ELECTRONICS, INC.
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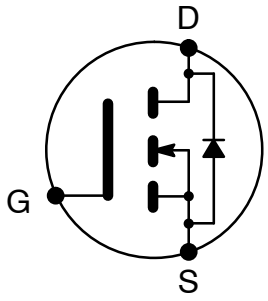
BLOOMFIELD, NJ 07003
(973) 748–5089
http://www.nteinc.com

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



Applications:

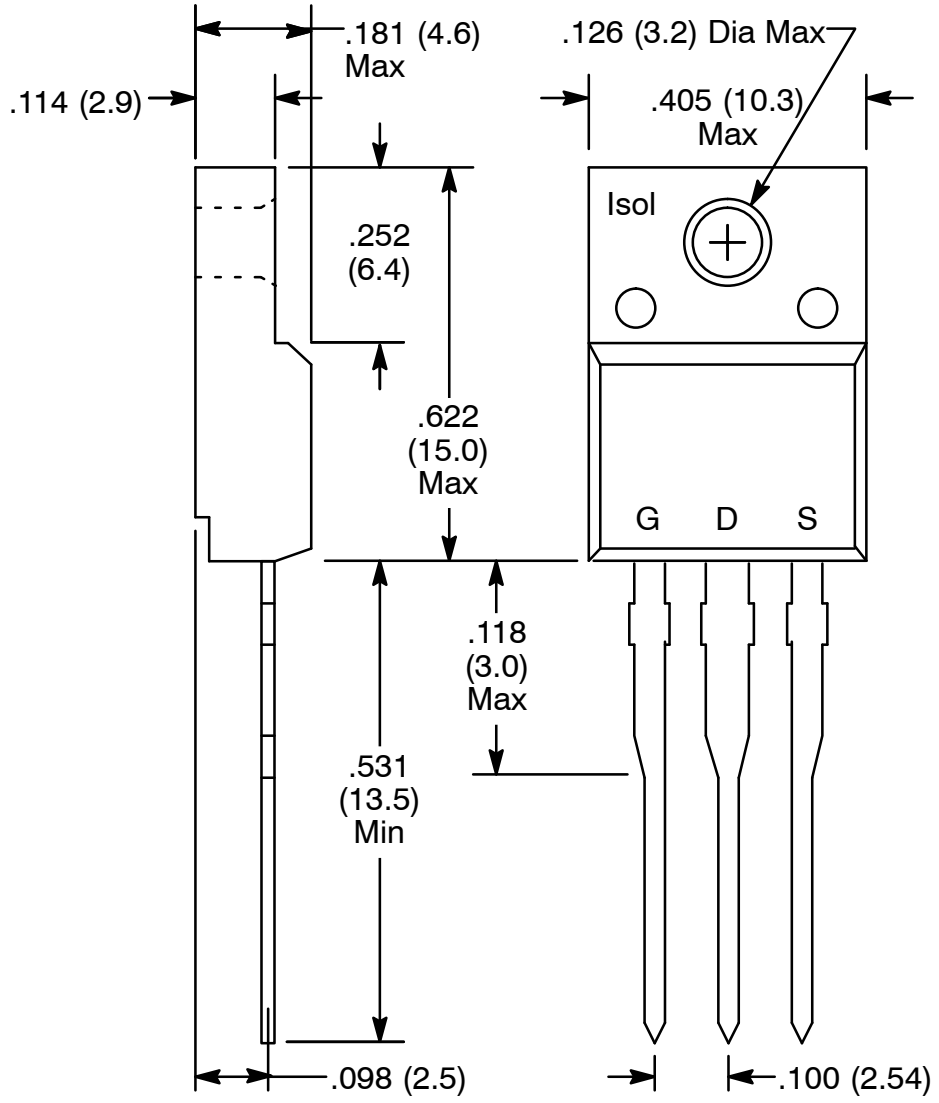
- AC–to–DC Power Supply Equipment
- Motor Control
- Server Power Supplies
- Synchronous Rectification

Absolute Maximum Ratings:

Drain–Source Voltage (+25°C ≤ T_J ≤ +175°C), V_{DS} 100V
Drain–Gate Voltage (+25°C ≤ T_J ≤ +175°C, R_{GS} = 20kΩ), V_{DSR} 100V
Gate–Source Voltage, V_{GS} . . . . . ±20V
Drain Current, I_D
(V_{GS} = 10V, T_{mb} = +25°C) 70.4A
(V_{GS} = 10V, T_{mb} = +100°C) 49.7A
Peak Drain Current (Pulsed, t_p ≤ 10μs, T_{mb} = +25°C), I_{DM} 281A
Source Current (T_{mb} = +25°C), I_S 53.2A
Peak Source Current (Pulsed, t_p ≤ 10μs, T_{mb} = +25°C), I_{SM} 281A
Non–Repetitive Drain–Source Avalanche Energy, $E_{DS(AL)S}$
(V_{GS} = 10V, $T_{J(init)}$ = +25°C, I_D = 70.4A, V_{sup} ≤ 100V, Unclamped, R_{GS} = 50Ω) 673mJ
Total Power Dissipation (T_{mb} = +25°C), P_D 63.8W
Junction Temperature Range, T_J . . . . . –55° to +175°C
Storage Temperature Range, T_{stg} . . . . . –55° to +175°C
Peak Soldering Temperature, $T_{sld(M)}$ . . . . . +260°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 = 1Mhz), C_{isol} 10pF
RMS Isolation Voltage, $V_{isol(RMS)}$
(50Hz ≤ f ≤ 60Hz, RH ≤ 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 = 250μA, T_J = +25°C	100	–	–	V
		V_{GS} = 0V, I_D = 250μA, T_J = –55°C	90	–	–	V
Gate–Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 1mA, T_J = +25°C	2.0	3.0	4.0	V
		V_{DS} = V_{GS}, I_D = 1mA, T_J = +175°C	1.0	–	–	V
		V_{DS} = V_{GS}, I_D = 1mA, T_J = –55°C	–	–	4.6	V
Drain Leakage Current	I_{DSS}	V_{DS} = 100V, V_{GS} = 0, T_J = +25°C	–	–	10	μA
		V_{DS} = 100V, V_{GS} = 0, T_J = +100°C	–	–	200	μA
Gate Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V, T_J = +25°C	–	2	100	nA
Drain–Source ON–State Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 15A, T_J = +25°C	–	3.95	4.6	mΩ
		V_{GS} = 10V, I_D = 15A, T_J = +100°C	–	6.9	8.1	mΩ
		V_{GS} = 10V, I_D = 15A, T_J = +175°C	–	11.05	12.9	mΩ
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°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 = 4Ω, V_{GS} = 10V, $R_{G(ext)}$ = 4.7Ω, T_J = +25°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°C	–	0.72	1.2	V
Reverse Recovery Time	t_{rr}	I_S = 10A, dI_S/dt = –100A/μs	–	63	–	ns
Recovered Charge	Q_r	V_{GS} = 0, V_{DS} = 50V	–	173	–	nC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