

NTE2930 MOSFET N-Channel, Enhancement Mode High Speed Switch

Features:

- Avalanche Rugged Technology
- Rugged Gate Oxide Technology
- Lower Input Capacitance
- Improved Gate Charge
- Extended Safe Operating Area
- Lower $R_{DS(on)}$: 0.032Ω Typ
- Lower Leakage Current: $10\mu A$ (Max) @ $V_{DS} = 100V$

Absolute Maximum Ratings:

Drain-to-Source Voltage, V_{DSS}	100V
Drain Current, I_D	
Continuous	
$T_C = +25^\circ C$	31A
$T_C = +100^\circ C$	21.9A
Pulsed (Note 1)	170A
Total Power Dissipation ($T_C = +25^\circ C$), P_D	100W
Derate Above $25^\circ C$	0.67W/ $^\circ C$
Gate-Source Voltage, V_{GS}	$\pm 20V$
Single Pulsed Avalanche Energy (Note 2), E_{AS}	641mJ
Avalanche Current (Note 1), I_{AR}	31A
Repetitive Avalanche Energy (Note 1), E_{AR}	10mJ
Peak Diode Recovery dv/dt (Note 3), dv/dt	6.5V/ns
Operating Junction Temperature Range, T_J	-55° to $+175^\circ C$
Storage Temperature Range, T_{stg}	-55° to $+175^\circ C$
Maximum Lead Temperature (During Soldering, 1/8" from case, 5sec), T_L	$+300^\circ C$
Thermal Resistance, Junction-to-Case, R_{thJC}	1.5 $^\circ C/W$
Thermal Resistance, Junction-to-Ambient, R_{thJA}	40 $^\circ C/W$

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

Note 2. $L = 1mH$, $I_{AS} = 31A$, $V_{DD} = 25V$, $R_G = 27\Omega$, Starting $T_J = +25^\circ C$.

Note 3. $I_{SD} \leq 40A$, $di/dt \leq 470A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, 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 = 250μA	100	–	–	V
Breakdown Voltage Temperature Coefficient	ΔV _{(BR)DSS} /ΔT _J	I _D = 250μA	–	0.11	–	V/°C
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = 5V, I _D = 250μA	2.0	–	4.0	V
Gate–Source Leakage Forward	I _{GSS}	V _{GS} = 10V	–	–	100	nA
Gate–Source Leakage Reverse	I _{GSS}	V _{GS} = –10V	–	–	–100	nA
Drain–to–Source Leakage Current	I _{DSS}	V _{DS} = 100V	–	–	10	μA
		V _{DS} = 80V, T _C = +150°C	–	–	100	μA
Static Drain–Source ON Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 15.5A, Note 4	–	–	0.04	Ω
Forward Transconductance	g _{fs}	V _{DS} = 40V, I _D = 15.5A, Note 4	–	27.3	–	mhos
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 25V, f = 1MHz	–	1750	2270	pF
Output Capacitance	C _{oss}		–	420	485	pF
Reverse Transfer Capacitance	C _{rss}		–	185	215	pF
Turn–On Delay Time	t _{d(on)}	V _{DD} = 50V, I _D = 40A, R _G = 6.2Ω, Note 4, Note 5	–	17	50	ns
Rise Time	t _r		–	20	50	ns
Turn–Off Delay Time	t _{d(off)}		–	80	160	ns
Fall Time	t _f		–	45	100	ns
Total Gate Charge	Q _g	V _{GS} = 10V, I _D = 40A, V _{DS} = 80V, Note 4, Note 5	–	75	97	nC
Gate–Source Charge	Q _{gs}		–	13.2	–	nC
Gate–Drain (“Miller”) Charge	Q _{gd}		–	34.8	–	nC
Source–Drain Diode Ratings and Characteristics						
Continuous Source Current	I _S	(Body Diode)	–	–	31	A
Pulse Source Current	I _{SM}	(Body Diode) Note 1	–	–	170	A
Diode Forward Voltage	V _{SD}	T _J = +25°C, I _S = 31A, V _{GS} = 0V, Note 4	–	–	1.6	V
Reverse Recovery Time	t _{rr}	T _J = +25°C, I _F = 40A, di _F /dt = 100A/μs, Note 4	–	135	–	ns
Reverse Recovery Charge	Q _{rr}		–	0.65	–	μC

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

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

Note 5. Essentially independent of operating temperature.

