

APT60M75JFLL

600V 58A 0.075Ω

POWER MOS 7™



Power MOS 7^{TM} 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^{TM} by significantly lowering $R_{\text{DS(ON)}}$ and Q_g . Power MOS 7^{TM} combines lower conduction and switching losses along with exceptionally fast switching speeds inherent with APT's patented metal gate structure.



• Lower Miller Capacitance

• Lower Gate Charge, Qg

Increased Power Dissipation

Easier To Drive

• Popular SOT-227 Package

• FAST RECOVERY BODY DIODE





MAXIMUM RATINGS

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

Symbol	Parameter	APT60M75JFLL	UNIT	
V _{DSS}	Drain-Source Voltage	600	Volts	
I _D	Continuous Drain Current @ T _C = 25°C	58	Amne	
I _{DM}	Pulsed Drain Current ①	232	Amps	
V_{GS}	Gate-Source Voltage Continuous	±30	Valta	
V _{GSM}	Gate-Source Voltage Transient	±40	Volts	
P _D	Total Power Dissipation @ T _C = 25°C	595	Watts	
, D	Linear Derating Factor	4.76	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 (Repetitive and Non-Repetitive)	58	Amps	
E _{AR}	Repetitive Avalanche Energy ^①	50	ml	
E _{AS}	Single Pulse Avalanche Energy ^④	3200	- mJ	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
BV _{DSS}	Drain-Source Breakdown Voltage $(V_{GS} = 0V, I_D = 250\mu\text{A})$	600			Volts
I _{D(on)}	On State Drain Current ② $(V_{DS} > I_{D(on)} \times R_{DS(on)} Max, V_{GS} = 10V)$	58			Amps
R _{DS(on)}	Drain-Source On-State Resistance ② (V _{GS} = 10V, 0.5 I _{D[Cont.]})			0.075	Ohms
I _{DSS}	Zero Gate Voltage Drain Current $(V_{DS} = V_{DSS}, V_{GS} = 0V)$			250	μΑ
	Zero Gate Voltage Drain Current $(V_{DS} = 0.8 V_{DSS}, V_{GS} = 0V, T_{C} = 125^{\circ}C)$			1000	
I _{GSS}	Gate-Source Leakage Current (V _{GS} = ±30V, V _{DS} = 0V)			±100	nA
V _{GS(th)}	Gate Threshold Voltage $(V_{DS} = V_{GS}, I_{D} = 5mA)$	3		5	Volts

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

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

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050-7100 Rev - 9-2001

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
C _{iss}	Input Capacitance	V _{GS} = 0V		9580		
C _{oss}	Output Capacitance	$V_{DS} = 25V$		1710		pF
C _{rss}	Reverse Transfer Capacitance	f = 1 MHz		108		
Q_g	Total Gate Charge ^③	V _{GS} = 10V		220		
Q_{gs}	Gate-Source Charge	$V_{DD} = 0.5 V_{DSS}$		51		nC
Q_{gd}	Gate-Drain ("Miller") Charge	$I_D = I_D [Cont.] @ 25°C$		98		
t _d (on)	Turn-on Delay Time	V _{GS} = 15V		23		
t _r	Rise Time	$V_{DD} = 0.5 V_{DSS}$		19		ns
t _d (off)	Turn-off Delay Time	I _D = I _D [Cont.] @ 25°C		53		113
t _f	Fall Time	$R_G = 0.6\Omega$		8		

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic / Test Conditions		MIN	TYP	MAX	UNIT
I _S	Continuous Source Current (Body Diode)				58	Amna
I _{SM}	Pulsed Source Current (Body Diode)				232	Amps
V_{SD}	Diode Forward Voltage (V _{GS} = 0V, I _S = -I _D [Cont.])				1.3	Volts
dv/ _{dt}	Peak Diode Recovery dv/ _{dt} (5)				15	V/ns
	Reverse Recovery Time	T _j = 25°C			300	
t _{rr}	$(I_S = -I_D [Cont.], \frac{di}{dt} = 100A/\mu s)$	T _j = 125°C			600	ns
	Reverse Recovery Charge	T _j = 25°C		2.6		
Q _{rr}	$(I_S = -I_D [Cont.], \frac{di}{dt} = 100A/\mu s)$	T _j = 125°C		10		μC
I _{RRM}	Peak Recovery Current	T _j = 25°C		17		A
	$(I_S = -I_D [Cont.], \frac{di}{dt} = 100A/\mu s)$	T _j = 125°C		34		Amps

THERMAL CHARACTERISTICS

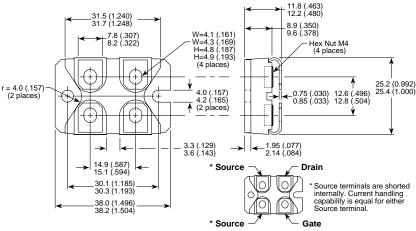
Symbol	Characteristic	MIN	TYP	MAX	UNIT
$R_{ hetaJC}$	Junction to Case			0.21	
$R_{\theta JA}$	Junction to Ambient			40	°C/W

① Repetitive Rating: Pulse width limited by maximum junction

- ② Pulse Test: Pulse width < 380 µs, Duty Cycle < 2%
- 3 See MIL-STD-750 Method 3471
- 4 Starting T_j = +25°C, L = 1.90mH, R_G = 25 Ω , Peak I_L = 58A 5 dv/_{dt} numbers reflect the limitations of the test circuit rather than the device itself. $I_S \le -I_{D[Cont.]}$ di/ $_{dt} \le 700 \text{A/} \mu \text{s}$ $V_R \le V_{DSS}$ $T_J \le 150^{\circ} \text{C}$

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

SOT-227 (ISOTOP®) Package Outline



Dimensions in Millimeters and (Inches)