2N/SST5484 Series

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

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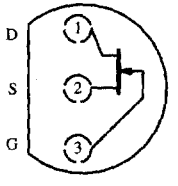
N-Channel JFETs

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.

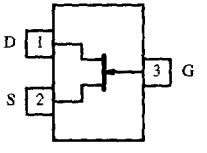
The 2N series, TO-226AA (TO-92), and SST series, TO-236 (SOT-23), packages provide low-cost options and are available with tape-and-reel to support automated assembly (see Packaging Information).

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

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

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70246. Applications information may also be obtained via FaxBack, request document #70595 and #70598.

Specifications[a] for 2N Series

Parameter	Symbol	Test Conditions		Typ[b]	Limits 2N5484 Min	Limits 2N5484 Max	Limits 2N5485 Min	Limits 2N5485 Max	Limits 2N5486 Min	Limits 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	
Saturation Drain Current[c]	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[d]	I_G	V_{DG} = 10 V, I_D = 1 mA		–20							pA
Gate-Source Forward Voltage[d]	$V_{GS(F)}$	I_G = 10 mA , V_{DS} = 0 V		0.8							V
Dynamic											
Common-Source Forward Transconductance[c]	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[c]	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		5		5		5	pF
Common-Source Reverse Transfer Capacitance	C_{rss}			0.7		1		1		1	
Common-Source Output Capacitance	C_{oss}			1		2		2		2	
Equivalent Input Noise Voltage[d]	$\bar{e}_n$	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
			f = 400 MHz	5.5			3		3.5		
Common-Source Output Conductance	$Y_{os(RE)}$		f = 100 MHz	45		75					µS
			f = 400 MHz	65				100		100	
Common-Source Input Conductance	$Y_{is(RE)}$		f = 100 MHz	0.05		0.1					mS
			f = 400 MHz	0.8				1		1	
Common-Source Power Gain	G_{ps}	V_{DS} = 15 V, I_D = 1 mA f = 100 MHz		20	16	25					dB
		V_{DS} = 15 V I_D = 4 mA	f = 100 MHz	21			18	30	18	30	
			f = 400 MHz	13			10	20	10	20	
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	
		V_{DS} = 15 V, I_D = 1 mA R_G = 1 kΩ, f = 100 MHz		2		3					
		V_{DS} = 15 V I_D = 4 mA R_G = 1 kΩ	f = 100 MHz	1				2		2	
			f = 400 MHz	2.5				4		4	

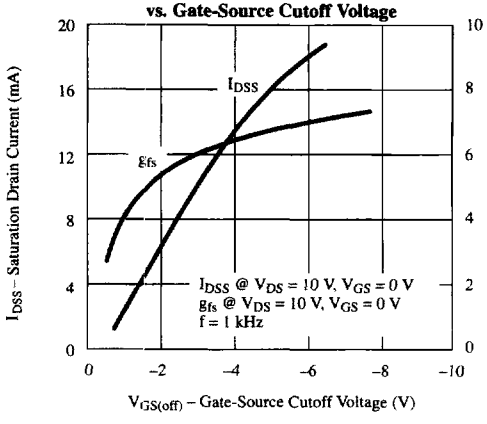
Specifications[a] for SST Series

Parameter	Symbol	Test Conditions	Typ[b]	Limits SST5484 Min	SST5484 Max	SST5485 Min	SST5485 Max	SST5486 Min	SST5486 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	
Saturation Drain Current[c]	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[d]	I_G	$V_{DG} = 10$ V, $I_D = 1$ mA	–20							pA
Gate-Source Forward Voltage[d]	$V_{GS(F)}$	$I_G = 10$ mA, $V_{DS} = 0$ V	0.8							V
Dynamic										
Common-Source Forward Transconductance[c]	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[c]	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[d]	$\bar{e}_n$	$V_{DS} = 15$ V, $V_{GS} = 0$ V, f = 100 Hz	10							$\frac{nV}{\sqrt{Hz}}$
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							

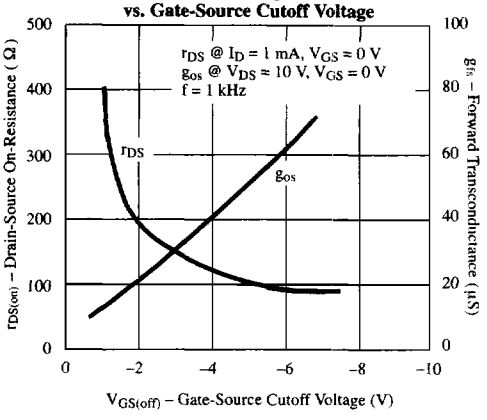
Notes
a. $T_A = 25°C$ unless otherwise noted. NH
b. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
c. Pulse test: PW ≤ 300 µs duty cycle ≤ 3%.
d. This parameter not registered with JEDEC.

Typical Characteristics

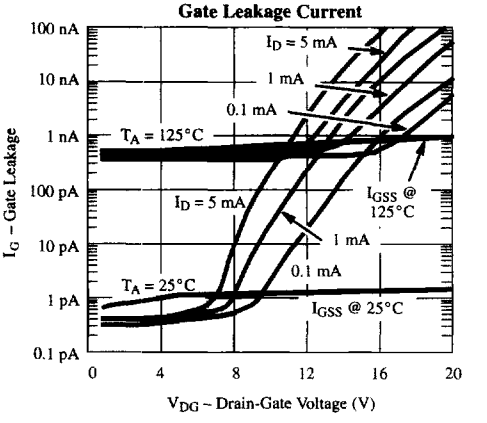
Drain Current and Transconductance vs. Gate-Source Cutoff Voltage



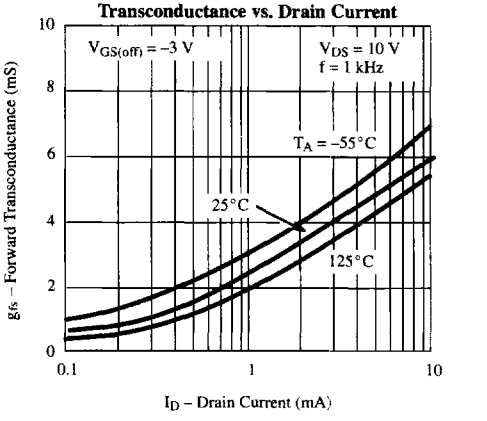
On-Resistance and Output Conductance vs. Gate-Source Cutoff Voltage



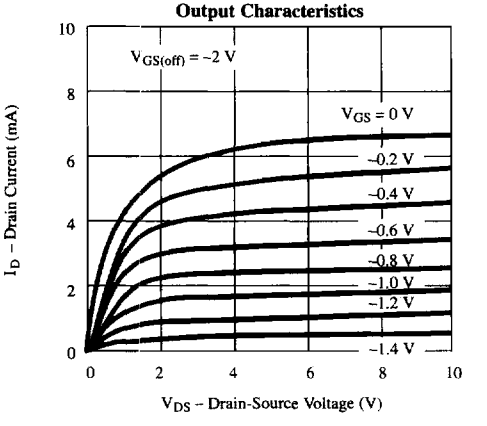
Gate Leakage Current



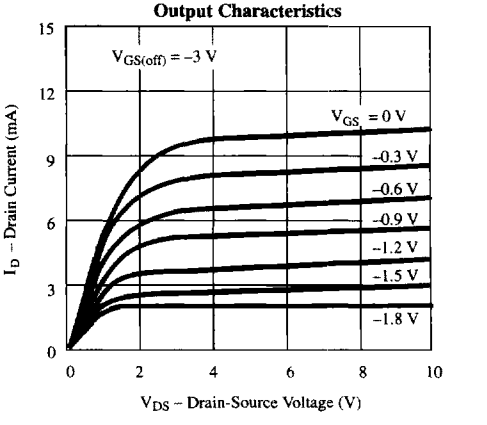
Common-Source Forward Transconductance vs. Drain Current



Output Characteristics

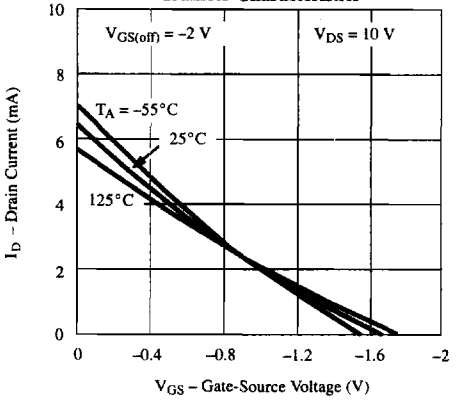


Output Characteristics

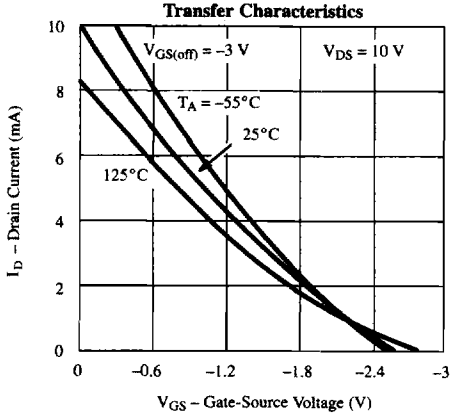


Typical Characteristics (Cont'd)

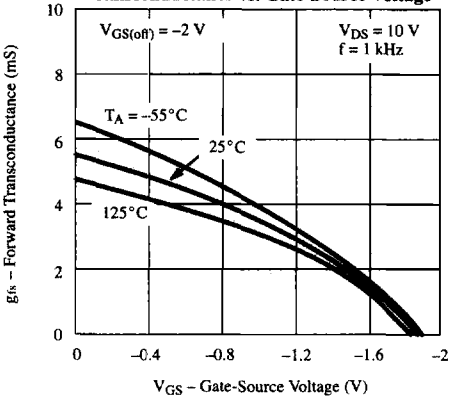
Transfer Characteristics



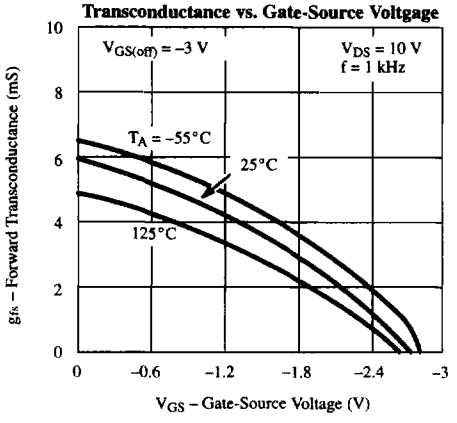
Transfer Characteristics



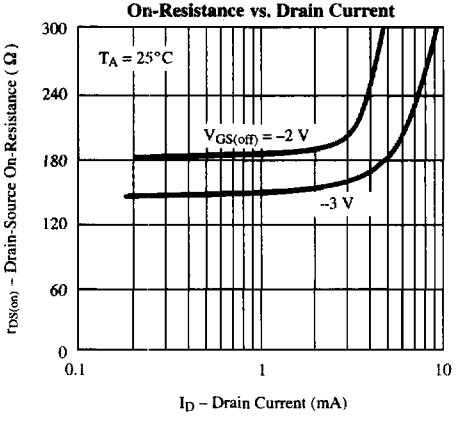
Transconductance vs. Gate-Source Voltage



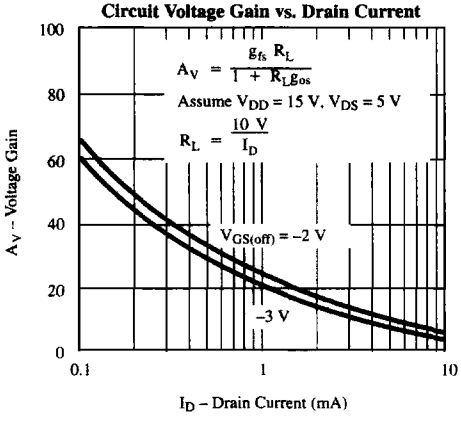
Transconductance vs. Gate-Source Voltgage



On-Resistance vs. Drain Current

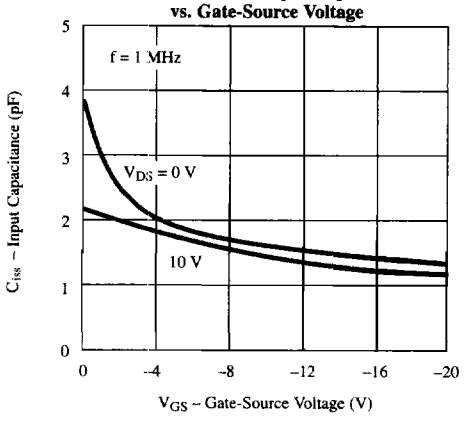


Circuit Voltage Gain vs. Drain Current

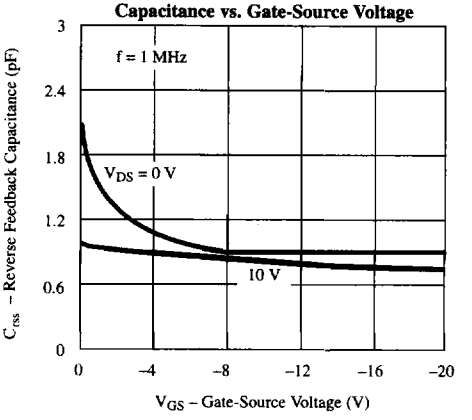


Typical Characteristics (Cont'd)

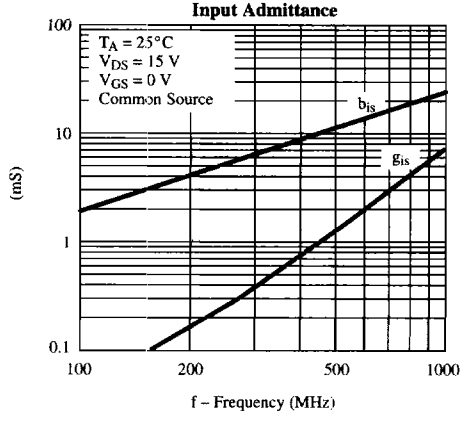
Common-Source Input Capacitance vs. Gate-Source Voltage



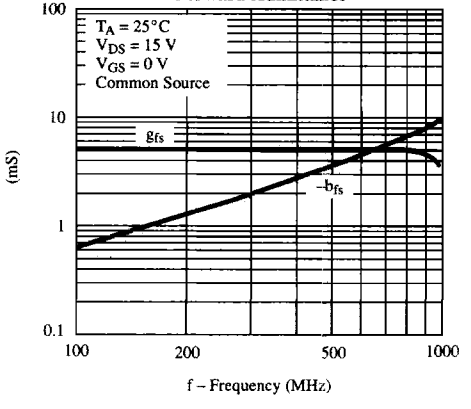
Common-Source Reverse Feedback Capacitance vs. Gate-Source Voltage



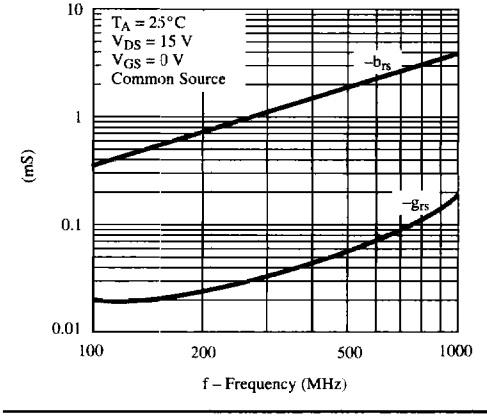
Input Admittance



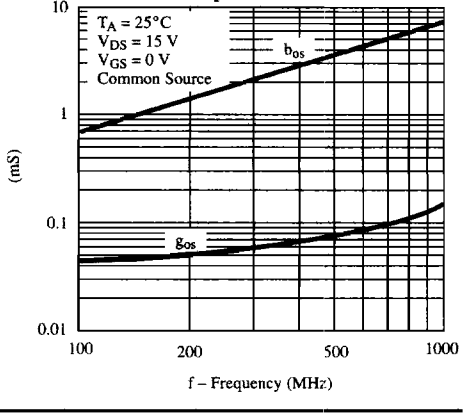
Forward Admittance



Reverse Admittance

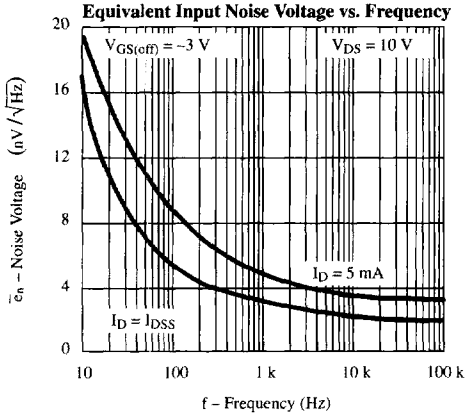


Output Admittance



Typical Characteristics (Cont'd)

Equivalent Input Noise Voltage vs. Frequency



Output Conductance vs. Drain Current