

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, Gps 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 μA

Benefits

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

Applications

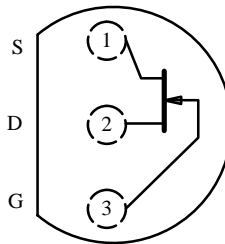
- High-Frequency Amplifier/Mixer
- Oscillator
- Sample-and-Hold
- Very Low Capacitance Switches

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	Lead Temperature (¹ / ₁₆ " from case for 10 sec.)	300°C
Forward Gate Current	10 mA	Power Dissipation ^a	350 mW
Storage Temperature	-55 to 150°C	Notes	
Operating Junction Temperature	-55 to 150°C	a. Derate 2.8 mW/°C above 25°C	

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70236.

J304/305

Specifications^a

Parameter	Symbol	Test Conditions	Typ ^b	Limits				Unit
				J304		J305		
				Min	Max	Min	Max	
Static								
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = -1 \mu A, V_{DS} = 0 V$	-35	-30		-30		V
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 15 V, I_D = 1 nA$		-2	-6	-0.5	-3	
Saturation Drain Current ^c	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
		$T_A = 100^\circ C$	-0.2					nA
Gate Operating Current ^c	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	\bar{e}_n	$V_{DS} = 10 V, V_{GS} = 0 V$ $f = 100 Hz$	10					nV/\sqrt{Hz}

Typical High-Frequency Specifications^a

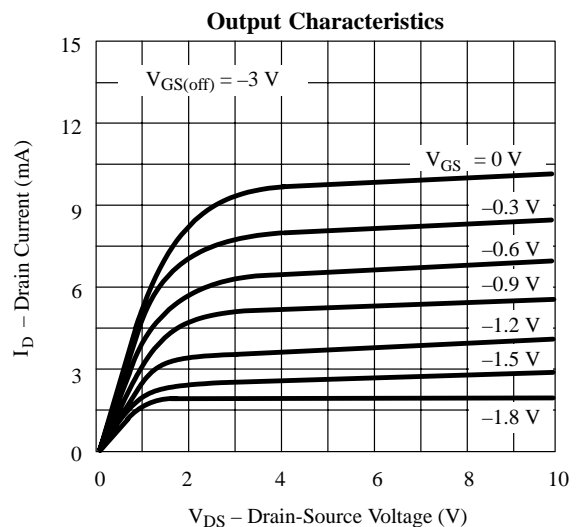
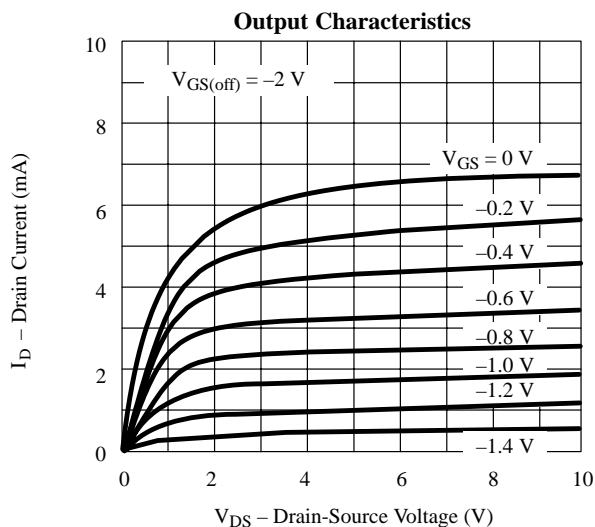
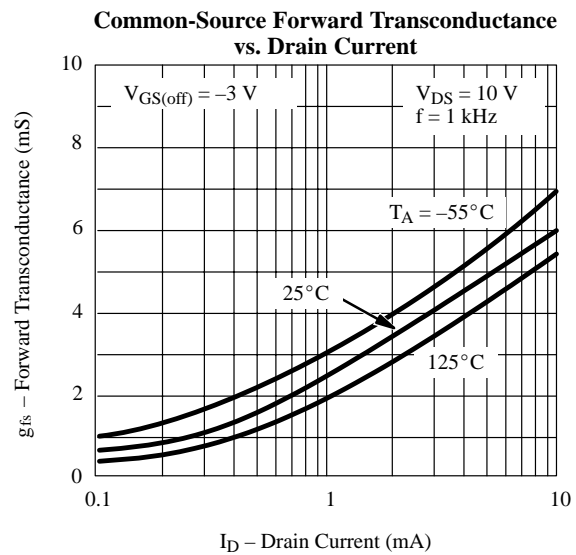
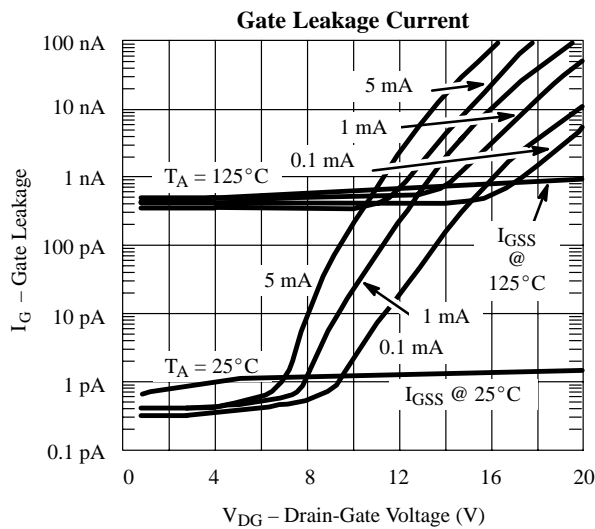
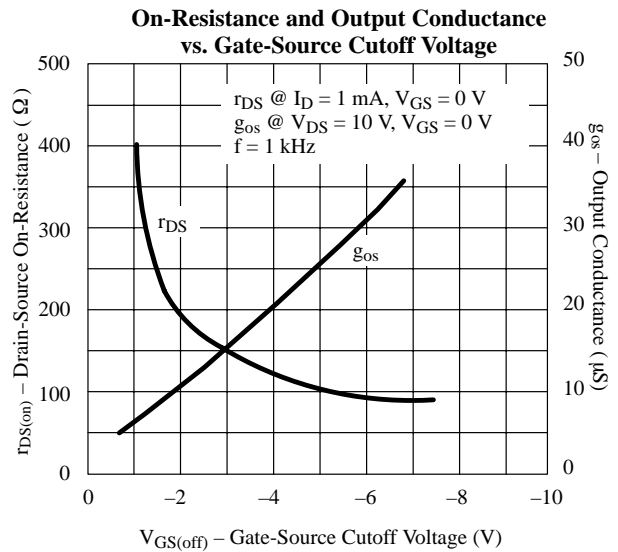
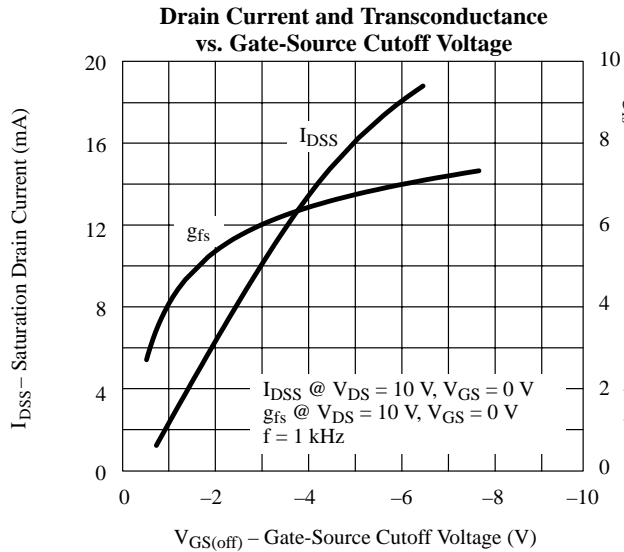
Parameter	Symbol	Test Conditions	Limits (Typ)				Unit
			J304		J305		
			100 MHz	400 MHz	100 MHz	400 MHz	
High-Frequency							
Common-Source Input Conductance	g_{iss}	$V_{DS} = 15 V, V_{GS} = 0 V$	80	800	80		μS
Common-Source Input Susceptance	b_{iss}		2	7.5	2		mS
Common-Source Output Conductance	g_{oss}		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	$R_G = 1 k\Omega$	1.7	3.8			

Notes

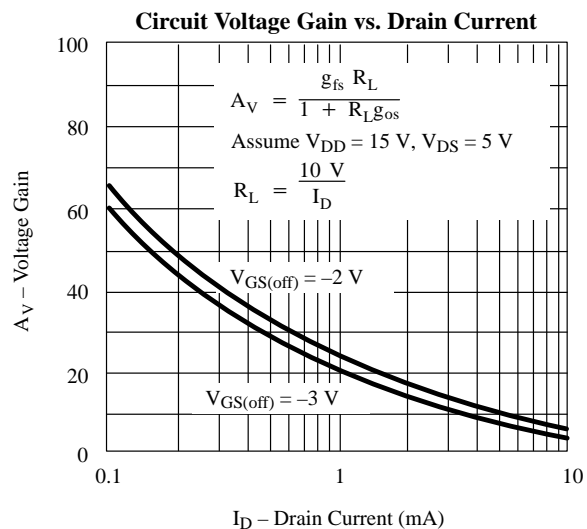
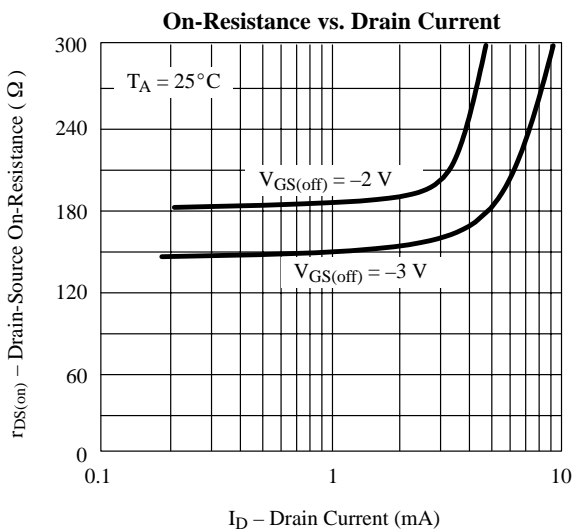
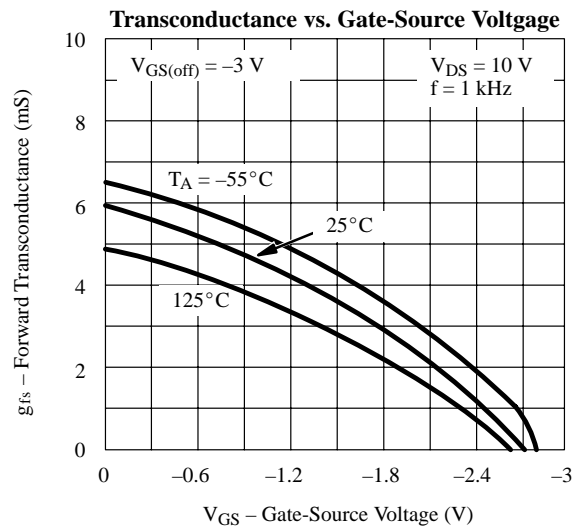
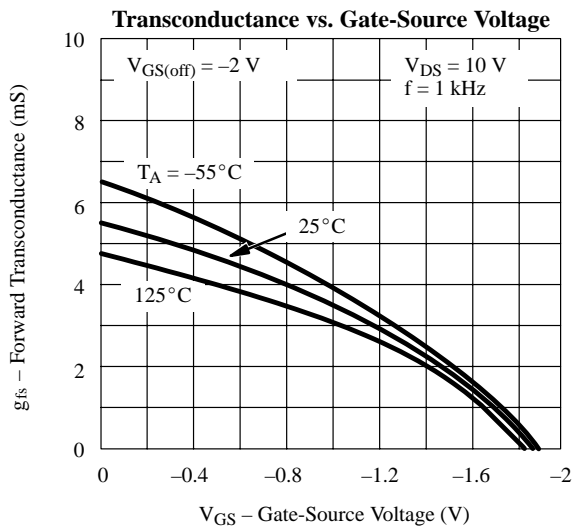
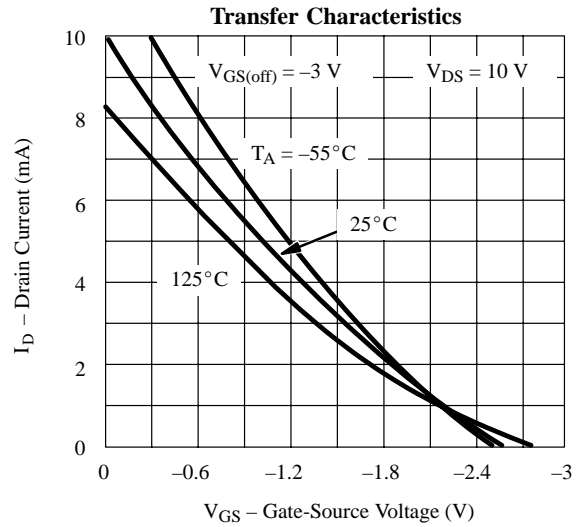
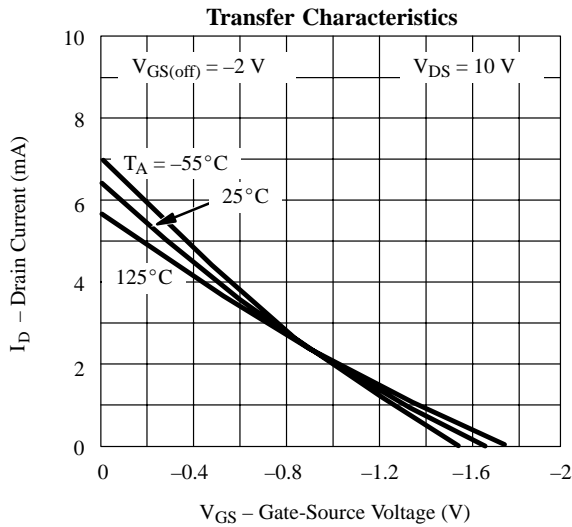
- $T_A = 25^\circ C$ unless otherwise noted.
- Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
- Pulse test: $PW \leq 300 \mu s$, duty cycle $\leq 2\%$.

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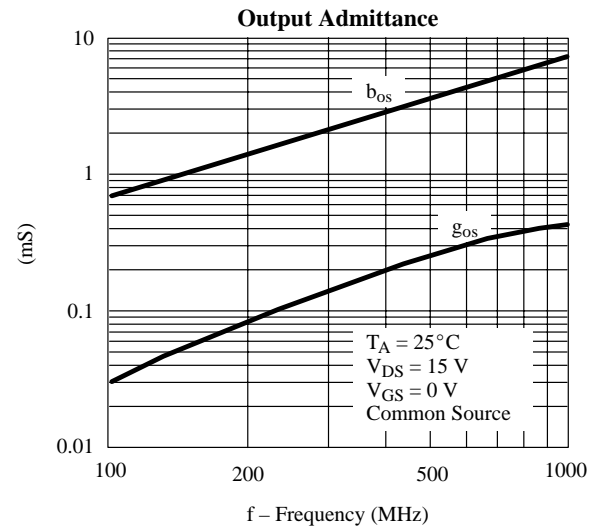
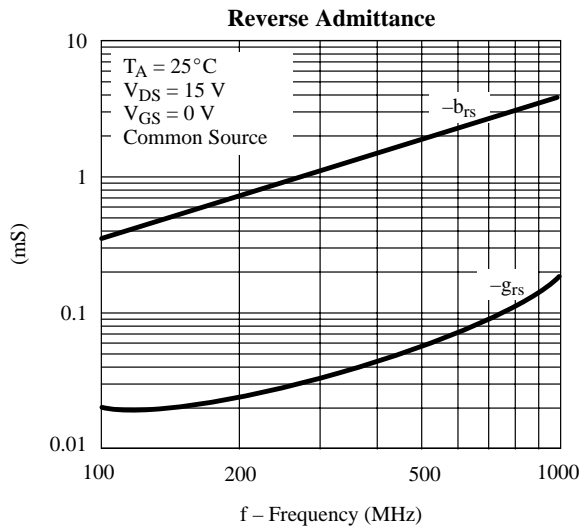
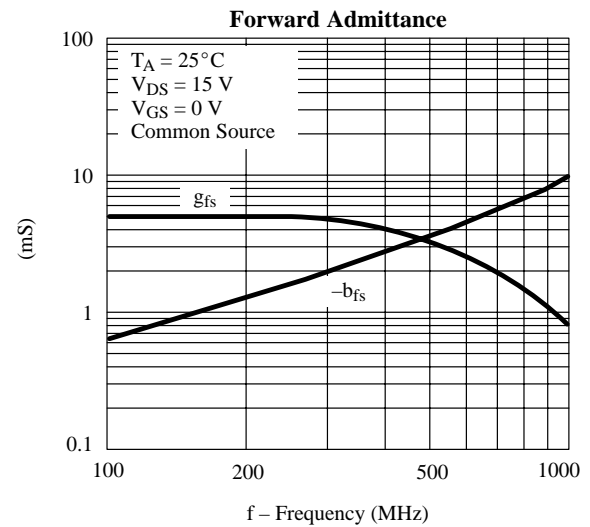
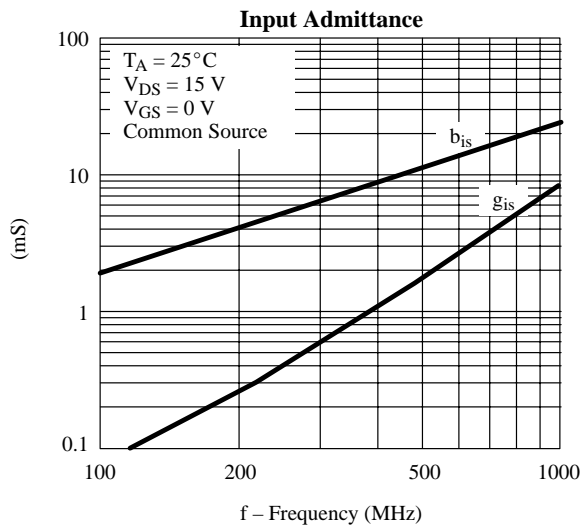
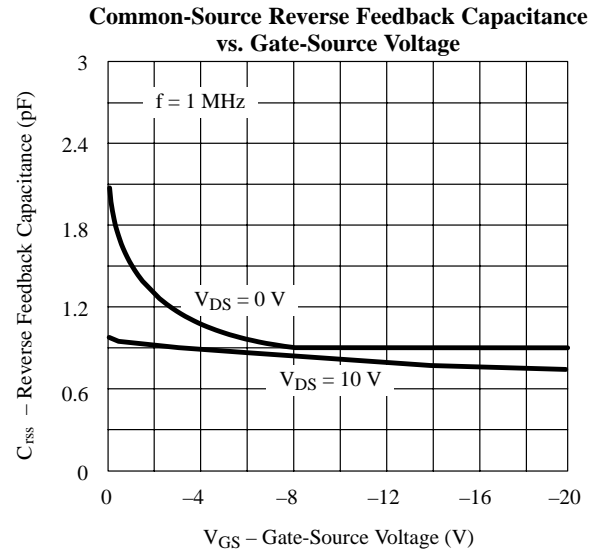
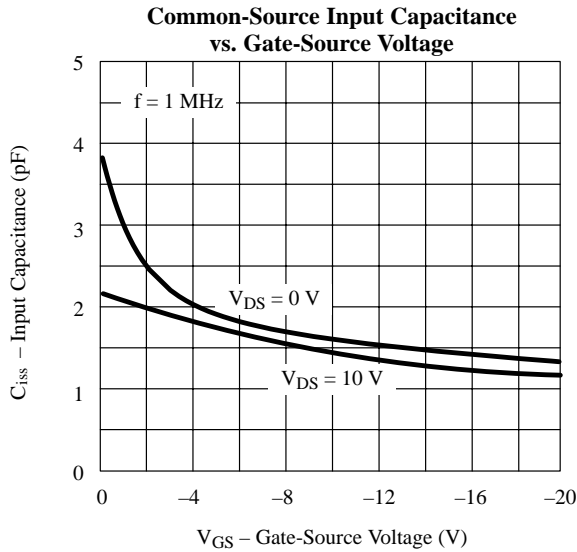
Typical Characteristics



Typical Characteristics (Cont'd)



Typical Characteristics (Cont'd)



Typical Characteristics (Cont'd)

