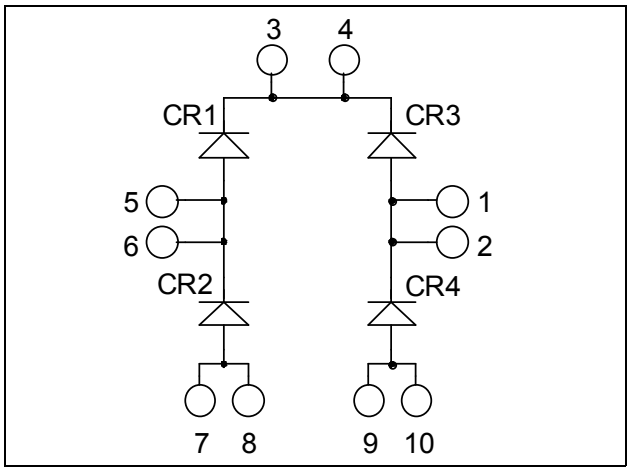
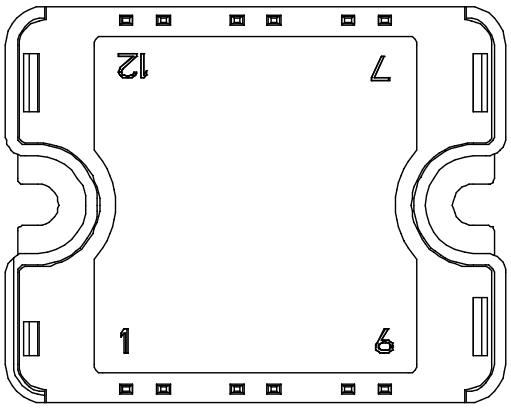
APTDF30H601G

Fast Diode Full Bridge Power Module

V_{RRM} = 600V
I_C = 30A @ Tc = 90°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%	T_C = 25°C	42	A
			T_C = 90°C	30	
I_{FSM}	Non-Repetitive Forward Surge Current	8.3ms	T_J = 45°C	250	

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°C unless otherwise specified

Electrical Characteristics

Symbol	*Characteristic*	*Test Conditions*		*Min*	*Typ*	*Max*	*Unit*
V_F	Diode Forward Voltage	I_F = 30A			1.8	2.2	V
		I_F = 60A			2.2		
		I_F = 30A	T_j = 125°C		1.5		
I_{RM}	Maximum Reverse Leakage Current	V_R = 600V	T_j = 25°C			250	µA
			T_j = 125°C			500	
C_T	Junction Capacitance	V_R = 200V			36		pF

Dynamic Characteristics

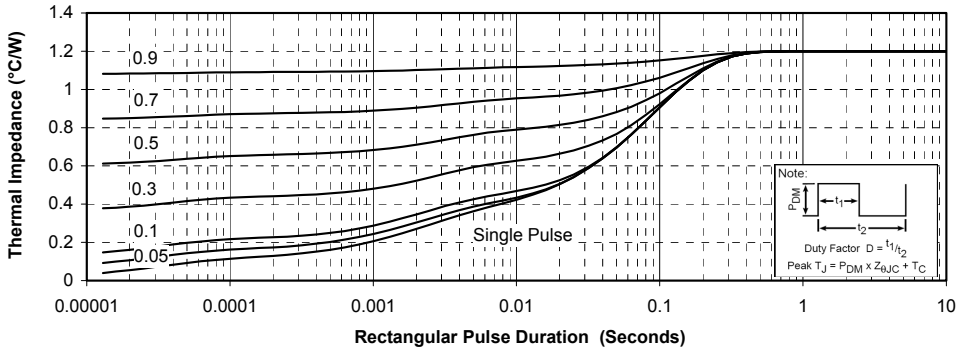
Symbol	*Characteristic*	*Test Conditions*		*Min*	*Typ*	*Max*	*Unit*
t_{rr}	Reverse Recovery Time	I_F = 30A V_R = 400V di/dt = 200A/µs	T_j = 25°C		25		ns
			T_j = 125°C		160		
Q_{rr}	Reverse Recovery Charge		T_j = 25°C		35		nC
			T_j = 125°C		480		
I_{RRM}	Reverse Recovery Current		T_j = 25°C		3		A
			T_j = 125°C		6		
t_{rr}	Reverse Recovery Time	I_F = 30A V_R = 400V di/dt=1000A/µs	T_j = 125°C		85		ns
Q_{rr}	Reverse Recovery Charge				920		nC
I_{RRM}	Reverse Recovery Current				20		A

Thermal and package characteristics

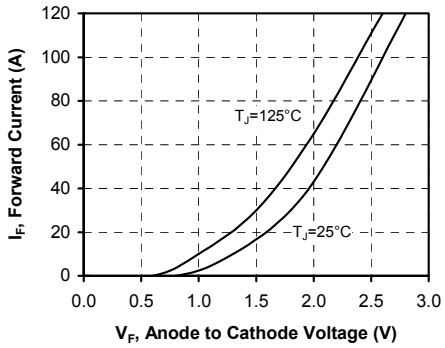
Symbol	*Characteristic*			*Min*	*Typ*	*Max*	*Unit*
R_{thJC}	Junction to Case Thermal Resistance					1.2	°C/W
V_{ISOL}	RMS Isolation Voltage, any terminal to case t =1 min, 50/60Hz			4000			V
T_J	Operating junction temperature range			-40		175	°C
T_{STG}	Storage Temperature Range			-40		125	
T_C	Operating Case Temperature			-40		100	
Torque	Mounting torque	To heatsink	M4	2		3	N.m
Wt	Package Weight					80	g

Typical Performance Curve

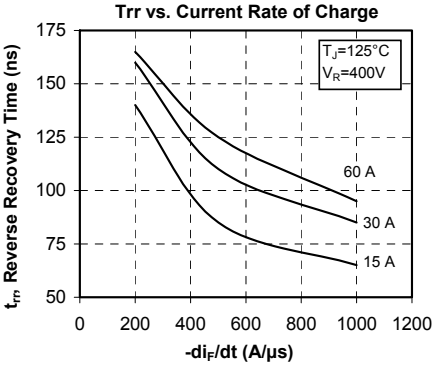
Maximum Effective Transient Thermal Impedance, Junction to Case vs Pulse Duration



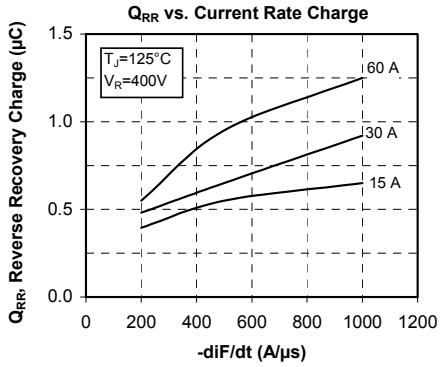
Forward Current vs Forward Voltage



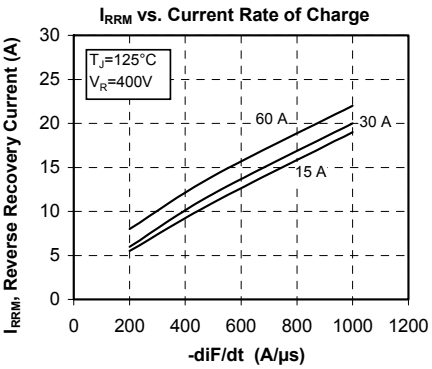
Trr vs. Current Rate of Charge



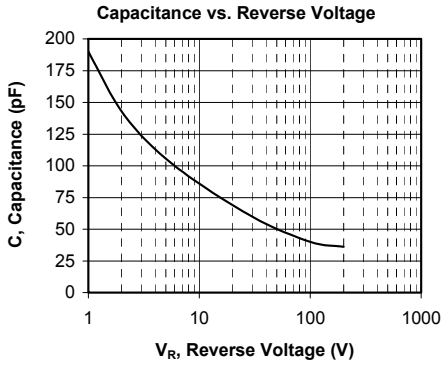
QRR vs. Current Rate Charge



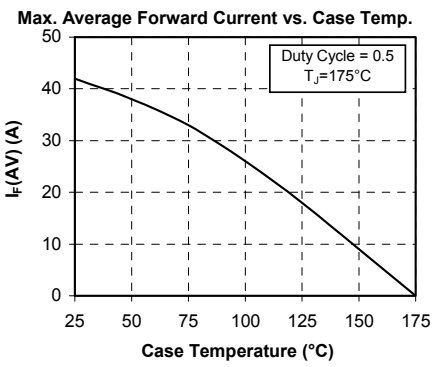
IRRM vs. Current Rate of Charge



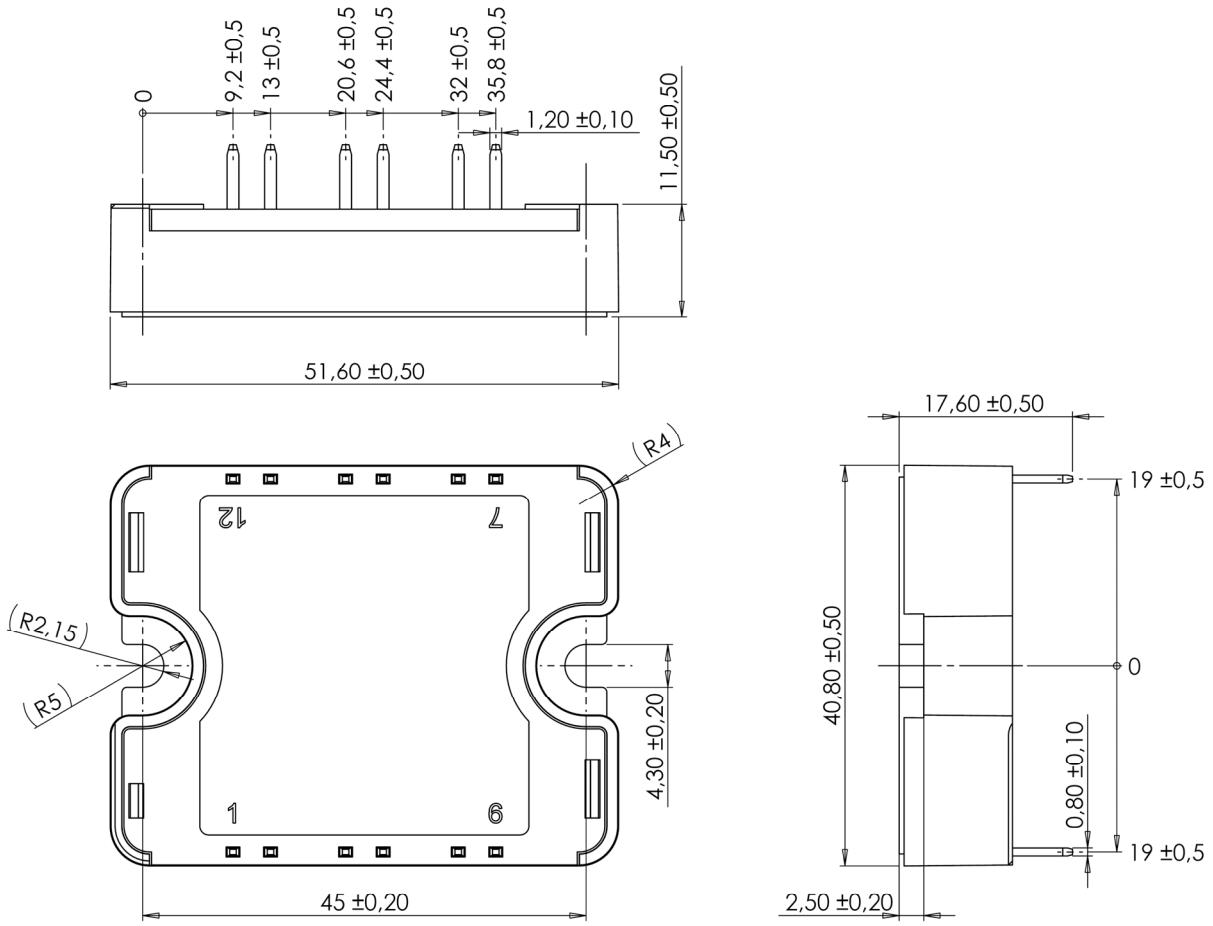
Capacitance vs. Reverse Voltage



Max. Average Forward Current vs. Case Temp.



SP1 Package outline (dimensions in mm)



See application note 1904 - Mounting Instructions for SP1 Power Modules on www.microsemi.com

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