

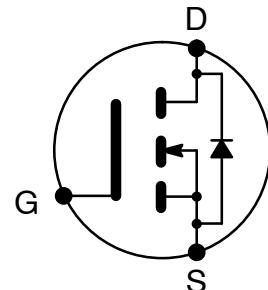


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**NTE2935**  
**MOSFET**  
**N-Channel, Enhancement Mode**  
**High Speed Switch**  
**TO3PML Type Package**

**Features:**

- Avalanche Rugged Technology
- Rugged Gate Oxide Technology
- Lower Input Capacitance
- Improved Gate Charge
- Extended Safe Operating Area
- Lower  $R_{DS(on)}$ :  $0.638 \leq$  Typ
- Lower Leakage Current:  $10^\circ A$  (Max) @  $V_{DS} = 500V$



**Absolute Maximum Ratings:**

Drain-to-Source Voltage, $V_{DSS}$	.....	500V
Drain Current, $I_D$ Continuous		
$T_C = +25^\circ C$	.....	6.2A
$T_C = +100^\circ C$	.....	3.9A
Pulsed (Note 1)	.....	34A
Total Power Dissipation ( $T_C = +25^\circ C$ ), $P_D$	.....	85W
Derate Above $25^\circ C$	.....	$0.68W/^\circ C$
Gate-Source Voltage, $V_{GS}$	.....	$\pm 30V$
Single Pulsed Avalanche Energy (Note 2), $E_{AS}$	.....	641mJ
Avalanche Current (Note 1), $I_{AR}$	.....	6.2A
Repetitive Avalanche Energy (Note 1), $E_{AR}$	.....	8.5mJ
Peak Diode Recovery $dv/dt$ (Note 3), $dv/dt$	.....	3.5V/ns
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, 1/8" from case, 5sec), $T_L$	.....	$+300^\circ C$
Thermal Resistance, Junction-to-Case, $R_{thJC}$	.....	$1.46^\circ C/W$
Thermal Resistance, Junction-to-Ambient, $R_{thJA}$	.....	$40^\circ C/W$

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

Note 2.  $L = 30mH$ ,  $I_{AS} = 6.2A$ ,  $V_{DD} = 50V$ ,  $R_G = 27\leq$ , Starting  $T_J = +25^\circ C$ .

Note 3.  $I_{SD} \leq 8A$ ,  $di/dt \leq 160A/\text{° s}$ ,  $V_{DD} \leq V_{(BR)DSS}$ , Starting  $T_J = +25\text{°C}$ .

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$\text{BV}_{\text{DSS}}$	$V_{\text{GS}} = 0\text{V}, I_D = 250^\circ\text{A}$	500	—	—	V
Breakdown Voltage Temperature Coefficient	$\pm V_{(\text{BR})\text{DSS}}/\pm T_J$	$I_D = 250^\circ\text{A}$	—	0.66	—	$\text{V}/^\circ\text{C}$
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}} = 5\text{V}, I_D = 250^\circ\text{A}$	2.0	—	4.0	V
Gate-Source Leakage Forward	$I_{\text{GSS}}$	$V_{\text{GS}} = 30\text{V}$	—	—	100	nA
Gate-Source Leakage Reverse	$I_{\text{GSS}}$	$V_{\text{GS}} = -30\text{V}$	—	—	-100	nA
Drain-to-Source Leakage Current	$I_{\text{DSS}}$	$V_{\text{DS}} = 500\text{V}$	—	—	10	$^\circ\text{A}$
		$V_{\text{DS}} = 400\text{V}, T_C = +125^\circ\text{C}$	—	—	100	$^\circ\text{A}$
Static Drain-Source ON Resistance	$R_{\text{DS}(\text{on})}$	$V_{\text{GS}} = 10\text{V}, I_D = 3.1\text{A}$ , Note 4	—	—	0.85	$\leq$
Forward Transconductance	$g_{\text{fs}}$	$V_{\text{DS}} = 50\text{V}, I_D = 3.1\text{A}$ , Note 4	—	5.73	—	mhos
Input Capacitance	$C_{\text{iss}}$	$V_{\text{GS}} = 0\text{V}, V_{\text{DS}} = 25\text{V}, f = 1\text{MHz}$	—	1190	1550	pF
Output Capacitance	$C_{\text{oss}}$		—	150	175	pF
Reverse Transfer Capacitance	$C_{\text{rss}}$		—	166	75	pF
Turn-On Delay Time	$t_{\text{d}(\text{on})}$	$V_{\text{DD}} = 250\text{V}, I_D = 8\text{A}, R_G = 9.1\leq$ , Note 4, Note 5	—	18	45	ns
Rise Time	$t_r$		—	22	55	ns
Turn-Off Delay Time	$t_{\text{d}(\text{off})}$		—	83	175	ns
Fall Time	$t_f$		—	30	70	ns
Total Gate Charge	$Q_g$	$V_{\text{GS}} = 10\text{V}, I_D = 8\text{A}, V_{\text{DS}} = 400\text{V}$ , Note 4, Note 5	—	57	74	nC
Gate-Source Charge	$Q_{\text{gs}}$		—	7.5	—	nC
Gate-Drain ("Miller") Charge	$Q_{\text{gd}}$		—	28.4	—	nC

**Source-Drain Diode Ratings and Characteristics**

Continuous Source Current	$I_S$	(Body Diode)	—	—	6.2	A
Pulse Source Current	$I_{\text{SM}}$	(Body Diode) Note 1	—	—	34	A
Diode Forward Voltage	$V_{\text{SD}}$	$T_J = +25^\circ\text{C}, I_S = 6.2\text{A}, V_{\text{GS}} = 0\text{V}$ , Note 4	—	—	1.4	V
Reverse Recovery Time	$t_{\text{rr}}$	$T_J = +25^\circ\text{C}, I_F = 8\text{A}, dI_F/dt = 100\text{A}/^\circ\text{s}$ , Note 4	—	370	—	ns
Reverse Recovery Charge	$Q_{\text{rr}}$		—	3.9	—	$^\circ\text{C}$

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

Note 4. Pulse Test: Pulse Width =  $250^\circ\text{s}$ , Duty Cycle  $\leq 2\%$ .

Note 5. Essentially independent of operating temperature.

