N-Channel JFETs

2N5484 SST5484
2N5485 SST5485
2N5486 SST5486

PRODUCT SUMMARY				
Part Number	$V_{GS(off)}$ (V)	$V_{(BR)GSS}$ Min (V)	g_{fs} Min (mS)	I_{DSS} Min (mA)
2N/SST5484	–0.3 to –3	–25	3	1
2N/SST5485	–0.5 to –4	–25	3.5	4
2N/SST5486	–2 to –6	–25	4	8

FEATURES

- Excellent High-Frequency Gain: Gps 13 dB (typ) @ 400 MHz – 5485/6
- Very Low Noise: 2.5 dB (typ) @ 400 MHz – 5485/6
- Very Low Distortion
- High AC/DC Switch Off-Isolation

BENEFITS

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

APPLICATIONS

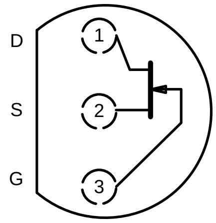
- High-Frequency Amplifier/Mixer
- Oscillator
- Sample-and-Hold
- Very Low Capacitance Switches

DESCRIPTION

The 2N/SST5484 series consists of n-channel JFETs designed to provide high-performance amplification, especially at high frequencies up to and beyond 400 MHz.

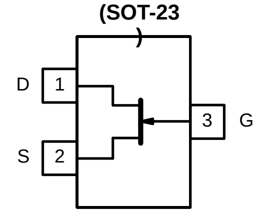
The 2N series, TO-226AA (TO-92), and SST series, TO-236 (SOT-23), packages provide low-cost options and are available with tape-and-reel to support automated assembly (see Packaging Information).

TO-226AA
(TO-92)



Top View
2N5484
2N5485
2N5486

TO-236
(SOT-23)



Top View
SST5484 (H4)*
SST5485 (H5)*
SST5486 (H6)*

*Marking Code for TO-236

For applications information see AN102 and AN105.

ABSOLUTE MAXIMUM RATINGS

Gate-Drain, Gate-Source Voltage . . . . –25 V
Gate Current . . . . 10 mA
Lead Temperature . . . . 300°C
Storage Temperature . . . . –65 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

SPECIFICATIONS FOR 2N SERIES (T_A = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Conditions	Typ[a]	2N5484 Min	2N5484 Max	2N5485 Min	2N5485 Max	2N5486 Min	2N5486 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 = 10 nA		–0.3	–3	–0.5	–4	–2	–6	V
Saturation Drain Current[b]	I_{DSS}	V_{DS} = 15 V, V_{GS} = 0 V		1	5	4	10	8	20	mA
Gate Reverse Current	I_{GSS}	V_{GS} = –20 V, V_{DS} = 0 V	–0.002		–1		–1		–1	nA
Gate Reverse Current	I_{GSS}	V_{GS} = –20 V, V_{DS} = 0 V, T_A = 100°C	–0.2		–200		–200		–200	nA
Gate Operating Current[c]	I_G	V_{DG} = 10 V, I_D = 1 mA	–20							pA
Gate-Source Forward Voltage[c]	$V_{GS(F)}$	I_G = 10 mA , V_{DS} = 0 V	0.8							V
Dynamic										
Common-Source Forward Transconductance[b]	g_{fs}	V_{DS} = 15 V, V_{GS} = 0 V, f = 1 kHz		3	6	3.5	7	4	8	mS
Common-Source Output Conductance[b]	g_{os}	V_{DS} = 15 V, V_{GS} = 0 V, f = 1 kHz			50		60		75	µS
Common-Source Input Capacitance	C_{iss}	V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz	2.2		5		5		5	pF
Common-Source Reverse Transfer Capacitance	C_{rss}	V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz	0.7		1		1		1	pF
Common-Source Output Capacitance	C_{oss}	V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz	1		2		2		2	pF
Equivalent Input Noise Voltage[c]	$\bar{e}_n$	V_{DS} = 15 V, V_{GS} = 0 V, f = 100 Hz	10							nV/√Hz
High-Frequency										
Common-Source Transconductance	$Y_{fs(RE)}$	V_{DS} = 15 V, V_{GS} = 0 V, f = 100 MHz	5.5	2.5						mS
Common-Source Transconductance	$Y_{fs(RE)}$	V_{DS} = 15 V, V_{GS} = 0 V, f = 400 MHz	5.5			3		3.5		mS
Common-Source Output Conductance	$Y_{os(RE)}$	V_{DS} = 15 V, V_{GS} = 0 V, f = 100 MHz	45		75					µS
Common-Source Output Conductance	$Y_{os(RE)}$	V_{DS} = 15 V, V_{GS} = 0 V, f = 400 MHz	65				100		100	µS
Common-Source Input Conductance	$Y_{is(RE)}$	V_{DS} = 15 V, V_{GS} = 0 V, f = 100 MHz	0.05		0.1					mS
Common-Source Input Conductance	$Y_{is(RE)}$	V_{DS} = 15 V, V_{GS} = 0 V, f = 400 MHz	0.8				1		1	mS
Common-Source Power Gain	G_{ps}	V_{DS} = 15 V, I_D = 1 mA, f = 100 MHz	20	16	25					dB
Common-Source Power Gain	G_{ps}	V_{DS} = 15 V, I_D = 4 mA, f = 100 MHz	21			18	30	18	30	dB
Common-Source Power Gain	G_{ps}	V_{DS} = 15 V, I_D = 4 mA, f = 400 MHz	13			10	20	10	20	dB
Noise Figure	NF	V_{DS} = 15 V, V_{GS} = 0 V, R_G = 1 MΩ, f = 1 kHz	0.3		2.5		2.5		2.5	dB
Noise Figure	NF	V_{DS} = 15 V, I_D = 1 mA, R_G = 1 kΩ, f = 100 MHz	2		3					dB
Noise Figure	NF	V_{DS} = 15 V, I_D = 4 mA, R_G = 1 kΩ, f = 100 MHz	1				2		2	dB
Noise Figure	NF	V_{DS} = 15 V, I_D = 4 mA, R_G = 1 kΩ, f = 400 MHz	2.5				4		4	dB

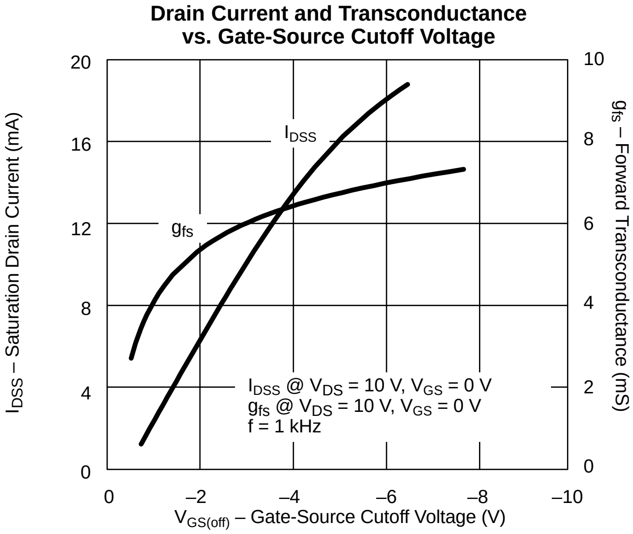
Document Number: 70246
S-04028—Rev. E, 04-Jun-01

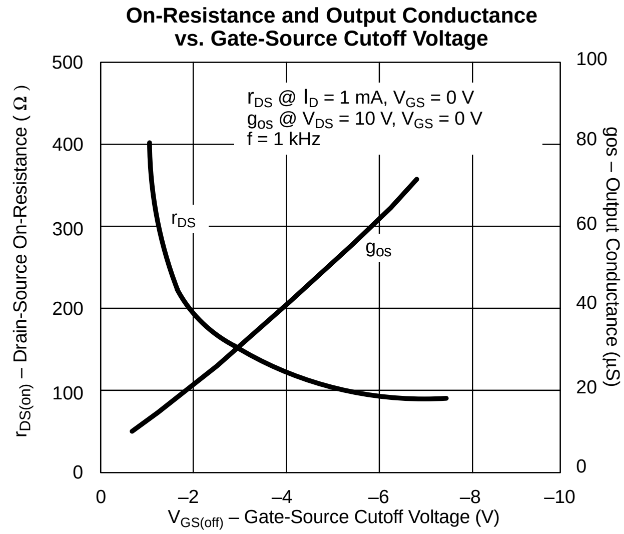
SPECIFICATIONS FOR SST SERIES (T_A = 25°C UNLESS OTHERWISE NOTED)

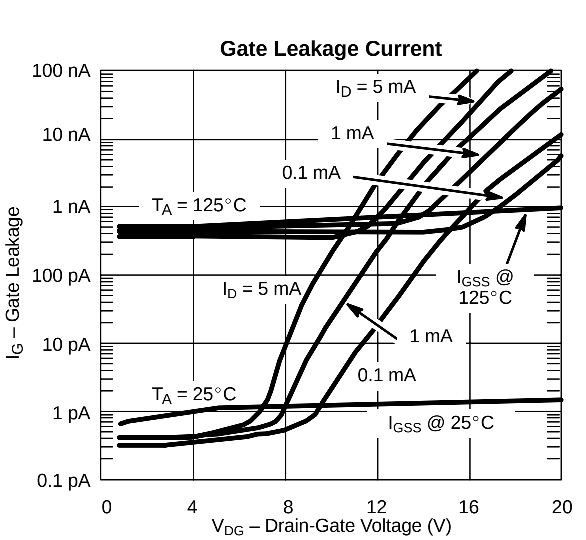
Parameter	Symbol	Test Conditions	Typ[b]	Limits						Unit
				SST5484		SST5485		SST5486		
				Min	Max	Min	Max	Min	Max	
Static										
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	I_G = –1 μA , V_{DS} = 0 V	–35	–25		–25		–25		V
Gate-Source Cutoff Voltage	$V_{GS(off)}$	V_{DS} = 15 V, I_D = 10 nA		–0.3	–3	–0.5	–4	–2	–6	V
Saturation Drain Current[b]	I_{DSS}	V_{DS} = 15 V, V_{GS} = 0 V		1	5	4	10	8	20	mA
Gate Reverse Current	I_{GSS}	V_{GS} = –20 V, V_{DS} = 0 V	–0.002		–1		–1		–1	nA
		T_A = 100°C	–0.2		–200		–200		–200	
Gate Operating Current[c]	I_G	V_{DG} = 10 V, I_D = 1 mA	–20							pA
Gate-Source Forward Voltage[c]	$V_{GS(F)}$	I_G = 10 mA , V_{DS} = 0 V	0.8							V
Dynamic										
Common-Source Forward Transconductance[b]	g_{fs}	V_{DS} = 15 V, V_{GS} = 0 V f = 1 kHz		3	6	3.5	7	4	8	mS
Common-Source Output Conductance[b]	g_{os}				50		60		75	μS
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[c]	$\bar{e}_n$	V_{DS} = 15 V, V_{GS} = 0 V f = 100 Hz	10							nV⁄ √Hz
High-Frequency										
Common-Source Transconductance	Y_{fs}	V_{DS} = 15 V V_{GS} = 0 V, f = 100 MHz	5.5							mS
		f = 400 MHz	5.5							
Common-Source Output Conductance	Y_{os}	f = 100 MHz	45							μS
		f = 400 MHz	65							
Common-Source Input Conductance	Y_{is}	f = 100 MHz	0.05							mS
		f = 400 MHz	0.8							
Common-Source Power Gain	G_{ps}	V_{DS} = 15 V, I_D = 1 mA f = 100 MHz	20							dB
		V_{DS} = 15 V I_D = 4 mA, f = 100 MHz	21							
		f = 400 MHz	13							
Noise Figure	NF	V_{DS} = 15 V, V_{GS} = 0 V R_G = 1 MΩ, f = 1 kHz	0.3							
		V_{DS} = 15 V, I_D = 1 mA R_G = 1 kΩ, f = 100 MHz	2							
		V_{DS} = 15 V I_D = 4 mA R_G = 1 kΩ, f = 100 MHz	1							
		f = 400 MHz	2.5							

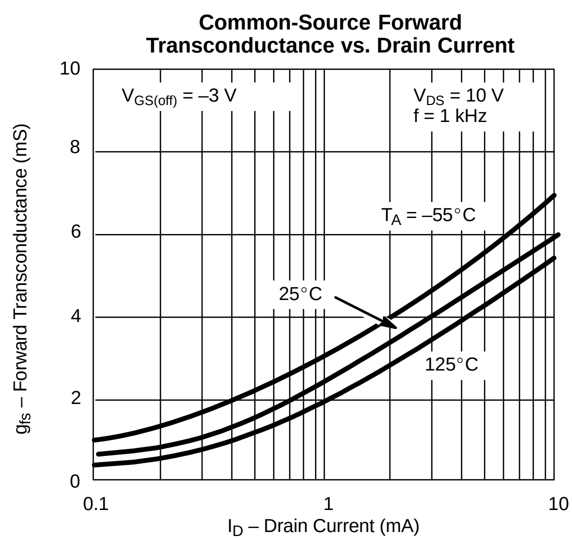
Notes
a. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing. NH
b. Pulse test: PW ≤300 μs duty cycle ≤3%.
c. This parameter not registered with JEDEC.

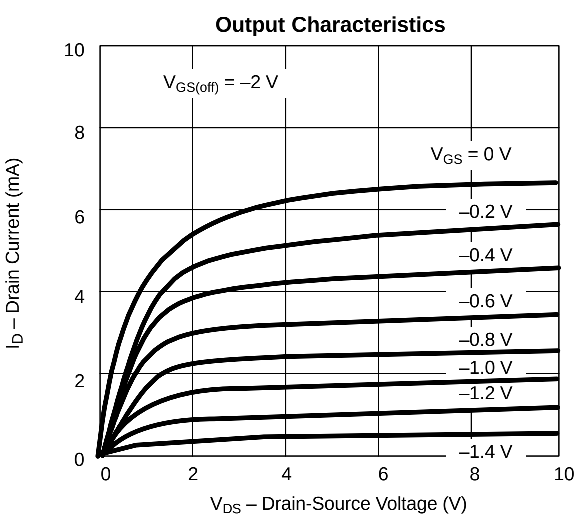
TYPICAL CHARACTERISTICS (T_A = 25°C UNLESS OTHERWISE NOTED)

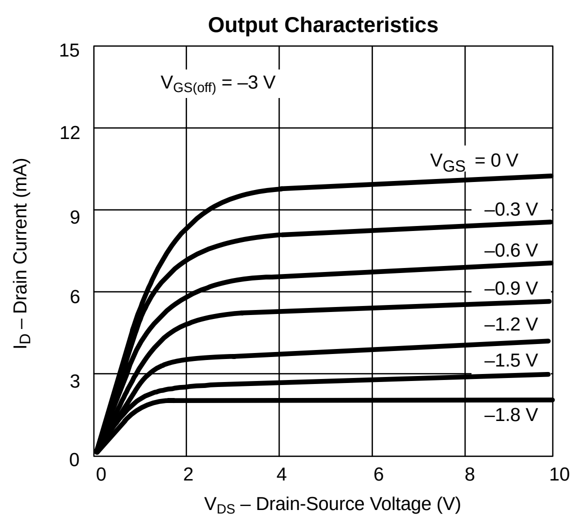






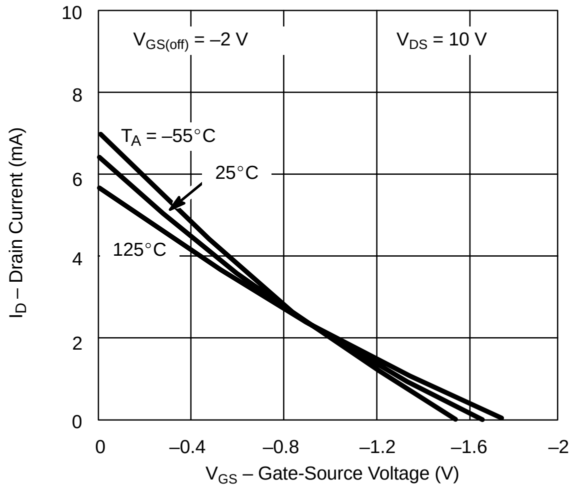




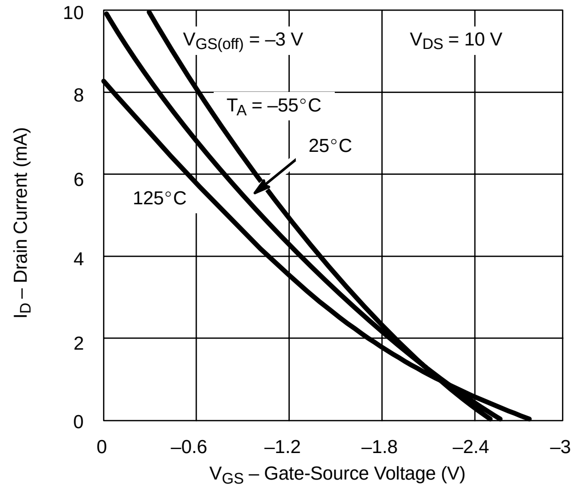


TYPICAL CHARACTERISTICS (T_A = 25°C UNLESS OTHERWISE NOTED)

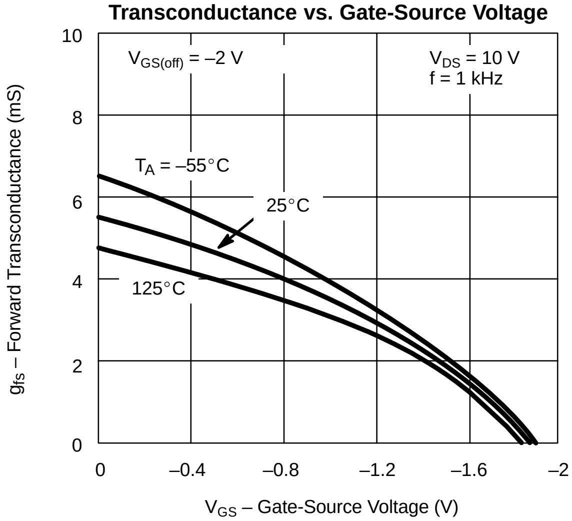
Transfer Characteristics



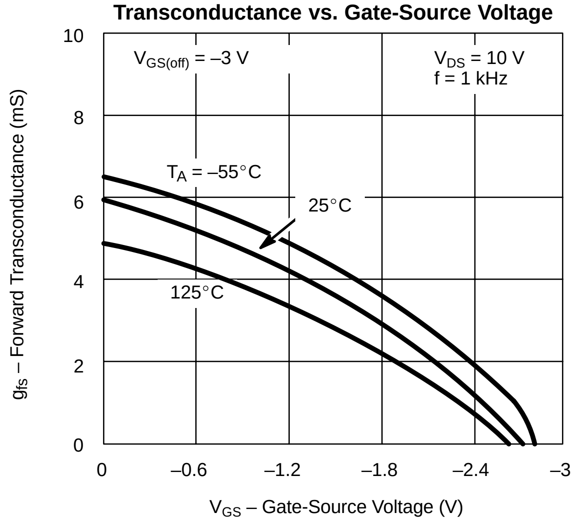
Transfer Characteristics



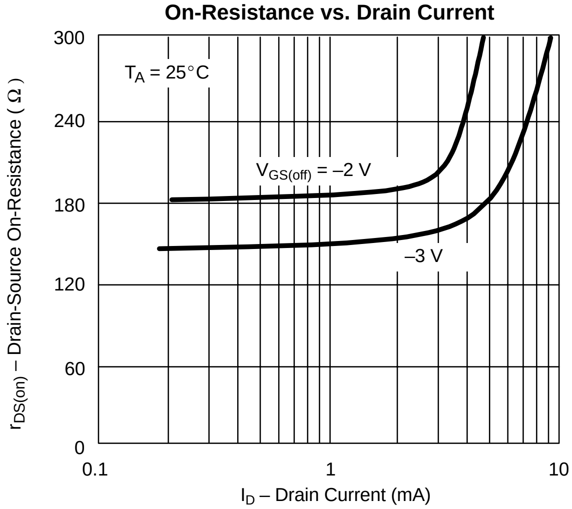
Transconductance vs. Gate-Source Voltage



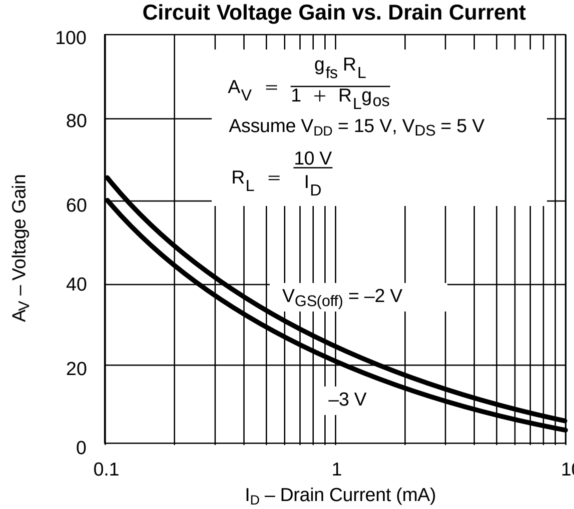
Transconductance vs. Gate-Source Voltage



On-Resistance vs. Drain Current

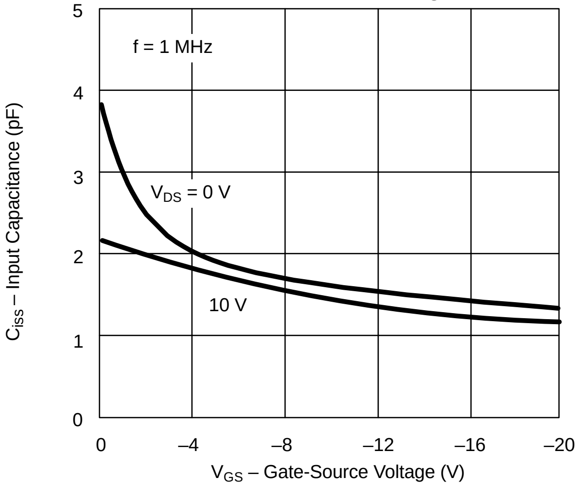


Circuit Voltage Gain vs. Drain Current

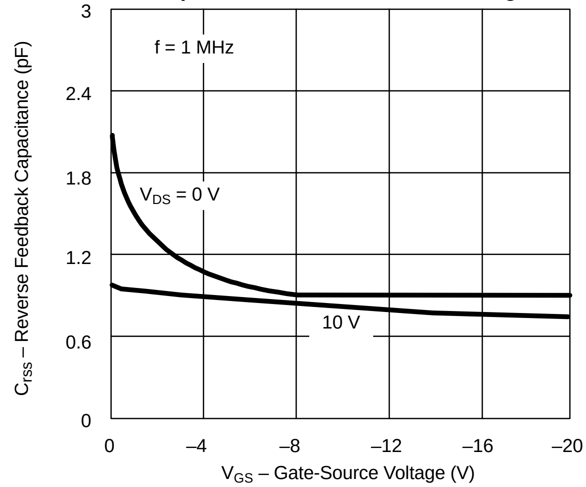


TYPICAL CHARACTERISTICS (T_A = 25°C UNLESS OTHERWISE NOTED)

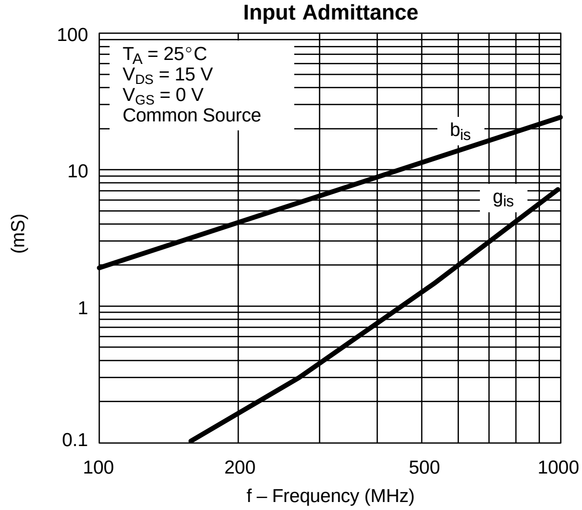
Common-Source Input Capacitance vs. Gate-Source Voltage



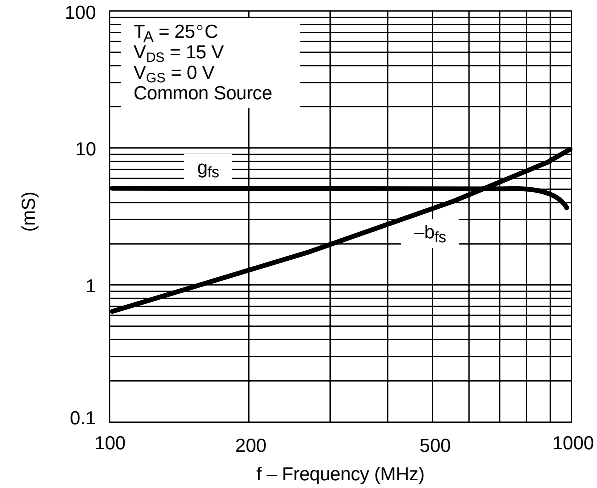
Common-Source Reverse Feedback Capacitance vs. Gate-Source Voltage



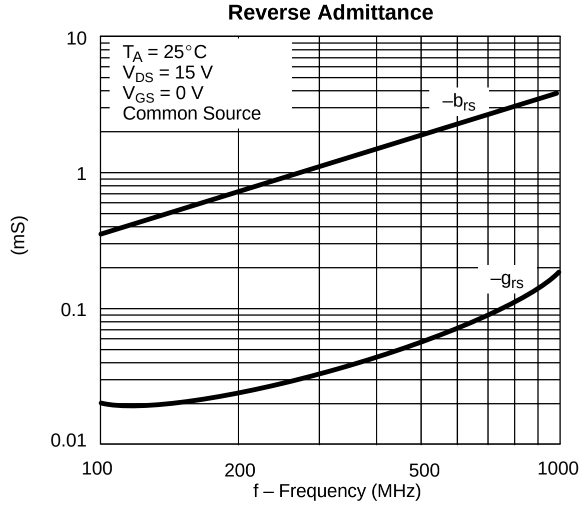
Input Admittance



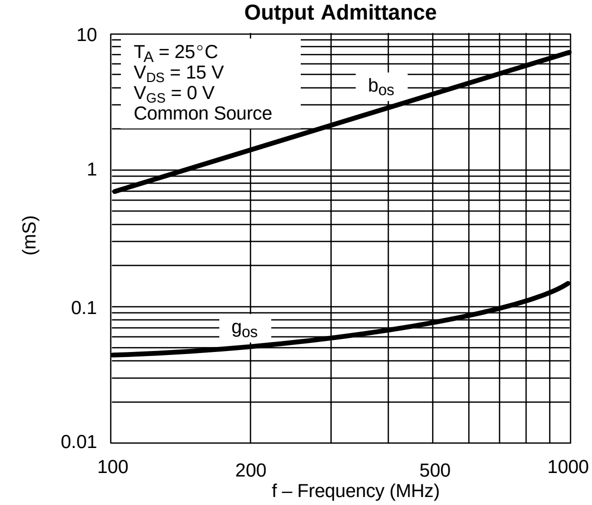
Forward Admittance



Reverse Admittance



Output Admittance



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