

NTE459

N-Channel Silicon JFET Transistor AF Amplifier/Chopper/Switch

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

Drain-Source Voltage, V_{DS}	50V
Drain-Gate Voltage, V_{DG}	50V
Gate-Source Voltage, V_{GS}	-50V
Drain Current, I_D	10mA
Total Device Dissipation ($T_A = +25^\circ\text{C}$), P_D	300mW
Derate Above 25°C	2mW/ $^\circ\text{C}$
Operating Junction Temperature, T_J	+175 $^\circ\text{C}$
Storage Temperature Range, T_{stg}	-55 $^\circ$ to +200 $^\circ\text{C}$

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	$V_{(BR)GSS}$	$I_G = -1\mu\text{A}$, $V_{DS} = 0$	-50	-	-	V
Gate Reverse Current	I_{GSS}	$V_{GS} = -30\text{V}$, $V_{DS} = 0$	-	-	-0.1	nA
		$V_{GS} = -30\text{V}$, $V_{DS} = 0$, $T_A = +150^\circ\text{C}$	-	-	-100	nA
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$I_D = 0.5\text{nA}$, $V_{DS} = 15\text{V}$	-	-	-6	V
Gate-Source Voltage	V_{GS}	$I_D = 200\mu\text{A}$, $V_{DS} = 15\text{V}$	-1	-	-4	V
ON Characteristics						
Zero-Gate-Voltage Drain Current	I_{DSS}	$V_{DS} = 15\text{V}$, $V_{GS} = 0$, Note 1	2	-	10	mA
Small-Signal Characteristics						
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 15\text{V}$, $V_{GS} = 0$, $f = 1\text{kHz}$, Note 1	3000	-	6500	μmho
		$V_{DS} = 15\text{V}$, $V_{GS} = 0$, $f = 100\text{MHz}$	3000	-	-	μmho
Output Admittance	$ y_{os} $	$V_{DS} = 15\text{V}$, $V_{GS} = 0$, $f = 1\text{kHz}$, Note 1	-	-	20	μmho
Input Capacitance	C_{iss}	$V_{DS} = 15\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$	-	-	6	pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS} = 15\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$	-	-	3	pF

Note 1. Pulse Test: Pulse Width $\leq 100\text{ms}$, Duty Cycle $\leq 10\%$.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Functional Characteristics						
Noise Figure	NF	$V_{DS} = 15\text{V}$, $V_{GS} = 0$, $R_G = 1\text{M}\Omega$, $f = 10\text{Hz}$, $\text{BW} = 5\text{Hz}$	–	–	5	dB
Equivalent Short-Circuit Input Noise Voltage	e_n	$V_{DS} = 15\text{V}$, $V_{GS} = 0$, $f = 10\text{Hz}$, $\text{BW} = 5\text{Hz}$	–	–	200	$\text{nV}/\text{Hz}^{1/2}$

