



ELECTRONICS, INC.  
 44 FARRAND STREET  
 BLOOMFIELD, NJ 07003  
 (973) 748-5089  
<http://www.nteinc.com>



## NTE2910

### N-Channel Field Effect Transistor Switch, TO18 Type Package

**Features:**

- Fast Switching,  $t_{ON} \leq 15\text{ns}$

**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$ , Note 1 unless otherwise specified)

|                                      |                |
|--------------------------------------|----------------|
| Maximum Gate-to-Drain or Source      | -40V           |
| Maximum Gate Current                 | 50mA           |
| Maximum Continuous Power Dissipation | 1800mW         |
| Operating Junction Temperature Range | -55° to +200°C |
| Storage Temperature Range            | -65° to +200°C |

Note 1. Absolute Maximum Ratings are limiting values above which serviceability may be impaired.

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

| Parameter                          | Symbol        | Test Conditions                                       | Min  | Typ  | Max  | Unit     |
|------------------------------------|---------------|---|------|------|------|----------|
| <b>Static Characteristics</b>      |               |   |      |      |      |          |
| Gate-to-Source Breakdown Voltage   | $BV_{GSS}$    | $I_G = -1\mu\text{A}$ , $V_{DS} = 0\text{V}$          | -40  | -    | -    | V        |
| Gate-to-Source Cutoff Voltage      | $V_{GS(off)}$ | $V_{DS} = 20\text{V}$ , $I_D = 1\text{nA}$            | -0.5 | -    | -3.0 | V        |
| Gate-to-Source Forward Voltage     | $V_{GS(F)}$   | $I_G = 1\text{mA}$ , $V_{DS} = 0\text{V}$             | -    | 0.7  | 1.0  | V        |
| Drain-to-Source ON Voltage         | $V_{DS(on)}$  | $V_{GS} = 0\text{V}$ , $I_D = 3\text{mA}$             | -    | 0.25 | 0.4  | V        |
| Drain-to-Source Saturation Current | $I_{DSS}$     | $V_{DS} = 20\text{V}$ , $V_{GS} = 0\text{V}$ , Note 2 | 5    | -    | 30   | mA       |
| Gate Leakage Current               | $I_{GSS}$     | $V_{GS} = -20\text{V}$ , $V_{DS} = 0\text{V}$         | -    | -5   | -100 | pA       |
| Gate Operating Current             | $I_G$         | $V_{DG} = 15\text{V}$ , $I_D = 10\text{mA}$           | -    | -5   | -    | pA       |
| Drain Cutoff Current               | $I_{D(off)}$  | $V_{DS} = 20\text{V}$ , $V_{GS} = -5\text{V}$         | -    | 5    | 100  | pA       |
| Drain-to-Source ON Resistance      | $r_{DS(on)}$  | $V_{GS} = 0\text{V}$ , $I_D = 1\text{mA}$             | -    | -    | 100  | $\Omega$ |

Note 2. Pulse Test:  $PW \leq 300\mu\text{s}$ , Duty Cycle  $\leq 3\%$ .

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

| Parameter                        | Symbol       | Test Conditions  | Min | Typ | Max | Unit                         |
|----------------------------------|--------------|--|-----|-----|-----|------------------------------|
| <b>Dynamic Characteristics</b>   |              |  |     |     |     |                              |
| Forward Transconductance         | $g_{fs}$     | $V_{DS} = 20\text{V}, I_D = 1\text{mA}, f = 1\text{kHz}$   | -   | 6   | -   | mS                           |
| Output Conductance               | $g_{os}$     | $V_{DS} = 20\text{V}, I_D = 1\text{mA}, f = 1\text{kHz}$   | -   | 25  | -   | $\mu\text{S}$                |
| Drain-to-Source ON Resistance    | $r_{DS(on)}$ | $V_{GS} = 0\text{V}, I_D = 0\text{A}, f = 1\text{kHz}$     | -   | -   | 100 | $\Omega$                     |
| Input Capacitance                | $C_{iss}$    | $V_{DS} = 20\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$ | -   | 12  | 14  | pF                           |
| Reverse Transfer Capacitance     | $C_{rss}$    | $V_{DS} = 0\text{V}, V_{GS} = -5\text{V}, f = 1\text{MHz}$ | -   | 3.3 | 3.5 | pF                           |
| Equivalent Input Noise Voltage   | $e_n$        | $V_{DS} = 10\text{V}, I_D = 10\text{mA}, f = 1\text{kHz}$  | -   | 3   | -   | $\text{nV}/\sqrt{\text{Hz}}$ |
| <b>Switching Characteristics</b> |              |  |     |     |     |                              |
| Turn-On Time                     | $t_{d(on)}$  | $V_{DD} = 10\text{V}, V_{GS(H)} = 0\text{V}$               | -   | 2   | 15  | ns                           |
|                                  | $t_r$        |  | -   | 2   | 5   | ns                           |
| Turn-Off Time                    | $t_{d(off)}$ |  | -   | 6   | 50  | ns                           |
|                                  | $t_f$        | -  | 13  | 30  | ns  |                              |

