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## NTE2911 MOSFET N-Channel, Enhancement Mode High Speed Switch TO220SIS Type Package

**Features:**

- Low Drain-Source ON-Resistance
- High Forward Transfer Admittance
- Low Leakage Current
- Enhancement Mode

**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$ , Note 1 unless otherwise specified)

Drain-Source Voltage, $V_{DSS}$ .....	500V
Drain-Gate Voltage ( $R_{GS} = 20k\Omega$ ), $V_{DGR}$ .....	500V
Gate-Source Voltage, $V_{GSS}$ .....	$\pm 30V$
Drain Current (Note 2), $I_D$	
Continuous .....	12A
Pulse ( $t = 1ms$ ) .....	48A
Drain Power Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$ .....	40W
Single Pulse Avalanche Energy (Note 3), $E_{AS}$ .....	364mJ
Avalanche Current, $I_{AR}$ .....	12A
Repetitive Avalanche Energy (Note 4), $E_{AR}$ .....	4mJ
Channel Temperature $T_{ch}$ .....	$+150^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+150^\circ\text{C}$
Thermal Resistance, Channel-to-Case, $R_{th(ch-c)}$ .....	$3.125^\circ\text{C/W}$
Thermal Resistance, Channel-to-Ambient, $R_{th(ch-a)}$ .....	$62.5^\circ\text{C/W}$

Note 1. Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the Absolute Maximum Ratings.

Note 2. Ensure that the channel temperature does not exceed  $+150^\circ\text{C}$ .

Note 3.  $V_{DD} = 90V$ ,  $T_{ch} = +25^\circ\text{C}$  (Initial),  $L = 4.3mH$ ,  $I_{AR} = 12A$ ,  $R_G = 25\Omega$ .

Note 4. Repetitive rating: pulse width limited by maximum channel temperature.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \pm 25\text{V}, V_{DS} = 0\text{V}$	-	-	$\pm 10$	$\mu\text{A}$
Gate-to-Source Breakdown Voltage	$V_{(BR)GSS}$	$V_{DS} = 0\text{V}, I_G = \pm 10\mu\text{A}$	$\pm 30$	-	-	V
Drain Cut-Off Current	$I_{DSS}$	$V_{DS} = 500\text{V}, V_{GS} = 0\text{V}$	-	-	100	$\mu\text{A}$
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{V}, I_D = 10\text{mA}$	500	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = 10\text{V}, I_D = 1\text{mA}$	2.0	-	4.0	V
Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 6\text{A}$	-	0.4	0.52	$\Omega$
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 10\text{V}, I_D = 6\text{A}$	3.5	8.5	-	S
Input Capacitance	$C_{iss}$	$V_{GS} = 0\text{V}, V_{DS} = 25\text{V}, f = 1\text{MHz}$	-	1500	-	pF
Output Capacitance	$C_{oss}$		-	180	-	pF
Reverse Transfer Capacitance	$C_{rss}$		-	15	-	pF
Turn-On Time	$t_{on}$	$V_{DD} = 200\text{V}, I_D = 6\text{A}, R_L = 33\Omega,$ $V_{GS} = 10\text{V}, \text{Duty} \leq 1\%, t_w = 10\mu\text{s}$	-	50	-	ns
Rise Time	$t_r$		-	22	-	ns
Turn-Off Time	$t_{off}$		-	170	-	ns
Fall Time	$t_f$		-	36	-	ns
Total Gate Charge	$Q_g$	$I_D = 12\text{A}, V_{DD} = 400\text{V}, V_{GS} = 10\text{V}$	-	42	-	nC
Gate-to-Source Charge	$Q_{gs}$		-	23	-	nC
Gate-to-Drain ("Miller") Charge	$Q_{gd}$		-	19	-	nC

**Source-Drain Ratings and Characteristics:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Drain Reverse Current	$I_{DR}$	Note 2	-	-	12	A
Pulse Drain Reverse Current	$I_{DRP}$	Note 2	-	-	48	A
Diode Forward Voltage	$V_{DSF}$	$I_{DR} = 12\text{A}, V_{GS} = 0\text{V}$	-	-	-1.7	V
Reverse Recovery Time	$t_{rr}$	$I_{DR} = 12\text{A}, V_{GS} = 0\text{V},$ $di_{DR}/dt = 100\text{A}/\mu\text{s}$	-	1200	-	ns
Reverse Recovery Charge	$Q_{rr}$		-	16	-	$\mu\text{C}$

Note 2. Ensure that the channel temperature does not exceed  $+150^\circ\text{C}$ .



