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NTE2938 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°C	3.3W/ $^\circ\text{C}$
Operating Temperature Range	-55° to $+150^\circ\text{C}$
Storage Temperature Range	-55° 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	$V_{GS(off)}$	$V_{DS} = -15\text{V}, I_D = -10\text{nA}$	0.8	-	2.25	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}	$V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, \text{Note 3}$	-1.5	-	-20	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	$r_{DS(on)}$	$V_{DS} = -0.1\text{V}, V_{GS} = 0\text{V}$	-	-	300	Ω
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	$t_{d(on)}$	$V_{DD} = -6\text{V}, V_{GS(off)} = 3\text{V}, R_L = 10\text{k}\Omega, V_{GS(off)} = 0\text{V}, \text{Note 4}$	-	20	-	ns
Rise Time	t_r		-	25	-	ns
Turn-Off Delay Time	$t_{d(off)}$		-	20	-	ns
Fall Time	t_f		-	25	-	ns

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

Note 3. Pulse Test Duration: Pulse Width = $-300 \leq t \leq 300 \mu\text{s}$, Duty Cycle $\leq 3\%$.

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

