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NTE2921 MOSFET N-Ch, Enhancement Mode High Speed Switch

Features:

- Dynamic dv/dt Rating
- Repetitive Avalanche Rated
- Isolated Central Mounting Hole
- Fast Switching
- Ease of Paralleling
- Simple Drive Requirements

Absolute Maximum Ratings:

| | |
|--|-------------------------------|
| Continuous Drain Current ($V_{GS} = 10V$), I_D | |
| $T_C = +25^\circ C$ | 15A |
| $T_C = +100^\circ C$ | 9.7A |
| Pulsed Drain Current (Note 1), I_{DM} | 60A |
| Power Dissipation ($T_C = +25^\circ C$), P_D | 150W |
| Derate Linearly Above $25^\circ C$ | 1.2W/ $^\circ C$ |
| Gate-to-Source Voltage, V_{GS} | ± 20 |
| Single Pulse Avalanche Energy (Note 2), E_{AS} | 550mJ |
| Avalanche Current (Note 1), I_{AR} | 15A |
| Repetitive Avalanche Energy (Note 1), E_{AR} | 15mJ |
| Peak Diode Recovery dv/dt (Note 3), dv/dt | 4.8V/ns |
| Operating Junction Temperature Range, T_J | -55° to $+150^\circ C$ |
| Storage Temperature Range, T_{stg} | -55° to $+150^\circ C$ |
| Lead Temperature (During Soldering, 1.6mm from case for 10sec), T_L | $+300^\circ C$ |
| Mounting Torque (6-32 or M3 Screw) | 10 lbf•in (1.1N•m) |
| Thermal Resistance, Junction-to-Case, R_{thJC} | 0.83 $^\circ C/W$ |
| Thermal Resistance, Junction-to-Ambient, R_{thJA} | 40 $^\circ C/W$ |
| Typical Thermal Resistance, Case-to-Sink (Flat, Greased Surface), R_{thCS} | 0.24 $^\circ C/W$ |

Note 1. Repetitive rating; pulse width limited by maximum junction temperature.

Note 2. $V_{DD} = 50V$, starting $T_J = +25^\circ C$, $L = 3.9mH$, $R_G = 25\Omega$, $I_{AS} = 15A$

Note 3. $I_{SD} \leq 15A$, di/dt $\leq 150A/\mu s$, $V_{DD} \leq 250V$, $T_J \leq +150^\circ C$

Note 4. Pules Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

Electrical Characteristics: ($T_J = +25^\circ\text{C}$ unless otherwise specified)

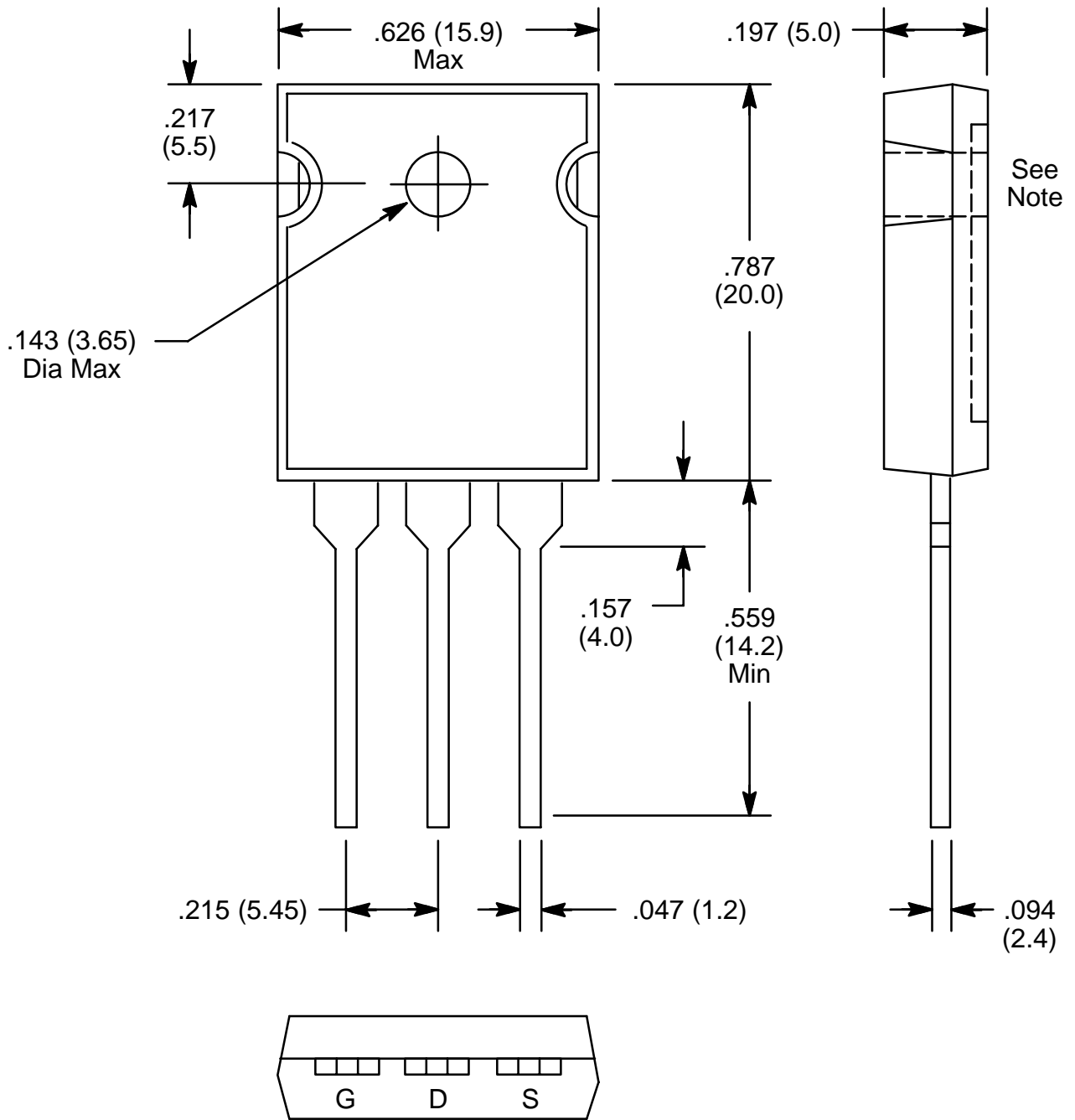
| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|---|--|-----|------|------|---------------------|
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$ | 250 | – | – | V |
| Breakdown Voltage Temp. Coefficient | $\frac{\Delta V_{(BR)DSS}}{\Delta T_J}$ | Reference to $+25^\circ\text{C}$, $I_D = 1\text{mA}$ | – | 0.37 | – | V/ $^\circ\text{C}$ |
| Static Drain-to-Source On-Resistance | $R_{DS(on)}$ | $V_{GS} = 10V, I_D = 9A$, Note 4 | – | – | 0.28 | Ω |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu A$ | 2.0 | – | 4.0 | V |
| Forward Transconductance | g_{fs} | $V_{DS} = 50V, I_D = 9A$, Note 4 | 6.7 | – | – | mhos |
| Drain-to-Source Leakage Current | I_{DSS} | $V_{DS} = 250V, V_{GS} = 0V$ | – | – | 25 | μA |
| | | $V_{DS} = 200V, V_{GS} = 0V, T_J = +125^\circ\text{C}$ | – | – | 250 | μA |
| Gate-to-Source Forward Leakage | I_{GSS} | $V_{GS} = 20V$ | – | – | 100 | nA |
| Gate-to-Source Reverse Leakage | I_{GSS} | $V_{GS} = -20V$ | – | – | -100 | nA |
| Total Gate Charge | Q_g | $I_D = 11A, V_{DS} = 200V, V_{GS} = 10V$, Note 4 | – | – | 63 | nC |
| Gate-to-Source Charge | Q_{gs} | | – | – | 12 | nC |
| Gate-to-Drain ("Miller") Charge | Q_{gd} | | – | – | 39 | nC |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD} = 125V, I_D = 11A, R_G = 9.1\Omega$, $R_D = 11\Omega$, Note 4 | – | 14 | – | ns |
| Rise Time | t_r | | – | 49 | – | ns |
| Turn-Off Delay Time | $t_{d(off)}$ | | – | 42 | – | ns |
| Fall Time | t_f | | – | 24 | – | ns |
| Internal Drain Inductance | L_D | Between lead, .250in. (6.0) mm from package and center of die contact | – | 5.0 | – | nH |
| Internal Source Inductance | L_S | | – | 13 | – | nH |
| Input Capacitance | C_{iss} | $V_{GS} = 0V, V_{DS} = 25V, f = 1\text{MHz}$ | – | 1400 | – | pF |
| Output Capacitance | C_{oss} | | – | 320 | – | pF |
| Reverse Transfer Capacitance | C_{riss} | | – | 73 | – | pF |

Source-Drain Ratings and Characteristics:

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--|----------|---|-----|-----|-----|---------|
| Continuous Source Current (Body Diode) | I_S | | – | – | 15 | A |
| Pulsed Source Current (Body Diode) | I_{SM} | Note 1 | – | – | 60 | A |
| Diode Forward Voltage | V_{SD} | $T_J = +25^\circ\text{C}, I_S = 15A, V_{GS} = 0V$, Note 4 | – | – | 1.8 | V |
| Reverse Recovery Time | t_{rr} | $T_J = +25^\circ\text{C}, I_F = 11A$, $di/dt = 100A/\mu s$, Note 4 | – | 290 | 570 | ns |
| Reverse Recovery Charge | Q_{rr} | | – | 3.1 | 6.3 | μC |
| Forward Turn-On Time | t_{on} | Intrinsic turn-on time is negligible (turn-on is dominated by L_S+L_D) | | | | |

Note 1. Repetitive rating; pulse width limited by maximum junction temperature.

Note 4. Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.



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Note: Drain connected to metal part of mounting surface.