

2N5911, 2N5912

Dual N-Channel Silicon Junction Field-Effect Transistor

• Wideband Differential Amplifiers

Absolute maximum ratings at $T_A = 25^\circ\text{C}$

Continuous Forward Gate Current	50 mA
Total Device Power Dissipation	500 mW
Power Derating	4 mW/°C
Storage Temperature Range	-65°C to +200°C

At 25°C free air temperature:

Static Electrical Characteristics		2N5911		2N5912		Process NJ30L or NJ36D	
		Min	Max	Min	Max	Unit	Test Conditions
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	-25		-25		V	$I_G = -1\ \mu\text{A}, V_{DS} = \emptyset\text{V}$
Gate Reverse Current	I_{GSS}		-100		-100	pA	$V_{GS} = -15\text{V}, V_{DS} = \emptyset\text{V}$
			-250		-250	nA	$V_{GS} = -15\text{V}, V_{DS} = \emptyset\text{V}$ $T_A = 150^\circ\text{C}$
Gate Operating Current	I_G		-100		-100	pA	$V_{DG} = 10\text{V}, I_D = 5\ \text{mA}$
			-100		-100	nA	$V_{DG} = 10\text{V}, I_D = 5\ \text{mA}$ $T_A = 125^\circ\text{C}$
Gate Source Cutoff Voltage	$V_{GS(OFF)}$	-1	-5	-1	-5	V	$V_{DS} = 10\text{V}, I_D = 1\ \text{nA}$
Gate Source Voltage	V_{GS}	-0.3	-4	-0.3	-4	V	$V_{DS} = 10\text{V}, I_D = 5\ \text{mA}$
Drain Saturation Current (Pulsed)	I_{DSS}	7	40	7	40	mA	$V_{DS} = 10\text{V}, V_{GS} = \emptyset\text{V}$

Dynamic Electrical Characteristics

Common Source Forward Transconductance	g_{fs}	5000	10000	5000	10000	μS	$V_{DG} = 10\text{V}, I_D = 5\ \text{mA}$	$f = 1\ \text{kHz}$
		5000	10000	5000	10000	μS	$V_{DG} = 10\text{V}, I_D = 5\ \text{mA}$	$f = 100\ \text{MHz}$
Common Source Output Conductance	g_{os}		100		100	μS	$V_{DG} = 10\text{V}, I_D = 5\ \text{mA}$	$f = 1\ \text{kHz}$
			150		150	μS	$V_{DG} = 10\text{V}, I_D = 5\ \text{mA}$	$f = 100\ \text{MHz}$
Common Source Input Capacitance	C_{iss}		5		5	pF	$V_{DG} = 10\text{V}, I_D = 5\ \text{mA}$	$f = 1\ \text{MHz}$
Common Source Reverse Transfer Capacitance	C_{rss}		1.2		1.2	pF	$V_{DG} = 10\text{V}, I_D = 5\ \text{mA}$	$f = 1\ \text{MHz}$
Equivalent Short Circuit Input Noise Voltage	\bar{e}_N		20		20	nV/ $\sqrt{\text{Hz}}$	$V_{DG} = 10\text{V}, I_D = 5\ \text{mA}$	$f = 10\ \text{kHz}$
Noise Figure	NF		1		1	dB	$V_{DG} = 10\text{V}, I_D = 5\ \text{mA}$ $R_G = 100\ \text{K}\Omega$	$f = 10\ \text{kHz}$
Differential Gate Current	$I_{G1} - I_{G2}$		20		20	nA	$V_{DG} = 10\text{V}, I_D = 5\ \text{mA}$	$T_A = 125^\circ\text{C}$
Saturation Drain Current Ratio	I_{DSS1} / I_{DSS2}	0.95	1	0.95	1		$V_{DG} = 20\text{V}, V_{GS} = \emptyset\text{V}$	
Differential Gate Source Voltage	$ V_{GS1} - V_{GS2} $		10		15	mV	$V_{DG} = 10\text{V}, I_D = 5\ \text{mA}$	
Gate Source Voltage Differential Drift	$\Delta V_{GS1} - V_{GS2}$ ΔT		20		40	mV	$V_{DG} = 10\text{V}, I_D = 5\ \text{mA}$	$T_A = 25^\circ\text{C}$ $T_B = 125^\circ\text{C}$
			20		40	mV	$V_{DG} = 10\text{V}, I_D = 5\ \text{mA}$	$T_A = -55^\circ\text{C}$ $T_B = 25^\circ\text{C}$
Transconductance Ratio	g_{fs1} / g_{fs2}	0.9	1	0.85	1		$V_{DG} = 10\text{V}, I_D = 5\ \text{mA}$	$f = 1\ \text{kHz}$

SOIC-8 Package

See Section G for Outline Dimensions

Pin Configuration

1 Source 1, 2 Drain 1, 3 Gate 1, 4 N/C,
5 Source 2, 6 Drain 2, 7 Gate 2, 8 Omitted

TO-78 Package

See Section G for Outline Dimensions

Pin Configuration

1 Source 1, 2 Drain 1, 3 Gate 1,
4 Case, 5 Source 2, 6 Drain 2,
7 Gate 2, 8 Omitted

Surface Mount

SMP5911, SMP5912

