

J308, J309

N-Channel Silicon Junction Field-Effect Transistor

- Mixers
- Oscillators
- VHF/UHF Amplifiers

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

Reverse Gate Source & Reverse Gate Drain Voltage

– 25 V

Continuous Forward Gate Current

10 mA

Continuous Device Power Dissipation

360 mW

Power Derating

3.27 mW/°C

At 25°C free air temperature:
Static Electrical Characteristics

		J308			J309			Process NJ72	
		Min	Typ	Max	Min	Typ	Max	Unit	Test Conditions
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	– 25			– 25			V	$I_G = -1\mu\text{A}$, $V_{DS} = 0\text{V}$
Gate Reverse Current	I_{GSS}			– 1			– 1	nA	$V_{GS} = -15\text{V}$, $V_{DS} = 0\text{V}$
				– 1			– 1	μA	$V_{GS} = -15\text{V}$, $V_{DS} = 0\text{V}$, $T_A = +125^\circ\text{C}$
Gate Source Cutoff Voltage	$V_{GS(OFF)}$	– 1		– 6.5	– 1		– 4	V	$V_{DS} = 10\text{V}$, $I_D = 1\text{nA}$
Gate Source Forward Voltage	$V_{GS(F)}$			1			1	V	$V_{DS} = 0\text{V}$, $I_G = 1\text{mA}$
Drain Saturation Current (Pulsed)	I_{DSS}	12		60	12		30	mA	$V_{DS} = 10\text{V}$, $V_{GS} = 0\text{V}$

Dynamic Electrical Characteristics

Common Source Forward Transconductance	g_{fs}	8000	17000		10000	17000		μS	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	$f = 1\text{kHz}$
Common Source Output Conductance	g_{os}			250			250	μS	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	$f = 1\text{kHz}$
Common Gate Forward Transconductance	g_{fg}		13000			13000		μS	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	$f = 1\text{kHz}$
Common Gate Output Transconductance	g_{og}		150			100		μS	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	$f = 1\text{kHz}$
Gate Drain Capacitance	C_{dg}		1.8	2.5		1.8	2.5	pF	$V_{DS} = 0\text{V}$, $V_{GS} = -10\text{V}$	$f = 1\text{MHz}$
Gate Source Capacitance	C_{gs}		4	5		4	5	pF	$V_{DS} = 0\text{V}$, $V_{GS} = -10\text{V}$	$f = 1\text{MHz}$
Equivalent Short Circuit Input Noise Voltage	$\bar{e}_N$		10			10		nV/√Hz	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	$f = 100\text{kHz}$
Common Source Forward Transconductance	$Re_{(Yfs)}$		12			12		μS	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	$f = 105\text{MHz}$
Common Gate Input Conductance	$Re_{(Yig)}$		14			14		μS	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	$f = 105\text{MHz}$
Common Source Input Conductance	$Re_{(Yis)}$		0.4			0.4		μS	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	$f = 105\text{MHz}$
Common Source Output Conductance	$Re_{(Gos)}$		0.15			0.15		μS	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	$f = 105\text{MHz}$
Common Gate Power Gain at Noise Match	G_{pg}		16			16		dB	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	$f = 105\text{MHz}$
			11			11		dB	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	$f = 450\text{MHz}$
Noise Figure	NF		1.5			1.5		dB	$V_{DS} = 15\text{V}$, $I_D = 10\text{mA}$	$f = 105\text{MHz}$
			2.7			2.7		dB	$V_{DS} = 15\text{V}$, $I_D = 10\text{mA}$	$f = 450\text{MHz}$

TO-226AA Package

Dimensions in Inches (mm)

Pin Configuration

1 Drain, 2 Source, 3 Gate

Surface Mount

SMPJ308, SMPJ309

