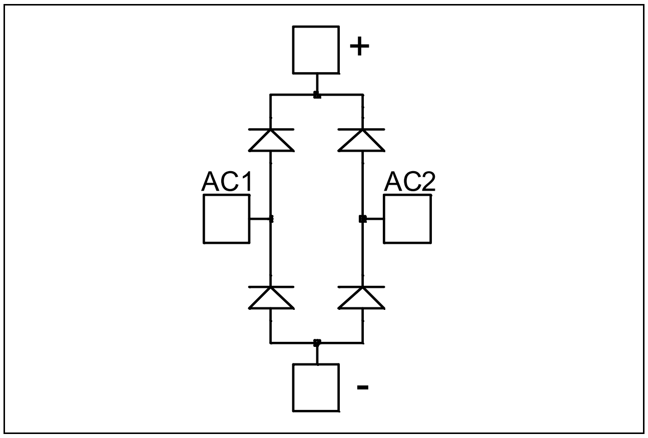
POWER PRODUCTS GROUP

APTDF100H60G

Diode Full Bridge Power Module

V_{RRM} = 600V
I_C = 100A @ Tc = 80°C

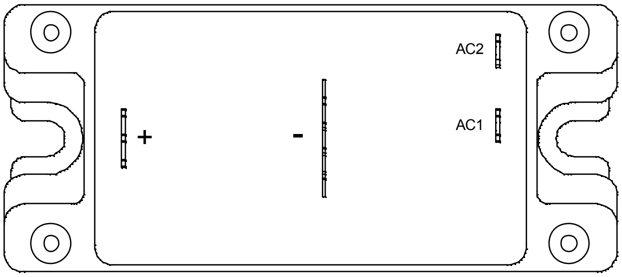


Application

- 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
  - Symmetrical design
  - Lead frames for power connections
- 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	135	A
			T_C = 80°C	100	
$I_{F(RMS)}$	RMS Forward Current	Duty cycle = 50%	T_C = 45°C	135	
I_{FSM}	Non-Repetitive Forward Surge Current	8.3ms	T_C = 45°C	500	

CAUTION: These Devices are sensitive to Electrostatic Discharge. Proper Handing 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	$I_F = 100A$			1.6	2.0	V
		$I_F = 200A$			2.0		
		$I_F = 100A$	$T_j = 125°C$		1.3		
I_{RM}	Maximum Reverse Leakage Current	$V_R = 600V$	$T_j = 25°C$			250	µA
			$T_j = 125°C$			500	
C_T	Junction Capacitance	$V_R = 600V$			190		pF

Dynamic Characteristics

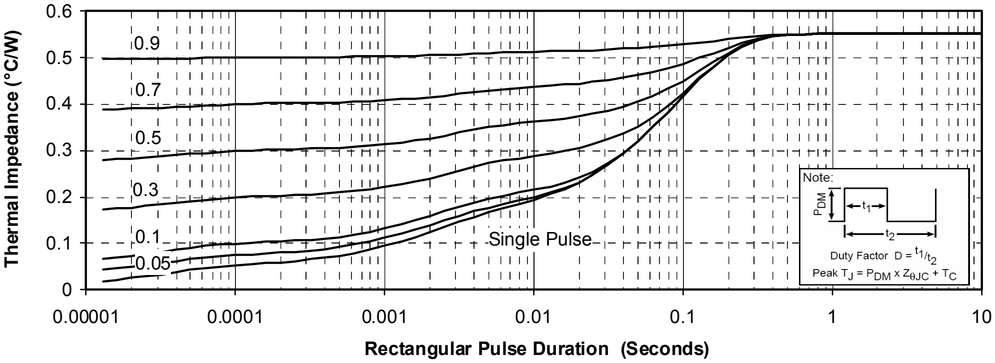
Symbol	*Characteristic*	*Test Conditions*		*Min*	*Typ*	*Max*	*Unit*
t_{rr}	Reverse Recovery Time	$I_F=1A, V_R=30V$ $di/dt = 100A/µs$	$T_j = 25°C$		34		ns
t_{rr}	Reverse Recovery Time	$I_F = 100A$ $V_R = 400V$ $di/dt = 200A/µs$	$T_j = 25°C$		160		ns
			$T_j = 125°C$		220		
Q_{rr}	Reverse Recovery Charge		$T_j = 25°C$		290		nC
			$T_j = 125°C$		1530		
I_{RRM}	Reverse Recovery Current		$T_j = 25°C$		5		A
			$T_j = 125°C$		13		
t_{rr}	Reverse Recovery Time	$I_F = 100A$ $V_R = 400V$ $di/dt=1000A/µs$	$T_j = 125°C$		100		ns
Q_{rr}	Reverse Recovery Charge				2890		nC
I_{RRM}	Reverse Recovery Current				44		A

Thermal and package characteristics

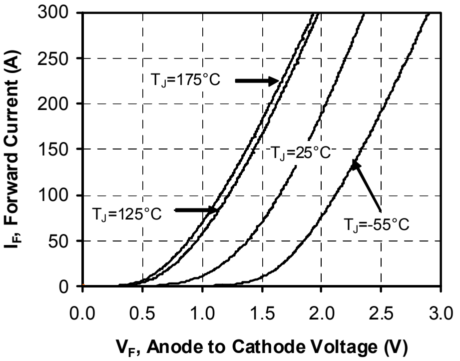
Symbol	*Characteristic*			*Min*	*Typ*	*Max*	*Unit*
R_{thJC}	Junction to Case Thermal Resistance					0.55	°C/W
V_{ISOL}	RMS Isolation Voltage, any terminal to case t =1 min, I isol<1mA, 50/60Hz			2500			V
T_J	Operating junction temperature range			-40		175	°C
T_{STG}	Storage Temperature Range			-40		125	
T_C	Operating Case Temperature			-40		100	
Torque	Mounting torque	To Heatsink	M5	2.5		4.7	N.m
Wt	Package Weight					160	g

Typical Performance Curve

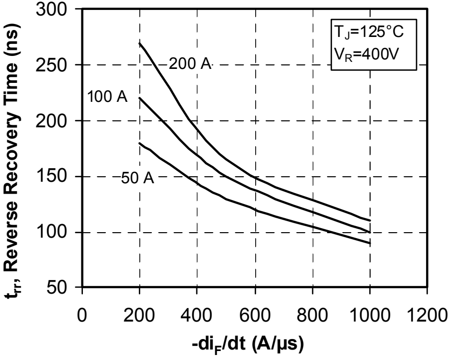
Maximum Effective Transient Thermal Impedance, Junction to Case vs Pulse Duration



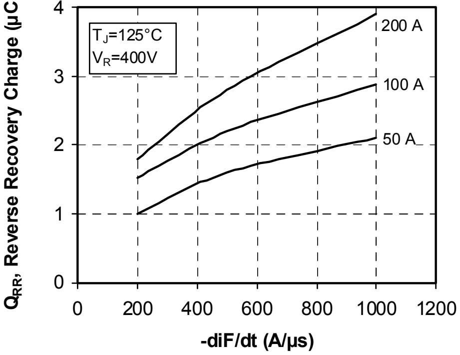
Forward Current vs Forward Voltage



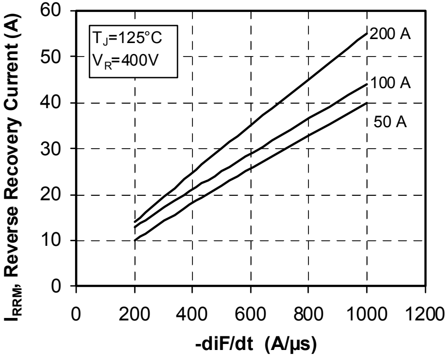
Trr vs. Current Rate of Charge



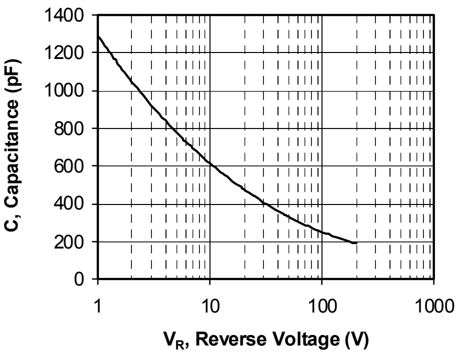
Q_{RR} vs. Current Rate Charge



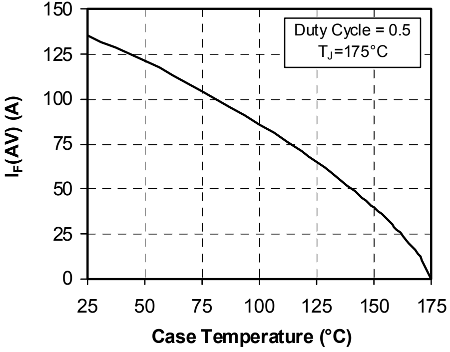
I_{RRM} vs. Current Rate of Charge



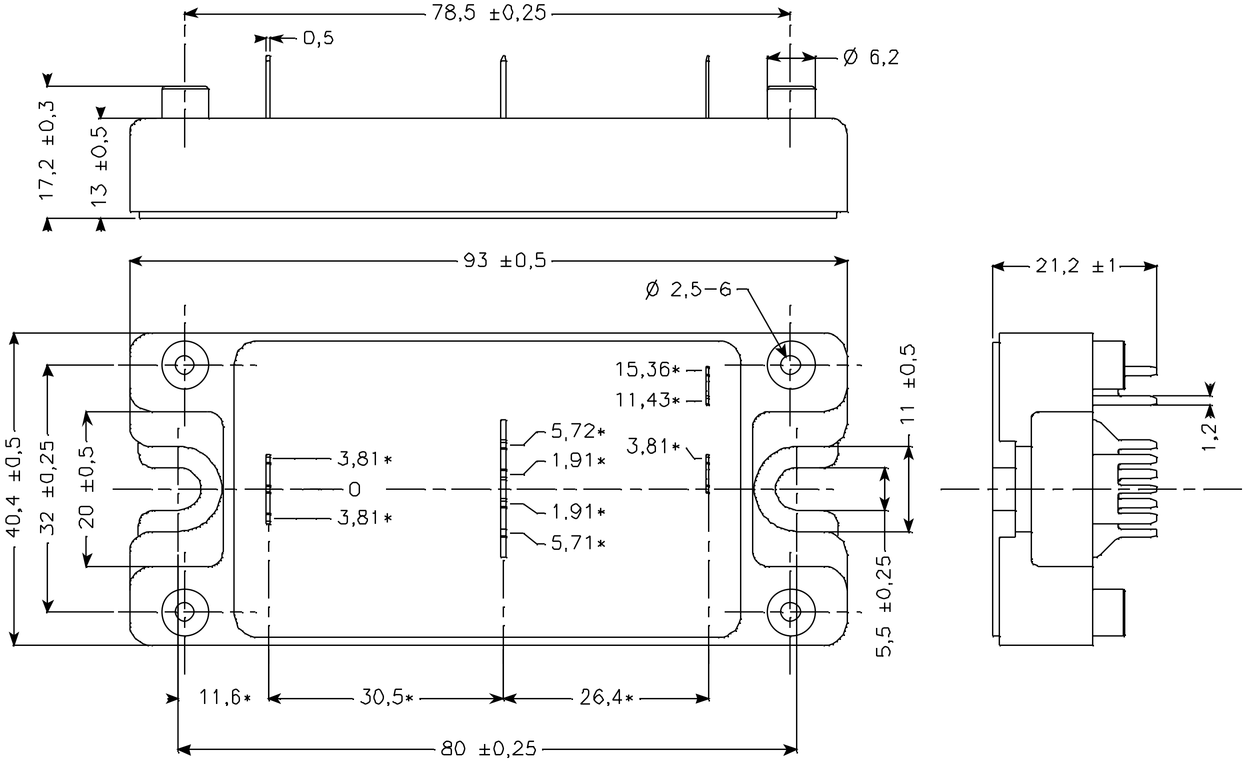
Capacitance vs. Reverse Voltage



Max. Average Forward Current vs. Case Temp.



SP4 Package outline (dimensions in mm)



ALL DIMENSIONS MARKED " * " ARE TOLERENCED AS : ⌖ Ø1