

APT10050CFN 1000V 22.0A 0.50 Ω 900V 22.0A 0.50 Ω

# N - CHANNEL ENHANCEMENT MODE HIGH VOLTAGE POWER MOSFETS

**MAXIMUM RATINGS** 

All Ratings:  $T_{\rm C} = 26^{\circ}{\rm C}$  unless otherwise specified.

Symbol	Parameter	APT9050CFN	APT10050CFN	UNUT
V <sub>DES</sub>	Drain-Source Voltage	900	1000	Volts
1 <sub>0</sub>	Continuous Drain Current	1 A 3	22	Amps
МО	Pubod Drain Current <sup>2</sup>		18	Ampe
V <sub>GE</sub>	Gate-Source Voltage	The state of the s	30	Volts
Po	Total Power Dissipation @ T <sub>C</sub> = 25°C, Derate Above 25°C	5	95	Watts
T,Tsic	Operating and Storage Junction Temperature Range	TUZZ	o 150	•6

STATIC ELECTRICAL CHARACTERISTICS

Characteristic / Test Conditions		MH	TYP	MAX	UNIT
	APT10050CFN	1000			Volts
Drain-Source Breakdown Voltage (Vos = 0 VOS = 250 µA)  APTRUSOCFN	APTEUSOCEN	900			Vots
Zero Gate Votage Drain Current (28 Voss Vos = 0V)				250	
(Vos = 0.8 Voss Vos = 0)				1000	μA
Gate-Source Leakage Cattage (Constant Constant C				±100	Αn
On State Drain Coments (NG > In(ON) x ROS(ON) Max, VGS = 10V)		22			Amps
Gate Threshold Voltage (V <sub>OS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1 mA)		2		4	Volts
Static Drain-Source On-State Resistance 2 (Vos = 10V, ID =	0,5 l <sub>p</sub> [Cont.])			0.50	Ohms
	Drain-Source Breakdown Voltage (13 = 0.250 μA)  Zero Gette Voltage Drain Current (13 = 0.250 μA)  (V <sub>OS</sub> = 0.8 V <sub>OSS</sub> , V <sub>OS</sub> = 0.250  Gette-Source Leekage (15 π (15 = ±30 V, V <sub>OS</sub> = 0 V)  On State Drain Current (15 = 1 <sub>D</sub> (ON) x R <sub>DS</sub> (ON) Max, V <sub>OS</sub> Gette Threshold Voltage (15 = V <sub>OS</sub> = V <sub>OS</sub> 1 <sub>D</sub> = 1 πA)	Crain-Source Breakdown Voltage V <sub>GS</sub> = 0.2 250 μA)  APT10050CFN  APT8059CFN  Zero Gate Voltage Crain Current P <sub>SS</sub> V <sub>GS</sub> = 0V)  (V <sub>DS</sub> = 0.8 V <sub>OSS</sub> , V <sub>GS</sub> = 0)  Gate-Source Leakage Crain (V <sub>SS</sub> = 1 <sub>2</sub> (ON) x P <sub>DS</sub> (ON) Max, V <sub>GS</sub> = 10V)	Drain-Source Breakdown Voltage       APT10050CFN       1000         Zero Gette Voltage Drain Current (V <sub>DS</sub> V <sub>DS</sub> , V <sub>GS</sub> = 0V)         (V <sub>DS</sub> = 0.8 V <sub>OSS</sub> , V <sub>GS</sub> = 0V)         Gette-Source Leekage       (V <sub>DS</sub> = 1 <sub>D</sub> (ON) x P <sub>DS</sub> (ON) Max, V <sub>GS</sub> = 10V)       22         Gette Threshold Voltage (V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1 mA)       2	Drain-Source Breakdown Voltage       25 × 0 × 250 μΑ)       APT10050CFN       1000         Zero Gette Voltage Drain Current (10 × 10 × 10 × 10 × 10 × 10 × 10 × 10	Drain-Source Breakdown Voltage       V <sub>OS</sub> = V <sub>OS</sub> V <sub>OS</sub> V <sub>OS</sub> = 0V)       APT10050CFN       1000       250         Zero Gette Voltage Drain Current (OS) V <sub>OS</sub> V <sub>OS</sub> = 0V)       250       250         (V <sub>OS</sub> = 0.8 V <sub>OS</sub> , V <sub>OS</sub> = 0V)       1000       1000         Gette-Source Leakage Crisial (V <sub>OS</sub> = ±30V, V <sub>OS</sub> = 0V)       ±100         On State Drain Crisial (V <sub>OS</sub> > I <sub>D</sub> (ON) x R <sub>DS</sub> (ON) Max, V <sub>OS</sub> = 10V)       22         Gette Threshold Voltage (V <sub>OS</sub> = V <sub>OS</sub> , I <sub>D</sub> = 1mA)       2       4

### THERMAL CHARACTERISTICS ...

Symbol	Characteristic	1 1 1		7	MIN	TYP	MAX	UNIT
Rauc	Junction to Case	6 - K		ge At			0.21	•C/W
R <sub>BJA</sub>	Junction to Ambient	i	: :				20	•c/w
TL	Max. Lead Temp. for Sol	dering Condition	s: 0.063" from C	lase for 10 Sec.			300	℃

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

PHONE ... (503) 382-8028

FAX.....(503)388-0364

### ATHAMIS CHARACTURETICS

#### APT10050/9050CFN

<b>Synni</b> bal	Characteristis	Test Conditions	MIN	TYP	MAX	UNIT
					1	- CALL
Cles	Input Capacitance	V <sub>GS</sub> = 0v V <sub>DS</sub> = 26v f = 1 MHz	-	5560	6500	₽₹
C	Output Capacitance			944	1320	ρF
C <sub>rea</sub>	Reverse Transfer Capacitance			296	450	عرم
Qg	Total Gate Charge 3	V <sub>GS</sub> = 10V, I <sub>D</sub> = I <sub>D</sub> [Cont] V <sub>DO</sub> = 0.5 V <sub>DSS</sub>		227	370	nC
G <sup>22</sup>	Gate-Source Charge		-	31	46	nÇ
O <sub>se</sub>	Gate-Drain ("Miller") Change			148	222	nC
<sub>a</sub> (nn)	Turn-on Delay Time	V <sub>DD</sub> = 0.5 V <sub>DSS</sub> I <sub>D</sub> = I <sub>D</sub> [Cont.]; V <sub>GS</sub> = 15V		18	36	ns
t,	Rise Time			19	38	····
t <sub>d</sub> (off)	Turn-off Delay Time			52	78	ns
1,	Fal Time	R <sub>G</sub> = 0.60		45	90	កន កន

### SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic / Test Conditions	XIIN	TYP	MAX	UNIT
l <sub>a</sub>	Continuous Source Current (Body Dlode)			22	Amos
SM	Pulsed Source Current <sup>1</sup> (Body Diode)			88	Amps
V <sub>50</sub>	Diode Forward Voltage <sup>2</sup> (V <sub>GS</sub> = 0V, I <sub>g</sub> = I <sub>D</sub> (Cont.))		<b></b> -	1.8	Vots
I <sub>er</sub>	Reverse Recovery Time (I <sub>s</sub> = -I <sub>D</sub> [Cont.] di <sub>s</sub> /dt = 100A/µs)	435	870	1600	ns
	Reversé Recovery Charge	6	13	26	uC

## SAFE OPERATING AREA CHARACTERISTICS

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
SOA1	Safe Operating Area	Y <sub>DS</sub> = 0.4 Y <sub>DSS</sub>   <sub>DS</sub> = P <sub>0</sub> / 0.4 V <sub>DSS</sub> , t= t Sec.		1	MINIS	Watts
80A2	Safe Operating Area	10s = 1p [Cont.], V <sub>DS</sub> = P <sub>D</sub> / 1p [Cont.], t = 1 Sec.		<del> </del>	<del> </del>	<del> </del>
LM	Inductive Current Clamped	90 0 - 03 0 0.	88		<del> </del> -	Watts

## F-Pack Package Outline (Type CF)

050-0023 Rev-1

\$0.9 (2.08) 44.45 [1.76] £ #0 (:3:50) + \$4.1 (1.50)· 7.27 (0) 38.1 (1.50) (១) ភក 19.05 (.750) 12-07 (475) \$4.46 (-400) 29.78 (.994)

Dimensions in Millimeters and (Inches)

- 1.) Repetitive Flating: Pulse width fimited by maximum junction temperatura.
- 2.) Pulsa Test: Pulsa Wicth < 380 µS Duly Cycle < 2% 3.) Sea MiL-STD-750 Method 3471