



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



## NTE2937 P-Channel Field Effect Transistor Switch, TO-92 Type Package

**Features:**

- Low Insertion Loss
- No Offset or Error Generated by Closed Switch
  - Purely Resistive
  - High Isolation Resistance From Driver
- Short Sample and Hold Aperture Time
- Fast Switching

**Applications:**

- Analog Switches
- Choppers
- Commutators

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

Gate-Drain or Gate-Source Voltage .....	30V
Gate Current .....	50mA
Power Dissipation .....	350mW
Derate Above $25^\circ\text{C}$ .....	3.3W/ $^\circ\text{C}$
Operating Temperature Range .....	$-55^\circ$ to $+150^\circ\text{C}$
Storage Temperature Range .....	$-55^\circ$ to $+150^\circ\text{C}$
Lead Temperature (During Soldering, 10sec) .....	$+300^\circ\text{C}$

Note 1. Stresses above those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate Reverse Current	$I_{GSS}$	$V_{GS} = 20\text{V}, V_{DS} = 0\text{V}, \text{Note 2}$	-	-	1	nA
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = -15\text{V}, I_D = -10\text{nA}$	5	-	10	V
Gate-Source Breakdown Voltage	$BV_{GSS}$	$V_{DS} = 0\text{V}, I_G = 1\mu\text{A}$	30	-	-	V
Drain Saturation Current	$I_{DSS}$	$V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, \text{Note 3}$	-20	-	-135	mA
Drain Cutoff Current	$I_{D(off)}$	$V_{DS} = -15\text{V}, V_{GS} = 10\text{V}, \text{Note 2}$	-	-	-1	nA
Drain-Source ON Resistance	$r_{DS(on)}$	$V_{DS} = -0.1\text{V}, V_{GS} = 0\text{V}$	-	-	85	$\Omega$
Drain-Gate OFF Capacitance	$C_{dg(off)}$	$V_{GS} = 10\text{V}, V_{DS} = 0\text{V}, f = 1\text{Mhz}, \text{Note 4}$	-	5.5	-	pF
Source-Gate OFF Capacitance	$C_{sg(off)}$		-	5.5	-	pF
Drain-Gate Plus Source-Gate ON Capacitance	$C_{dg(on)} + C_{sg(on)}$	$V_{GS} = V_{DS} = 0\text{V}, f = 1\text{Mhz}, \text{Note 4}$	-	32	-	pF
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10\text{V}, V_{GS(off)} = 12\text{V}, R_L = 560\Omega, V_{GS(off)} = 0\text{V}, \text{Note 4}$	-	2	-	ns
Rise Time	$t_r$		-	5	-	ns
Turn-Off Delay Time	$t_{d(off)}$		-	5	-	ns
Fall Time	$t_f$		-	10	-	ns

Note 2. Approximately doubles for every  $+10^\circ\text{C}$  increase in  $T_A$ .

Note 3. Pulse Test Duration: Pulse Width =  $-300 \leq s$ , Duty Cycle  $\leq 3\%$ .

Note 4. For design reference only, no 100% tested.

