

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 | $\text{nV}/\text{Hz}^{1/2}$ |

