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NTE2379 MOSFET N-Channel, Enhancement Mode High Speed Switch

Features:

- Dynamic dv/dt Rating
- Repetitive Avalanche Rated
- Fast Switching
- Ease of Paralleling
- Simple Drive Requirements

Absolute Maximum Ratings:

Gate-Source Voltage, V_{GS}	±20V
Drain Current, I_D	
Continuous ($V_{GS} = 10V$)	
$T_C = +25^\circ C$	6.2A
$T_C = +100^\circ C$	3.9A
Pulsed (Note 1)	25A
Gate Current (Pulsed), I_{GM}	±1.5A
Single Pulsed Avalanche Energy (Note 2), E_{AS}	570mJ
Avalanche Current (Note 1), I_{AR}	6.2A
Repetitive Avalanche Energy (Note 1), E_{AR}	13mJ
Peak Diode Recovery dv/dt (Note 3), dv/dt	3V/ns
Total Power Dissipation ($T_C = +25^\circ C$), P_D	125W
Derate Above $25^\circ C$	1.0W/ $^\circ C$
Operating Junction Temperature Range, T_J	-55° to +150°C
Storage Temperature Range, T_{stg}	-55° to +150°C
Maximum Lead Temperature (During Soldering, 1/16" from case, 10sec), T_L	+300°C
Thermal Resistance:	
Maximum Junction-to-Case, R_{thJC}	1.0°C/W
Typical Case-to-Sink (Mounting surface flat, smooth, and greased), R_{thCS}	0.5°C/W
Maximum Junction-to-Ambient (Free Air Operation), R_{thJA}	62°C/W

- Note 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
 Note 2. $V_{DD} = 50V$, starting $T_J = +25^\circ C$, $I = 27mA$, $R_G = 25\Omega$, $I_{AS} = 6.2A$.
 Note 3. $I_{SD} \leq 6.2A$, di/dt $\leq 80A/\mu A$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq +150^\circ C$.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain–Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	600	–	–	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	–	4.0	V
Gate–Source Leakage Forward	I_{GSS}	$V_{GS} = 20V$	–	–	100	nA
Gate–Source Leakage Reverse	I_{GSS}	$V_{GS} = -20V$	–	–	-100	nA
Drain–Source Leakage Current	I_{DSS}	$V_{DS} = 600V, V_{GS} = 0$	–	–	100	μA
		$V_{DS} = 480V, V_{GS} = 0, T_C = +150^\circ\text{C}$	–	–	500	μA
Static Drain–Source ON Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 3.7A, \text{Note 4}$	–	–	1.2	Ω
Forward Transconductance	g_{fs}	$V_{DS} \geq 100V, I_D = 3.7A, \text{Note 4}$	4.7	–	–	mhos
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 25V, f = 1\text{MHz}$	–	1300	–	pF
Output Capacitance	C_{oss}		–	160	–	pF
Reverse Transfer Capacitance	C_{rss}		–	30	–	pF
Turn–On Delay Time	$t_{d(on)}$	$V_{DD} = 300V, I_D = 6.2A, R_G = 9.1\Omega, R_D = 47\Omega, \text{Note 4}$	–	32	–	ns
Rise Time	t_r		–	18	–	ns
Turn–Off Delay Time	$t_{d(off)}$		–	55	–	ns
Fall Time	t_f		–	20	–	ns
Total Gate Charge	Q_g	$V_{GS} = 10V, I_D = 6.2A, V_{DS} = 360V$	–	–	60	nC
Gate–Source Charge	Q_{gs}		–	–	8.3	nC
Gate–Drain (“Miller”) Charge	Q_{gd}		–	–	30	nC
Internal Drain Inductance	L_D	Between lead, 6mm (.250 in) from package and center of die contact	–	4.5	–	nH
Internal Source Inductance	L_S		–	7.5	–	nH
Source–Drain Diode Ratings and Characteristics						
Continuous Source Current	I_S	(Body Diode)	–	–	6.2	A
Pulse Source Current	I_{SM}	(Body Diode) Note 1	–	–	25	A
Diode Forward Voltage	V_{SD}	$T_J = +25^\circ\text{C}, I_S = 6.2A, V_{GS} = 0V, \text{Note 4}$	–	–	1.5	V
Reverse Recovery Time	t_{rr}	$T_J = +25^\circ\text{C}, I_F = 6.2A, di/dt = 100A/\mu s, \text{Note 4}$	–	450	940	ns
Reverse Recovery Charge	Q_{rr}		–	3.8	7.9	μC
Forward Turn–On Time	t_{on}	Intrinsic turn–on time is negligible (turn–on is dominated by $L_S + L_D$)				

Note 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

Note 4. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

