

## 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

		J308			J309			Process NJ72		
		Min	Typ	Max	Min	Typ	Max	Unit	Test Conditions	
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	- 25			- 25			V	$I_G = -1\mu\text{A}, V_{DS} = \emptyset\text{V}$	
Gate Reverse Current	$I_{GSS}$			- 1			- 1	nA	$V_{GS} = -15\text{V}, V_{DS} = \emptyset\text{V}$	
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	$V_{DS} = \emptyset\text{V}, I_G = 1\text{mA}$	
Drain Saturation Current (Pulsed)	$I_{DSS}$	12		60	12		30	mA	$V_{DS} = 10\text{V}, V_{GS} = \emptyset\text{V}$	

## Dynamic Electrical Characteristics

		J308		J309					
Common Source Forward Transconductance	$g_{fs}$	8000	17000		10000	17000		$\mu\text{S}$	$V_{DS} = 10\text{V}, I_D = 10\text{mA}$ f = 1 kHz
Common Source Output Conductance	$g_{os}$			250			250	$\mu\text{S}$	$V_{DS} = 10\text{V}, I_D = 10\text{mA}$ f = 1 kHz
Common Gate Forward Transconductance	$g_{fg}$		13000			13000		$\mu\text{S}$	$V_{DS} = 10\text{V}, I_D = 10\text{mA}$ f = 1 kHz
Common Gate Output Transconductance	$g_{og}$		150			100		$\mu\text{S}$	$V_{DS} = 10\text{V}, I_D = 10\text{mA}$ f = 1 kHz
Gate Drain Capacitance	$C_{dg}$		1.8	2.5		1.8	2.5	pF	$V_{DS} = \emptyset\text{V}, V_{GS} = -10\text{V}$ f = 1 MHz
Gate Source Capacitance	$C_{gs}$		4	5		4	5	pF	$V_{DS} = \emptyset\text{V}, V_{GS} = -10\text{V}$ f = 1 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 kHz
Common Source Forward Transconductance	$Re_{(Yfs)}$		12			12		$\mu\text{S}$	$V_{DS} = 10\text{V}, I_D = 10\text{mA}$ f = 105 MHz
Common Gate Input Conductance	$Re_{(Yig)}$		14			14		$\mu\text{S}$	$V_{DS} = 10\text{V}, I_D = 10\text{mA}$ f = 105 MHz
Common Source Input Conductance	$Re_{(Yis)}$		0.4			0.4		$\mu\text{S}$	$V_{DS} = 10\text{V}, I_D = 10\text{mA}$ f = 105 MHz
Common Source Output Conductance	$Re_{(Gos)}$		0.15			0.15		$\mu\text{S}$	$V_{DS} = 10\text{V}, I_D = 10\text{mA}$ f = 105 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 MHz
			11			11		dB	$V_{DS} = 10\text{V}, I_D = 10\text{mA}$ f = 450 MHz
Noise Figure	NF		1.5			1.5		dB	$V_{DS} = 15\text{V}, I_D = 10\text{mA}$ f = 105 MHz
			2.7			2.7		dB	$V_{DS} = 15\text{V}, I_D = 10\text{mA}$ f = 450 MHz

## TO-226AA Package

Dimensions in Inches (mm)

## Pin Configuration

1 Drain, 2 Source, 3 Gate

## Surface Mount

SMPJ308, SMPJ309

