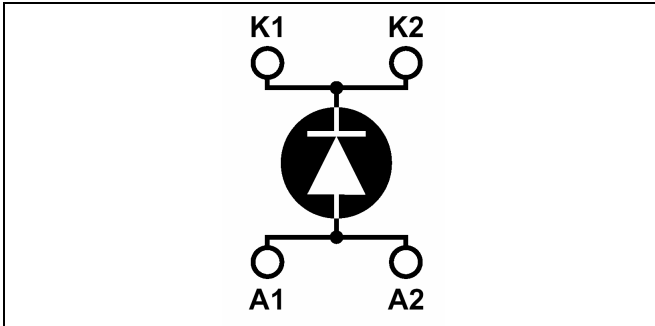


Single diode Power Module

$V_{CES} = 600V$
 $I_C = 450A @ T_c = 80^\circ C$

Application

- Anti-Parallel diode
 - Switchmode Power Supply
 - Inverters
- Snubber diode
- Uninterruptible Power Supply (UPS)
- Induction heating
- Welding equipment
- High speed rectifiers
- Electric vehicles

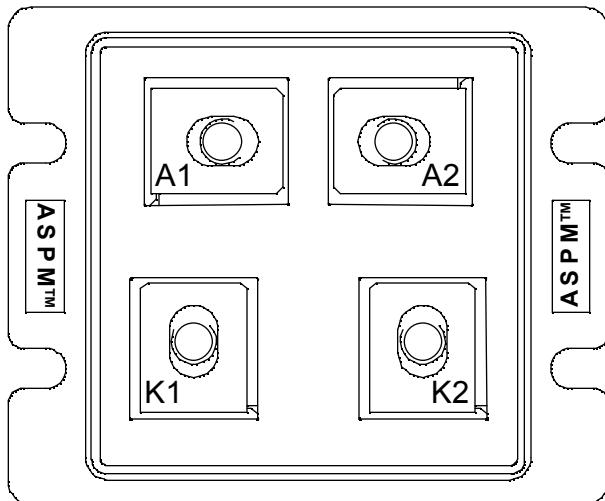


Features

- Ultra fast recovery times
- Soft recovery characteristics
- Very low stray inductance
- High blocking voltage
- High current
- Low leakage current

Benefits

- 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	600	V
V_{RRM}	Maximum Peak Repetitive Reverse Voltage	600	V
$I_{F(AV)}$	Maximum Average Forward Current	Duty cycle = 50%	A
		$T_c = 25^\circ C$	
		$T_c = 80^\circ C$	450
$I_{F(RMS)}$	RMS Forward Current	850	A
I_{FSM}	Non-Repetitive Forward Surge Current	$T_j = 25^\circ C$	5000

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	$I_F = 500\text{A}$			1.4	1.8	V
		$I_F = 1000\text{A}$			1.7		
		$I_F = 500\text{A}$	$T_j = 150^\circ\text{C}$			1.5	
I_{RM}	Maximum Reverse Leakage Current	$V_R = 600\text{V}$	$T_j = 25^\circ\text{C}$			2500	μA
			$T_j = 150^\circ\text{C}$			5000	
C_T	Junction Capacitance	$V_R = 200\text{V}$			825		pF

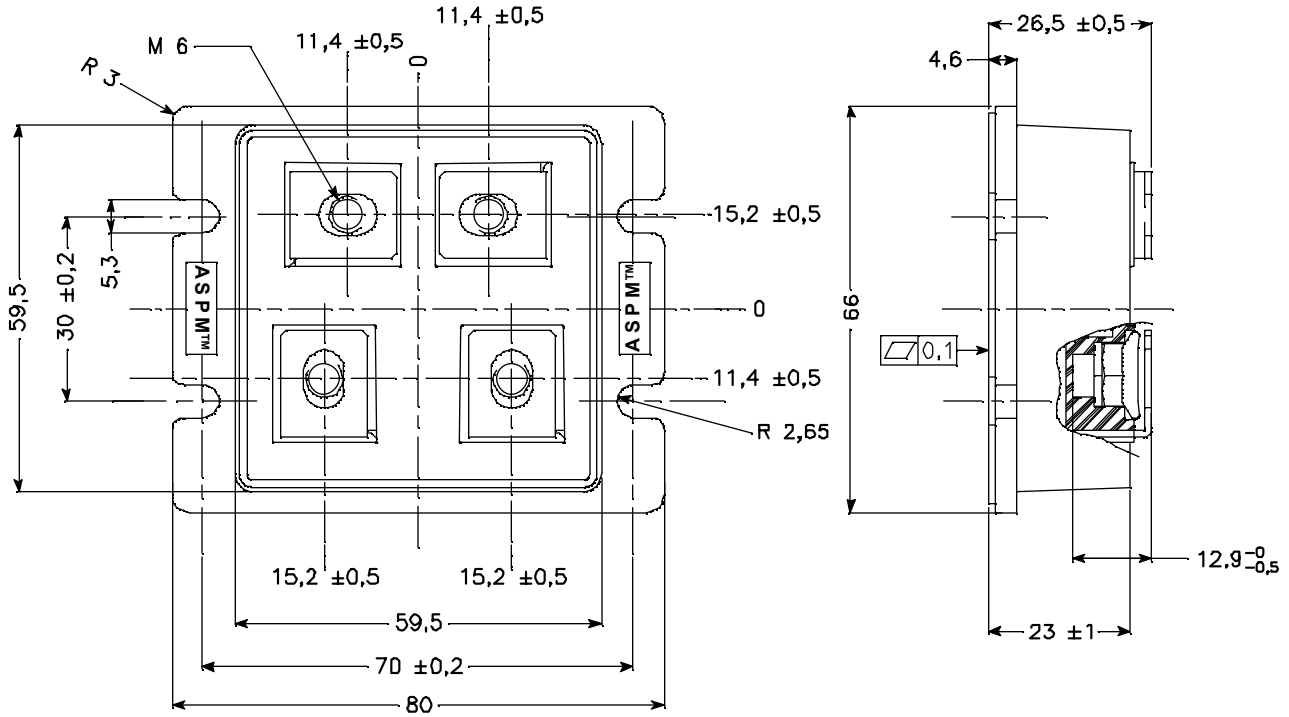
Dynamic Characteristics

Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit
t_{rr1}	Reverse Recovery Time	$I_F = 1\text{A}, V_R = 30\text{V}$ $di/dt = 15\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		60	75	ns
t_{rr2}			$T_j = 25^\circ\text{C}$		90	115	
t_{rr3}			$T_j = 100^\circ\text{C}$		135	255	
t_{fr1}	Forward Recovery Time	$I_F = 500\text{A}$ $V_R = 350\text{V}$ $di/dt = 1000\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		135		ns
t_{fr2}			$T_j = 100^\circ\text{C}$		135		
I_{RRM1}	Reverse Recovery Current		$T_j = 25^\circ\text{C}$		35	50	A
I_{RRM2}			$T_j = 100^\circ\text{C}$		55	70	
Q_{rr1}	Reverse Recovery Charge		$T_j = 25^\circ\text{C}$		1575	2875	nC
Q_{rr2}			$T_j = 100^\circ\text{C}$		3715	8925	
V_{fr1}	Forward Recovery Voltage		$T_j = 25^\circ\text{C}$		23		V
V_{fr2}			$T_j = 100^\circ\text{C}$		23		
d_{IM}/dt	Rate of Fall of Recovery Current		$T_j = 25^\circ\text{C}$		600		$\text{A}/\mu\text{s}$
			$T_j = 100^\circ\text{C}$		400		

Thermal and package characteristics

Symbol	Characteristic	Min	Typ	Max	Unit	
R_{thJC}	Junction to Case Thermal Resistance			0.08	$^\circ\text{C}/\text{W}$	
V_{ISOL}	RMS Isolation Voltage, any terminal to case $t = 1\text{ min}, I_{isol} < 1\text{mA}, 50/60\text{Hz}$	2500			V	
T_j	Operating junction temperature range	-40		150	$^\circ\text{C}$	
T_{STG}	Storage Temperature Range	-40		125		
T_C	Operating Case Temperature	-40		100		
Torque	Mounting torque	To heatsink	M5	2.5	3.5	N.m
		For terminals	M6	3	4	
Wt	Package Weight			250	g	

LP4 Package outline (dimensions in mm)



Microsemi reserves the right to change, without notice, the specifications and information contained herein

Microsemi's products are covered by one or more of U.S. patents 4,895,810 5,045,903 5,089,434 5,182,234 5,019,522 5,262,336 6,503,786 5,256,583 4,748,103 5,283,202 5,231,474 5,434,095 5,528,058 and foreign patents. U.S. and Foreign patents pending. All Rights Reserved.