

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	$+150^\circ C$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ C$
Maximum Thermal Resistance, Junction-to-Case, R_{thJC}	$1.0^\circ C/W$
Typical Thermal Resistance, Junction-to-Ambient, R_{thJA}	$35^\circ C/W$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
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	μA
		$V_{GS} = 0$, $V_{DS} = 800V$, $T_J = +125^\circ C$	—	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	Ω
Dynamic Characteristics						
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	ns
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
Dynamic Characteristics (Cont'd)						
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
Source–Drain Diode Ratings and Characteristics						
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	–	μC

