



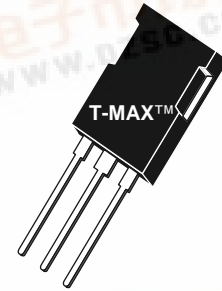
APT6011B2VFR

600V 49A 0.110Ω

POWER MOS V[®]

FREDFET

Power MOS V[®] is a new generation of high voltage N-Channel enhancement mode power MOSFETs. This new technology minimizes the JFET effect, increases packing density and reduces the on-resistance. Power MOS V[®] also achieves faster switching speeds through optimized gate layout.



- Fast Recovery Body Diode
- Lower Leakage
- Popular T-MAX[™] Package
- 100% Avalanche Tested
- Faster Switching

MAXIMUM RATINGS

All Ratings: T_C = 25°C unless otherwise specified.

Symbol	Parameter	APT6011B2VFR	UNIT
V _{DSS}	Drain-Source Voltage	600	Volts
I _D	Continuous Drain Current @ T _C = 25°C	49	Amps
I _{DM}	Pulsed Drain Current ^①	196	
V _{GS}	Gate-Source Voltage Continuous	±30	Volts
V _{GSM}	Gate-Source Voltage Transient	±40	
P _D	Total Power Dissipation @ T _C = 25°C	625	Watts
	Linear Derating Factor	5.0	
T _J , T _{STG}	Operating and Storage Junction Temperature Range	-55 to 150	°C
T _L	Lead Temperature: 0.063" from Case for 10 Sec.	300	
I _{AR}	Avalanche Current ^① (Repetitive and Non-Repetitive)	49	Amps
E _{AR}	Repetitive Avalanche Energy ^①	50	mJ
E _{AS}	Single Pulse Avalanche Energy ^④	3000	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
BV _{DSS}	Drain-Source Breakdown Voltage (V _{GS} = 0V, I _D = 250μA)	600			Volts
I _{D(on)}	On State Drain Current ^② (V _{DS} > I _{D(on)} × R _{DS(on)} Max, V _{GS} = 10V)	49			Amps
R _{DS(on)}	Drain-Source On-State Resistance ^② (V _{GS} = 10V, 0.5 I _{D(Cont.)})			0.110	Ohms
I _{DSS}	Zero Gate Voltage Drain Current (V _{DS} = V _{DSS} , V _{GS} = 0V)			250	μA
	Zero Gate Voltage Drain Current (V _{DS} = 0.8 V _{DSS} , V _{GS} = 0V, T _C = 125°C)			1000	
I _{GSS}	Gate-Source Leakage Current (V _{GS} = ±30V, V _{DS} = 0V)			±100	nA
V _{GS(th)}	Gate Threshold Voltage (V _{DS} = V _{GS} , I _D = 2.5mA)	2		4	Volts

CAUTION: These Devices are Sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed.

APT Website - <http://www.advancedpower.com>

DYNAMIC CHARACTERISTICS

APT6011B2VFR

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
C _{ISS}	Input Capacitance	V _{GS} = 0V		8310		pF
C _{OSS}	Output Capacitance	V _{DS} = 25V		990		
C _{RSS}	Reverse Transfer Capacitance	f = 1 MHz		390		
Q _g	Total Gate Charge ③	V _{GS} = 10V		370		nC
Q _{gs}	Gate-Source Charge	V _{DD} = 0.5 V _{DSS}		51		
Q _{gd}	Gate-Drain ("Miller") Charge	I _D = I _D [Cont.] @ 25°C		156		
t _{d(on)}	Turn-on Delay Time	V _{GS} = 15V		17		ns
t _r	Rise Time	V _{DD} = 0.5 V _{DSS}		16		
t _{d(off)}	Turn-off Delay Time	I _D = I _D [Cont.] @ 25°C		63		
t _f	Fall Time	R _G = 0.6Ω		6		

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
I _S	Continuous Source Current (Body Diode)			49	Amps
I _{SM}	Pulsed Source Current ① (Body Diode)			196	
V _{SD}	Diode Forward Voltage ② (V _{GS} = 0V, I _S = -I _D [Cont.])			1.3	Volts
dv/dt	Peak Diode Recovery dv/dt ⑤			5	V/ns
t _{rr}	Reverse Recovery Time (I _S = -I _D [Cont.], di/dt = 100A/μs)	T _j = 25°C		300	ns
		T _j = 125°C		600	
Q _{rr}	Reverse Recovery Charge (I _S = -I _D [Cont.], di/dt = 100A/μs)	T _j = 25°C	2.0		μC
		T _j = 125°C	6.8		
I _{RRM}	Peak Recovery Current (I _S = -I _D [Cont.], di/dt = 100A/μs)	T _j = 25°C	15		Amps
		T _j = 125°C	27		

THERMAL CHARACTERISTICS

Symbol	Characteristic	MIN	TYP	MAX	UNIT
R _{θJC}	Junction to Case			0.20	°C/W
R _{θJA}	Junction to Ambient			40	

① Repetitive Rating: Pulse width limited by maximum junction temperature.

② Pulse Test: Pulse width < 380 μs, Duty Cycle < 2%

③ See MIL-STD-750 Method 3471

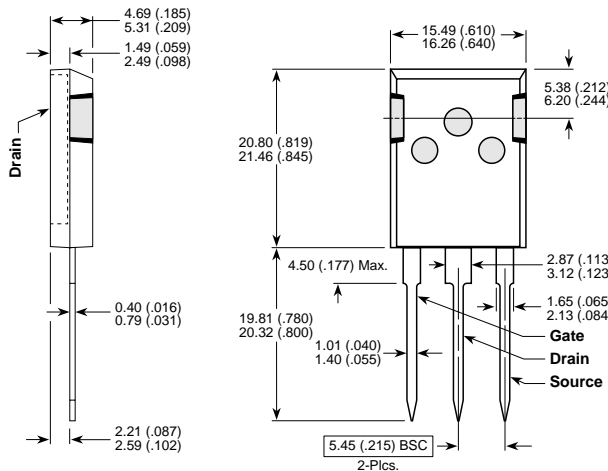
④ Starting T_j = +25°C, L = 2.49mH, R_G = 25Ω, Peak I_L = 49A

⑤ I_S ≤ I_D [Cont.], di/dt = 100A/μs, T_j ≤ 150°C, R_G = 2.0Ω, V_R = 200V.

APT Reserves the right to change, without notice, the specifications and information contained herein.

These dimensions are equal to the TO-247AD without mounting hole.

T-MAX™ Package Outline



Dimensions in Millimeters and (Inches)