



ELECTRONICS, INC.  
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## NTE491 MOSFET N-Ch, Enhancement Mode High Speed Switch

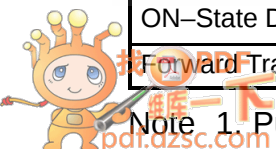
### Absolute Maximum Ratings:

|                                                                            |                               |
|----------------------------------------------------------------------------|-------------------------------|
| Drain-Source Voltage, $V_{DS}$                                             | 60V                           |
| Drain-Gate Voltage ( $R_{GS} = 1M\Omega$ ), $V_{DGR}$                      | 60V                           |
| Gate-Source Voltage, $V_{GS}$                                              | $\pm 40V$                     |
| Drain Current, $I_D$                                                       |                               |
| Continuous                                                                 | 200mA                         |
| Pulsed                                                                     | 500mA                         |
| Total Device Dissipation ( $T_A = +25^\circ C$ ), $P_D$                    | 350mW                         |
| Derate above $25^\circ C$                                                  | 2.8mW/ $^\circ C$             |
| Operating Junction Temperature Range, $T_J$                                | $-55^\circ$ to $+150^\circ C$ |
| Storage Temperature Range, $T_{stg}$                                       | $-55^\circ$ to $+150^\circ C$ |
| Thermal Resistance, Junction-to-Ambient, $R_{th(JA)}$                      | 312.5 $^\circ C/W$            |
| Maximum Lead Temperature (During Soldering, 1/16" from case, 10sec), $T_L$ | $+300^\circ C$                |

### Electrical Characteristics: ( $T_A = +25^\circ C$ unless otherwise specified)

| Parameter                          | Symbol        | Test Conditions                                | Min | Typ | Max  | Unit       |
|------------------------------------|---------------|------------------------------------------------|-----|-----|------|------------|
| <b>OFF Characteristics</b>         |               |                                                |     |     |      |            |
| Zero-Gate-Voltage Drain Current    | $I_{DSS}$     | $V_{DS} = 48V, V_{GS} = 0$                     | —   | —   | 1.0  | $\mu A$    |
|                                    |               | $V_{DS} = 48V, V_{GS} = 0, T_J = +125^\circ C$ | —   | —   | 1.0  | mA         |
| Drain-Source Breakdown Voltage     | $V_{(BR)DSS}$ | $V_{GS} = 0, I_D = 10\mu A$                    | 60  | —   | —    | V          |
| Gate-Body Leakage Current, Forward | $I_{GSSF}$    | $V_{GSF} = 15V, V_{DS} = 0$                    | —   | —   | -10  | nA         |
| <b>ON Characteristics (Note 1)</b> |               |                                                |     |     |      |            |
| Gate Threshold Voltage             | $V_{GS(Th)}$  | $I_D = 1mA, V_{DS} = V_{GS}$                   | 0.8 | —   | 3.0  | V          |
| Static Drain-Source ON Resistance  | $r_{DS(on)}$  | $V_{GS} = 10V, I_D = 500mA$                    | —   | —   | 5.0  | $\Omega$   |
|                                    |               | $V_{GS} = 4.5V, I_D = 75mA$                    | —   | —   | 6.0  | $\Omega$   |
| Drain-Source ON-Voltage            | $V_{DS(on)}$  | $V_{GS} = 10V, I_D = 500mA$                    | —   | —   | 2.5  | V          |
|                                    |               | $V_{GS} = 4.5V, I_D = 75mA$                    | —   | —   | 0.45 | V          |
| ON-State Drain Current             | $I_{d(on)}$   | $V_{GS} = 4.5V, V_{DS} = 10V$                  | 75  | —   | —    | mA         |
| Forward Transconductance           | $g_{fs}$      | $V_{DS} = 10V, I_D = 200mA$                    | 100 | —   | —    | $\mu mhos$ |

Note 1. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .



**Electrical Characteristics (Cont'd):** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

| Parameter                    | Symbol           | Test Conditions                                                                                | Min | Typ | Max | Unit |
|------------------------------|------------------|------------------------------------------------------------------------------------------------|-----|-----|-----|------|
| Dynamic Characteristics      |                  |                                                                                                |     |     |     |      |
| Input Capacitance            | C <sub>iss</sub> | V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0, f = 1MHz                                           | —   | —   | 60  | pF   |
| Reverse Transfer Capacitance | C <sub>rss</sub> |                                                                                                | —   | —   | 25  | pF   |
| Output Capacitance           | C <sub>oss</sub> |                                                                                                | —   | —   | 5.0 | pF   |
| Switching Characteristics    |                  |                                                                                                |     |     |     |      |
| Turn-On Delay Time           | t <sub>on</sub>  | V <sub>DD</sub> = 15V, I <sub>D</sub> = 500mA,<br>R <sub>gen</sub> = 25Ω, R <sub>L</sub> = 25Ω | —   | —   | 10  | ns   |
| Turn-Off Delay Time          | t <sub>off</sub> |                                                                                                | —   | —   | 10  | ns   |

