

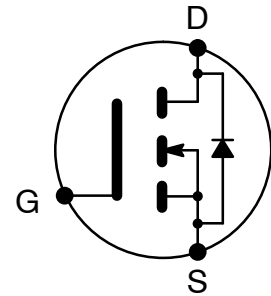


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NTE2953 MOSFET N-Channel, Enhancement Mode High Speed Switch TO-220 Full Pack Type Package

Applications:

- AC-to-DC Power Supply Equipment
- Motor Control
- Server Power Supplies
- Synchronous Rectification



Absolute Maximum Ratings:

Drain-Source Voltage ($+25^{\circ}\text{C} \leq T_J \leq +175^{\circ}\text{C}$), V_{DS}	100V
Drain-Gate Voltage ($+25^{\circ}\text{C} \leq T_J \leq +175^{\circ}\text{C}$, $R_{GS} = 20\text{k}\Omega$), V_{DSR}	100V
Gate-Source Voltage, V_{GS}	$\pm 20\text{V}$
Drain Current, I_D	
($V_{GS} = 10\text{V}$, $T_{mb} = +25^{\circ}\text{C}$)	70.4A
($V_{GS} = 10\text{V}$, $T_{mb} = +100^{\circ}\text{C}$)	49.7A
Peak Drain Current (Pulsed, $t_p \leq 10\mu\text{s}$, $T_{mb} = +25^{\circ}\text{C}$), I_{DM}	281A
Source Current ($T_{mb} = +25^{\circ}\text{C}$), I_S	53.2A
Peak Source Current (Pulsed, $t_p \leq 10\mu\text{s}$, $T_{mb} = +25^{\circ}\text{C}$), I_{SM}	281A
Non-Repetitive Drain-Source Avalanche Energy, $E_{DS(AL)S}$	
($V_{GS} = 10\text{V}$, $T_{J(init)} = +25^{\circ}\text{C}$, $I_D = 70.4\text{A}$, $V_{sup} \leq 100\text{V}$, Unclamped, $R_{GS} = 50\Omega$)	673mJ
Total Power Dissipation ($T_{mb} = +25^{\circ}\text{C}$), P_D	63.8W
Junction Temperature Range, T_J	-55° to $+175^{\circ}\text{C}$
Storage Temperature Range, T_{stg}	-55° to $+175^{\circ}\text{C}$
Peak Soldering Temperature, $T_{sld(M)}$	$+260^{\circ}\text{C}$
Maximum Thermal Resistance, Junction-to-Mounting Base, $R_{th(j-mb)}$	2.35K/W
Typical Thermal Resistance, Junction-to-Ambient, $R_{th(j-a)}$	55K/W
Isolation Capacitance ($f = 1\text{Mhz}$), C_{isol}	10pF
RMS Isolation Voltage, $V_{isol(RMS)}$	
($50\text{Hz} \leq f \leq 60\text{Hz}$, $RH \leq 65\%$, Sinusoidal Waveform, Clean and Dust Free)	2500V

Electrical Characteristics:

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain–Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A, T_J = +25^\circ C$	100	–	–	V
		$V_{GS} = 0V, I_D = 250\mu A, T_J = -55^\circ C$	90	–	–	V
Gate–Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 1mA, T_J = +25^\circ C$	2.0	3.0	4.0	V
		$V_{DS} = V_{GS}, I_D = 1mA, T_J = +175^\circ C$	1.0	–	–	V
		$V_{DS} = V_{GS}, I_D = 1mA, T_J = -55^\circ C$	–	–	4.6	V
Drain Leakage Current	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0, T_J = +25^\circ C$	–	–	10	μA
		$V_{DS} = 100V, V_{GS} = 0, T_J = +100^\circ C$	–	–	200	μA
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V, T_J = +25^\circ C$	–	2	100	nA
Drain–Source ON–State Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 15A, T_J = +25^\circ C$	–	3.95	4.6	m Ω
		$V_{GS} = 10V, I_D = 15A, T_J = +100^\circ C$	–	6.9	8.1	m Ω
		$V_{GS} = 10V, I_D = 15A, T_J = +175^\circ C$	–	11.05	12.9	m Ω
Internal Gate Resistance (AC)	R_G	f = 1MHz	–	0.9	–	Ω
Dynamic Characteristics						
Total Gate Charge	$Q_{G(tot)}$	$V_{GS} = 10V, V_{DS} = 50V, I_D = 15A$	–	153	–	nC
Gate–Source Charge	Q_{GS}		–	28	–	nC
Pre–Threshold Gate–Source Charge	$Q_{GS(th)}$		–	25	–	nC
Post–Threshold Gate–Source Charge	$Q_{GS(th-pl)}$		–	3	–	nC
Gate–Drain Charge	Q_{GD}		–	40	–	nC
Gate–Source Plateau Voltage	$V_{GS(pl)}$	$V_{DS} = 50V, I_D = 15A$	–	3.5	–	V
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 50V, f = 1MHz, T_J = +25^\circ C$	–	9900	–	pF
Output Capacitance	C_{oss}		–	660	–	pF
Reverse Transfer Capacitance	C_{rss}		–	381	–	pF
Turn–On Delay Time	$t_{d(on)}$	$V_{DS} = 50V, R_L = 4\Omega, V_{GS} = 10V, R_{G(ext)} = 4.7\Omega, T_J = +25^\circ C$	–	35	–	ns
Rise Time	t_r		–	40	–	ns
Turn–Off Delay Time	$t_{d(off)}$		–	170	–	ns
Fall Time	t_f		–	71	–	ns
Source–Drain Diode						
Source–Drain Voltage	V_{SD}	$I_S = 10A, V_{GS} = 0V, T_J = +25^\circ C$	–	0.72	1.2	V
Reverse Recovery Time	t_{rr}	$I_S = 10A, dI_S/dt = -100A/\mu s$	–	63	–	ns
Recovered Charge	Q_r	$V_{GS} = 0, V_{DS} = 50V$	–	173	–	nC

