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NTE2988 MOSFET N-Channel, Enhancement Mode High Speed Switch

Description:

The NTE2988 is an N-Channel, enhancement mode, power field effect transistor in a TO52 type package designed especially for low power inverters, interface to CMOS and TTL logic, and line drivers.

Features:

- High Input Impedance
- Extremely Fast Switching
- Rugged-Dissipation Limited SOA
- Internal Drain-Source Diode

Benefits:

- Reduced Component Count
- Simpler Designs – Directly Interfaces CMOS & TTL
- Improved Circuit Performance
- Increased Reliability

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

Drain-Source Voltage	60V
Drain-Gate Voltage	60V
Peak Gate Current	100mA
Gate-Source Voltage	+15V, -0.3V
Drain Current	
Continuous (Note 1)	±0.2A
Pulsed (Note 2)	±1.0A
Maximum Dissipation ($T_C = +25^\circ\text{C}$)	315mW
Linear Derating Factor	2.5mW/°C
Operating Temperature Range, T_{opr}	-55° to +150°C
Storage Temperature Range, T_{stg}	-55° to +150°C
Lead Temperature (During Soldering, 1/16" from case, 10sec), T_L	+300°C

Note 1. Limited by package dissipation.

Note 2. Pulse test – 80µs to 300µs, 1% duty cycle.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain–Source Breakdown Voltage	BV_{DSS}	$I_D = 1000\mu\text{A}, V_{GS} = 0$	60	–	–	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 1\text{mA}$	0.8	–	2.5	V
Gate–Body Leakage	I_{GSS}	$V_{GS} = 15\text{V}, V_{DS} = 0$	–	–	100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 50\text{V}, V_{GS} = 0$	–	–	10	μA
On–State Drain Current	$I_{D(on)}$	$V_{GS} = 5\text{V}, I_D = 0.2\text{A}, \text{Note 2}$	–	–	1.5	V
		$V_{GS} = 10\text{V}, I_D = 0.5\text{A}, \text{Note 2}$	–	–	2.5	V
Static–Drain–Source On–State Resistance	$r_{DS(on)}$	$V_{GS} = 5\text{V}, I_D = 0.2\text{A}, \text{Note 2}$	–	–	7.5	Ω
		$V_{GS} = 10\text{V}, I_D = 0.5\text{A}, \text{Note 2}$	–	–	5.0	Ω
Dynamic Characteristics						
Forward Transconductance	g_{fs}	$V_{DS} = 15\text{V}, I_D = 0.5\text{A}, \text{Note 2}$	200	–	–	mS
Input Capacitance	C_{iss}	$V_{DS} = 25\text{V}, f = 1\text{MHz}$	–	–	60	pF
Reverse Transfer Capacitance	C_{rss}		–	–	5	pF
Common Source Output Capacitance	C_{oss}		–	–	25	pF
Turn–On Time	t_{ON}	$V_{DD} = 15\text{V}, R_L = 23\Omega, R_g = 25\Omega, I_D = 0.6\text{A}$	–	–	10	ns
Turn–Off Time	t_{OFF}		–	–	10	ns
Drain–Source Diode Characteristics						
Forward ON Voltage	V_{SD}	$I_S = -0.5\text{A}, V_{GS} = 0, \text{Note 2}$	–	-0.85	–	V
Reverse Recovery Time	t_{rr}	$V_{GS} = 0, I_F = I_R = 0.5\text{A}$	–	160	–	ns

Note 2. Pulse test – $80\mu\text{s}$ to $300\mu\text{s}$, 1% duty cycle.

