

N-Channel JFETs

J111 SST111
J112 SST112
J113 SST113

Product Summary

Part Number	V _{GS(off)} (V)	r _{DS(on)} Max (Ω)	I _{D(off)} Typ (pA)	t _{ON} Typ (ns)
J/SST111	-3 to -10	30	5	4
J/SST112	-1 to -5	50	5	4
J/SST113	≤ -3	100	5	4

Features

- Low On-Resistance: 111 < 30 Ω
- Fast Switching—t_{ON}: 4 ns
- Low Leakage: 5 pA
- Low Capacitance: 3 pF
- Low Insertion Loss

Benefits

- Low Error Voltage
- High-Speed Analog Circuit Performance
- Negligible "Off-Error," Excellent Accuracy
- Good Frequency Response, Low Glitches
- Eliminates Additional Buffering

Applications

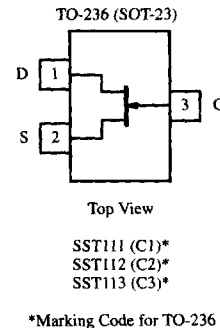
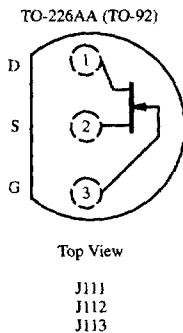
- Analog Switches
- Choppers
- Sample-and-Hold
- Normally "On" Switches
- Current Limiters

Description

The J/SST111 series consists of all-purpose analog switches designed to support a wide range of applications. The J/SST113 are useful in a high-gain amplifier mode.

For similar products in TO-206AA(TO-18) packaging, see the 2N/PN/SST4391 series, 2N4856A/4857A/4858A, and 2N5564/5565/5566 (duals) data sheets.

The J series, TO-226AA (TO-92) plastic package, provides low cost, while the SST series, TO236 (SOT-23) package, provides surface-mount capability. Both the J and SST series are available in tape-and-reel for automated assembly (see Packaging Information).



Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70232. Applications information may also be obtained via FaxBack, request document #70598.

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Absolute Maximum Ratings

Gate-Drain, Gate-Source Voltage	-35 V	Power Dissipation ^a (TO-236)	350 mW
Gate Current	50 mA	(TO-226AA)	360 mW
Lead Temperature (l_{16} " from case for 10 seconds)	300 °C		
Storage Temperature	-55 to 150 °C	Notes	
Operating Junction Temperature	-55 to 150 °C	a. Derate 2.8 mW/°C above 25 °C	

Specifications^a

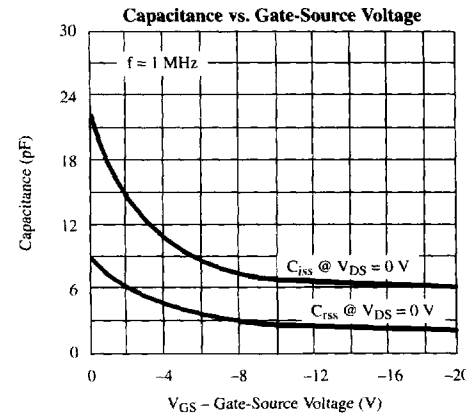
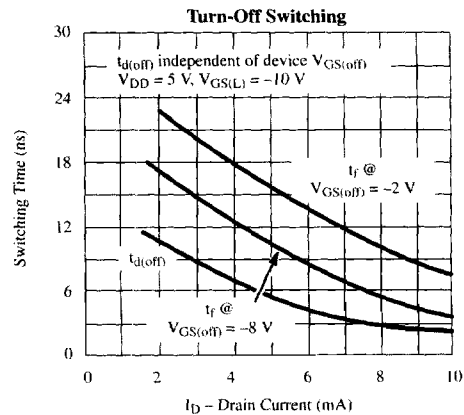
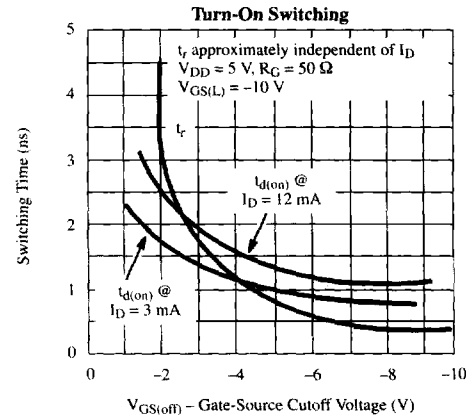
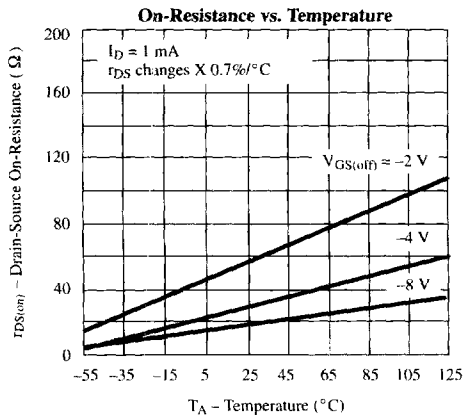
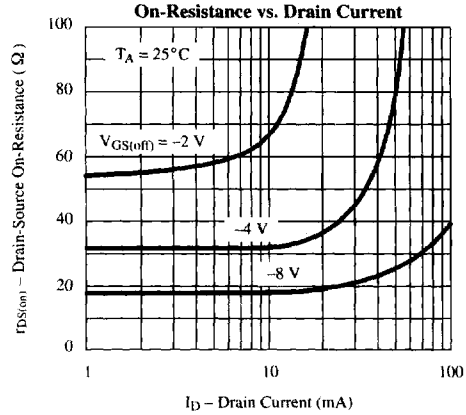
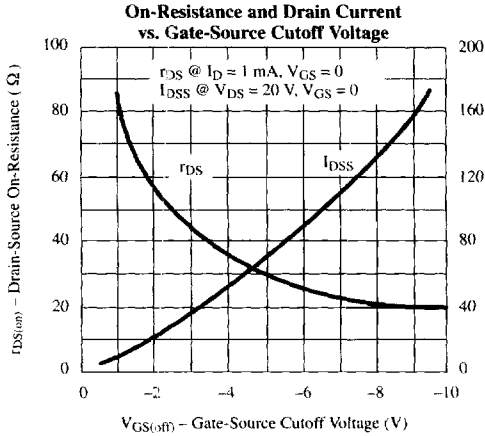
Parameter	Symbol	Test Conditions	Typ ^b	Limits						Unit
				J/SST111		J/SST112		J/SST113		
				Min	Max	Min	Max	Min	Max	
Static										
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = -1 \mu A, V_{DS} = 0 V$	-55	-35		-35		-35		V
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 5 V, I_D = 1 \mu A$		-3	-10	-1	-5		-3	
Saturation Drain Current ^c	I_{DSS}	$V_{DS} = 15 V, V_{GS} = 0 V$		20		5		2		mA
Gate Reverse Current	I_{GSS}	$V_{GS} = -15 V, V_{DS} = 0 V$	-0.005		-1		-1		-1	nA
		$T_A = 125^\circ C$	-3							
Gate Operating Current	I_G	$V_{DG} = 15 V, I_D = 10 mA$	-5							pA
Drain Cutoff Current	$I_{D(off)}$	$V_{DS} = 5 V, V_{GS} = -10 V$	0.005		1		1		1	nA
		$T_A = 125^\circ C$	3							
Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS} = 0 V, V_{DS} = 0.1 V$			30		50		100	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}	$V_{DS} = 20 V, I_D = 1 mA$ $f = 1 kHz$	6							mS
			25							μS
Common-Source Output Conductance	g_{os}									μS
Drain-Source On-Resistance	$r_{ds(on)}$	$V_{GS} = 0 V, I_D = 0 mA$ $f = 1 kHz$			30		50		100	Ω
Common-Source Input Capacitance	C_{iss}	$V_{DS} = 0 V, V_{GS} = -10 V$ $f = 1 MHz$	7		12		12		12	pF
			3		5		5		5	
Common-Source Reverse Transfer Capacitance	C_{rss}									pF
Equivalent Input Noise Voltage	\bar{e}_n	$V_{DG} = 10 V, I_D = 1 mA$ $f = 1 kHz$	3							nV/ \sqrt{Hz}
Switching										
Turn-On Time	$t_{d(on)}$	$V_{DD} = 10 V, V_{GS(H)} = 0 V$ See Switching Circuit	2							ns
	t_r		2							
Turn-Off Time	$t_{d(off)}$		6							
	t_f		15							

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 $\leq 3\%$.

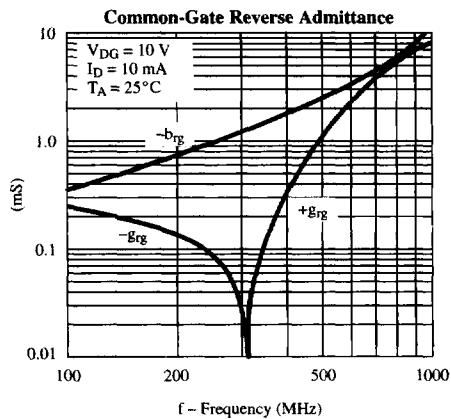
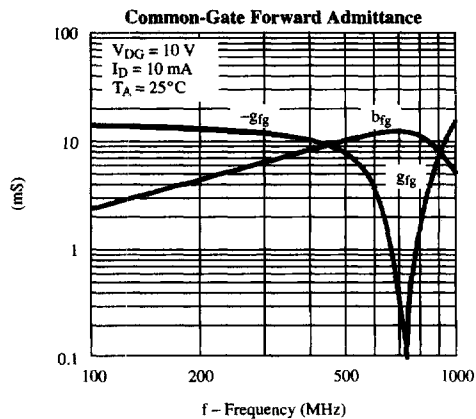
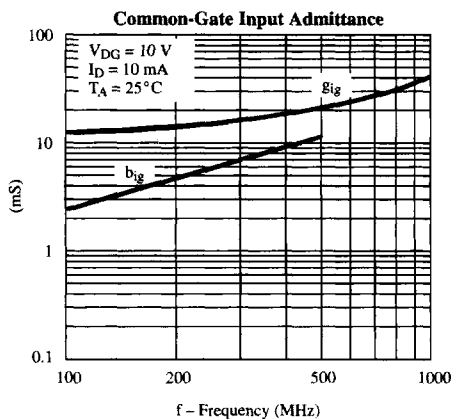
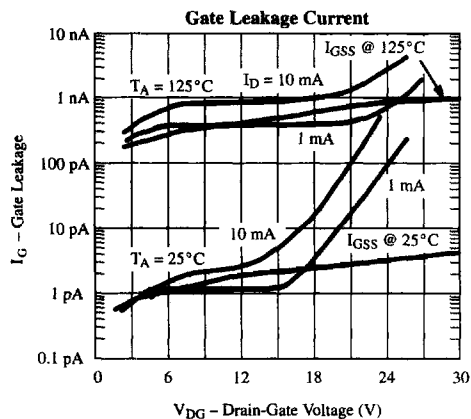
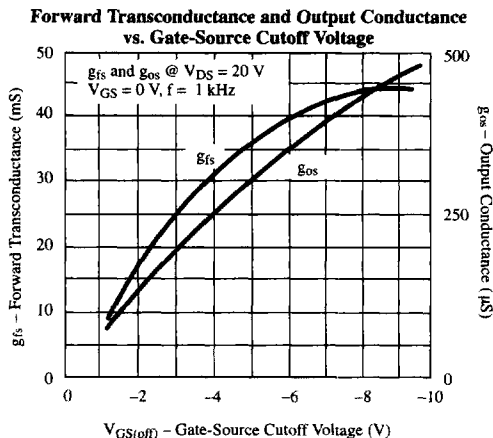
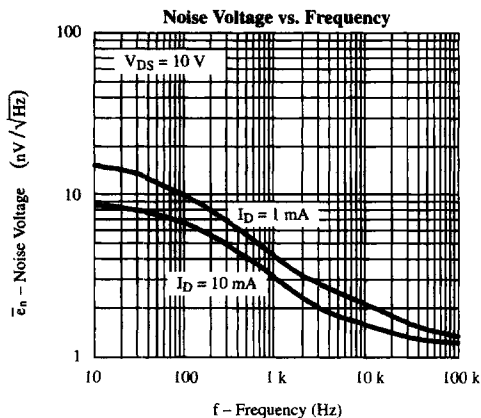
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Typical Characteristics

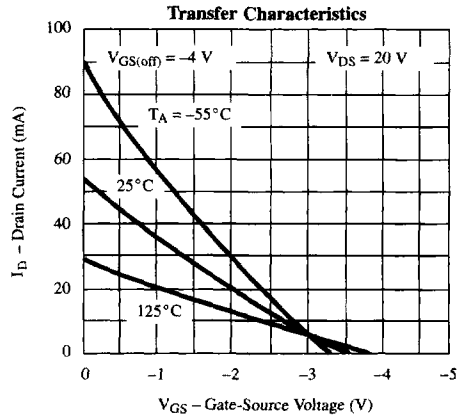
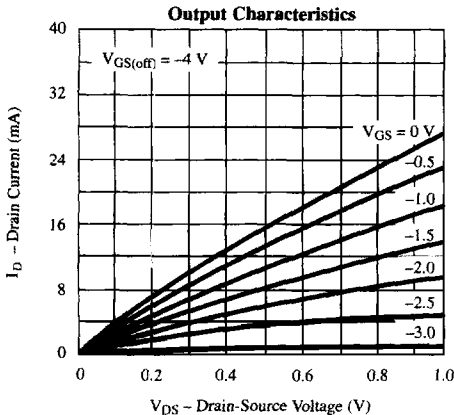
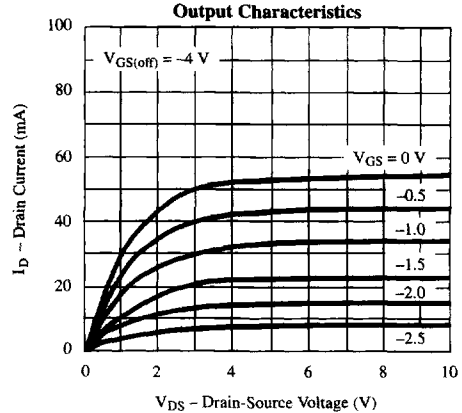
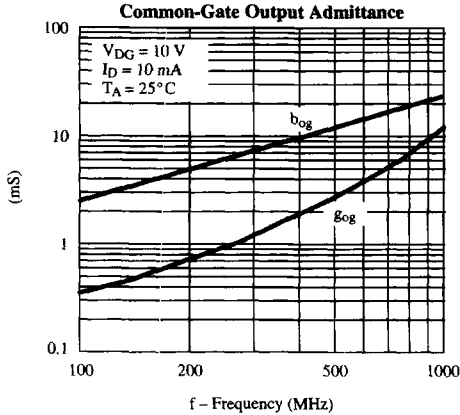


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Typical Characteristics (Cont'd)



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Switching Time Test Circuit

	J/SST111	J/SST112	J/SST113
$V_{GS(L)}$	-12 V	-7 V	-5 V
R_L^*	800 Ω	1600 Ω	3200 Ω
$I_{D(on)}$	12 mA	6 mA	3 mA

*Non-inductive

Input Pulse

Rise Time < 1 ns
 Fall Time < 1 ns
 Pulse Width 100 ns
 PRF 1 MHz

Sampling Scope

Rise Time 0.4 ns
 Input Resistance 10 M Ω
 Input Capacitance 1.5 pF

