ELECTRONICS, INC.
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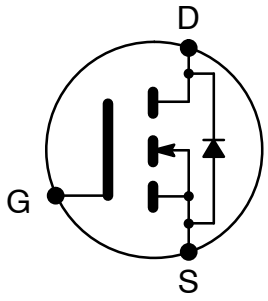
NTE2954
MOSFET
N–Channel, Enhancement Mode
High Speed Switch
TO–220 Full Pack Type Package



Features:
- Low Gate Charge: 147nC Typ
- Low Reverse Transfer Capacitance: 300pF Typ
- Fast Switching
- 100% Avalanche Tested
- Improved dv/dt Capability

Absolute Maximum Ratings: (T_C = +25°C unless otherwise specified)

Drain–Source Voltage, V_{DSS} 100V
Drain Current (Note 1), I_D
  Continuous
    T_C = +25°C 90A
    T_C = +100°C 68A
  Pulsed (Note 2) 360A
Drain–Source Diode Forward Current, I_S
  Continuous 90A
  Pulsed 360A
Gate–Source Voltage, V_{GSS} . . . . . ±30V
Single Pulsed Avalanche Energy (Note 3), E_{AS} 2430mJ
Avalanche Current (Note 2), I_{AR} 90A
Repetitive Avalanche Energy (Note 2), E_{AR} 25mJ
Peak Diode Recovery (Note 4), dv/dt 4.5V/ns
Power Dissipation (T_C = +25°C), P_D 83W
  Derate Above +25°C 0.55W/C
Operating Junction Temperature Range, T_J . . . . . –55° to +175°C
Storage Temperature Range, T_{stg} . . . . . –55° to +175°C
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 1.8°C/W
Thermal Resistance, Junction–to–Ambient, R_{thJA} . . . . . 62.5°C/W

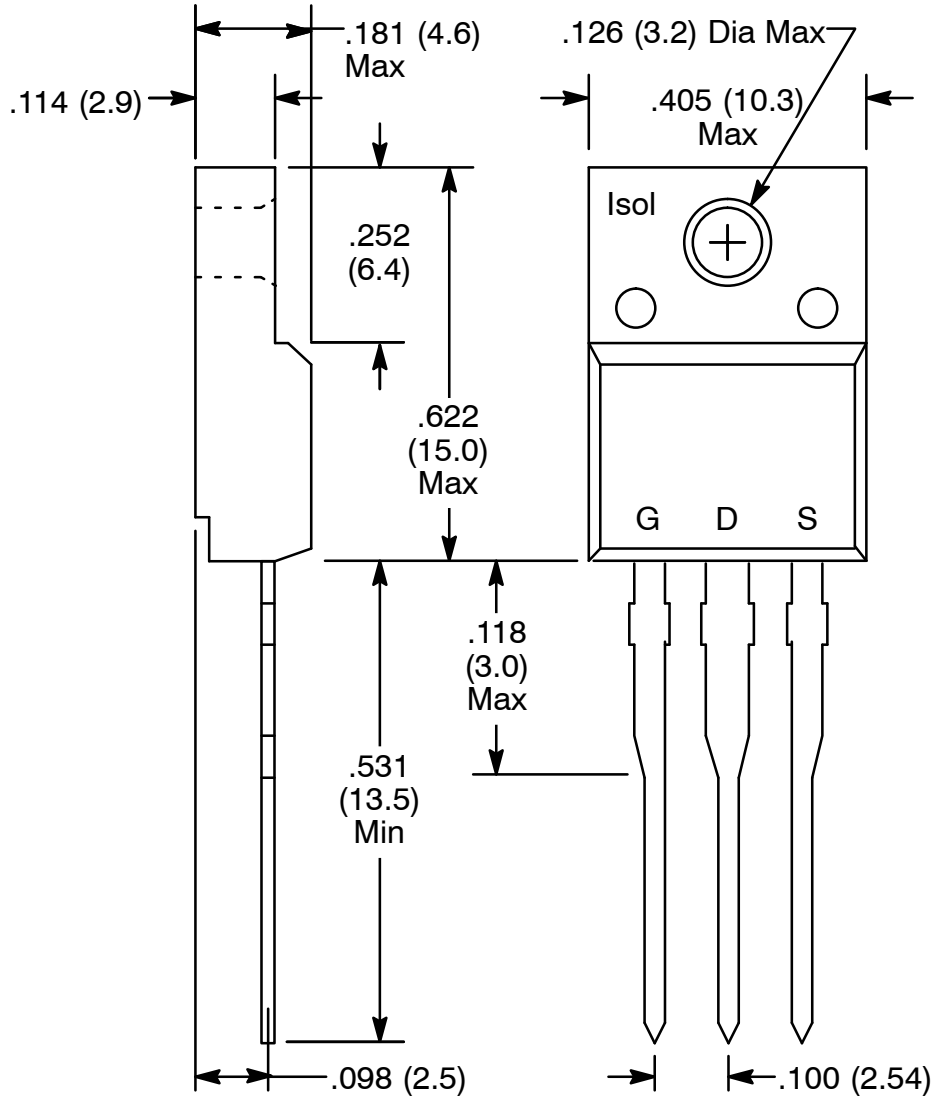
Note 1. Drain current limited by maximum junction temperature.
Note 2. Repetitive Rating: Pulse width limited by maximum junction temperature.
Note 3. L = 0.3mH, I_{AS} = 90A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = +25°C.
Note 4. I_{SD} ≤ 90A, di/dt ≤ 200A/μs, V_{DD} ≥ BV_{DSS}, Starting T_J = +25°C.

Electrical Characteristics: (T_C = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Drain–Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	100	–	–	V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	I_D = 250μA, Referenced to +25°C	–	0.1	–	V/°C
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V, V_{GS} = 0	–	–	1	μA
		V_{DS} = 80V, T_C = +150°C	–	–	10	μA
Gate–Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V	–	–	±100	nA
ON Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.0	–	4.0	V
Static Drain–Source ON Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 45A	–	8.5	10.0	mΩ
Forward Transconductance	g_{FS}	V_{DS} = 40V, I_D = 45A, Note 5	–	72	–	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	–	4730	6150	pF
Output Capacitance	C_{oss}		–	1180	1530	pF
Reverse Transfer Capacitance	C_{rss}		–	300	390	pF
Switching Characteristics						
Turn–On Delay Time	$t_{d(on)}$	V_{DD} = 50V, I_D = 90A, R_G = 25Ω, Note5, Note 6	–	52	114	ns
Rise Time	t_r		–	492	944	ns
Turn–Off Delay Time	$t_{d(off)}$		–	304	618	ns
Fall Time	t_f		–	355	720	ns
Total Gate Charge	Q_g	V_{DS} = 80V, I_D = 90A, V_{GS} = 10V, Note5, Note 6	–	147	191	nC
Gate–Source Charge	Q_{gs}		–	28	–	nC
Gate–Drain Charge	Q_{gd}		–	60	–	nC
Drain–Source Diode Characteristics and Maximum Ratings						
Drain–Source Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = 90A	–	–	1.4	V
Reverse Recovery Time	t_{rr}	V_{GS} = 0V, I_S = 90A, dI_F/dt = 100A/μs, Note 5	–	114	–	ns
Reverse Recovery Charge	Q_{rr}		–	0.54	–	μC

Note 5. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

Note 6. Essentially independent of operating temperature.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G D S
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Max
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Min
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.100 (2.54)