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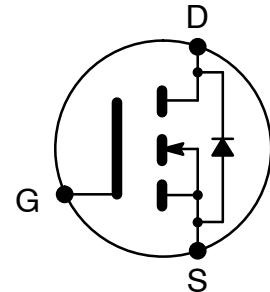
NTE2950 MOSFET N-Channel, Enhancement Mode High Speed Switch TO-262 Type Package

Features:

- Low $R_{DS(ON)}$ Reduces Losses
- Low Gate Charge Improves the Switching Performance
- Improved Diode Recovery Improves Switching & EMI Performance
- 30V Gate Voltage Rating Improves Robustness
- Fully Characterized Avalanche SOA

Applications

- Motion Control Applications
- High Efficiency Synchronous Rectification in SMPS
- Uninterruptible Power Supply
- Hard Switched and High Frequency Circuits



Absolute Maximum Ratings:

Continuous Drain Current ($V_{GS} = 10V$), I_D	
$T_C = +25^\circ C$ (Note 1)	85A
$T_C = +100^\circ C$	60A
Pulsed Drain Current (Note 2), I_{DM}	330A
Maximum Power Dissipation ($T_C = +25^\circ C$), P_D	350W
Linear Derating Factor	2.3W/ $^\circ C$
Gate-to-Source Voltage, V_{GS}	$\pm 30V$
Single Pulse Avalanche Energy (Thermally Limited, Note 3), E_{AS}	120mJ
Operating Junction Temperature Range, T_{opr}	-55° to $+175^\circ C$
Storage Temperature Range, T_{STG}	-55° to $+175^\circ C$
Lead Temperature (During soldering, 10 sec. max, 1.6mm from case), T_L	$+300^\circ C$
Thermal Resistance, Junction-to-Case (Note 4, Note 5), R_{thJC}	0.43 $^\circ C/W$
Thermal Resistance, Junction-to-Ambient (Note 4), R_{thJA}	40 $^\circ C/W$

Note 1. Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 75A

Note 2. Repetitive rating: pulse width limited by max. junction temperature.

Note 3. Limited by T_{Jmax} , starting $T_J = +25^\circ C$, $L = 0.096mH$, $R_G = 25\Omega$, $I_{AS} = 50A$, $V_{GS} = 10V$. Device not recommended for use above this value.

Note 4. Thermal resistance is measured at T_J approximately $+90^\circ C$.

Note 5. R_{thJC} (end of life) = 0.65 $^\circ C/W$. This is the maximum measured value after 1000 temperature cycles from -55° to $+15^\circ C$ and is accounted for by the physical wearout of the die attach medium.



Electrical Characteristics:

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static ($T_J = +25^\circ\text{C}$ unless otherwise specified)						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	150	–	–	V
Breakdown Voltage Temp. Coefficient	$\Delta V_{(BR)DSS} / \Delta T_J$	Reference to $+25^\circ\text{C}$, $I_D = 1\text{mA}$, Note 2	–	150	–	mV/ $^\circ\text{C}$
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 33A$, Note 6	–	12	15	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	3.0	–	5.0	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS} = 150V,$ $V_{GS} = 0V$	–	–	20	μA
			$T_J = +125^\circ\text{C}$	–	–	1.0
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20V$	–	–	± 100	nA
Internal Gate Resistance	$R_{G(int)}$		–	0.8	–	Ω
Dynamic ($T_J = +25^\circ\text{C}$ unless otherwise specified)						
Forward Transconductance	g_{fs}	$V_{DS} = 25V, I_D = 50A$	130	–	–	S
Total Gate Charge	Q_g	$I_D = 50A, V_{DS} = 75V,$ $V_{GS} = 10V$, Note 6	–	71	110	nC
Gate-to-Source Charge	Q_{gs}		–	24	–	nC
Gate-to-Drain (“Miller”) Charge	Q_{gd}		–	21	–	nC
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 98V, I_D = 50A, R_G = 2.5\Omega,$ $V_{GS} = 10V$, Note 6	–	18	–	ns
Rise Time	t_r		–	60	–	ns
Turn-Off Delay Time	$t_{d(off)}$		–	25	–	ns
Fall Time	t_f		–	35	–	ns
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 50V, f = 1\text{MHz}$	–	4460	–	pF
Output Capacitance	C_{oss}		–	390	–	pF
Reverse Transfer Capacitance	C_{rss}		–	82	–	pF
Diode Characteristics						
Continuous Source Current (Body Diode)	I_S	Note 1	–	–	85	A
Pulsed Source Current (Body Diode)	I_{SM}	Note 2	–	–	330	A
Diode Forward Voltage	V_{SD}	$I_S = 50A, V_{GS} = 0V, T_J = +25^\circ\text{C}$, Note 6	–	–	1.3	V
Reverse Recovery Time	t_{rr}	$I_D = 50A, V_R = 128V,$ $di/dt = 100A/\mu\text{s}$, Note 6	–	89	130	ns
Reverse Recovery Charge	Q_{rr}		–	300	450	nC
Reverse Recovery Current	I_{RRM}		–	6.5	–	A
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Note 1. Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 75A

Note 2. Repetitive rating: pulse width limited by max. junction temperature.

Note 6. Pulse width $\leq 400\mu\text{s}$; duty cycle $\leq 2\%$.

