

NTE2989 MOSFET N-Channel, Enhancement Mode High Speed Switch

Features:

- High Speed Switching
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- High Voltage
- Repetitive Avalanche Rated

Applications:

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

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

Drain-Source Voltage, V_{DS}	600V
Drain Current, I_D	
Continuous	10A
Pulsed	36A
Gate-Source Voltage, V_{GS}	$\pm 30\text{V}$
Avalanche Current, Repetitive or Non-Repetitive ($T_{ch} \leq +150^\circ\text{C}$), I_{AR}	10A
Avalanche Energy, E_{AS}	64.7mJ
Maximum Power Dissipation, P_D	50W
Operating Junction Temperature, T_J	$+150^\circ\text{C}$
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}	2.5°C/W

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1\text{mA}$, $V_{GS} = 0\text{V}$	600	—	—	V
Gate Threshold Voltage	$V_{GS(th)}$	$I_D = 1\text{mA}$, $V_{DS} = V_{GS}$	3.5	4.0	4.5	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 600\text{V}$, $V_{GS} = 0\text{V}$	$T_{ch} = +25^\circ\text{C}$	—	10	μA
			$T_{ch} = +125^\circ\text{C}$	—	0.2	mA

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate–Source Leakage Current	I_{GSS}	$V_{GS} = \pm 30\text{V}$, $V_{DS} = 0\text{V}$	–	10	100	nA
Drain–Source On–State Resistance	$R_{DS(on)}$	$I_D = 4.5\text{A}$, $V_{GS} = 10\text{V}$	–	0.85	1.0	Ω
Forward Transconductance	g_{fs}	$I_D = 5\text{A}$, $V_{DS} = 25\text{V}$	3	6	–	S
Input Capacitance	C_{iss}	$V_{DS} = 25\text{V}$, $V_{GS} = 0\text{V}$, $f = 1\text{MHz}$	–	1100	1700	pF
Output Capacitance	C_{oss}		–	170	260	pF
Reverse Transfer Capacitance	C_{rss}		–	74	120	pF
Turn–On Time, t_{on} ($t_{on} = t_{d(on)} + t_r$)	$t_{d(on)}$	$V_{CC} = 300\text{V}$, $I_D = 10\text{A}$, $V_{GS} = 10\text{V}$, $R_{GS} = 10\Omega$	–	25	40	ns
	t_r		–	70	110	ns
Turn–Off Time, t_{off} ($t_{off} = t_{d(off)} + t_f$)	$t_{d(off)}$		–	75	120	ns
	t_f		–	40	60	ns
Avalanche Capability	I_{AV}	$L = 100\mu\text{H}$, $T_{ch} = +25^\circ\text{C}$	10	–	–	A
Diode Forward On–Voltage	V_{SD}	$I_F = 2 \times I_{DR}$, $V_{GS} = 0\text{V}$, $T_{ch} = +25^\circ\text{C}$	–	1.0	1.5	V
Reverse Recovery Time	t_{rr}	$I_F = I_{DR}$, $V_{GS} = 0\text{V}$, $-di_F/dt = 100\text{A}/\mu\text{s}$, $T_{ch} = +25^\circ\text{C}$	–	500	–	ns
Reverse Recovery Charge	Q_{rr}		–	6.5	–	μC

