NTE2911
MOSFET
N–Channel, Enhancement Mode
High Speed Switch
TO–220 Full Pack Type Package

Features:
- Low Drain–Source ON–Resistance
- High Forward Transfer Admittance
- Low Leakage Current
- Enhancement Mode
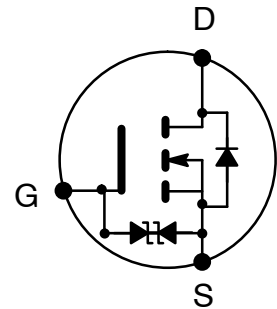
Absolute Maximum Ratings: (T_A = +25°C, Note 1 unless otherwise specified)

Drain–Source Voltage, V_{DSS} 500V

Drain–Gate Voltage (R_{GS} = 20kΩ), V_{DGR} 500V

Gate–Source Voltage, V_{GSS} . . . . ±30V

Drain Current (Note 2), I_D
      Continuous 12A
      Pulse (t = 1ms) 48A

Drain Power Dissipation (T_C = +25°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°C

Storage Temperature Range, T_{stg} . . . . −55° to +150°C

Thermal Resistance, Channel–to–Case, $R_{th(ch-c)}$ . . . . 3.125°C/W

Thermal Resistance, Channel–to–Ambient, $R_{th(ch-a)}$ . . . . 62.5°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/cur- rent/voltage, etc.) are within the Absolute Maximum Ratings.

Note 2. Ensure that the channel temperature does not exceed +150°C.

Note 3. V_{DD} = 90V, T_{ch} = +25°C (Initial), L = 4.3mH, I_{AR} = 12A, R_G = 25Ω.

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

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate Leakage Current	I_{GSS}	V_{GS} = ±25V, V_{DS} = 0V	–	–	±10	µA
Gate-to-Source Breakdown Voltage	$V_{(BR)GSS}$	V_{DS} = 0V, I_G = ±10µA	±30	–	–	V
Drain Cut-Off Current	I_{DSS}	V_{DS} = 500V, V_{GS} = 0V	–	–	100	µA
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 10mA	500	–	–	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = 10V, I_D = 1mA	2.0	–	4.0	V
Drain-to-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 6A	–	0.4	0.52	Ω
Forward Transfer Admittance	$|y_{fs}|$	V_{DS} = 10V, I_D = 6A	3.5	8.5	–	S
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	–	1500	–	pF
Output Capacitance	C_{oss}		–	180	–	pF
Reverse Transfer Capacitance	C_{rss}		–	15	–	pF
Turn-On Time	t_{on}	V_{DD} = 200V, I_D = 6A, R_L = 33Ω, V_{GS} = 10V, Duty ≤ 1%, t_w = 10µs	–	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 = 12A, V_{DD} = 400V, V_{GS} = 10V	–	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°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} = 12A, V_{GS} = 0V	–	–	–1.7	V
Reverse Recovery Time	t_{rr}	I_{DR} = 12A, V_{GS} = 0V, dI_{DR}/dt = 100A/µs	–	1200	–	ns
Reverse Recovery Charge	Q_{rr}		–	16	–	µC

Note 2. Ensure that the channel temperature does not exceed +150°C.

.181 (4.6)

.394 (10.0)

.106 (2.7)

.236
(6.0)

.118
(3.0)

Isol

.590
(15.0)

.110
(2.8)

G   D   S

.492
(12.5)
Min

.100 (2.54)

.102 (2.6)