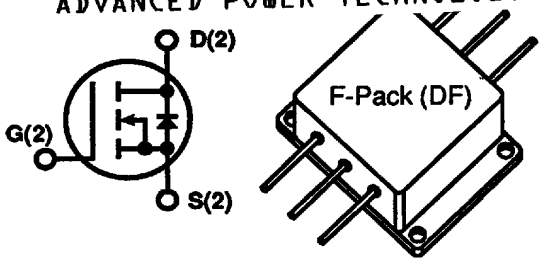

ADVANCED POWER TECHNOLOGY T-39-15

APT8016DFN 800V 47.0A 0.16 Ω
APT7516DFN 750V 47.0A 0.16 Ω

POWER MOS IV™

N - CHANNEL ENHANCEMENT MODE HIGH VOLTAGE POWER MOSFETS

MAXIMUM RATINGS

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

Symbol	Parameter	APT7516DFN	APT8016DFN	UNIT
V_{DSS}	Drain-Source Voltage	750	800	Volts
I_D	Continuous Drain Current	47		Amps
I_{DM}	Pulsed Drain Current[1]	188		Amps
V_{GS}	Gate-Source Voltage	±30		Volts
P_D	Total Power Dissipation @ T_C = 25°C, Derate Above 25°C	830		Watts
T_J,T_{STG}	Operating and Storage Junction Temperature Range	-55 to 150		°C

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions		MIN	TYP	MAX	UNIT
BV_{DSS}	Drain-Source Breakdown Voltage (V_{GS} = 0V, I_D = 250 µA)	APT8016DFN	800			Volts
		APT7516DFN	750			Volts
I_{DSS}	Zero Gate Voltage Drain Current (V_{DS} = V_{DSS}, V_{GS} = 0V)				250	µA
	(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
$I_D(ON)$	On State Drain Current[2] (V_{DS} > $I_D(ON)$ x $R_{DS}(ON)$ Max, V_{GS} = 10V)		47			Amps
$V_{GS}(TH)$	Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 1mA)		2		4	Volts
$R_{DS}(ON)$	Static Drain-Source On-State Resistance[2] (V_{GS} = 10V, I_D = 0.5 I_D [Cont.])				0.21	Ohms

THERMAL CHARACTERISTICS

Symbol	Characteristic	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to Case			0.15	°C/W
$R_{\theta JA}$	Junction to Ambient			20	°C/W
T_L	Max. Lead Temp. for Soldering Conditions: 0.063" from Case for 10 Sec.			300	°C

405 S.W. COLUMBIA STREET
BEND, OREGON 97702-1035
U.S.A.

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DYNAMIC CHARACTERISTICS

APT8016/7516DFN

T-39-15

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
C_{iss}	Input Capacitance	V_{GS} = 0V V_{DS} = 25V f = 1 MHz		11320	13000	pF
C_{oss}	Output Capacitance			1655	2317	pF
C_{rss}	Reverse Transfer Capacitance			578	870	pF
Q_g	Total Gate Charge [3]	V_{GS} = 10V, I_D = I_D [Cont.] V_{DD} = 0.5 V_{DSS}		445	675	nC
Q_{gs}	Gate-Source Charge			49	75	nC
Q_{gd}	Gate-Drain ("Miller") Charge			227	340	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD} = 0.5 V_{DSS} I_D = I_D [Cont.], V_{GS} = 15V R_G = 0.6		19	38	ns
t_r	Rise Time			29	58	ns
$t_{d(off)}$	Turn-off Delay Time			128	190	ns
t_f	Fall Time			40	80	ns

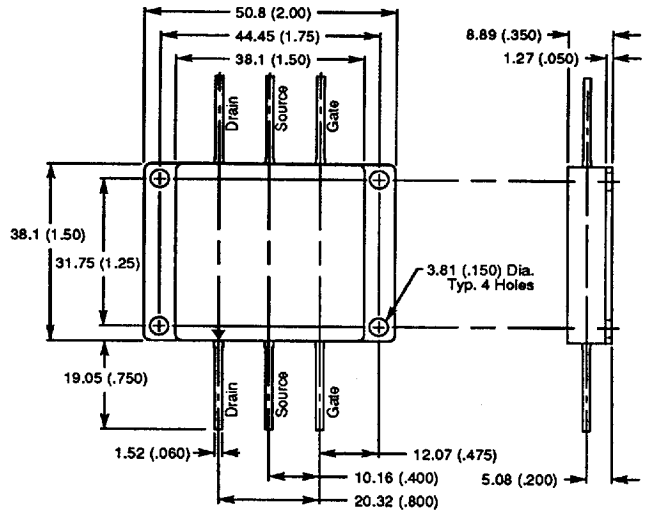
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
I_S	Continuous Source Current (Body Diode)			47	Amps
I_{SM}	Pulsed Source Current[1] (Body Diode)			188	Amps
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)	440	880	1700	ns
Q_{rr}	Reverse Recovery Charge	12	25	50	µC

SAFE OPERATING AREA CHARACTERISTICS

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
SOA1	Safe Operating Area	V_{DS} = 0.4 V_{DSS}, I_{DS} = P_D / 0.4 V_{DSS}, t = 1 Sec.	830			Watts
SOA2	Safe Operating Area	I_{DS} = I_D [Cont.], V_{DS} = P_D / I_D [Cont.], t = 1 Sec.	830			Watts
I_{LM}	Inductive Current Clamped		188			Amps

F-Pack Package Outline (Type DF)



Dimensions in Millimeters and (Inches)

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