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## NTE2384 MOSFET N-Channel Enhancement Mode, High Speed Switch

### Absolute Maximum Ratings:

Drain-Source Voltage, $V_{DS}$ .....	800V
Drain-Gate Voltage ( $R_{GS} = 20k\Omega$ ), $V_{DGR}$ .....	800V
Gate-Source Voltage, $V_{GS}$ .....	$\pm 20V$
Pulsed Drain Current ( $T_C = +25^\circ C$ ), $I_{DM}$ .....	24A
Continuous Drain Current, $I_D$	
$T_C = +30^\circ C$ .....	6.0A
$T_C = +100^\circ C$ .....	3.9A
Total Dissipation ( $T_C = +25^\circ C$ ), $P_{tot}$ .....	125W
Operating Junction Temperature, $T_J$ .....	+150°C
Storage Temperature Range, $T_{stg}$ .....	-55° to +150°C
Maximum Thermal Resistance, Junction-to-Case, $R_{thJC}$ .....	1.0°C/W
Typical Thermal Resistance, Junction-to-Ambient, $R_{thJA}$ .....	35°C/W

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu A, V_{GS} = 0$	800	-	-	V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{GS} = 0, V_{DS} = 800V, T_J = +25^\circ C$	-	20	250	$\mu A$
		$V_{GS} = 0, V_{DS} = 800V, T_J = +125^\circ C$	-	0.1	1.0	mA
Gate-Body Leakage Current	$I_{GSS}$	$V_{DS} = 0, V_{GS} = \pm 20V$	-	10	100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 1mA$	2.1	3.0	4.0	V
Static Drain-Source On Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 3A$	-	1.3	1.5	$\Omega$
<b>Dynamic Characteristics</b>						
Forward Transconductance	$g_{fs}$	$V_{DS} = 25V, I_D = 3A$	1.8	3.0	-	mho
Input Capacitance	$C_{iss}$	$V_{DS} = 25V, V_{GS} = 0, f = 1MHz$	-	3900	5000	pf
Output Capacitance	$C_{oss}$		-	200	350	pf
Reverse Transfer Capacitance	$C_{rss}$		-	80	140	pf
Turn-On Time	$t_{d(on)}$		$V_{DD} = 30V, I_D = 2.6A, V_{GS} = 10V,$ $R_{GS} = 50\Omega, R_{gen} = 50\Omega$	-	60	90
Rise Time	$t_r$	-		90	140	ns
Turn-Off Delay Time	$t_{d(off)}$	-		330	430	ns
Fall Time	$t_f$	-		110	140	ns

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Dynamic Characteristics (Cont'd)</b>						
Internal Drain Inductance	$L_D$	Measured from contact screw on header closer to source pin and center of die	–	5.0	–	nH
Internal Source Inductance	$L_S$	Measured from the source lead 6mm from package to source bonding pad	–	12.5	–	nH
<b>Source–Drain Diode Ratings and Characteristics</b>						
Continuous Reverse Drain Current	$I_{DR}$	$T_C = +25^\circ\text{C}$	–	–	6	A
Pulsed Reverse Drain Current	$I_{DRM}$	$T_C = +25^\circ\text{C}$	–	–	24	A
Diode Forward Voltage	$V_{SD}$	$I_F = 12\text{A}, V_{GS} = 0, T_J = +25^\circ\text{C}$	–	1.1	1.5	V
Reverse Recovery Time	$t_{rr}$	$I_F = 6\text{A}, T_J = +25^\circ\text{C}$	–	1800	–	ns
Reverse Recovered Charge	$Q_{rr}$	$V_{GS} = 0, V_R = 100\text{V}, T_J = +25^\circ\text{C}, di_F/dt = 100\text{A}/\mu\text{s}$ ,	–	25	–	$\mu\text{C}$

