

J304, J305

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	– 30 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

		J304			J305			Process NJ26	
		Min	Typ	Max	Min	Typ	Max	Unit	Test Conditions
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	– 30			– 30			V	$I_G = -1\mu\text{A}$, $V_{DS} = 0\text{V}$
Gate Reverse Current	I_{GSS}			– 100			– 100	pA	$V_{GS} = -20\text{V}$, $V_{DS} = 0\text{V}$
Gate Source Cutoff Voltage	$V_{GS(OFF)}$	– 2		– 6	– 0.5		– 3	V	$V_{DS} = 15\text{V}$, $I_D = 1\text{nA}$
Drain Saturation Current (Pulsed)	I_{DSS}	5		15	1		8	mA	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$

Dynamic Electrical Characteristics

Common Source Forward Transconductance	g_{fs}	4500		7500	3000			μS	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 1\text{ kHz}$
						3000		μS	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 100\text{ MHz}$
			4200					μS	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 400\text{ MHz}$
Common Source Output Conductance	g_{os}			50			50	μS	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 1\text{ kHz}$
Common Source Input Capacitance	C_{iss}		3			3		pF	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 1\text{ MHz}$
Common Source Reverse Transfer Capacitance	C_{rss}		0.85			0.85		pF	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 1\text{ MHz}$
Common Source Output Capacitance	C_{oss}		1			1		pF	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 1\text{ MHz}$
Common Source Output Conductance	g_{os}		60			60		μS	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 100\text{ MHz}$
			80					μS	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 400\text{ MHz}$
Common Source Output Susceptance	b_{os}		800			800		μS	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 100\text{ MHz}$
			3600					μS	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 400\text{ MHz}$
Common Source Input Conductance	g_{is}		80			80		μS	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 100\text{ MHz}$
			800					μS	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 400\text{ MHz}$
Common Source Input Susceptance	b_{is}		2000			2000		μS	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 100\text{ MHz}$
			7500					μS	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 400\text{ MHz}$
Common Source Power Gain	G_{ps}		20					dB	$V_{DS} = 15\text{V}$, $I_D = 5\text{ mA}$	$f = 100\text{ MHz}$
			11					dB	$V_{DS} = 15\text{V}$, $I_D = 5\text{ mA}$	$f = 400\text{ MHz}$
Noise Figure	NF		1.7					dB	$V_{DS} = 15\text{V}$, $I_D = 5\text{ mA}$	$f = 100\text{ MHz}$
			3.8					dB	$R_G = 1\ \Omega$	$f = 400\text{ MHz}$

TO-226AA Package

Dimensions in Inches (mm)

Pin Configuration

1 Drain, 2 Source, 3 Gate

Surface Mount

SMPJ304, SMPJ305



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