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NTE312

N-Channel Silicon Junction Field Effect Transistor

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 μmho 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

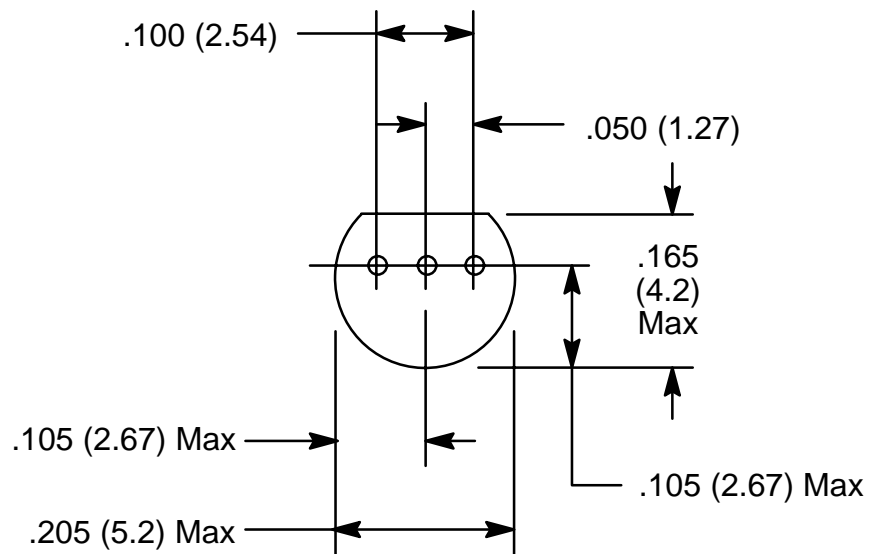
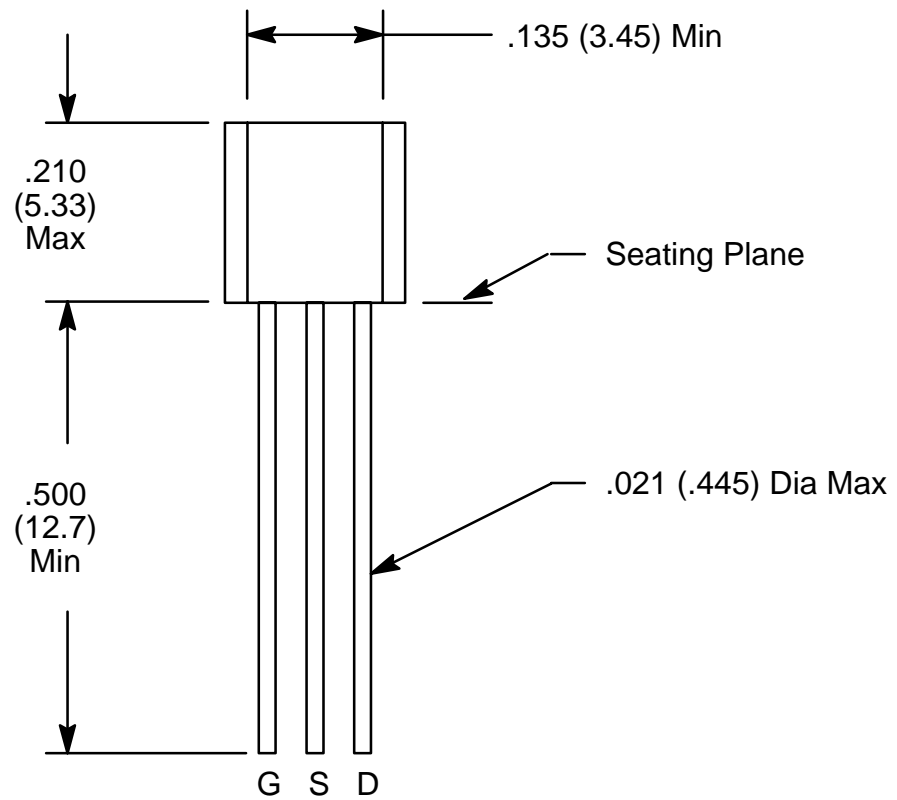
Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

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° to +150°C
Lead Temperature, During Soldering (1/16 Inch from Case for 10sec), T_L	+260°C

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
OFF Characteristics							
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	μA	
Gate–Source Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 15\text{V}, I_D = 10\text{mA}$	-1.0	-	-6.0	V	
ON Characteristics							
Zero–Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 15\text{V}, V_{GS} = 0, \text{Note 1}$	5.0	-	15	mA	
Small–Signal Characteristics							
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1\text{kHz}$	4500	-	7500	μmhos	
Input Admittance	$\text{Re}(y_{is})$	100MHz	$V_{DS} = 15\text{V}, V_{GS} = 0$	-	-	100	μmhos
		400MHz		-	-	1000	μmhos
Output Admittance	$ y_{os} $	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1\text{kHz}$	-	-	50	μmhos	
Output Conductance	$\text{Re}(y_{os})$	100MHz	$V_{DS} = 15\text{V}, V_{GS} = 0$	-	-	75	μmhos
		400MHz		-	-	100	μmhos
Forward Transconductance	$\text{Re}(y_{fs})$	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 400\text{MHz}$	4000	-	-	μmhos	
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
Functional Characteristics							
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	μmhos
		400MHz		-	-	4000	μmhos

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



NOTE: Drain and Source are interchangeable.