

NTE2934 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 $R_{DS(on)}$: 0.254 Ω Typ
- Lower Leakage Current: 10 μ A (Max) @ $V_{DS} = 400V$

Absolute Maximum Ratings:

Drain-to-Source Voltage, V_{DSS}	400V
Drain Current, I_D	
Continuous	
$T_C = +25^\circ C$	11.5A
$T_C = +100^\circ C$	7.3A
Pulsed (Note 1)	68A
Total Power Dissipation ($T_C = +25^\circ C$), P_D	92W
Derate Above $25^\circ C$	0.74W/ $^\circ C$
Gate-Source Voltage, V_{GS}	$\pm 30V$
Single Pulsed Avalanche Energy (Note 2), E_{AS}	1134mJ
Avalanche Current (Note 1), I_{AR}	11.5A
Repetitive Avalanche Energy (Note 1), E_{AR}	9.2mJ
Peak Diode Recovery dv/dt (Note 3), dv/dt	4.0V/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}	1.35 $^\circ C/W$
Thermal Resistance, Junction-to-Ambient, R_{thJA}	40 $^\circ C/W$

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

Note 2. $L = 15mH$, $I_{AS} = 11.5A$, $V_{DD} = 50V$, $R_G = 27\Omega$, Starting $T_J = +25^\circ C$.

Note 3. $I_{SD} \leq 17A$, $di/dt \leq 250A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, 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	400	–	–	V
Breakdown Voltage Temperature Coefficient	ΔV _{(BR)DSS} /ΔT _J	I _D = 250μA	–	0.46	–	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} = 30V	–	–	100	nA
Gate–Source Leakage Reverse	I _{GSS}	V _{GS} = –30V	–	–	–100	nA
Drain–to–Source Leakage Current	I _{DSS}	V _{DS} = 400V	–	–	10	μA
		V _{DS} = 320V, T _C = +125°C	–	–	100	μA
Static Drain–Source ON Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 5.75A, Note 4	–	–	0.3	Ω
Forward Transconductance	g _{fs}	V _{DS} = 50V, I _D = 5.75A, Note 4	–	9.75	–	mhos
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 25V, f = 1MHz	–	2140	2780	pF
Output Capacitance	C _{oss}		–	305	350	pF
Reverse Transfer Capacitance	C _{rss}		–	134	155	pF
Turn–On Delay Time	t _{d(on)}	V _{DD} = 200V, I _D = 17A, R _G = 6.2Ω, Note 4, Note 5	–	20	50	ns
Rise Time	t _r		–	22	55	ns
Turn–Off Delay Time	t _{d(off)}		–	100	210	ns
Fall Time	t _f		–	32	75	ns
Total Gate Charge	Q _g	V _{GS} = 10V, I _D = 17A, V _{DS} = 320V, Note 4, Note 5	–	101	131	nC
Gate–Source Charge	Q _{gs}		–	14	–	nC
Gate–Drain (“Miller”) Charge	Q _{gd}		–	51.5	–	nC
Source–Drain Diode Ratings and Characteristics						
Continuous Source Current	I _S	(Body Diode)	–	–	11.5	A
Pulse Source Current	I _{SM}	(Body Diode) Note 1	–	–	68	A
Diode Forward Voltage	V _{SD}	T _J = +25°C, I _S = 11.5A, V _{GS} = 0V, Note 4	–	–	1.5	V
Reverse Recovery Time	t _{rr}	T _J = +25°C, I _F = 17A, di _F /dt = 100A/μs, Note 4	–	385	–	ns
Reverse Recovery Charge	Q _{rr}		–	4.85	–	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.

