



ELECTRONICS, INC.
 44 FARRAND STREET
 BLOOMFIELD, NJ 07003
 (973) 748-5089
<http://www.nteinc.com>

NTE2389 MOSFET N-Ch, Enhancement Mode High Speed Switch TO220 Type Package

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

Drain-Source Voltage, V_{DS}	60V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$), V_{DGR}	60V
Drain Current, I_D	
Continuous	35A
Pulsed	152A
Gate-Source Voltage, V_{GS}	$\leq 30V$
Maximum Power Dissipation, P_D	125W
Operating Junction Temperature, T_J	+175 μC
Storage Temperature Range, T_{stg}	-55 μC to +175 μC
Maximum Thermal Resistance, Junction-to-Case, R_{thJC}	1.2 $\mu\text{C/W}$
Typical Thermal Resistance, Junction-to-Ambient, R_{thJA}	60 $\mu\text{C/W}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Static Ratings							
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D = 0.25\text{mA}, V_{GS} = 0$	60	-	-	V	
Gate Threshold Voltage	$V_{GS(th)}$	$I_D = 1\text{mA}, V_{DS} = V_{GS}$	2.1	3.0	4.0	V	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 60V,$ $V_{GS} = 0$	$T_J = +25\mu\text{C}$	-	1	10	μA
			$T_J = +125\mu\text{C}$	-	0.1	1.0	mA
Gate-Source Leakage Current	I_{GSS}	$V_{GS} = \leq 30V, V_{DS} = 0$	-	10	100	nA	
Drain-Source On-State Resistance	$R_{DS(on)}$	$I_D = 20A, V_{GS} = 10V$	-	40	45	m Ω	
Dynamic Ratings							
Forward Transconductance	g_{fs}	$I_D = 20A, V_{DS} = 25V$	8	13.5	-	mhos	
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0, f = 1\text{MHz}$	-	1650	2000	pF	
Output Capacitance	C_{oss}		-	560	750	pF	
Reverse Transfer Capacitance	C_{rss}		-	300	400	pF	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Dynamic Ratings (Cont'd)						
Turn-On Time	$t_{d(on)}$	$V_{CC} = 30\text{V}, V_{GS} = 10\text{V},$ $I_D = 3\text{A}, R_{GS} = 50\Omega$	-	25	40	ns
	t_r		-	60	90	ns
Turn-Off Time	$t_{d(off)}$		-	125	160	ns
	t_f		-	100	130	ns
Internal Drain Inductance	L_d	Measured from contact screw on tab to center of die	-	3.5	-	nH
		Measured from drain lead 6mm from package to center of die	-	4.5	-	nH
Internal Source Inductance	L_s	Measured from source lead 6mm from package to source bond pad	-	7.5	-	nH
Reverse Diode						
Continuous Reverse Drain Current	I_{DR}		-	-	41	A
Pulsed Reverse Drain Current	I_{DRM}		-	-	164	A
Diode Forward On-Voltage	V_{SD}	$I_F = 41\text{A}, V_{GS} = 0$	-	1.4	2.0	V
Reverse Recovery Time	t_{rr}	$I_F = 41\text{A}, V_{GS} = 0, V_R = 30\text{V}$ $-di_F/dt = 100\text{A}/\mu\text{s}$	-	60	-	ns
Reverse Recovery Charge	Q_{rr}		-	0.3	-	μC

