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NTE2990 MOSFET P-Channel, Enhancement Mode High Speed Switch

Features:

- Low Drain-Source On-Resistance
- Low Input Capacitance
- High Avalanche Capability Ratings

Applications:

- Switching Regulators
- UPS
- DC-DC Converters
- General Purpose Power Amplifier

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

Drain-Source Voltage, V_{DSS}	250V
Gate-Source Voltage, V_{GSS}	$\pm 30\text{V}$
Drain Current, I_D	
Continuous	$\pm 6\text{A}$
Pulsed (Note 1)	$\pm 24\text{A}$
Maximum Power Dissipation, P_D	
$T_C = +25^\circ\text{C}$	35W
$T_A = +25^\circ\text{C}$	2.0W
Single Avalanche Current (Note 2), I_{AS}	6A
Single Avalanche Energy (Note 2), E_{AS}	180mJ
Channel Temperature, T_{ch}	$+150^\circ\text{C}$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient, R_{thJA}	62.5°C/W
Thermal Resistance, Junction-to-Case, R_{thJC}	2.77°C/W

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

Note 2. Starting $T_{ch} = +25^\circ\text{C}$, $R_G = 25\Omega$, $V_{GS} = -20\text{V} \rightarrow 0$.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source On-State Resistance	$R_{DS(on)}$	$I_D = 3A, V_{GS} = 10V$	-	0.55	0.80	Ω
Gate Threshold Voltage	$V_{GS(th)}$	$I_D = 1mA, V_{DS} = 10V$	4.0	4.8	5.5	V
Forward Transfer Admittance	g_{fs}	$I_D = 3A, V_{DS} = 10V$	2.0	3.5	-	S
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 250V, V_{GS} = 0V$	-	-	100	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 30V, V_{DS} = 0V$	-	-	± 100	nA
Input Capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$	-	1040	-	pF
Output Capacitance	C_{oss}		-	360	-	pF
Reverse Transfer Capacitance	C_{rss}		-	70	-	pF
Turn-On Time	$t_{d(on)}$	$V_{DD} = 125V, I_D = 3A, V_{GS(on)} = 10V, R_G = 10\Omega, R_L = 42\Omega$	-	25	-	ns
Rise Time	t_r		-	16	-	ns
Turn-Off Time	$t_{d(off)}$		-	47	-	ns
Fall Time	t_f		-	14	-	ns
Total Gate Charge	Q_g	$V_{DD} = 200V, V_{GS} = 10V, I_D = 6A$	-	23.1	-	nC
Gate-Source Charge	Q_{gs}		-	7.1	-	nC
Gate-Drain ("Miller") Charge	Q_{gd}		-	12.9	-	nC
Source-Drain Diode Ratings and Characteristics: ($T_A = +25^\circ\text{C}$ unless otherwise specified)						
Diode Forward Voltage	V_{DSF}	$I_{DR} = 6A, V_{GS} = 0V$	-	0.92	-	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 6A, V_{GS} = 0V, di/dt = 50A/\mu s$	-	155	-	ns
Reverse Recovered Charge	Q_{rr}		-	930	-	nC

