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NTE2378 MOSFET N-Channel Enhancement Mode, High Speed Switch

Description:

The NTE2378 is an N-Channel Enhancement Mode Power MOS Field Effect Transistor. Easy drive and very fast switching times make this device ideal for high speed switching applications. Typical applications include switching mode power supplies, uninterruptible power supplies, and motor speed control.

Features:

- Low ON-State Resistance
- Very High-Speed Switching
- Converters

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$)

Drain-Source Voltage, V_{DSS}	900V
Gate-Source Voltage, V_{GSS}	$\pm 30\text{V}$
DC Drain Current, I_D	5A
Pulsed Drain Current (Note 1), I_{DP}	10A
Allowable Power Dissipation ($T_C = +25^\circ\text{C}$), P_D	120W
Maximum Channel Temperature, T_{ch}	$+150^\circ\text{C}$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ\text{C}$

Note 1. Pulse Width $\leq 10\mu\text{s}$, Duty Cycle $\leq 1\%$.

Note 2. Be careful in handling the NTE2378 because it has no protection diode between gate and source.

Electrical Characteristics: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1\text{mA}$, $V_{GS} = 0$	900	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{GS} = 0$, $V_{DS} = 900\text{V}$	-	-	1.0	mA
Gate-Source Leakage Current	I_{GSS}	$V_{DS} = 0$, $V_{GS} = \pm 30\text{V}$	-	-	± 100	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 10\text{V}$, $I_D = 1\text{mA}$	2	-	3	V
Static Drain-Source On Resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}$, $I_D = 2\text{A}$	-	2.8	3.6	Ω
Forward Transconductance	g_{fs}	$V_{DS} = 20\text{V}$, $I_D = 2\text{A}$	1.0	2.0	-	mho

Electrical Characteristics (Cont'd): ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	C_{iss}	$V_{DS} = 20\text{V}, f = 1\text{MHz}$	–	700	–	pf
Output Capacitance	C_{oss}		–	300	–	pf
Reverse Transfer Capacitance	C_{rss}		–	170	–	pf
Turn-On Time	$t_{d(on)}$	$V_{DD} = 200\text{V}, I_D = 2\text{A},$ $V_{GS} = 10\text{V}, R_{GS} = 50\Omega$	–	15	–	ns
Rise Time	t_r		–	35	–	ns
Turn-Off Delay Time	$t_{d(off)}$		–	200	–	ns
Fall Time	t_f		–	65	–	ns
Diode Forward Voltage	V_{SD}	$I_S = 5\text{A}, V_{GS} = 0$	–	–	1.8	V

