

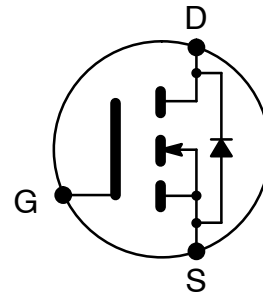


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## NTE2379 MOSFET N-Channel, Enhancement Mode High Speed Switch TO220 Type package

**Features:**

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



**Absolute Maximum Ratings:**

Gate-Source Voltage, $V_{GS}$ .....	$\pm 20V$
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), $I_{GM}$ .....	$\pm 1.5A$
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, $T_J$ .....	$-55^\circ$ to $+150^\circ C$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+150^\circ C$
Maximum Lead Temperature (During Soldering, 1/16" from case, 10sec), $T_L$ .....	$+300^\circ C$
Thermal Resistance:	
Maximum Junction-to-Case, $R_{thJC}$ .....	1.0 $^\circ C/W$
Typical Case-to-Sink (Mounting surface flat, smooth, and greased), $R_{thCS}$ .....	0.5 $^\circ C/W$
Maximum Junction-to-Ambient (Free Air Operation), $R_{thJA}$ .....	62 $^\circ C/W$

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

Note 2.  $V_{DD} = 50V$ , starting  $T_J = +25^\circ C$ ,  $L = 27mH$ ,  $R_G = 25\pm$ ,  $I_{AS} = 6.2A$ .

Note 3.  $I_{SD} \leq 6.2A$ ,  $di/dt \leq 80A/\mu s$ ,  $V_{DD} \leq V_{(BR)DSS}$ ,  $T_J \leq +150^\circ C$ .

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain–Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = 250\geq A$	600	–	–	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\geq A$	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	$\geq A$
		$V_{DS} = 480V, V_{GS} = 0, T_C = +150^\circ\text{C}$	–	–	500	$\geq A$
Static Drain–Source ON Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 3.7A, \text{Note 4}$	–	–	1.2	$\pm$
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	$t_{d(on)}$	$V_{DD} = 300V, I_D = 6.2A, R_G = 9.1\pm, R_D = 47\pm, \text{Note 4}$	–	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
<b>Source–Drain Diode Ratings and Characteristics</b>						
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	$t_{rr}$	$T_J = +25^\circ\text{C}, I_F = 6.2A, di/dt = 100A/\geq s, \text{Note 4}$	–	450	940	ns
Reverse Recovery Charge	$Q_{rr}$		–	3.8	7.9	$\geq C$
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  $\leq 300\geq s$ , Duty Cycle  $\leq 2\%$ .

