J210/211/212

N-Channel JFETs

Product Summary

Part Number	$V_{GS(off)}$ (V)	$V_{(BR)GSS}$ Min (V)	g_{fs} Min (mS)	I_{DSS} Min (mA)
J210	−1 to −3	−25	4	2
J211	−2.5 to −4.5	−25	6	7
J212	−4 to −6	−25	7	15

J211, For applications information see AN104, page 21.

Features

- Excellent High Frequency Gain: J211/212, Gps 12 dB (typ) @ 400 MHz
- Very Low Noise: 3 dB (typ) @ 400 MHz
- Very Low Distortion
- High ac/dc Switch Off-Isolation
- High Gain: A_V = 35 @ 100 μA

Benefits

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

Applications

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

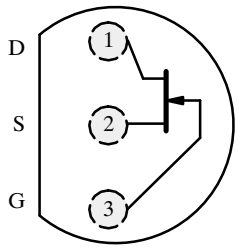
Description

The J210/211/212 n-channel JFETs are general-purpose and high-frequency amplifiers for a wide range of applications. These devices feature low leakage (I_{GSS} < 100 pA).

The TO-226AA (TO-92) plastic package, provides low cost and is available in tape-and-reel for automated assembly (see Packaging Information).

For similar dual products, see the 2N5911/5912 and U440/441 data sheets.

TO-226AA
(TO-92)



Top View

Absolute Maximum Ratings

Gate-Drain, Gate-Source Voltage . . . . . −25 V
Gate Current . . . . . 10 mA
Lead Temperature ($^1/_{16}$" from case for 10 sec.) . . . . . 300°C
Storage Temperature . . . . . −55 to 150°C
Operating Junction Temperature . . . . . −55 to 150°C
Power Dissipation[a] . . . . . 350 mW

Notes
a. Derate 2.8 mW/°C above 25°C

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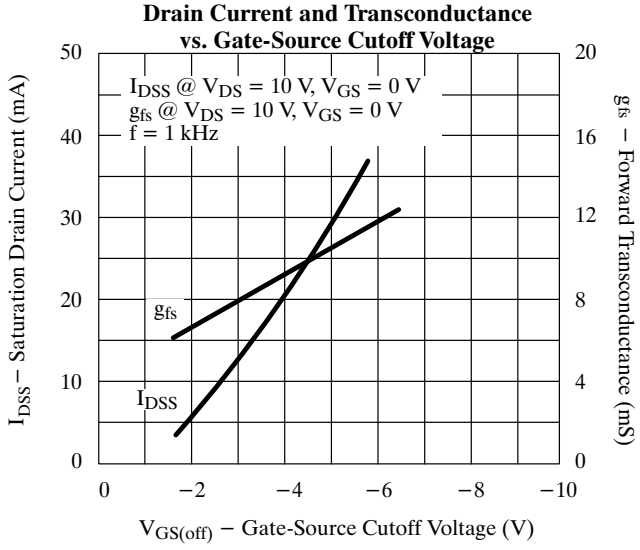
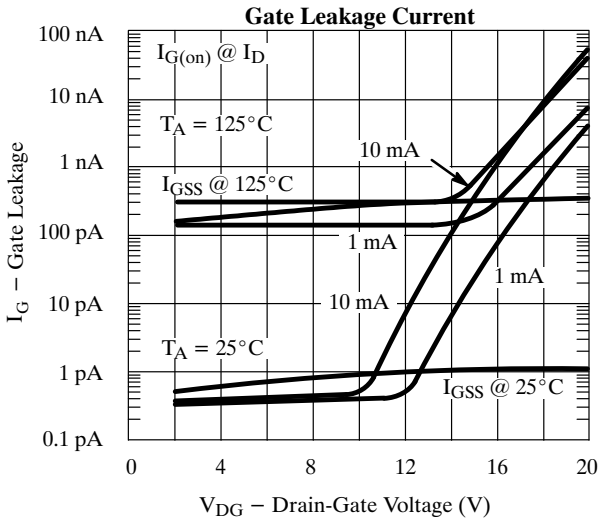
Specifications[a]

Parameter	Symbol	Test Conditions	Typ[b]	Limits J210 Min	Limits J210 Max	Limits J211 Min	Limits J211 Max	Limits J212 Min	Limits J212 Max	Unit
Static										
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = -1$ µA , $V_{DS} = 0$ V	−35	−25		−25		−25		V
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 15$ V, $I_D = 1$ nA		−1	−3	−2.5	−4.5	−4	−6	
Saturation Drain Current[c]	I_{DSS}	$V_{DS} = 15$ V, $V_{GS} = 0$ V		2	15	7	20	15	40	mA
Gate Reverse Current	I_{GSS}	$V_{GS} = -15$ V, $V_{DS} = 0$ V	−1		−100		−100		−100	pA
		$T_A = 125°C$	−0.5							nA
Gate Operating Current[b]	I_G	$V_{DG} = 10$ V, $I_D = 1$ mA	−1							pA
Drain Cutoff Current	$I_{D(off)}$	$V_{DS} = 10$ V, $V_{GS} = -8$ V	1							
Gate-Source Forward Voltage	$V_{GS(F)}$	$I_G = 1$ mA , $V_{DS} = 0$ V	0.7							V
Dynamic										
Common-Source Forward Transconductance[c]	g_{fs}	$V_{DS} = 15$ V, $V_{GS} = 0$ V, f = 1 kHz		4	12	6	12	7	12	mS
Common-Source Output Conductance	g_{os}				150		200		200	µS
Common-Source Input Capacitance	C_{iss}	$V_{DS} = 15$ V, $V_{GS} = 0$ V, f = 1 MHz	4							pF
Common-Source Reverse Transfer Capacitance	C_{rss}		1.5							
Equivalent Input Noise Voltage	$\overline{e}_n$	$V_{DS} = 15$ V, $V_{GS} = 0$ V, f = 1 kHz	5							nV/√Hz

Notes
a. $T_A = 25°C$ unless otherwise noted. NZF
b. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
c. Pulse test: PW ≤300 µs duty cycle ≤3%.

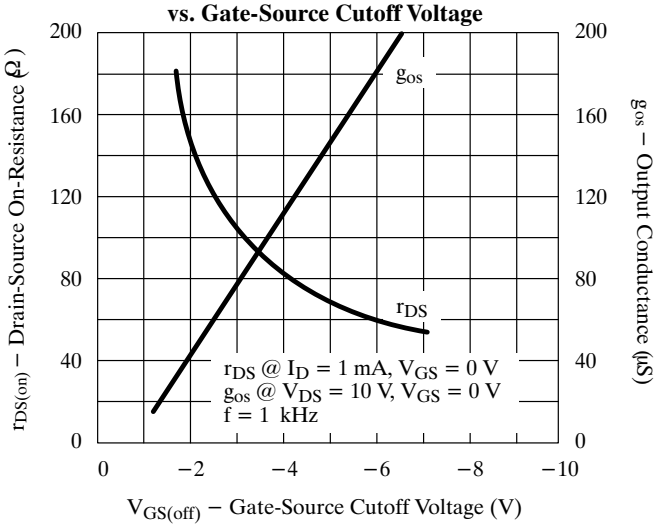
Typical Characteristics



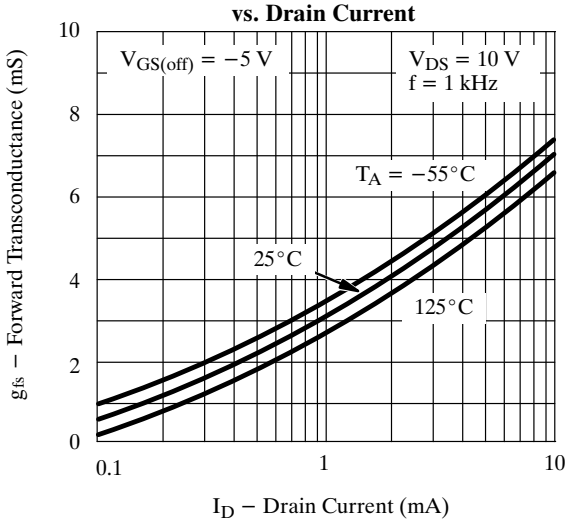


Typical Characteristics (Cont'd)

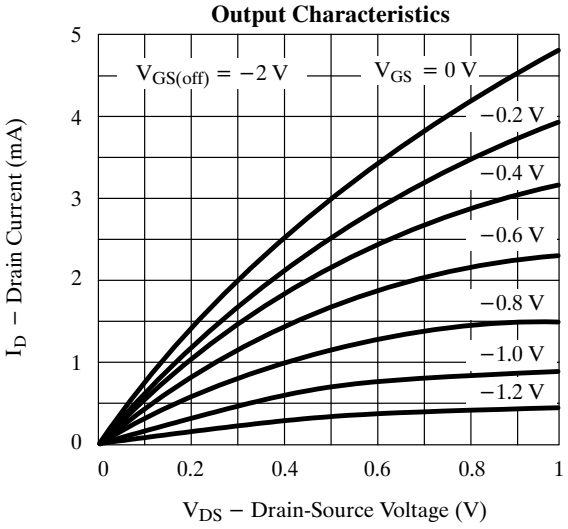
On-Resistance and Output Conductance vs. Gate-Source Cutoff Voltage



Common-Source Forward Transconductance vs. Drain Current



Output Characteristics



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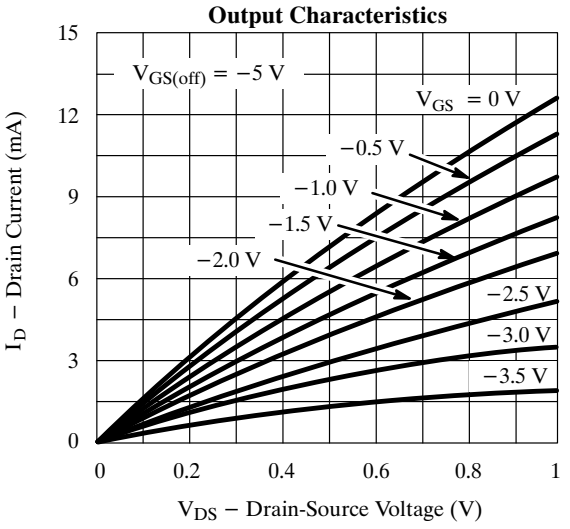
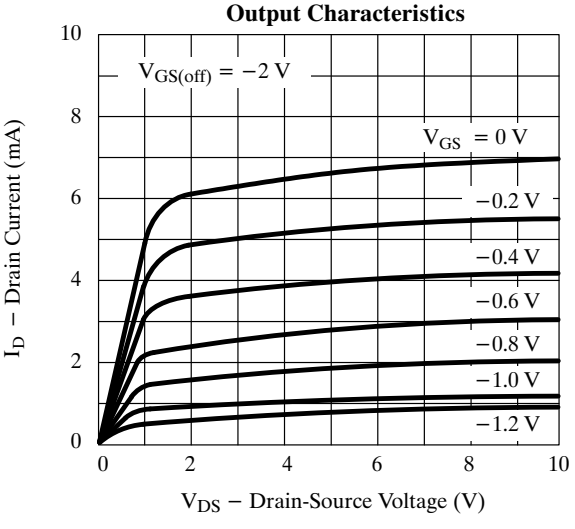
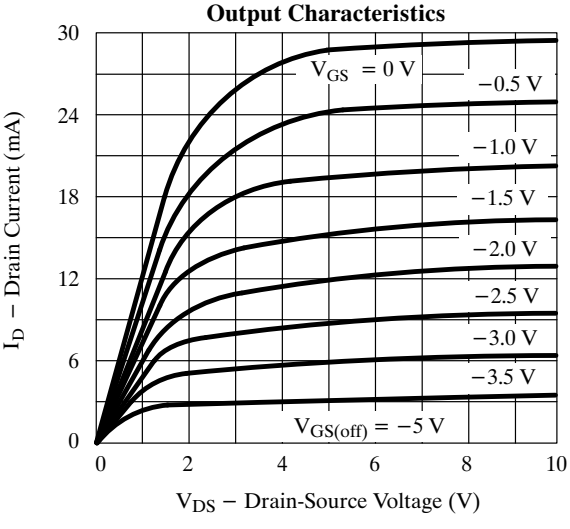


Output Characteristics



Output Characteristics



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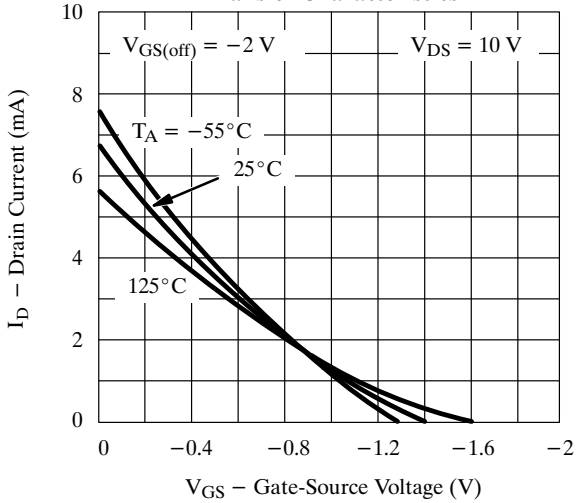
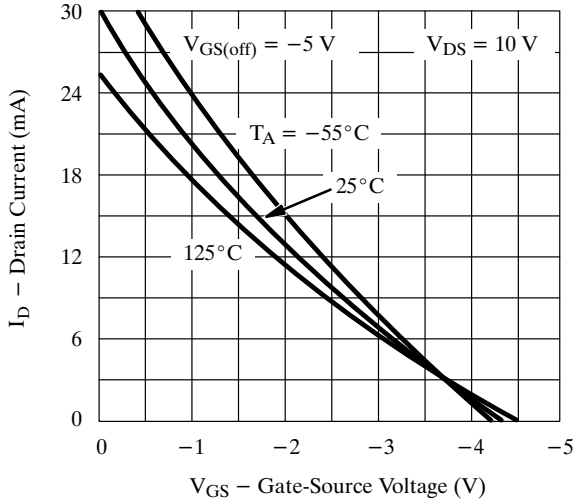
Typical Characteristics (Cont'd)

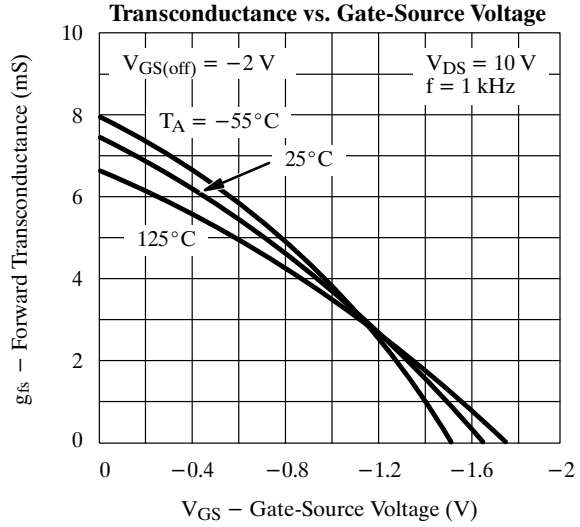
Transfer Characteristics



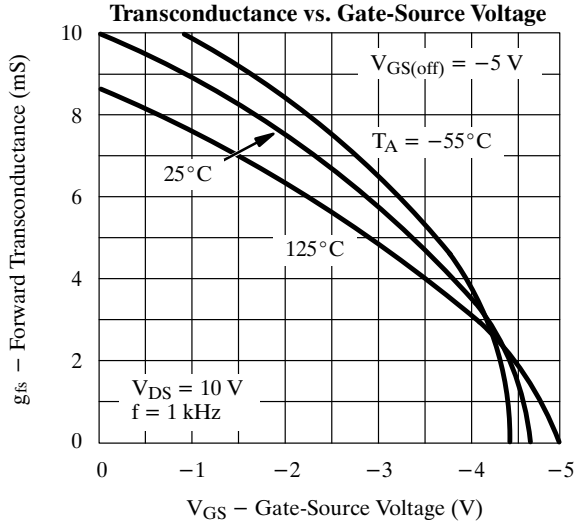
Transfer Characteristics



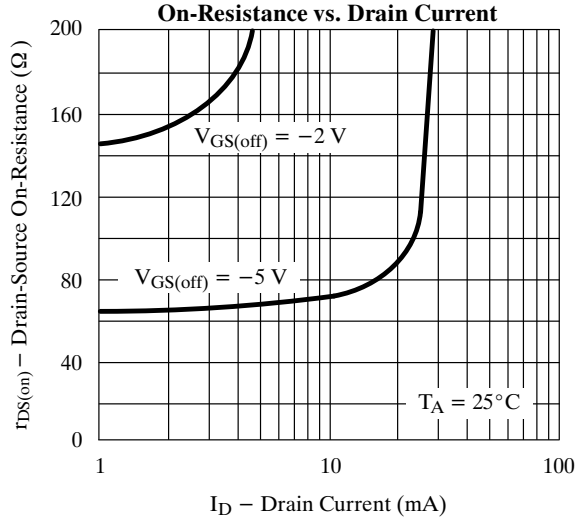
Transconductance vs. Gate-Source Voltage



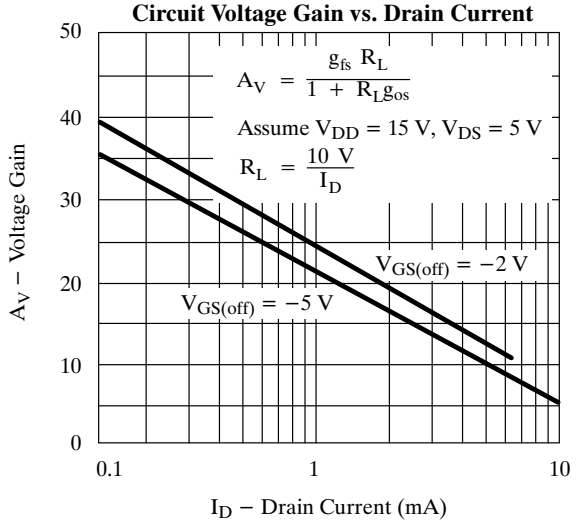
Transconductance vs. Gate-Source Voltage



On-Resistance vs. Drain Current

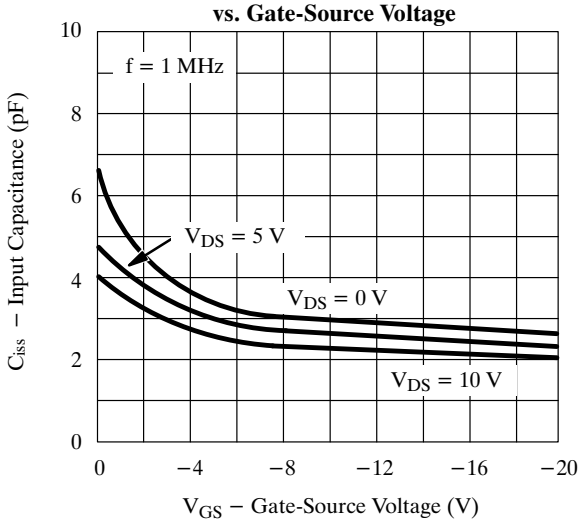


Circuit Voltage Gain vs. Drain Current

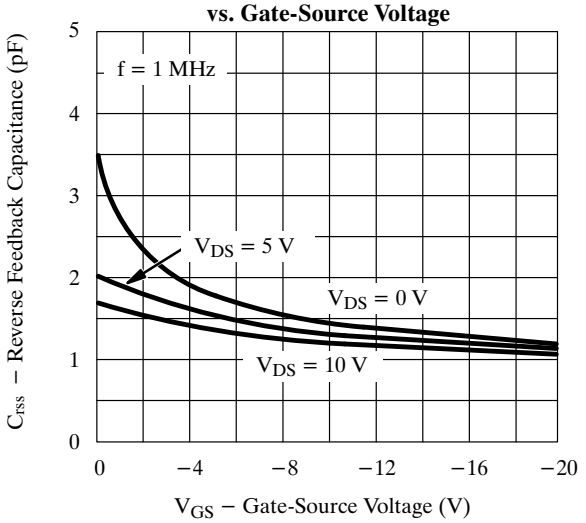


Typical Characteristics (Cont'd)

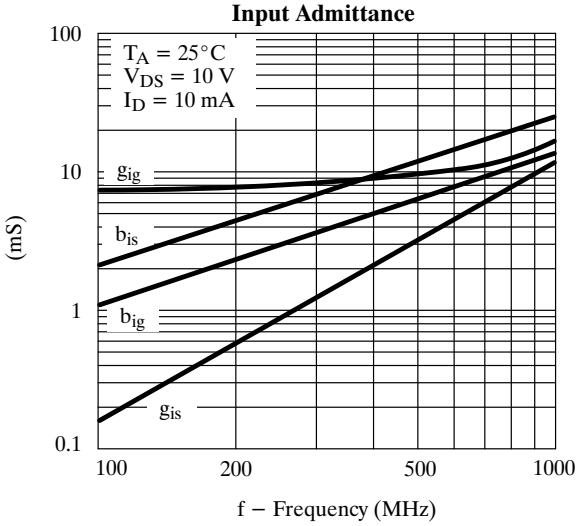
Common-Source Input Capacitance vs. Gate-Source Voltage



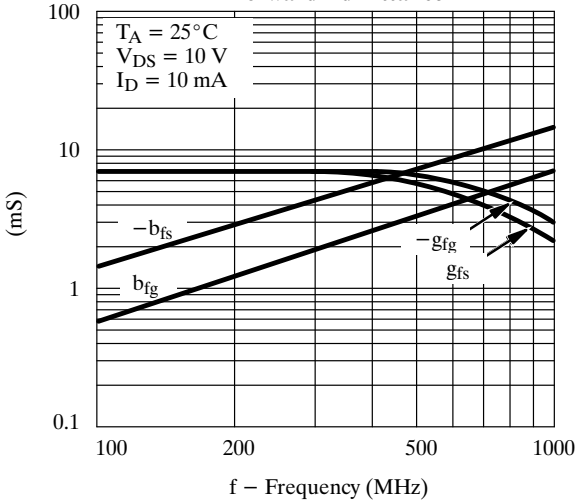
Common-Source Reverse Feedback Capacitance vs. Gate-Source Voltage



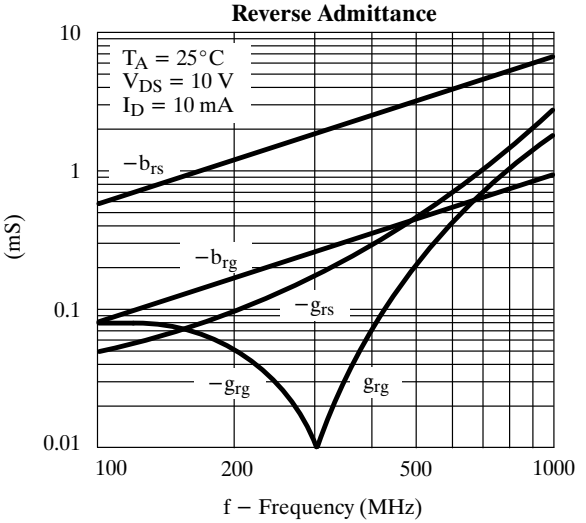
Input Admittance



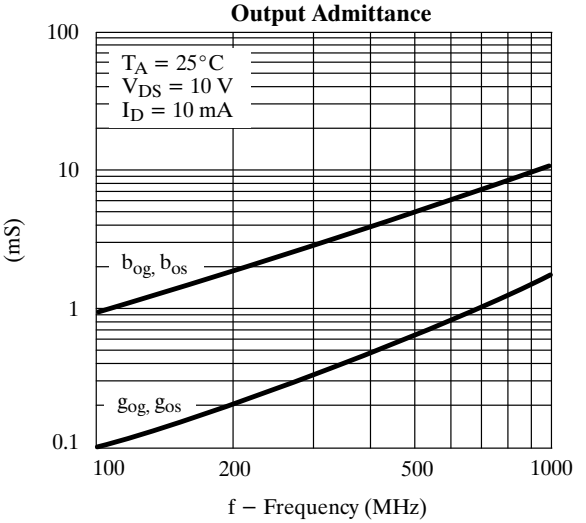
Forward Admittance



Reverse Admittance



Output Admittance



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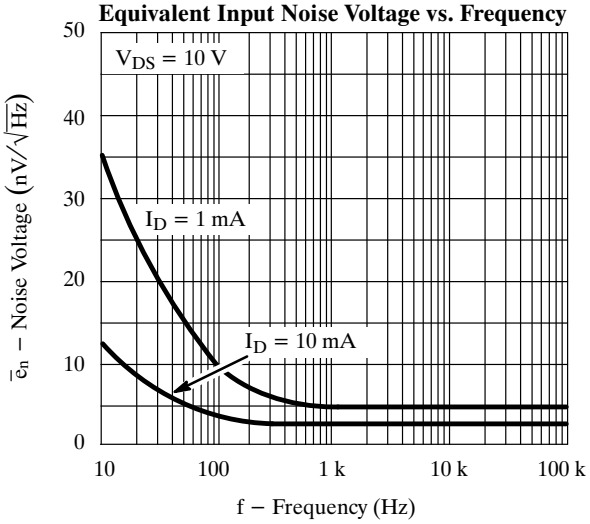
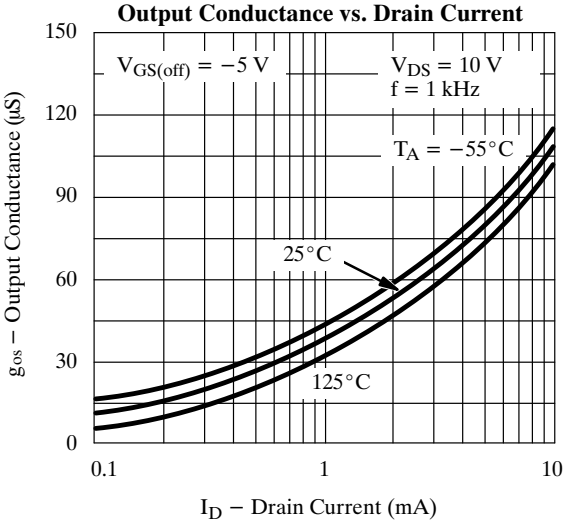
Typical Characteristics (Cont'd)

Equivalent Input Noise Voltage vs. Frequency



Output Conductance vs. Drain Current