

# 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

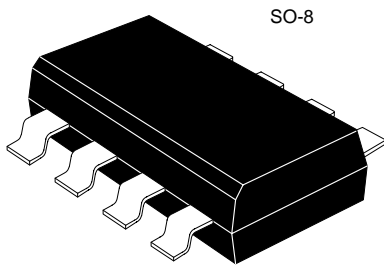
The SST5912 is a High Speed N-Channel Monolithic JFET pair encapsulated in a surface mount plastic SO-8 package. The device is designed for high gain (typically  $> 6000 \text{ mmhos}$ ), low leakage ( $< 1 \text{ pA}$  typically) and low noise. The SST5912 is an excellent choice for differential wideband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

### ORDERING INFORMATION

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

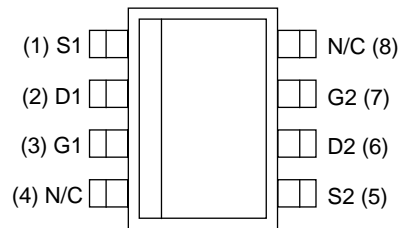
NOTE: For Sorted Chips in Carriers, See 2N5911 Series

### PIN CONFIGURATION



CJ1

### TOP VIEW



### PRODUCT MARKING

SST5912	SST5912
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**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 <sup>1</sup>	SST5912		UNIT	TEST CONDITIONS
			MIN	MAX		
<b>STATIC</b>						
$V_{(BR)GSS}$	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 <sup>2</sup>	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				$I_G = 1\text{mA}, V_{DS} = 0\text{V}$
<b>DYNAMIC</b>						
$g_{fs}$	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	$V_{DG} = 10\text{V}, I_D = 5\text{mA}, f = 10\text{kHz}, R_G = 100\Omega$
<b>MATCHING</b>						
$ 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/ $^\circ\text{C}$	$T = -55$ to $25^\circ\text{C}$
		10		40		$T = 25$ 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	$V_{DD} = 5$ 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%.