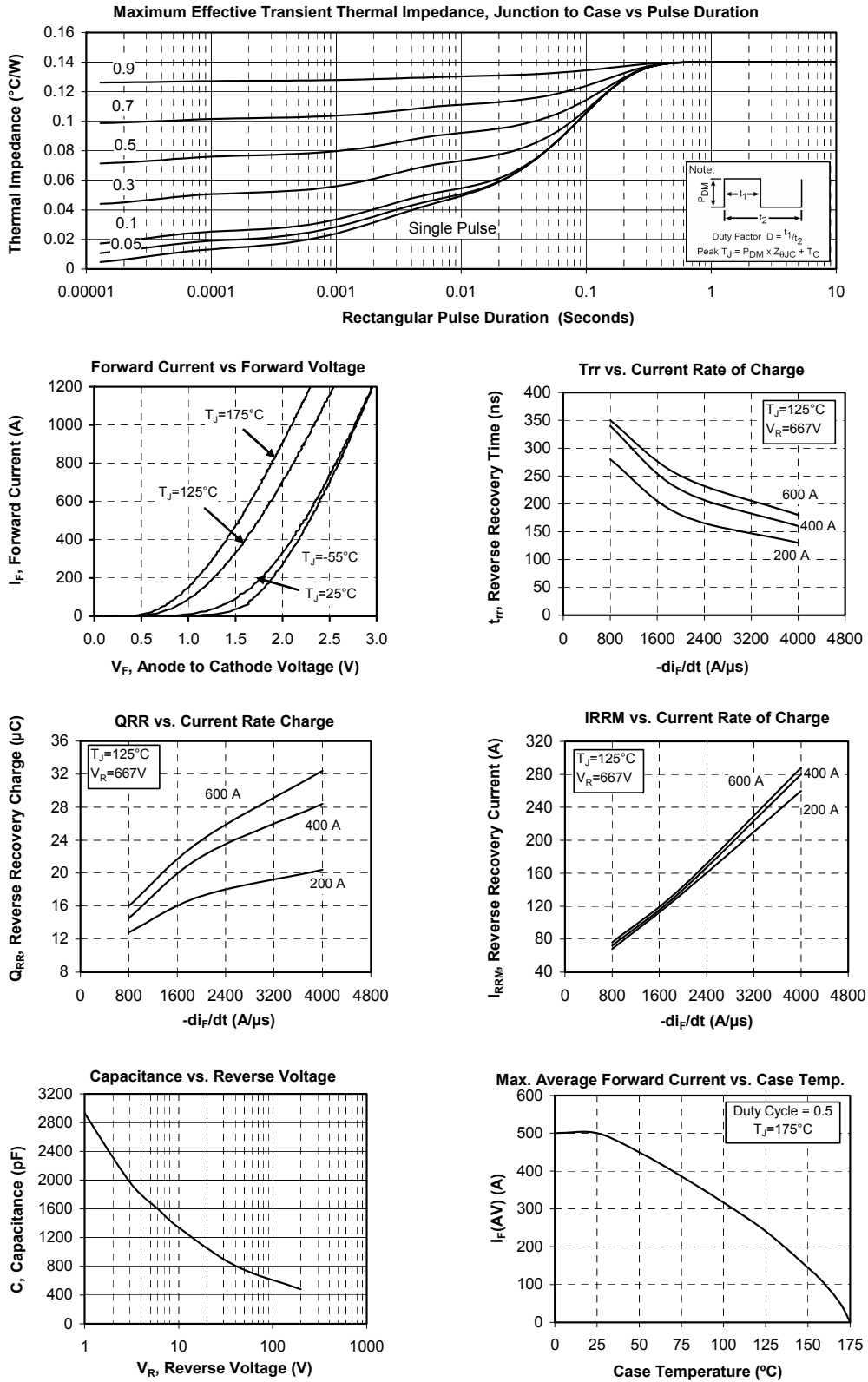
**Dynamic Characteristics**

Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit
$t_{rr}$	Reverse Recovery Time	$I_F = 1\text{A}, V_R = 30\text{V}$ $di/dt = 400\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		45		ns
$t_{rr}$	Reverse Recovery Time		$T_j = 25^\circ\text{C}$		290		ns
		$T_j = 125^\circ\text{C}$		340			
$Q_{rr}$	Reverse Recovery Charge	$I_F = 400\text{A}$ $V_R = 667\text{V}$ $di/dt = 800\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		2.7		$\mu\text{C}$
			$T_j = 125^\circ\text{C}$		14.6		
$I_{RRM}$	Reverse Recovery Current		$T_j = 25^\circ\text{C}$		24		A
			$T_j = 125^\circ\text{C}$		72		
$t_{rr}$	Reverse Recovery Time	$I_F = 400\text{A}$ $V_R = 667\text{V}$ $di/dt = 4000\text{A}/\mu\text{s}$	$T_j = 125^\circ\text{C}$		160		ns
$Q_{rr}$	Reverse Recovery Charge				28.4		$\mu\text{C}$
$I_{RRM}$	Reverse Recovery Current				280		A

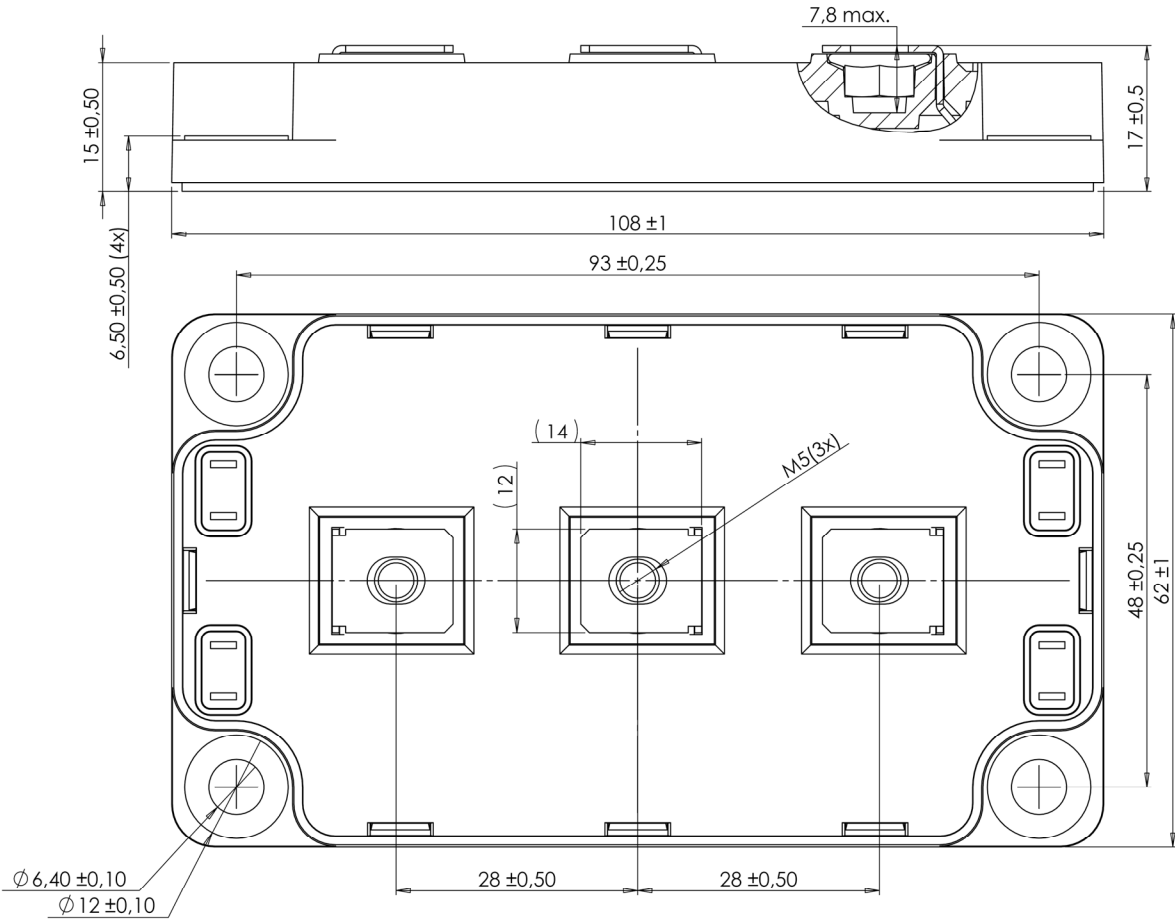
**Thermal and package characteristics**

Symbol	Characteristic	Min	Typ	Max	Unit	
$R_{thJC}$	Junction to Case Thermal Resistance			0.14	$^\circ\text{C}/\text{W}$	
$V_{ISOL}$	RMS Isolation Voltage, any terminal to case $t = 1\text{ min}, 50/60\text{Hz}$	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	M6	3	5	N.m
		For terminals	M5	2	3.5	
Wt	Package Weight			300	g	

## Typical Performance Curve



**SP6 Package outline** (dimensions in mm)



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