

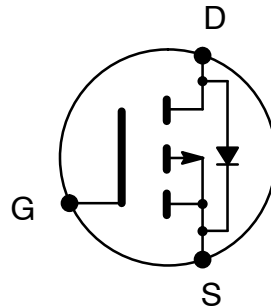


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NTE2372 MOSFET P-Ch, Enhancement Mode High Speed Switch TO220 Type Package

Features:

- Dynamic dv/dt Rating
- Fast Switching
- Ease of Paralleling
- Simple Drive Requirements
- TO220 Case Style



Absolute Maximum Ratings:

| | |
|--|-------------------------------|
| Continuous Drain Current ($V_{GS} = 10V$), I_D | |
| $T_C = +25^\circ C$ | 3.5A |
| $T_C = +100^\circ C$ | 2.0A |
| Pulsed Drain Current (Note 1), I_{DM} | 14A |
| Power Dissipation ($T_C = +25^\circ C$), P_D | 40W |
| Derate Linearly Above $25^\circ C$ | 0.32W/ $^\circ C$ |
| Gate-to-Source Voltage, V_{GS} | ± 20 |
| Inductive Current, Clamp, I_{LM} | 14A |
| Peak Diode Recovery dv/dt (Note 2), dv/dt | 5.0V/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} | 3.1 $^\circ C/W$ |
| Thermal Resistance, Junction-to-Ambient, R_{thJA} | 62 $^\circ C/W$ |
| Typical Thermal Resistance, Case-to-Sink (Flat, Greased Surface), R_{thCS} | 0.5 $^\circ C/W$ |

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

Note 2. $I_{SD} \leq 3.5A$, $di/dt \leq 95A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq +150^\circ C$

Note 3. 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 | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu\text{A}$ | 200 | - | - | V |
| Breakdown Voltage Temp. Coefficient | $\frac{V_{(BR)DSS}}{T_J}$ | Reference to $+25^\circ\text{C}$, $I_D = 1\text{mA}$ | - | 0.22 | - | $\text{V}/^\circ\text{C}$ |
| Static Drain-to-Source On-Resistance | $R_{DS(on)}$ | $V_{GS} = 10V, I_D = 1.5A$, Note 3 | - | - | 1.5 | \pm |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu\text{A}$ | 2.0 | - | 4.0 | V |
| Forward Transconductance | g_{fs} | $V_{DS} = 50V, I_D = 1.5A$, Note 3 | 1.0 | - | - | mhos |
| Drain-to-Source Leakage Current | I_{DSS} | $V_{DS} = 200V, V_{GS} = 0V$ | - | - | 100 | $\leq\text{A}$ |
| | | $V_{DS} = 160V, V_{GS} = 0V, T_J = +125^\circ\text{C}$ | - | - | 500 | $\leq\text{A}$ |
| 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 | $I_D = 4A, V_{DS} = 160V, V_{GS} = 10V$, Note 3 | - | - | 22 | nC |
| Gate-to-Source Charge | Q_{gs} | | - | - | 12 | nC |
| Gate-to-Drain ("Miller") Charge | Q_{gd} | | - | - | 10 | nC |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD} = 100V, I_D = 1.5A, R_G = 50\pm, R_D = 67\pm$, Note 3 | - | 15 | - | ns |
| Rise Time | t_r | | - | 25 | - | ns |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 20 | - | ns |
| Fall Time | t_f | | - | 15 | - | ns |
| Internal Drain Inductance | L_D | Between lead, .250in. (6.0) mm from package and center of die contact | - | 4.5 | - | nH |
| Internal Source Inductance | L_S | | - | 7.5 | - | nH |
| Input Capacitance | C_{iss} | $V_{GS} = 0V, V_{DS} = 25V, f = 1\text{MHz}$ | - | 350 | - | pF |
| Output Capacitance | C_{oss} | | - | 100 | - | pF |
| Reverse Transfer Capacitance | C_{riss} | | - | 30 | - | pF |

Source-Drain Ratings and Characteristics:

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--|----------|--|-----|-----|-----|----------------|
| Continuous Source Current (Body Diode) | I_S | | - | - | 3.5 | A |
| Pulsed Source Current (Body Diode) | I_{SM} | Note 1 | - | - | 14 | A |
| Diode Forward Voltage | V_{SD} | $T_J = +25^\circ\text{C}, I_S = 3.5A, V_{GS} = 0V$, Note 3 | - | - | 7.0 | V |
| Reverse Recovery Time | t_{rr} | $T_J = +25^\circ\text{C}, I_F = 3.5A$, $di/dt = 100A/\mu\text{s}$, Note 3 | - | 300 | 450 | ns |
| Reverse Recovery Charge | Q_{rr} | | - | 1.9 | 2.9 | $\leq\text{C}$ |
| 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 3. Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.

