

## NTE451 Silicon N-Channel JFET Transistor VHF/UHF Amplifier

**Absolute Maximum Ratings:**

Drain-Gate Voltage, $V_{DG}$ .....	25V
Reverse Gate-Source Voltage, $V_{GSR}$ .....	25V
Drain Current, $I_D$ .....	30mA
Total Device Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_D$ .....	350mW
Derate Above $25^\circ\text{C}$ .....	2.8mW/ $^\circ\text{C}$
Operating Junction Temperature Range, $T_J$ .....	$-65^\circ$ to $+150^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ to $+150^\circ\text{C}$

**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	$V_{(BR)GSS}$	$I_G = -1\mu\text{A}, V_{DS} = 0$	-25	-	-	V
Gate Reverse Current	$I_{GSS}$	$V_{GS} = -20\text{V}, V_{DS} = 0$	-	-	-1.0	nA
		$V_{GS} = -20\text{V}, V_{DS} = 0, T_A = +100^\circ\text{C}$	-	-	-0.2	nA
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$I_D = 10\text{nA}, V_{DS} = 15\text{V}$	-0.5	-	-4.0	V
<b>ON Characteristics</b>						
Zero-Gate-Voltage Drain Current	$I_{DSS}$	$V_{DS} = 15\text{V}, V_{GS} = 0$	4	-	20	mA
<b>Small Signal Characteristics Characteristics</b>						
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1\text{kHz}$	3500	-	7000	$\mu\text{mho}$
Input Admittance	$\text{Re}(y_{is})$	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 400\text{MHz}$	-	-	1000	$\mu\text{mho}$
Output Admittance	$ y_{os} $	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1\text{kHz}$	-	-	60	$\mu\text{mho}$
Output Conductance	$\text{Re}(y_{os})$	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 400\text{MHz}$	-	-	100	$\mu\text{mho}$
Forward Transconductance	$g_{fs}$	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 400\text{MHz}$	3000	-	-	$\mu\text{mho}$
Input Capacitance	$C_{iss}$	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1\text{MHz}$	-	-	5	pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1\text{MHz}$	-	-	1	pF
Output Capacitance	$C_{oss}$	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1\text{MHz}$	-	-	2	pF

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
<b>Functional Characteristics</b>							
Noise Figure	NF	$V_{DS} = 15\text{V}, I_D = 4\text{mA}, R_G \approx 1\text{k}\Omega$	$f = 100\text{MHz}$	-	-	2	dB
			$f = 400\text{MHz}$	-	-	4	dB
Common Source Power Gain	$G_{ps}$	$V_{DS} = 15\text{V}, I_D = 4\text{mA}$	$f = 100\text{MHz}$	18	-	30	dB
			$f = 400\text{MHz}$	10	-	20	dB

