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## NTE312

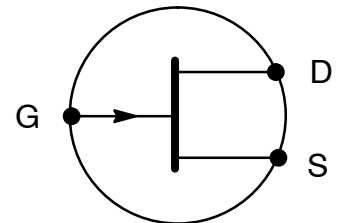
### N-Channel Silicon Junction Field Effect Transistor TO92 Type Package

**Description:**

The NTE312 is a field effect transistor designed for VHF amplifier and mixer applications. The NTE312 comes in a TO-92 package.

**Features:**

- High Power Gain: 10dB Min at 400MHz
- High Transconductance: 4000  $\mu\text{mho}$  Min at 400MHz
- Low  $C_{rss}$ : 1pF Max
- High  $(Y_{fs}) / C_{iss}$  Ratio (High-Frequency Figure-of-Merit)
- Drain and Gate Leads Separated for High Maximum Stable Gain
- Cross-Modulation Minimized by Square-Law Transfer Characteristic
- For Use in VHF Amplifiers in FM, TV, and Mobile Communications Equipment



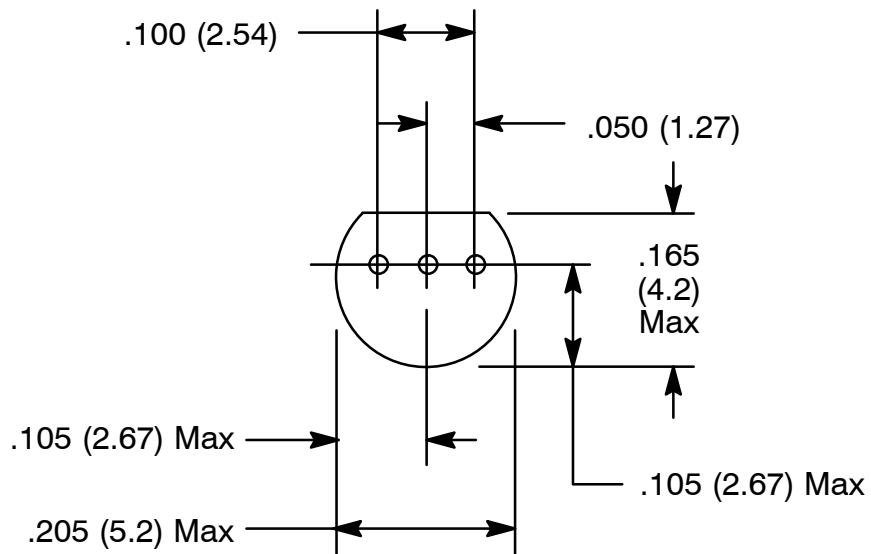
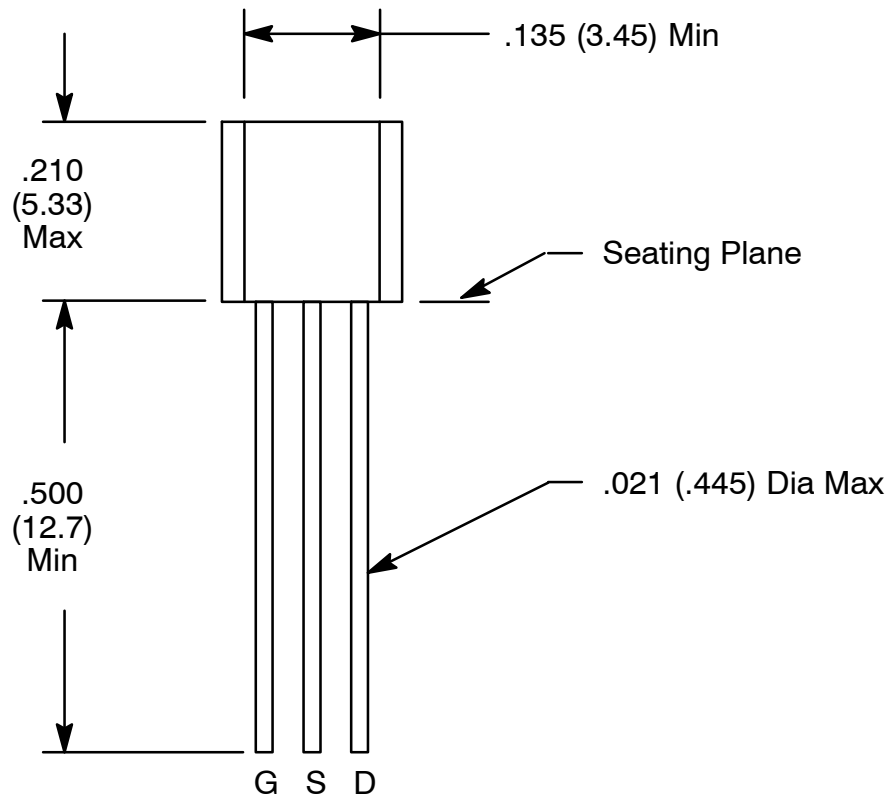
**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Drain-Gate Voltage, $V_{DG}$ .....	30V
Gate-Source Voltage, $V_{GS}$ .....	-30V
Gate Current, $I_G$ .....	50mA
Total Device Dissipation ( $T_A = +25^\circ\text{C}$ ), $P_D$ .....	360mW
Derate Above $+25^\circ\text{C}$ .....	2.88mW/ $^\circ\text{C}$
Total Device Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$ .....	500mW
Derate Above $+25^\circ\text{C}$ .....	4.0mW/ $^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	-65 $^\circ\text{C}$ to +150 $^\circ\text{C}$
Lead Temperature, During Soldering (1/16 Inch from Case for 10sec), $T_L$ .....	+260 $^\circ\text{C}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
<b>OFF Characteristics</b>							
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = -1.0\mu\text{A}, V_{DS} = 0$	-30	-	-	V	
Gate Reverse Current	$I_{GSS}$	$V_{GS} = -20\text{V}, V_{DS} = 0$	-	-	-1.0	nA	
Gate 1 Leakage Current	$I_{G1SS}$	$V_{G1S} = -20\text{V}, V_{DS} = 0, T_A = +100^{\circ}\text{C}$	-	-	-0.5	$\mu\text{A}$	
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 15\text{V}, I_D = 10\text{mA}$	-1.0	-	-6.0	V	
<b>ON Characteristics</b>							
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 15\text{V}, V_{GS} = 0, \text{Note 1}$	5.0	-	15	mA	
<b>Small-Signal Characteristics</b>							
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1\text{kHz}$	4500	-	7500	$\mu\text{mhos}$	
Input Admittance	$\text{Re}(y_{is})$	100MHz	$V_{DS} = 15\text{V}, V_{GS} = 0$	-	-	100	$\mu\text{mhos}$
		400MHz		-	-	1000	$\mu\text{mhos}$
Output Admittance	$ y_{os} $	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1\text{kHz}$	-	-	50	$\mu\text{mhos}$	
Output Conductance	$\text{Re}(y_{os})$	100MHz	$V_{DS} = 15\text{V}, V_{GS} = 0$	-	-	75	$\mu\text{mhos}$
		400MHz		-	-	100	$\mu\text{mhos}$
Forward Transconductance	$\text{Re}(y_{fs})$	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 400\text{MHz}$	4000	-	-	$\mu\text{mhos}$	
Input Capacitance	$C_{iss}$	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1.0\text{MHz}$	-	-	4.5	pF	
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1.0\text{MHz}$	-	-	1.0	pF	
Input Susceptance	$I_M(Y_{is})$	100MHz	$V_{DS} = 15\text{V}, V_{GS} = 0$	-	-	3.0	mmho
		400MHz		-	-	12.0	mmho
<b>Functional Characteristics</b>							
Noise Figure	NF	100MHz	$V_{DS} = 15\text{V}, I_D = 5\text{mA}, R'_G = 1\text{k}\Omega$	-	-	2.0	dB
		400MHz		-	-	4.0	dB
Common Source Power Gain	$G_{ps}$	100MHz	$V_{DS} = 15\text{V}, I_D = 5\text{mA}, R'_G = 1\text{k}\Omega$	18	-	-	dB
		400MHz		10	-	-	dB
Output Susceptance	$I_M(Y_{os})$	100MHz	$V_{DS} = 15\text{V}, V_{GS} = 0$	-	-	1000	$\mu\text{mhos}$
		400MHz		-	-	4000	$\mu\text{mhos}$

Note 1.  $t_p = 100\text{ms}$ , Duty Cycle = 10%.



**NOTE:** Drain and Source are interchangeable.