

APT10050CFN 1000V 22.0A 0.50 Ω
APT9050CFN 900V 22.0A 0.50 Ω

POWER MOS IV™

N - CHANNEL ENHANCEMENT MODE HIGH VOLTAGE POWER MOSFETS

MAXIMUM RATINGS

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

Symbol	Parameter	APT9050CFN	APT10050CFN	UNIT
V_{DS}	Drain-Source Voltage	900	1000	Volts
I_D	Continuous Drain Current	22		Amps
I_{DM}	Pulsed Drain Current ¹	88		Amps
V_{GS}	Gate-Source Voltage	± 30		Volts
P_D	Total Power Dissipation @ $T_C = 25^\circ\text{C}$, Derate Above 25°C	595		Watts
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to 150		$^\circ\text{C}$

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
BV_{DS}	Drain-Source Breakdown Voltage ($V_{GS} = 0\text{V}$, $I_D = 250\mu\text{A}$)	APT10050CFN 1000			Volts
		APT9050CFN 900			Volts
I_{DSS}	Zero Gate Voltage Drain Current ($V_{GS} = 0\text{V}$, $V_{DS} = 10\text{V}$)			250	μA
	($V_{DS} = 0.8 V_{DS}$, $V_{GS} = 0\text{V}$)			1000	
I_{GSS}	Gate-Source Leakage Current ($V_{GS} = \pm 30\text{V}$, $V_{DS} = 0\text{V}$)			± 100	nA
$I_{D(ON)}$	On State Drain Current ($V_{GS} = I_{D(ON)} \times R_{DS(ON)}$ Max, $V_{GS} = 10\text{V}$)	22			Amps
$V_{GS(TH)}$	Gate Threshold Voltage ($V_{DS} = V_{GS}$, $I_D = 1\text{mA}$)	2		4	Volts
$R_{DS(ON)}$	Static Drain-Source On-State Resistance ² ($V_{GS} = 10\text{V}$, $I_D = 0.5 I_D$ [Cont.])			0.50	Ohms

THERMAL CHARACTERISTICS

Symbol	Characteristic	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to Case			0.21	$^\circ\text{C/W}$
$R_{\theta JA}$	Junction to Ambient			20	$^\circ\text{C/W}$
T_L	Max. Lead Temp. for Soldering Conditions: 0.063" from Case for 10 Sec.			300	$^\circ\text{C}$

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DYNAMIC CHARACTERISTICS

APT10050/9050CFN

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
C_{iss}	Input Capacitance	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1 \text{ MHz}$		5500	6500	pF
C_{oss}	Output Capacitance			944	1320	pF
C_{rss}	Reverse Transfer Capacitance			296	450	pF
Q_g	Total Gate Charge ³	$V_{GS} = 10V, I_D = I_D [Cont.]$ $V_{DS} = 0.5 V_{DSS}$		227	370	nC
Q_{gs}	Gate-Source Charge			31	46	nC
Q_{gd}	Gate-Drain ("Miller") Charge			148	222	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{DS} = 0.5 V_{DSS}$ $I_D = I_D [Cont.], V_{GS} = 15V$ $R_g = 0.6\Omega$		18	36	ns
t_r	Rise Time			19	38	ns
$t_{d(off)}$	Turn-off Delay Time			52	78	ns
t_f	Fall Time			45	90	ns

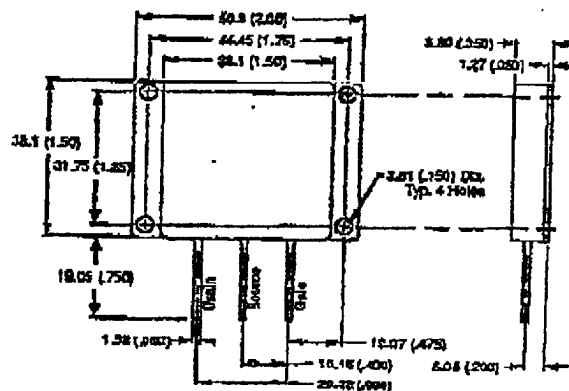
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
I_S	Continuous Source Current (Body Diode)			22	Amps
I_{SM}	Pulsed Source Current ¹ (Body Diode)			88	Amps
V_{SD}	Diode Forward Voltage ² ($V_{GS} = 0V, I_S = -I_D [Cont.]$)			1.8	Volts
t_{rr}	Reverse Recovery Time ($I_S = -I_D [Cont.]$, $dI_S/dt = 100A/\mu s$)	435	870	1600	ns
Q_T	Reverse Recovery Charge	6	13	26	μC

SAFE OPERATING AREA CHARACTERISTICS

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
SOA1	Safe Operating Area	$V_{DS} = 0.4 V_{DSS}, I_{DS} = P_D / 0.4 V_{DSS}, t = 1 \text{ Sec.}$	595			Watts
SOA2	Safe Operating Area	$I_{DS} = I_D [Cont.], V_{DS} = P_D / I_D [Cont.], t = 1 \text{ Sec.}$	595			Watts
I_{LM}	Inductive Current Clamped		88			Amps

F-Pack Package Outline (Type CF)



- 1.) Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2.) Pulse Test: Pulse width $< 380 \mu s$, Duty Cycle $< 2\%$
- 3.) See MIL-STD-750 Method 3471

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