



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

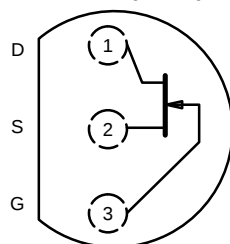
- Analog Switches
- Choppers
- Sample-and-Hold
- Normally “On” Switches
- Current Limiters

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.

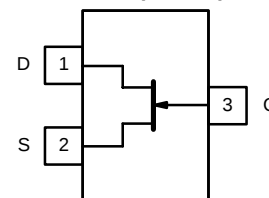
For similar products in TO-206AA(TO-18) packaging, see the 2N/PN/SST4391 series, 2N4856A/4857A/4858A, and 2N5564/5565/5566 (duals) data sheets.

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).

TO-226AA (TO-92)

Top View

J111
J112
J113

TO-236 (SOT-23)

Top View

SST111 (C1)*
SST112 (C2)*
SST113 (C3)*

*Marking Code for TO-236

ABSOLUTE MAXIMUM RATINGS

Gate-Drain, Gate-Source Voltage	-35 V
Gate Current	50 mA
Lead Temperature (1/16" from case for 10 seconds)	300 °C
Storage Temperature	-55 to 150 °C
Operating Junction Temperature	-55 to 150 °C

For applications information see AN105.

Power Dissipation ^a	
(TO-236)	350 mW
(TO-226AA)	360 mW

Notes

a. Derate 2.8 mW/°C above 25 °C

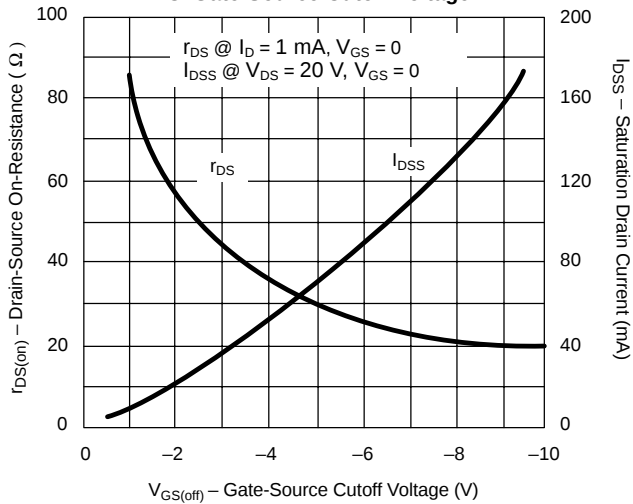
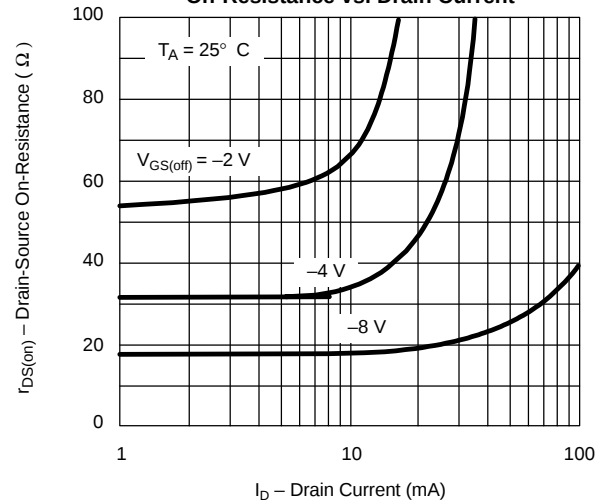
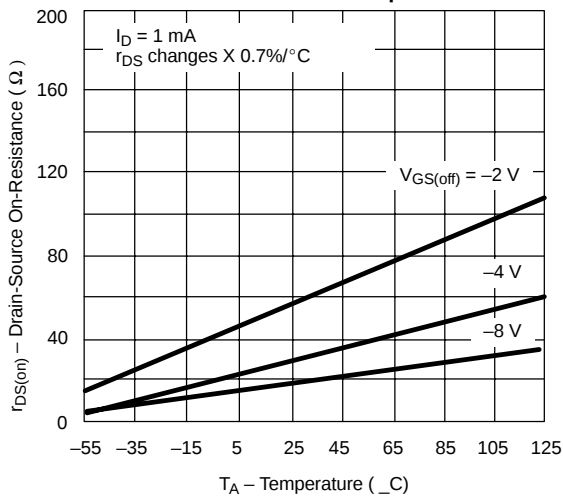
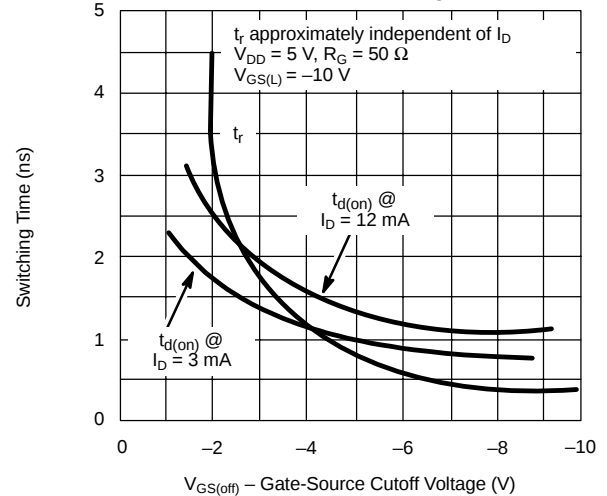
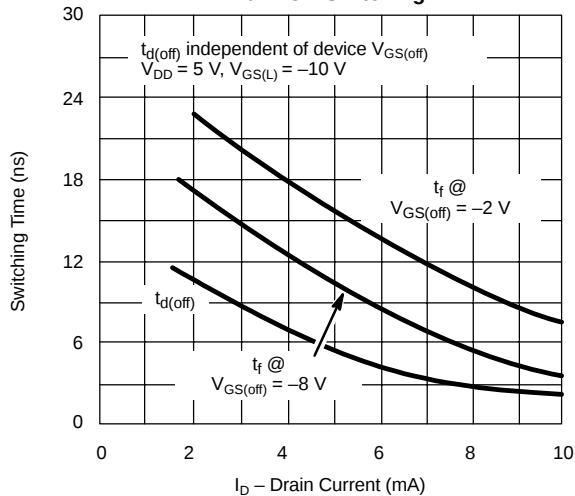
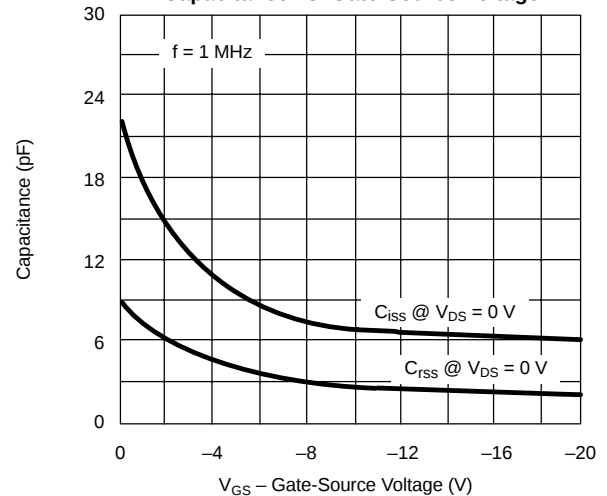
SPECIFICATIONS (T_A = 25 °C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Conditions	Typ ^a	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 μA , V _{DS} = 0 V	−55	−35		−35		−35		V
Gate-Source Cutoff Voltage	V _{GS(off)}	V _{DS} = 5 V, I _D = 1 μA		−3	−10	−1	−5		−3	
Saturation Drain Current ^b	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°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°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
Common-Source Output Conductance	g _{os}		25							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
Common-Source Reverse Transfer Capacitance	C _{rss}		3		5		5		5	
Equivalent Input Noise Voltage	e _n	V _{DG} = 10 V, I _D = 1 mA f = 1 kHz	3							nV/ √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							

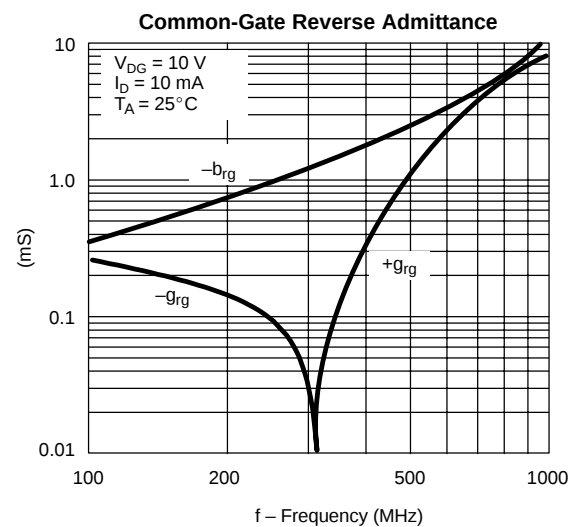
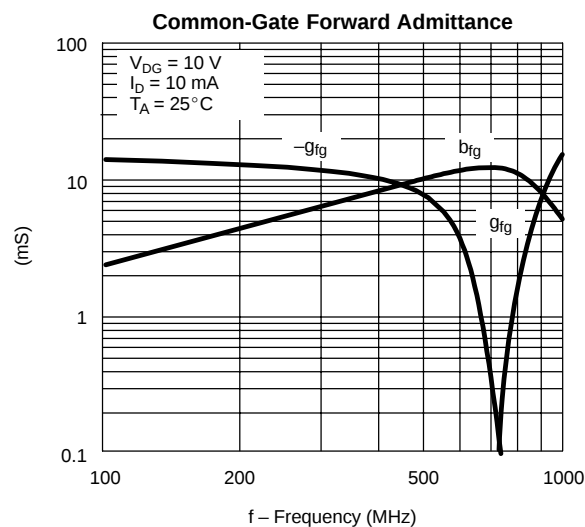
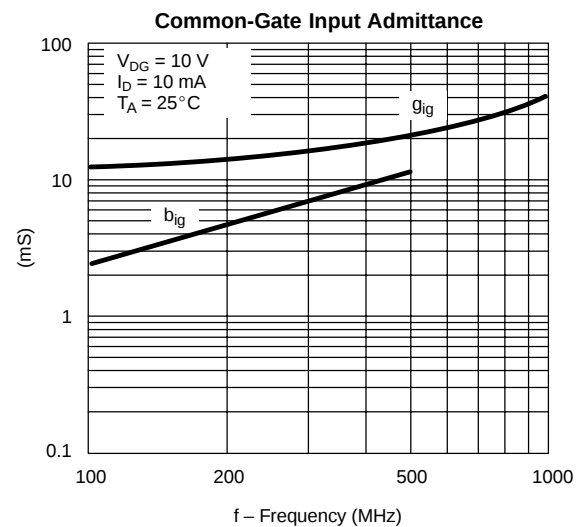
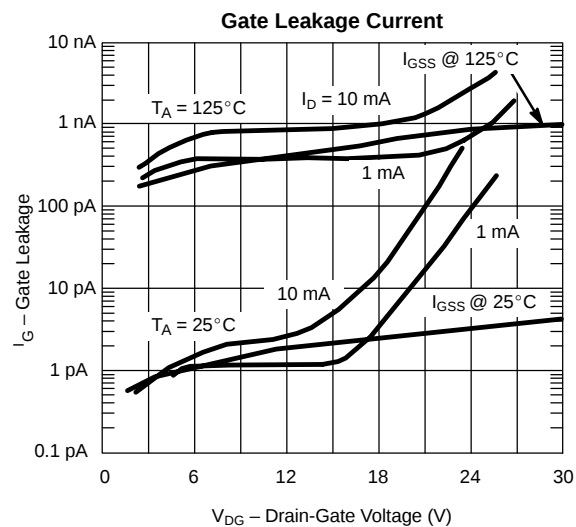
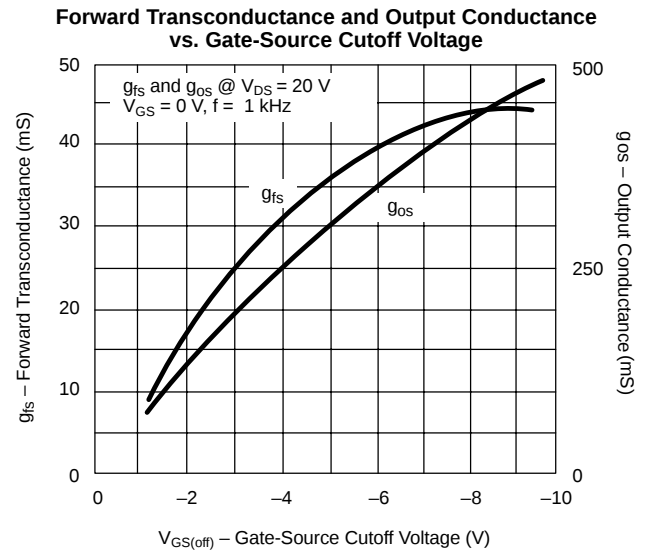
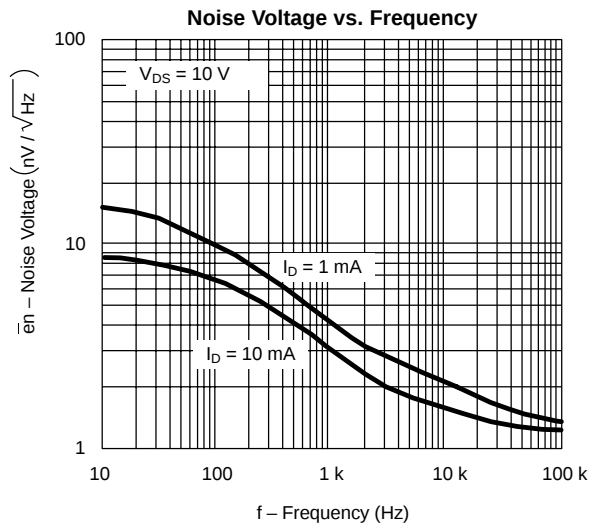
Notes

- a. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
b. Pulse test: PW ≤ 300 μs duty cycle ≤ 3%.

NCB

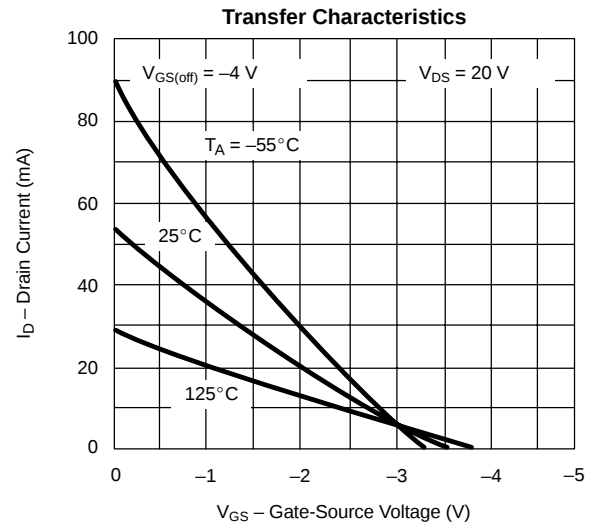
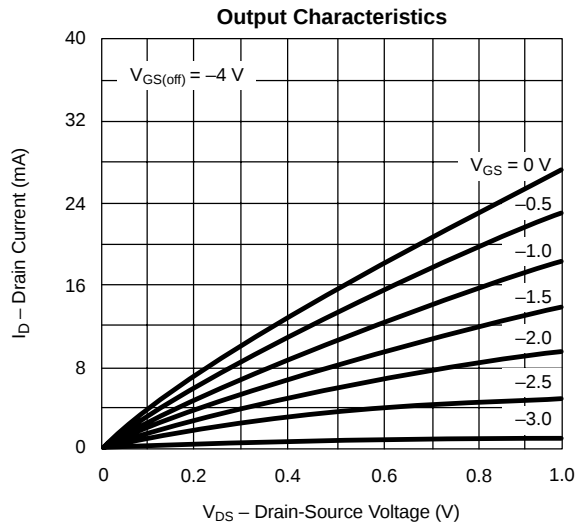
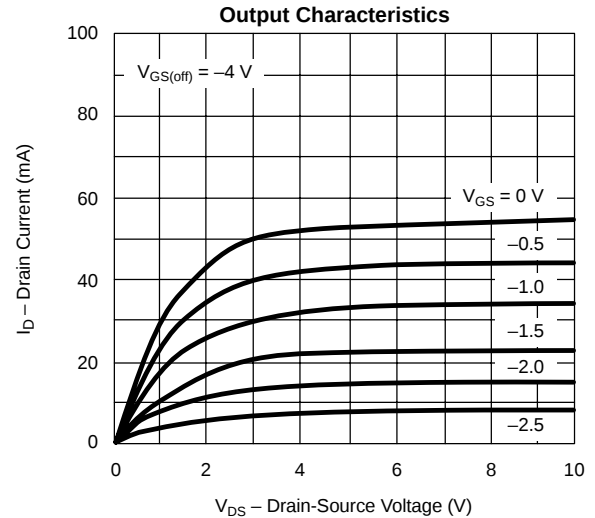
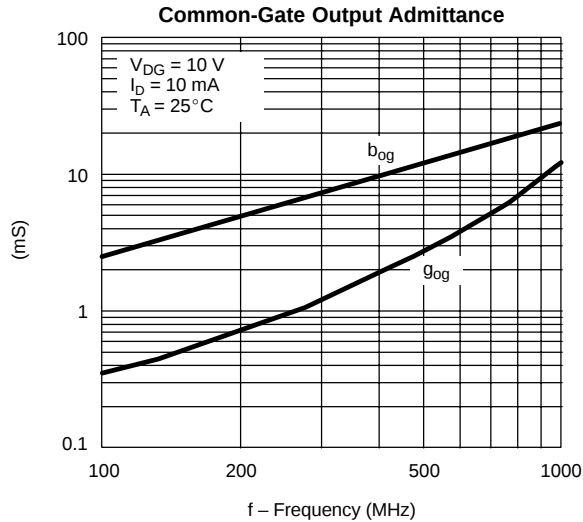
**TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)****On-Resistance and Drain Current vs. Gate-Source Cutoff Voltage****On-Resistance vs. Drain Current****On-Resistance vs. Temperature****Turn-On Switching****Turn-Off Switching****Capacitance vs. Gate-Source Voltage**

TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)





TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)



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

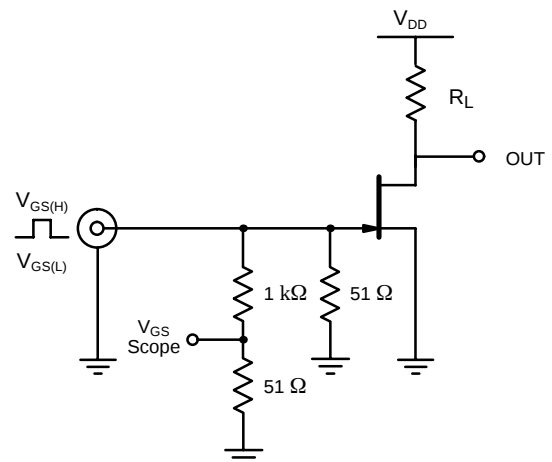
*Non-inductive

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





Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.