

J310

N-Channel Silicon Junction Field-Effect Transistor

- Mixer
- Oscillator
- VHF/UHF Amplifier

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

Reverse Gate Source Voltage	- 25 V
Reverse Gate Drain Voltage	- 25 V
Continuous Forward Gate Current	10 mA
Continuous Device Power Dissipation	360 mW

At 25°C free air temperature:

Static Electrical Characteristics

		J310			Process NJ72		
		Min	Typ	Max	Unit	Test Conditions	
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	- 25			V	$I_G = -1 \mu\text{A}$, $V_{DS} = 0\text{V}$	
Gate Reverse Current	I_{GSS}			- 1	nA	$V_{GS} = -15\text{V}$, $V_{DS} = 0\text{V}$	
				- 1	μA	$V_{GS} = -15\text{V}$, $V_{DS} = 0\text{V}$, $T_A = +125^\circ\text{C}$	
Gate Source Cutoff Voltage	$V_{GS(OFF)}$	- 2		- 6.5	V	$V_{DS} = 10\text{V}$, $I_D = 1 \text{ nA}$	
Gate Source Forward Voltage	$V_{GS(F)}$			1	V	$V_{DS} = 0\text{V}$, $I_G = 1 \text{ mA}$	
Drain Saturation Current (Pulsed)	I_{DSS}	24		60	mA	$V_{DS} = 10\text{V}$, $V_{GS} = 0\text{V}$	

Dynamic Electrical Characteristics

Common Source Forward Transconductance	g_{fs}	8000	17000		μS	$V_{DS} = 10\text{V}$, $I_D = 10 \text{ mA}$	$f = 1 \text{ kHz}$
Common Source Output Conductance	g_{os}			250	μS	$V_{DS} = 10\text{V}$, $I_D = 10 \text{ mA}$	$f = 1 \text{ kHz}$
Common Gate Forward Transconductance	g_{fg}		1200		μS	$V_{DS} = 10\text{V}$, $I_D = 10 \text{ mA}$	$f = 1 \text{ kHz}$
Common Gate Output Transconductance	g_{og}		150		μS	$V_{DS} = 10\text{V}$, $I_D = 10 \text{ mA}$	$f = 1 \text{ kHz}$
Gate Drain Capacitance	C_{dg}		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	pF	$V_{DS} = 0\text{V}$, $V_{GS} = -10\text{V}$	$f = 1 \text{ MHz}$
Equivalent Short Circuit Input Noise Voltage	\hat{e}_N		10		nV/ $\sqrt{\text{Hz}}$	$V_{DS} = 10\text{V}$, $I_D = 10 \text{ mA}$	$f = 100 \text{ Hz}$
Common Source Forward Transconductance	$\text{Re}(Y_{fs})$		12		μS	$V_{DS} = 10\text{V}$, $I_D = 10 \text{ mA}$	$f = 105 \text{ MHz}$
Common Gate Input Conductance	$\text{Re}(Y_{ig})$		14		μS	$V_{DS} = 10\text{V}$, $I_D = 10 \text{ mA}$	$f = 105 \text{ MHz}$
Common Source Input Conductance	$\text{Re}(Y_{is})$		0.4		μS	$V_{DS} = 10\text{V}$, $I_D = 10 \text{ mA}$	$f = 105 \text{ MHz}$
Common Source Output Conductance	$\text{Re}(g_{os})$		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		dB	$V_{DS} = 10\text{V}$, $I_D = 10 \text{ mA}$	$f = 105 \text{ MHz}$
			11		dB	$V_{DS} = 10\text{V}$, $I_D = 10 \text{ mA}$	$f = 450 \text{ MHz}$
Noise Figure	NF		1.5		dB	$V_{DS} = 15\text{V}$, $I_D = 10 \text{ mA}$	$f = 105 \text{ MHz}$
			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

SMPJ310



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