ELECTRONICS, INC.
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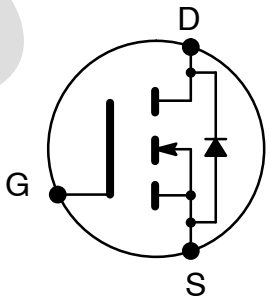
NTE2956
MOSFET
N–Channel, Enhancement Mode
High Speed Switch
TO–220 Full Pack Type Package

Features:
- $R_{DS(on)}$ = 380mΩ Max @ V_{GS} = 10V, I_D = 8A
- Low Gate Charge: 32nC Typ
- Low C_{RSS}: 20pF Typ
- 100% Avalanche Tested



Applications:
- LCD/LED/PDP TV
- Lighting
- Uninterruptible Power Supply

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

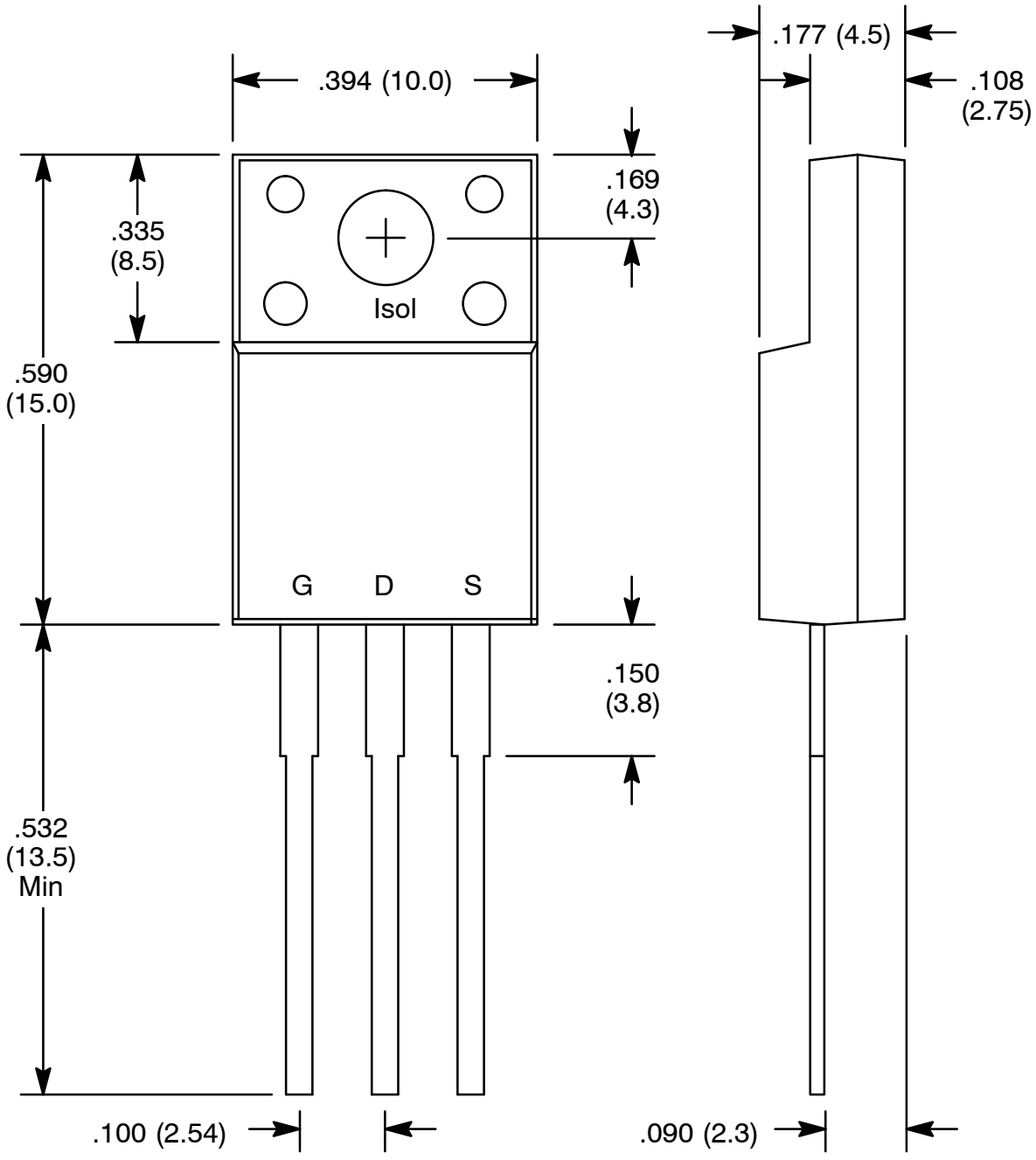
Drain–Source Voltage, V_{DSS} 500V
Gate–Source Voltage, V_{GSS} . . . . . ±30V
Drain Current (Note 1), I_D
  Continuous
    T_C = +25°C 16A
    T_C = +100°C 9.6A
  Pulsed (Note 2) 64A
Single Pulsed Avalanche Energy (Note 3), E_{AS} 780mJ
Avalanche Current (Note 2), I_{AR} 16A
Repetitive Avalanche Energy (Note 2), E_{AR} 20mJ
Peak Diode Recovery dv/dt (Note 4), dv/dt 4.5V/ns
Power Dissipation (T_C = +25°C), P_D 38.5W
  Derate Above +25°C . . . . . 0.3W/°C
Operating Temperature Range, T_J . . . . . –55° to +150°C
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C
Maximum Lead temperature (During Soldering, 1/8” from case, 5 sec), T_L . . . . . +300°C
Maximum Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 3.3°C/W
Maximum 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 = 5.5mH, I_{AS} = 16A, V_{DD} = 50V, R_G = 25Ω, starting T_J = +25°C.
Note 4. I_{SD} ≤ 16A, di/dt ≤ 200A/μs, V_{DD} ≤ $V_{(BR)DSS}$, 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	500	–	–	V
Breakdown Voltage Temperature Coefficient	$\Delta V_{(BR)DSS}/\Delta T_J$	I_D = 250μA, Referenced to +25°C	–	0.5	–	V/°C
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 500V, V_{GS} = 0	–	–	1.0	μA
		V_{DS} = 400V, T_C = +125°C	–	–	10	μA
Gate–Body Leakage Current	I_{GSS}	V_{GS} = ±30V, V_{DS} = 0V	–	–	±100	nA
ON Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	3.0	–	5.0	V
Static Drain–Source ON Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 8A	–	0.31	0.38	Ω
Forward Transconductance	g_{FS}	V_{DS} = 40V, I_D = 8A	–	23	–	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	–	1495	1945	pF
Output Capacitance	C_{oss}		–	235	310	pF
Reverse Transfer Capacitance	C_{rss}		–	20	30	pF
Switching Characteristics						
Turn–On Delay Time	$t_{d(on)}$	V_{DD} = 250V, I_D = 16A, R_G = 25Ω, Note 5	–	40	90	ns
Rise Time	t_r		–	150	310	ns
Turn–Off Delay Time	$t_{d(off)}$		–	65	140	ns
Fall Time	t_f		–	80	170	ns
Total Gate Charge	Q_g	V_{DD} = 400V, I_D = 16A, V_{GS} = 10V, Note 5	–	32	45	nC
Gate–Source Charge	Q_{gs}		–	8.5	–	nC
Gate–Drain Charge	Q_{gd}		–	14	–	nC
Drain–Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain–Source Diode Forward Current	I_S		–	–	9.2	A
Maximum Pulsed Drain–Source Diode Forward Current	I_{SM}		–	–	37	A
Drain–Source Diode Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = 16A	–	–	1.4	V
Reverse Recovery Time	t_{rr}	V_{GS} = 0V, I_S = 16A, dI_F/dt = 100A/μs	–	490	–	ns
Reverse Recovery Charge	Q_{rr}		–	5.0	–	μC

Note 5. Essentially independent of operating temperature typical characteristics.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