

N-Channel JFETs

PRODUCT SUMMARY				
Part Number	$V_{GS(off)}$ (V)	$V_{(BR)GSS}$ Min (V)	g_{fs} Min (mS)	I_{DSS} Min (mA)
J304	-2 to -6	-30	4.5	5
J305	-0.5 to -3	-30	3	1

FEATURES

- Excellent High Frequency Gain: J304, G_{ps} 11 dB (typ) @ 400 MHz
- Very Low Noise: 3.8 dB (typ) @ 400 MHz
- Very Low Distortion
- High ac/dc Switch Off-Isolation
- High Gain: $A_V = 60$ @ 100 μ A

BENEFITS

- Wideband High Gain
- Very High System Sensitivity
- High Quality of Amplification
- High-Speed Switching Capability
- High Low-Level Signal Amplification

APPLICATIONS

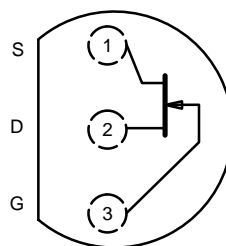
- High-Frequency Amplifier/Mixer
- Oscillator
- Sample-and-Hold
- Very Low Capacitance Switches

DESCRIPTION

The J304/305 n-channel JFETs provide high-performance amplification, especially at high-frequency. These products are available in tape and reel for automated assembly (see Package Information).

For similar products in TO-236 (SOT-23) packages, see the 2N/SST5484 series data sheet, or in TO-206AF (TO-72) packages, see the 2N/SST4416 series data sheet.

**TO-226AA
(TO-92)**



Top View

ABSOLUTE MAXIMUM RATINGS

Gate-Source/Gate-Drain Voltage	-30 V
Forward Gate Current	10 mA
Storage Temperature	-55 to 150°C
Operating Junction Temperature	-55 to 150°C

Lead Temperature ($1/16$ " from case for 10 sec.)	300°C
Power Dissipation ^a	350 mW

Notes
a. Derate 2.8 mW/°C above 25°C



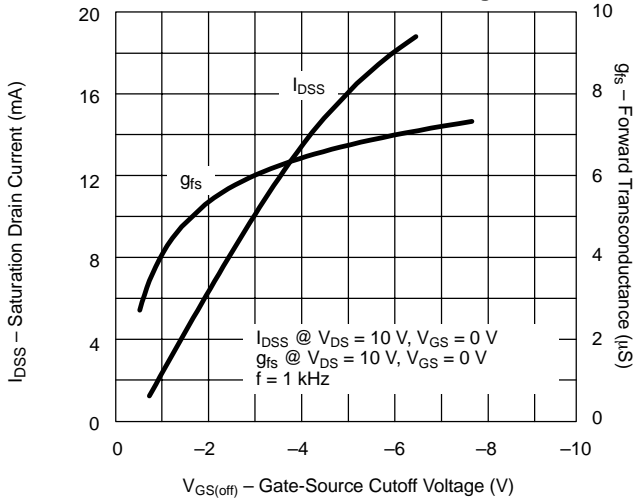
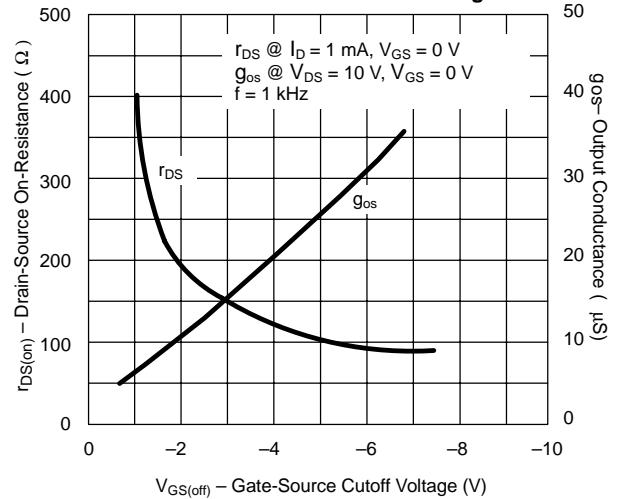
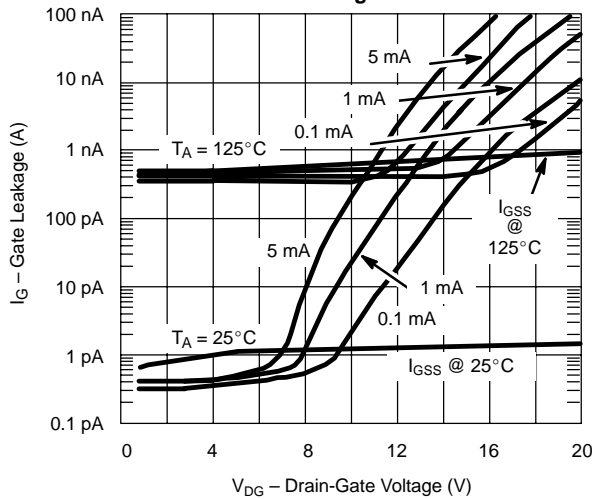
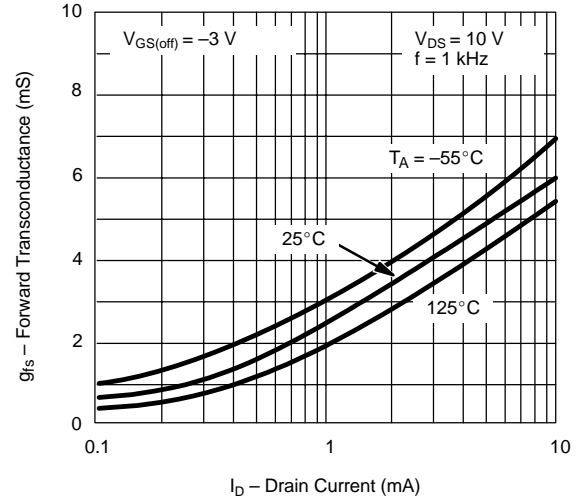
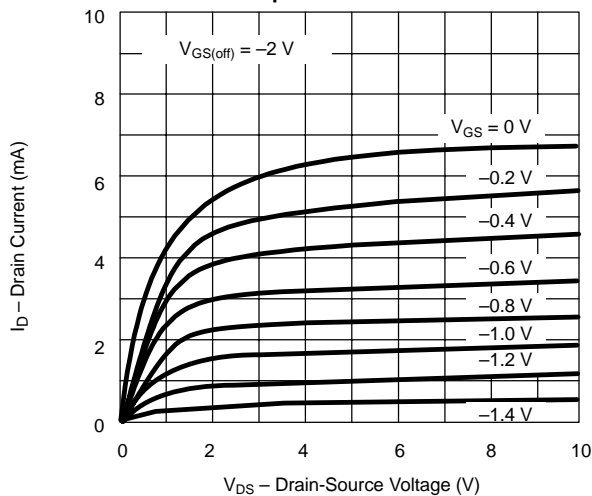
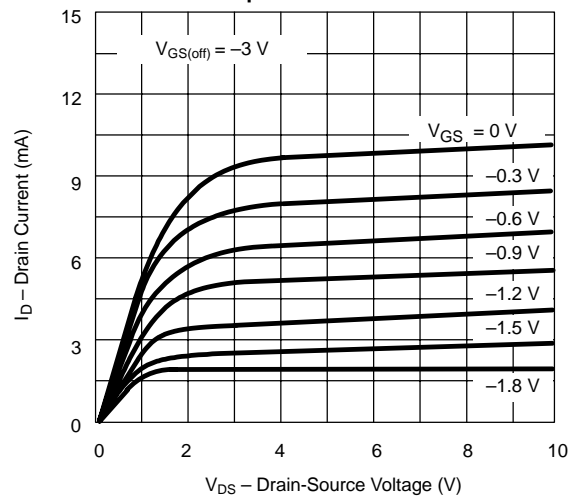
SPECIFICATIONS (T _A = 25 °C UNLESS OTHERWISE NOTED)								
Parameter	Symbol	Test Conditions	Typ ^a	Limits				Unit
				J304		J305		
				Min	Max	Min	Max	
Static								
Gate-Source Breakdown Voltage	V _{(BR)GSS}	I _G = -1 μA, V _{DS} = 0 V	-35	-30		-30		V
Gate-Source Cutoff Voltage	V _{GS(off)}	V _{DS} = 15 V, I _D = 1 nA		-2	-6	-0.5	-3	V
Saturation Drain Current ^b	I _{DSS}	V _{DS} = 15 V, V _{GS} = 0 V		5	15	1	8	mA
Gate Reverse Current	I _{GSS}	V _{GS} = -20 V, V _{DS} = 0 V	-2		-100		-100	pA
		T _A = 100 °C	-0.2					nA
Gate Operating Current ^b	I _G	V _{DG} = 10 V, I _D = 1 mA	-20					pA
Drain Cutoff Current	I _{D(off)}	V _{DS} = 10 V, V _{GS} = -6 V	2					
Drain-Source On-Resistance	r _{DS(on)}	V _{GS} = 0 V, I _D = 1 mA	200					Ω
Gate-Source Forward Voltage	V _{GS(F)}	I _G = 1 mA, V _{DS} = 0 V	0.7					V
Dynamic								
Common-Source Forward Transconductance	g _{fs}	V _{DS} = 15 V, V _{GS} = 0 V, f = 1 kHz		4.5	7.5	3		mS
Common-Source Output Conductance	g _{os}					50		50
Common-Source Input Capacitance	C _{iss}	V _{DS} = 15 V, V _{GS} = 0 V f = 1 MHz	2.2					pF
Common-Source Reverse Transfer Capacitance	C _{rss}		0.7					
Common-Source Output Capacitance	C _{oss}		1					
Equivalent Input Noise Voltage	e _n	V _{DS} = 10 V, V _{GS} = 0 V f = 100 Hz	10					nV/ √Hz

TYPICAL HIGH-FREQUENCY SPECIFICATIONS (T _A = 25 °C UNLESS OTHERWISE NOTED)								
Parameter	Symbol	Test Conditions	Limits (Typ)				Unit	
			J304		J305			
			100 MHz	400 MHz	100 MHz	400 MHz		
High-Frequency								
Common-Source Input Conductance	g _{iss}	V _{DS} = 15 V, V _{GS} = 0 V	80	800	80			μS
Common-Source Input Susceptance	b _{iss}	V _{DS} = 15 V, V _{GS} = 0 V	2	7.5	2			mS
Common-Source Output Conductance	g _{oss}		60	80	60			μS
Common-Source Output Susceptance	b _{oss}		0.8	3.6	0.8			mS
Common-Source Forward Transconductance	g _{fs}		4.4	4.2	3			
Common-Source Power Gain	G _{ps}	V _{DS} = 15 V, I _D = 5 mA	20	11				dB
Noise Figure	NF	R _G = 1 kΩ	1.7	3.8				

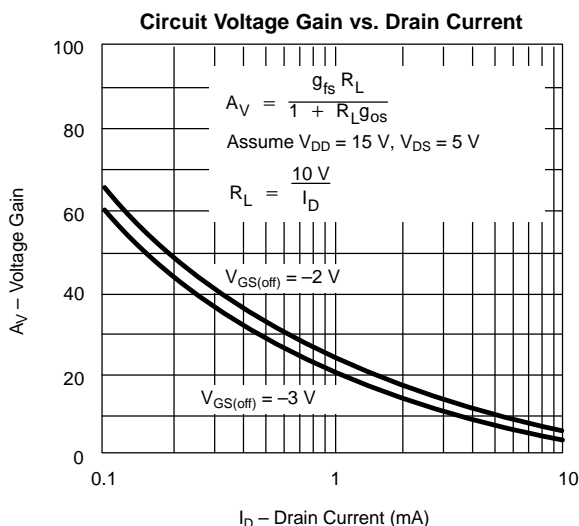
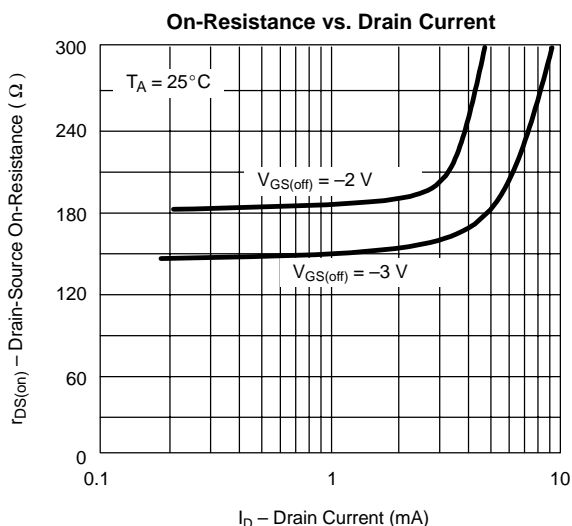
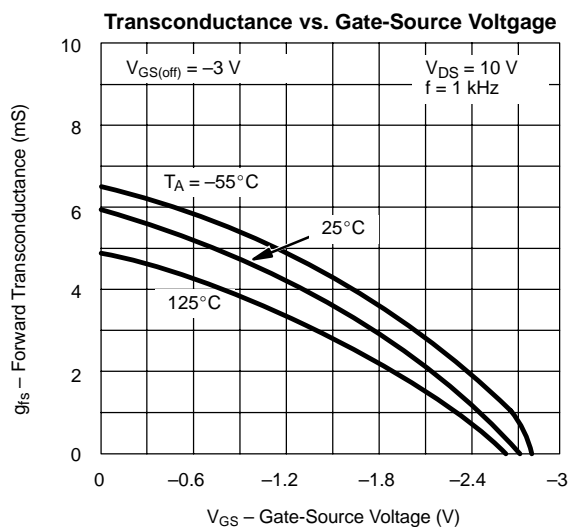
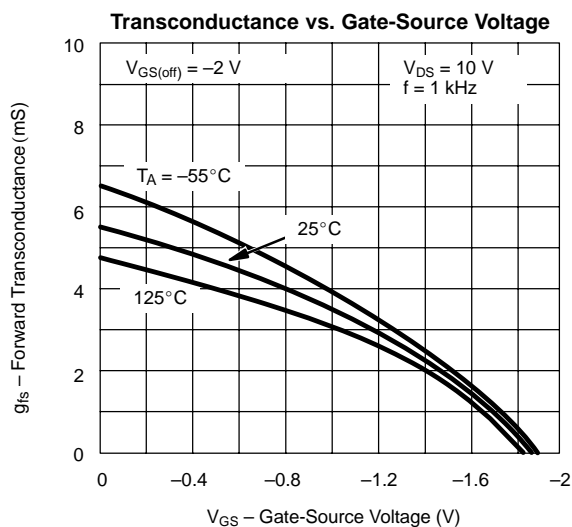
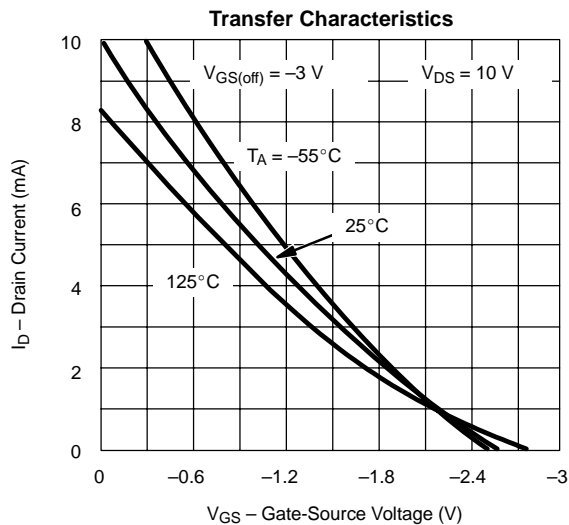
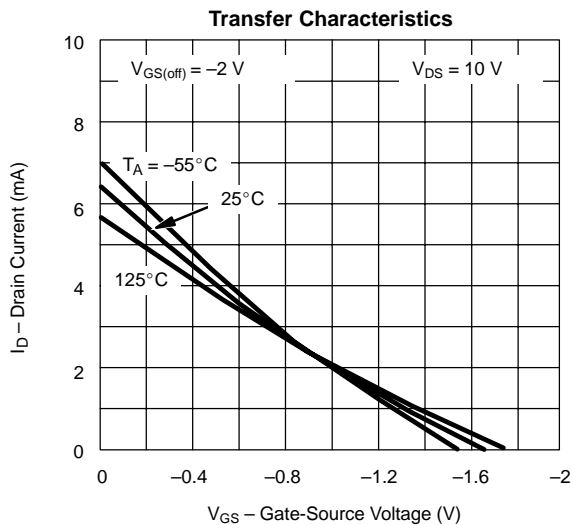
Notes

- a. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
- b. Pulse test: PW ≤ 300 μs, duty cycle ≤ 2%.

NH

TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)
Drain Current and Transconductance vs. Gate-Source Cutoff Voltage

On-Resistance and Output Conductance vs. Gate-Source Cutoff Voltage

Gate Leakage Current

Common-Source Forward Transconductance vs. Drain Current

Output Characteristics

Output Characteristics


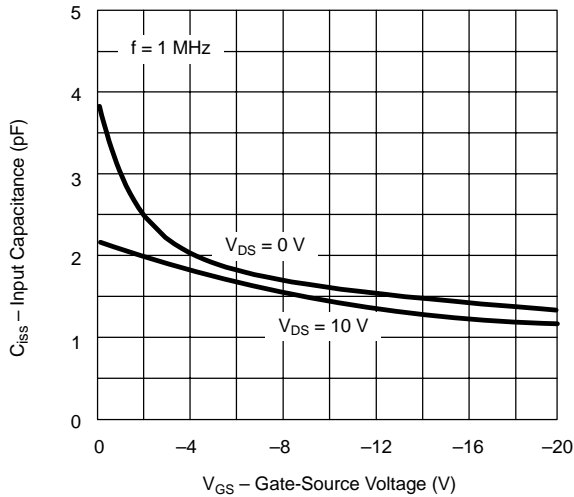
TYPICAL CHARACTERISTICS (T_A = 25°C UNLESS OTHERWISE NOTED)



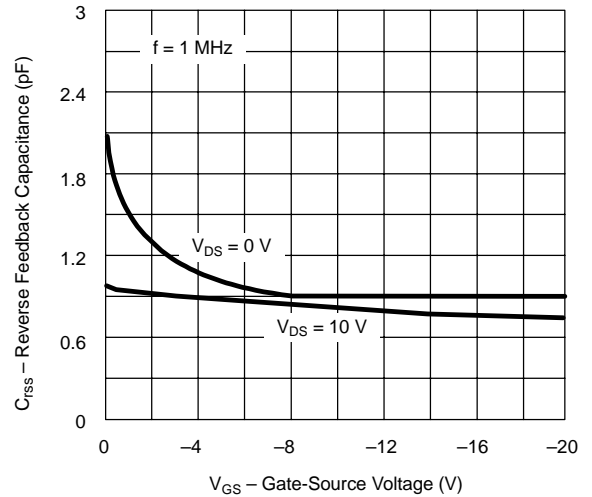


TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

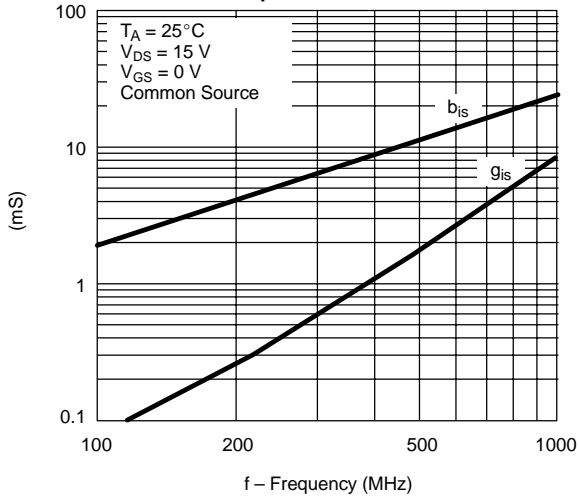
Common-Source Input Capacitance vs. Gate-Source Voltage



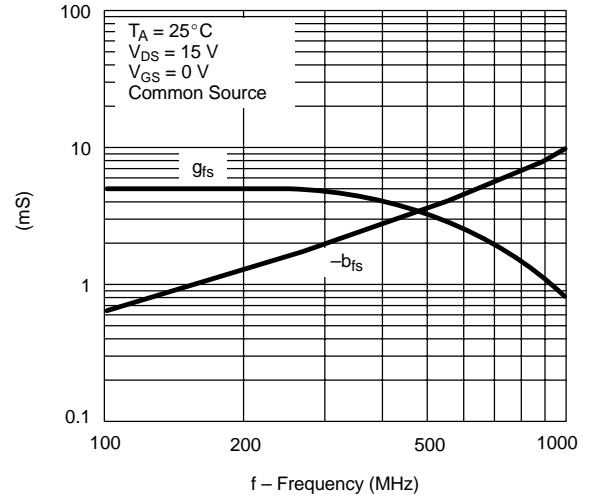
Common-Source Reverse Feedback Capacitance vs. Gate-Source Voltage



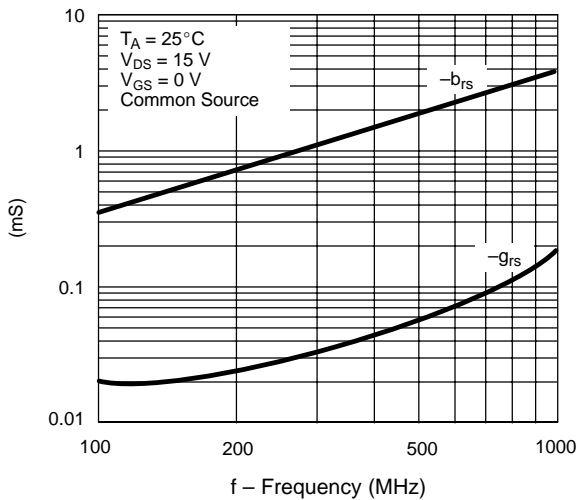
Input Admittance



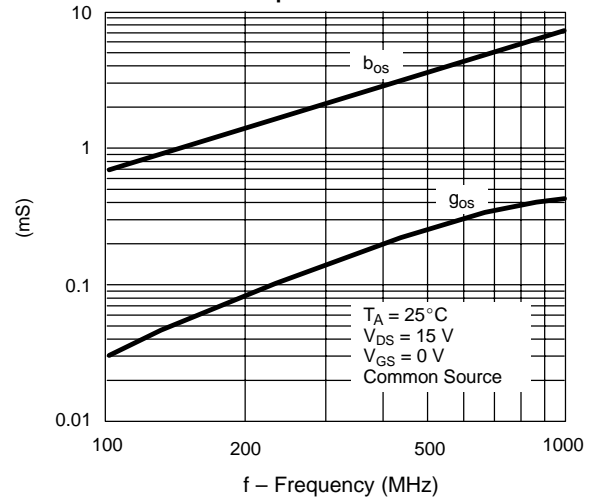
Forward Admittance



Reverse Admittance



Output Admittance



TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

