

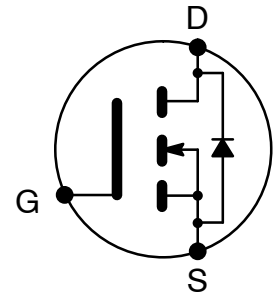


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NTE2931 MOSFET N-Channel, Enhancement Mode High Speed Switch TO3PML Type Package

Features:

- Avalanche Rugged Technology
- Rugged Gate Oxide Technology
- Lower Input Capacitance
- Improved Gate Charge
- Extended Safe Operating Area
- Lower $R_{DS(on)}$: $0.144 \leq$ Typ
- Lower Leakage Current: 10° A (Max) @ $V_{DS} = 200V$



Absolute Maximum Ratings:

Drain-to-Source Voltage, V_{DSS}	200V
Drain Current, I_D	
Continuous	
$T_C = +25^{\circ}C$	12.8A
$T_C = +100^{\circ}C$	8.1A
Pulsed (Note 1)	80A
Total Power Dissipation ($T_C = +25^{\circ}C$), P_D	73W
Derate Above $25^{\circ}C$	0.59W/ $^{\circ}C$
Gate-Source Voltage, V_{GS}	$\pm 30V$
Single Pulsed Avalanche Energy (Note 2), E_{AS}	328mJ
Avalanche Current (Note 1), I_{AR}	12.8A
Repetitive Avalanche Energy (Note 1), E_{AR}	7.3mJ
Peak Diode Recovery dv/dt (Note 3), dv/dt	5.0V/ns
Operating Junction Temperature Range, T_J	-55° to $+150^{\circ}C$
Storage Temperature Range, T_{stg}	-55° 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}	1.7 $^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient, R_{thJA}	40 $^{\circ}C/W$

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

Note 2. $L = 3mH$, $I_{AS} = 12.8A$, $V_{DD} = 50V$, $R_G = 27 \leq$, Starting $T_J = +25^{\circ}C$.

Note 3. $I_{SD} \leq 18A$, $di/dt \leq 260A/^\circ s$, $V_{DD} \leq V_{(BR)DSS}$, Starting $T_J = +25^\circ C$.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain–Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250^\circ A$	200	–	–	V
Breakdown Voltage Temperature Coefficient	$\pm V_{(BR)DSS} / \pm T_J$	$I_D = 250^\circ A$	–	0.26	–	$V/^\circ\text{C}$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = 5V, I_D = 250^\circ A$	2.0	–	4.0	V
Gate–Source Leakage Forward	I_{GSS}	$V_{GS} = 30V$	–	–	100	nA
Gate–Source Leakage Reverse	I_{GSS}	$V_{GS} = -30V$	–	–	-100	nA
Drain–to–Source Leakage Current	I_{DSS}	$V_{DS} = 200V$	–	–	10	$^\circ A$
		$V_{DS} = 160V, T_C = +125^\circ\text{C}$	–	–	100	$^\circ A$
Static Drain–Source ON Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 6.4A, \text{Note 4}$	–	–	0.18	\leq
Forward Transconductance	g_{fs}	$V_{DS} = 40V, I_D = 6.4A, \text{Note 4}$	–	8.87	–	mhos
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 25V, f = 1\text{MHz}$	–	1160	1500	pF
Output Capacitance	C_{oss}		–	210	250	pF
Reverse Transfer Capacitance	C_{rss}		–	94	110	pF
Turn–On Delay Time	$t_{d(on)}$	$V_{DD} = 100V, I_D = 18A, R_G = 9.1\leq, \text{Note 4, Note 5}$	–	17	40	ns
Rise Time	t_r		–	16	40	ns
Turn–Off Delay Time	$t_{d(off)}$		–	48	110	ns
Fall Time	t_f		–	24	60	ns
Total Gate Charge	Q_g	$V_{GS} = 10V, I_D = 18A, V_{DS} = 160V, \text{Note 4, Note 5}$	–	44	58	nC
Gate–Source Charge	Q_{gs}		–	10.4	–	nC
Gate–Drain (“Miller”) Charge	Q_{gd}		–	27.1	–	nC
Source–Drain Diode Ratings and Characteristics						
Continuous Source Current	I_S	(Body Diode)	–	–	12.8	A
Pulse Source Current	I_{SM}	(Body Diode) Note 1	–	–	80	A
Diode Forward Voltage	V_{SD}	$T_J = +25^\circ\text{C}, I_S = 12.8A, V_{GS} = 0V, \text{Note 4}$	–	–	1.5	V
Reverse Recovery Time	t_{rr}	$T_J = +25^\circ\text{C}, I_F = 18A, di_F/dt = 100A/^\circ s, \text{Note 4}$	–	195	–	ns
Reverse Recovery Charge	Q_{rr}		–	1.35	–	$^\circ\text{C}$

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

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

Note 5. Essentially independent of operating temperature.

