



APTDF450U60G

Single diode Power Module

$$V_{CES} = 600V$$

$$I_C = 450A @ T_c = 80^{\circ}C$$

Application

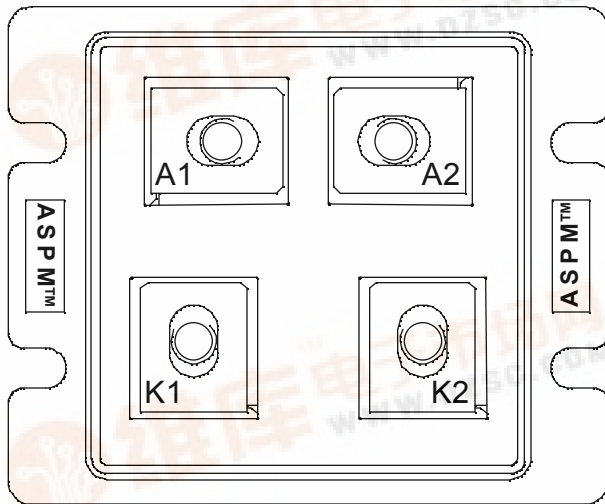
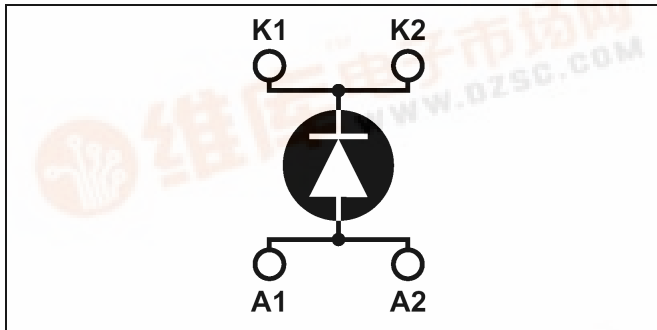
- Anti-Parallel diode
 - Switchmode Power Supply
 - Inverters
- Snubber diode
- Uninterruptible Power Supply (UPS)
- Induction heating
- Welding equipment
- High speed rectifiers
- Electric vehicles

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		
$I_{F(AV)}$	Maximum Average Forward Current	500	A
	Duty cycle = 50%	450	
$I_{F(RMS)}$	RMS Forward Current	850	
I_{FSM}	Non-Repetitive Forward Surge Current	5000	
		$T_j = 25^{\circ}C$	

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

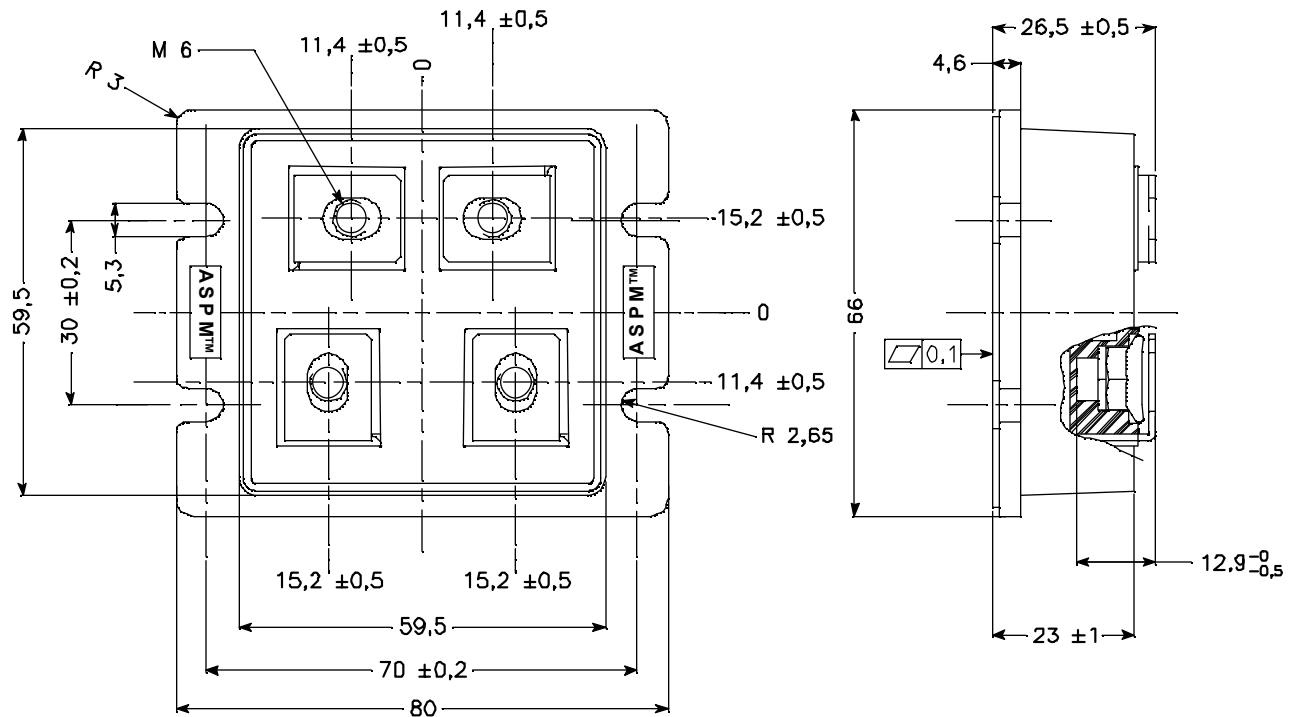
Dynamic Characteristics

Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit
t _{rr1}	Reverse Recovery Time	I _F =1 A, V _R =30 V di/dt = 15 A/μs	T _j = 25°C		60	75	ns
t _{rr2}			T _j = 25°C		90	115	
t _{rr3}			T _j = 100°C		135	255	
t _{fr1}	Forward Recovery Time	I _F = 500 A V _R = 350 V di/dt=1000 A/μs	T _j = 25°C		135		ns
t _{fr2}			T _j = 100°C		135		
I _{RRM1}	Reverse Recovery Current		T _j = 25°C		35	50	A
I _{RRM2}			T _j = 100°C		55	70	
Q _{rr1}	Reverse Recovery Charge		T _j = 25°C		1575	2875	nC
Q _{rr2}			T _j = 100°C		3715	8925	
V _{fr1}	Forward Recovery Voltage		T _j = 25°C		23		V
V _{fr2}			T _j = 100°C		23		
d _I M/dt	Rate of Fall of Recovery Current		T _j = 25°C		600		A/μs
			T _j = 100°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)



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