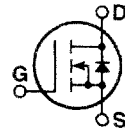


POWER MOS V™

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.



- Faster Switching
- Lower Leakage
- 100% Avalanche Tested
- Surface Mount D³PAK Package


MAXIMUM RATINGS

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

Symbol	Parameter	APT5027SVR	UNIT
V_{DSS}	Drain-Source Voltage	500	Volts
I_D	Continuous Drain Current @ $T_C = 25^\circ\text{C}$	20	Amps
I_{DM}	Pulsed Drain Current ①	80	
V_{GS}	Gate-Source Voltage Continuous	± 30	Volts
V_{GSM}	Gate-Source Voltage Transient	± 40	
P_D	Total Power Dissipation @ $T_C = 25^\circ\text{C}$	250	Watts
	Linear Derating Factor	2	W/ $^\circ\text{C}$
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)	20	Amps
E_{AR}	Repetitive Avalanche Energy ①	30	mJ
E_{AS}	Single Pulse Avalanche Energy ④	960	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
BV_{DSS}	Drain-Source Breakdown Voltage ($V_{GS} = 0V, I_D = 250\mu\text{A}$)	500			Volts
$I_{D(on)}$	On State Drain Current ② ($V_{DS} > I_{D(on)} \times R_{DS(on)}$ Max, $V_{GS} = 10V$)	20			Amps
$R_{DS(on)}$	Drain-Source On-State Resistance ② ($V_{GS} = 10V, 0.5 I_{D(Cont.)}$)			0.27	Ohms
I_{DSS}	Zero Gate Voltage Drain Current ($V_{DS} = V_{DSS}, V_{GS} = 0V$)			25	μA
	Zero Gate Voltage Drain Current ($V_{DS} = 0.8 V_{DSS}, V_{GS} = 0V, T_C = 125^\circ\text{C}$)			250	
I_{GSS}	Gate-Source Leakage Current ($V_{GS} = \pm 30V, V_{DS} = 0V$)			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage ($V_{DS} = V_{GS}, I_D = 1.0mA$)	2		4	Volts

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

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DYNAMIC CHARACTERISTICS

APT5027SVR

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
C_{iss}	Input Capacitance	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1\text{ MHz}$		2600		pF
C_{oss}	Output Capacitance			362		
C_{rss}	Reverse Transfer Capacitance			145		
Q_g	Total Gate Charge ③	$V_{GS} = 10V$ $V_{DD} = 0.5 V_{DSS}$ $I_D = I_{D(Cont.)}$ @ 25°C		120		nC
Q_{gs}	Gate-Source Charge			13		
Q_{gd}	Gate-Drain ("Miller") Charge			48		
$t_{d(on)}$	Turn-on Delay Time	$V_{GS} = 15V$ $V_{DD} = 0.5 V_{DSS}$ $I_D = I_{D(Cont.)}$ @ 25°C $R_G = 1.6\Omega$		14		ns
t_r	Rise Time			15		
$t_{d(off)}$	Turn-off Delay Time			40		
t_f	Fall Time			6		

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
I_S	Continuous Source Current (Body Diode)			20	Amps
I_{SM}	Pulsed Source Current ① (Body Diode)			80	
V_{SD}	Diode Forward Voltage ② ($V_{GS} = 0V, I_S = -I_{D(Cont.)}$)			1.3	Volts
t_{rr}	Reverse Recovery Time ($I_S = -I_{D(Cont.)}, di_S/dt = 100A/\mu s$)		410		ns
Q_{rr}	Reverse Recovery Charge ($I_S = -I_{D(Cont.)}, di_S/dt = 100A/\mu s$)		6.5		μC

THERMAL CHARACTERISTICS

Symbol	Characteristic	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to Case			0.50	°C/W
$R_{\theta JA}$	Junction to Ambient			40	

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

③ See MIL-STD-750 Method 3471

④ Starting $T_j = +25^\circ C$, $L = 4.8mH$, $R_G = 25\Omega$, Peak $I_L = 20A$

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

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

D³PAK Package Outline

