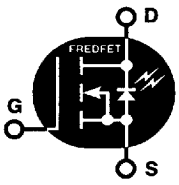

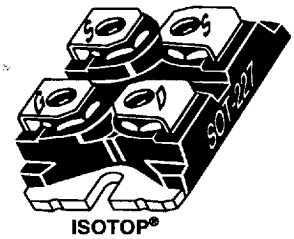

ISOTOP®

ADVANCED POWER TECHNOLOGY®

APT8030JNFR 800V 27A 0.30Ω

"UL Recognized" File No. E145592 (S)

POWER MOS IV® **AVALANCHE RATED FREDFET**

N-CHANNEL ENHANCEMENT MODE HIGH VOLTAGE POWER FREDFETS

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

Symbol	Parameter		APT8030JNFR	UNIT
V_{DSS}	Drain-Source Voltage		800	Volts
I_D	Continuous Drain Current @ T_C = 25°C		27	Amps
I_{DM}	Pulsed Drain Current ①		108	
V_{GS}	Gate-Source Voltage Continuous	±20		Volts
V_{GSM}	Gate-Source Voltage Transient	±30		
P_D	Total Power Dissipation @ T_C = 25°C	520		Watts
	Linear Derating Factor	4.16		W/°C
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)	27		Amps
E_{AR}	Repetitive Avalanche Energy ①	30		mJ
E_{AS}	Single Pulse Avalanche Energy ④	2300		

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions / Part Number		MIN	TYP	MAX	UNIT
BV_{DSS}	Drain-Source Breakdown Voltage (V_{GS} = 0V, I_D = 4.0 mA)		800			Volts
$I_{D(ON)}$	On State Drain Current ②	APT8030JNFR	27			Amps
	(V_{DS} > $I_{D(ON)}$ x $R_{DS(ON)}$ Max, V_{GS} = 10V)					
$R_{DS(ON)}$	Drain-Source On-State Resistance ②	APT8030JNFR			0.30	Ohms
	(V_{GS} = 10V, 0.5 I_D [Cont.])					
I_{DSS}	Zero Gate Voltage Drain Current (V_{DS} = V_{DSS}, V_{GS} = 0V)				4.0	mA
	Zero Gate Voltage Drain Current (V_{DS} = 0.8 V_{DSS}, V_{GS} = 0V, T_C = 125°C)				4.0	
I_{GSS}	Gate-Source Leakage Current (V_{GS} = ±20V, V_{DS} = 0V)				±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 2.5mA)		2		4	Volts

THERMAL CHARACTERISTICS

Symbol	Characteristic	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to Case			0.24	°C/W
$R_{\theta CS}$	Case to Sink (Use High Efficiency Thermal Joint Compound and Planer Heat Sink Surface.)		0.08		

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

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DYNAMIC CHARACTERISTICS

APT8030JNFR

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
C_{iss}	Input Capacitance	V_{GS} = 0V		9200	11050	pF
C_{oss}	Output Capacitance	V_{DS} = 25V		850	1190	
C_{rss}	Reverse Transfer Capacitance	f = 1 MHz		300	450	
Q_g	Total Gate Charge ③	V_{GS} = 10V		360	500	nC
Q_{gs}	Gate-Source Charge	V_{DD} = 0.5 V_{DSS}		35	50	
Q_{gd}	Gate-Drain ("Miller") Charge	I_D = I_D [Cont.] @ 25°C		150	225	
$t_{d(on)}$	Turn-on Delay Time	V_{GS} = 15V		20	30	ns
t_r	Rise Time	V_{DD} = 0.5 V_{DSS}		15	25	
$t_{d(off)}$	Turn-off Delay Time	I_D = I_D [Cont.] @ 25°C		72	140	
t_f	Fall Time	R_G = 0.6Ω		15	25	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic / Test Conditions		MIN	TYP	MAX	UNIT
I_S	Continuous Source Current (Body Diode)	**APT8030JNFR**			27	Amps
I_{SM}	Pulsed Source Current ① (Body Diode)	**APT8030JNFR**			108	
V_{SD}	Diode Forward Voltage ② (V_{GS} = 0V, I_S = -I_D [Cont.])				1.8	Volts
dv/dt	Peak Diode Recovery dv/dt ④				5	V/ns
t_{rr}	Reverse Recovery Time (I_S = -I_D [Cont.], di/dt = 100A/µs)	T_j = 25°C		250	315	ns
		T_j = 125°C		500	645	
Q_{rr}	Reverse Recovery Charge (I_S = -I_D [Cont.], di/dt = 100A/µs)	T_j = 25°C		2.2		µC
		T_j = 125°C		7.9		
I_{RRM}	Peak Recovery Current (I_S = -I_D [Cont.], di/dt = 100A/µs)	T_j = 25°C		16		Amps
		T_j = 125°C		28		

PACKAGE CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
L_D	Internal Drain Inductance (Measured From Drain Terminal to Center of Die.)		3		nH
L_S	Internal Source Inductance (Measured From Source Terminals to Source Bond Pads)		5		
$V_{Isolation}$	RMS Voltage (50-60 Hz Sinusoidal Waveform From Terminals to Mounting Base for 1 Min.)	2500			Volts
$C_{Isolation}$	Drain-to-Mounting Base Capacitance (f = 1MHz)		38		pF
Torque	Maximum Torque for Device Mounting Screws and Electrical Terminations.			13	lb•in.

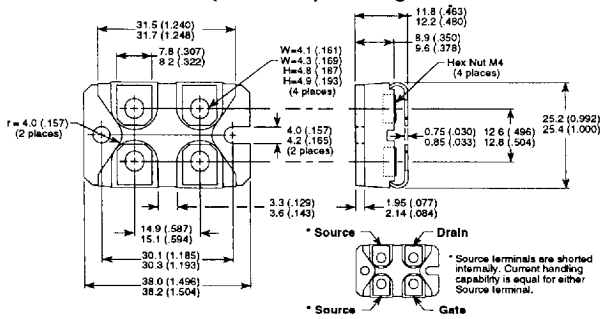
① Repetitive Rating: Pulse width limited by maximum junction temperature.

② I_S ≤ -I_D [Cont.], di/dt = 100A/µs, V_{DD} ≤ V_{DSS}, T_j ≤ 150°C, R_G = 1.8Ω, V_R = 50V.

③ Starting T_j = 25°C, L = 6.31mH, R_G = 25Ω, Peak I_L = 27A

④ Pulse Test: Pulse width < 380 µS, Duty Cycle < 2%

SOT-227 (ISOTOP®) Package Outline



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Dimensions in Millimeters and (Inches)

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