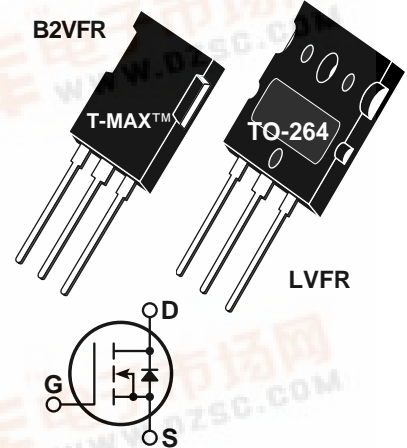




APT10040B2VFR APT10040LVFR

1000V 25A 0.400Ω

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.

- Identical Specifications: T-MAX™ or TO-264 Package
- Lower Leakage
- Fast Recovery Body Diode
- Faster Switching
- 100% Avalanche Tested

MAXIMUM RATINGS

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

Symbol	Parameter	APT10040	UNIT
V _{DSS}	Drain-Source Voltage	1000	Volts
I _D	Continuous Drain Current @ T _C = 25°C	25	Amps
I _{DM}	Pulsed Drain Current ^①	100	
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)	33	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)	1000			Volts
I _{D(on)}	On State Drain Current ^② (V _{DS} > I _{D(on)} × R _{DS(on)} Max, V _{GS} = 10V)	25			Amps
R _{DS(on)}	Drain-Source On-State Resistance ^② (V _{GS} = 10V, 0.5 I _{D(Cont.)})			0.40	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

APT10040 B2VFR - LVFR

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
C_{iss}	Input Capacitance	$V_{GS} = 0V$		7700		pF
C_{oss}	Output Capacitance	$V_{DS} = 25V$		690		
C_{rss}	Reverse Transfer Capacitance	$f = 1\text{ MHz}$		330		
Q_g	Total Gate Charge ^③	$V_{GS} = 10V$		380		nC
Q_{gs}	Gate-Source Charge	$V_{DD} = 0.5 V_{DSS}$		33		
Q_{gd}	Gate-Drain ("Miller") Charge	$I_D = I_D [\text{Cont.}] @ 25^\circ\text{C}$		196		
$t_{d(on)}$	Turn-on Delay Time	$V_{GS} = 15V$		18		ns
t_r	Rise Time	$V_{DD} = 0.5 V_{DSS}$		14		
$t_{d(off)}$	Turn-off Delay Time	$I_D = I_D [\text{Cont.}] @ 25^\circ\text{C}$		66		
t_f	Fall Time	$R_G = 0.6\Omega$		9		

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
I_S	Continuous Source Current (Body Diode)			25	Amps
I_{SM}	Pulsed Source Current ^① (Body Diode)			100	
V_{SD}	Diode Forward Voltage ^② ($V_{GS} = 0V, I_S = -I_D [\text{Cont.}]$)			1.3	Volts
dv/dt	Peak Diode Recovery dv/dt ^⑤			5	V/ns
t_{rr}	Reverse Recovery Time ($I_S = -I_D [\text{Cont.}], di/dt = 100A/\mu s$)	$T_j = 25^\circ\text{C}$		320	ns
		$T_j = 125^\circ\text{C}$		650	
Q_{rr}	Reverse Recovery Charge ($I_S = -I_D [\text{Cont.}], di/dt = 100A/\mu s$)	$T_j = 25^\circ\text{C}$		1.9	μC
		$T_j = 125^\circ\text{C}$		5.4	
I_{RRM}	Peak Recovery Current ($I_S = -I_D [\text{Cont.}], di/dt = 100A/\mu s$)	$T_j = 25^\circ\text{C}$		13	Amps
		$T_j = 125^\circ\text{C}$		21	

THERMAL CHARACTERISTICS

Symbol	Characteristic	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to Case			0.20	$^\circ\text{C/W}$
$R_{\theta JA}$	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 $T_j = +25^\circ\text{C}$, $L = 9.60\text{mH}$, $R_G = 25\Omega$, Peak $I_L = 25A$

⑤ $I_S \leq -I_D [\text{Cont.}], di/dt = 100A/\mu s, T_j \leq 150^\circ\text{C}, R_G = 2.0\Omega, V_R = 200V$.

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

