

N-Channel JFET Monolithic Dual



SST5912

FEATURES

- High Gain $g_{fs} > 6 \text{ mS}$
- Low Leakage $I_G < 1 \text{ pA typical}$
- Low Noise
- Surface Mount Package

APPLICATIONS

- Differential Wideband Amplifier
- VHF/UHF Amplifiers
- Test and Measurement

DESCRIPTION

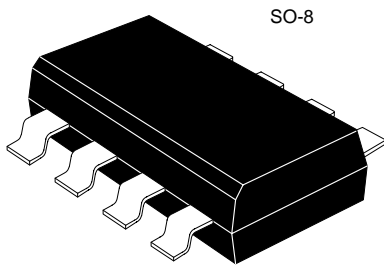
The SST5912 is a High Speed N-Channel Monolithic JFET pair encapsulated in a surface mount plastic SO-8 package. The device is designed for high gain (typically $> 6000 \text{ mmhos}$), low leakage ($< 1 \text{ pA typical}$) and low noise. The SST5912 is an excellent choice for differential wideband amplifiers, VHF/UHF amplifiers and test and measurement.

ORDERING INFORMATION

| Part | Package | Temperature Range |
|---------|----------------------|---|
| SST5912 | Plastic SO-8 Package | -55°C to $+150^\circ\text{C}$ |

NOTE: For Sorted Chips in Carriers, See 2N5911 Series

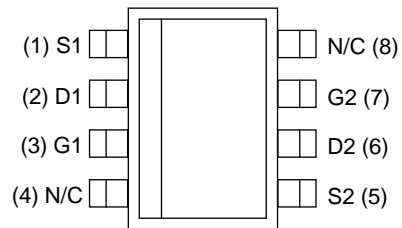
PIN CONFIGURATION



SO-8

CJ1

TOP VIEW



PRODUCT MARKING

| | |
|---------|---------|
| SST5912 | SST5912 |
|---------|---------|

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| Parameter/Test Condition | Symbol | Limit | Unit |
|---|-----------|------------|----------------------|
| Gate-Drain Voltage | V_{GD} | -25 | V |
| Gate-Source Voltage | V_{GS} | -25 | V |
| Forward Gate Current | I_G | 50 | mA |
| Power Dissipation (per side) | P_D | 300 | mW |
| (total) | | 500 | mW |
| Power Derating (per side) | | 2.4 | mW/ $^\circ\text{C}$ |
| (total) | | 4 | mW/ $^\circ\text{C}$ |
| Operating Junction Temperature | T_J | -55 to 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -65 to 150 | $^\circ\text{C}$ |
| Lead Temperature (1/16" from case for 10 seconds) | T_L | 300 | $^\circ\text{C}$ |

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| SYMBOL | CHARACTERISTICS | TYP ¹ | SST5912 | | UNIT | TEST CONDITIONS |
|------------------------------------|--|------------------|---------|------|------------------------|--|
| | | | MIN | MAX | | |
| STATIC | | | | | | |
| $V_{(BR)GSS}$ | Gate-Source Breakdown Voltage | -35 | -25 | | V | $I_G = -1\text{mA}, V_{DS} = 0\text{V}$ |
| $V_{GS(OFF)}$ | Gate-Source Cut off Voltage | -3.5 | -1 | -5 | | $V_{DS} = 10\text{V}, I_D = 1\text{nA}$ |
| I_{DSS} | Saturation Drain Current ² | 15 | 7 | 40 | mA | $V_{DS} = 10\text{V}, V_{GS} = 0\text{V}$ |
| I_{GSS} | Gate Reverse Current | -1 | | -100 | pA | $V_{GS} = -15\text{V}, V_{DS} = 0\text{V}$ |
| | | -0.2 | | | nA | $T_A = 125^\circ\text{C}$ |
| I_G | Gate Operating Current | -1 | | -100 | pA | $V_{DG} = 10\text{V}, I_D = 5\text{mA}$ |
| | | -0.2 | | | nA | $T_A = 125^\circ\text{C}$ |
| V_{GS} | Gate-Source Voltage | -1.5 | -0.3 | -4 | V | $V_{DG} = 10\text{V}, I_D = 5\text{mA}$ |
| $V_{GS(F)}$ | Gate-Source Forward Voltage | 0.7 | | | | $I_G = 1\text{mA}, V_{DS} = 0\text{V}$ |
| DYNAMIC | | | | | | |
| g_{fs} | Common-Source Forward Transconductance | 6 | 5 | 10 | mS | $V_{DG} = 10\text{V}, I_D = 5\text{mA}$ |
| g_{os} | Common-Source Output Conductance | 20 | | 100 | mS | $f = 1\text{kHz}$ |
| g_{fs} | Common-Source Forward Transconductance | 6 | 5 | 10 | mS | $V_{DG} = 10\text{V}, I_D = 5\text{mA}$ |
| g_{os} | Common-Source Output Conductance | 30 | | 150 | mS | $f = 100\text{MHz}$ |
| C_{iss} | Common-Source Input Capacitance | 3.5 | | 5 | pF | $V_{DG} = 10\text{V}, I_D = 5\text{mA}$ |
| C_{rss} | Common-Source Reverse Transfer Capacitance | 1 | | 1.2 | | $f = 1\text{MHz}$ |
| \bar{e}_n | Equivalent Input Noise Voltage | 4 | | 20 | nV/ $\sqrt{\text{Hz}}$ | $V_{DG} = 10\text{V}, I_D = 5\text{mA}, f = 10\text{kHz}$ |
| NF | Noise Figure | 0.1 | | 1 | dB | $V_{DG} = 10\text{V}, I_D = 5\text{mA}, f = 10\text{kHz}, R_G = 100\Omega$ |
| MATCHING | | | | | | |
| $ V_{GS1} - V_{GS2} $ | Differential Gate Source Voltage | 7 | | 15 | mV | $V_{DG} = 10\text{V}, I_D = 5\text{mA}$ |
| $\frac{D V_{GS1} - V_{GS2} }{DT}$ | Gate Source Voltage Differential Change with Temperature | 10 | | 40 | mV/ $^\circ\text{C}$ | $T = -55\text{ to }25^\circ\text{C}$ |
| | | 10 | | 40 | | $T = 25\text{ to }125^\circ\text{C}$ |
| $\frac{I_{DSS1}}{I_{DSS2}}$ | Saturation Drain Current Ratio | 0.98 | 0.95 | 1 | | $V_{DS} = 10\text{V}, V_{GS} = 0\text{V}$ |
| $\frac{g_{fs1}}{g_{fs2}}$ | Transconductance Ratio | 0.98 | 0.95 | 1 | | $V_{DG} = 10\text{V}, I_D = 5\text{mA}, f = 1\text{kHz}$ |
| $ I_{G1} - I_{G2} $ | Differential Gate Current | 0.01 | | 20 | nA | $V_{DG} = 10\text{V}, I_D = 5\text{mA}, T_A = 125^\circ\text{C}$ |
| CMRR | Common Mode Rejection Ratio | 90 | | | dB | $V_{DD} = 5\text{ to }10\text{V}, I_D = 5\text{mA}$ |

NOTES: 1. For design aid only, not subject to production testing.
 2. Pulse test; PW = 300ms, duty cycle à 3%.