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

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

Drain–Source Voltage, V_{DS} 60V
Drain–Gate Voltage (R_{GS} = 20kΩ), V_{DGR} 60V
Drain Current, I_D
  Continuous 35A
  Pulsed 152A
Gate–Source Voltage, V_{GS} . . . . . ±30V
Maximum Power Dissipation, P_D 125W
Operating Junction Temperature, T_J . . . . . +175°C
Storage Temperature Range, T_{stg} . . . . . –55° to +175°C
Maximum Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 1.2°C/W
Typical Thermal Resistance, Junction–to–Ambient, R_{thJA} . . . . . 60°C/W

Electrical Characteristics: (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Static Ratings							
Drain–Source Breakdown Voltage	BV_{DSS}	I_D = 0.25mA, V_{GS} = 0		60	–	–	V
Gate Threshold Voltage	$V_{GS(th)}$	I_D = 1mA, 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°C	–	1	10	µA
			T_J = +125°C	–	0.1	1.0	mA
Gate–Source Leakage Current	I_{GSS}	V_{GS} = ±30V, V_{DS} = 0		–	10	100	nA
Drain–Source On–State Resistance	$R_{DS(on)}$	I_D = 20A, V_{GS} = 10V		–	40	45	mΩ
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 = 1MHz		–	1650	2000	pF
Output Capacitance	C_{oss}			–	560	750	pF
Reverse Transfer Capacitance	C_{rss}			–	300	400	pF

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Electrical Characteristics (Cont'd): (T_A = +25μC unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Dynamic Ratings (Cont'd)						
Turn−On Time	$t_{d\ (on)}$	V_{CC} = 30V, V_{GS} = 10V, I_D = 3A, R_{GS} = 50Ω	−	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 = 41A, V_{GS} = 0	−	1.4	2.0	V
Reverse Recovery Time	t_{rr}	I_F = 41A, V_{GS} = 0, V_R = 30V $-di_F/dt$ = 100A/μs	−	60	−	ns
Reverse Recovery Charge	Q_{rr}		−	0.3	−	μC