

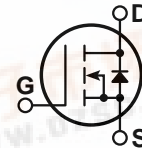
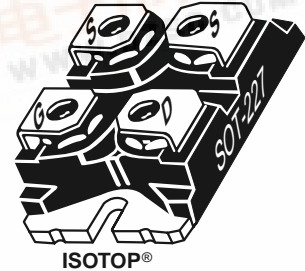


APT12031JLL

1200V 30A 0.310Ω

POWER MOS 7™

Power MOS 7™ is a new generation of low loss, high voltage, N-Channel enhancement mode power MOSFETS. Both conduction and switching losses are addressed with Power MOS 7™ by significantly lowering $R_{DS(ON)}$ and Q_g . Power MOS 7™ combines lower conduction and switching losses along with exceptionally fast switching speeds inherent with APT's patented metal gate structure.



- Lower Input Capacitance
- Lower Miller Capacitance
- Lower Gate Charge, Q_g
- Increased Power Dissipation
- Easier To Drive
- Popular SOT-227 Package

MAXIMUM RATINGS

All Ratings: $T_C = 25^\circ\text{C}$ unless otherwise specified.

Symbol	Parameter	APT12031JLL	UNIT
V_{DSS}	Drain-Source Voltage	1200	Volts
I_D	Continuous Drain Current @ $T_C = 25^\circ\text{C}$	30	Amps
I_{DM}	Pulsed Drain Current ^①	120	
V_{GS}	Gate-Source Voltage Continuous	± 30	Volts
V_{GSM}	Gate-Source Voltage Transient	± 40	
P_D	Total Power Dissipation @ $T_C = 25^\circ\text{C}$	690	Watts
	Linear Derating Factor	5.52	
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to 150	$^\circ\text{C}$
T_L	Lead Temperature: 0.063" from Case for 10 Sec.	300	
I_{AR}	Avalanche Current ^① (Repetitive and Non-Repetitive)	30	Amps
E_{AR}	Repetitive Avalanche Energy ^①	50	mJ
E_{AS}	Single Pulse Avalanche Energy ^④	3600	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
BV_{DSS}	Drain-Source Breakdown Voltage ($V_{GS} = 0V, I_D = 250\mu\text{A}$)	1200			Volts
$I_{D(on)}$	On State Drain Current ^② ($V_{DS} > I_{D(on)} \times R_{DS(on)}$ Max, $V_{GS} = 10V$)	30			Amps
$R_{DS(on)}$	Drain-Source On-State Resistance ^② ($V_{GS} = 10V, 0.5 I_{D(Cont.)}$)			0.310	Ohms
I_{DSS}	Zero Gate Voltage Drain Current ($V_{DS} = V_{DSS}, V_{GS} = 0V$)			100	μA
	Zero Gate Voltage Drain Current ($V_{DS} = 0.8 V_{DSS}, V_{GS} = 0V, T_C = 125^\circ\text{C}$)			500	
I_{GSS}	Gate-Source Leakage Current ($V_{GS} = \pm 30V, V_{DS} = 0V$)			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage ($V_{DS} = V_{GS}, I_D = 5mA$)	3		5	Volts

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

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

DYNAMIC CHARACTERISTICS

APT12031JLL

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
C _{iss}	Input Capacitance	V _{GS} = 0V V _{DS} = 25V f = 1 MHz		11300		pF
C _{oss}	Output Capacitance			1560		
C _{rss}	Reverse Transfer Capacitance			1180		
Q _g	Total Gate Charge ③	V _{GS} = 10V V _{DD} = 0.5 V _{DSS} I _D = I _{D[Cont.]} @ 25°C		397		nC
Q _{gs}	Gate-Source Charge			48		
Q _{gd}	Gate-Drain ("Miller") Charge			237		
t _{d(on)}	Turn-on Delay Time	V _{GS} = 15V V _{DD} = 0.5 V _{DSS} I _D = I _{D[Cont.]} @ 25°C R _G = 0.6Ω		23		ns
t _r	Rise Time			16		
t _{d(off)}	Turn-off Delay Time			79		
t _f	Fall Time			30		

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

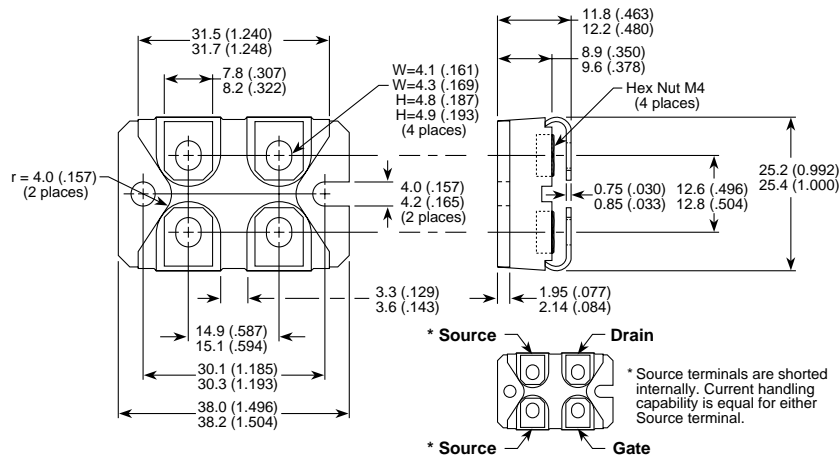
Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
I _S	Continuous Source Current (Body Diode)			30	Amps
I _{SM}	Pulsed Source Current ① (Body Diode)			120	
V _{SD}	Diode Forward Voltage ② (V _{GS} = 0V, I _S = -I _{D[Cont.]})			1.3	Volts
t _{rr}	Reverse Recovery Time (I _S = -I _{D[Cont.]} , di _S /dt = 100A/μs)		1400		ns
Q _{rr}	Reverse Recovery Charge (I _S = -I _{D[Cont.]} , di _S /dt = 100A/μs)		38.0		μC
dv/dt	Peak Diode Recovery dv/dt ⑤			10	V/ns

THERMAL CHARACTERISTICS

Symbol	Characteristic	MIN	TYP	MAX	UNIT
R _{θJC}	Junction to Case			0.18	°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 = 8.0mH, R_G = 25Ω, Peak I_L = 30A
 - ⑤ dv/dt numbers reflect the limitations of the test circuit rather than the device itself. I_S ≤ -I_{D[Cont.]} di/dt ≤ 700A/μs V_R ≤ V_{DSS} T_J ≤ 150°C
- APT Reserves the right to change, without notice, the specifications and information contained herein.**

SOT-227 (ISOTOP®) Package Outline



Dimensions in Millimeters and (Inches)