n-channel JFETs *designed for . . .*

Siliconix

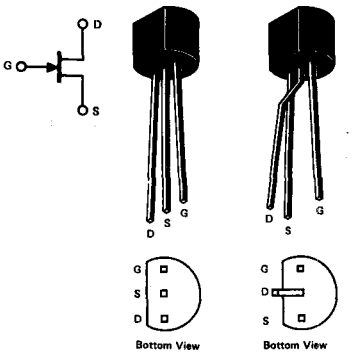
■ Audio and Sub-Audio Amplifiers

Performance Curves NS See Section 5

BENEFITS

- Ultra Low Noise
  $\overline{e_n}$ = 8 nV/$\sqrt{Hz}$ Typical at 10 Hz
  $\overline{e_n}$ = 2 nV/$\sqrt{Hz}$ Typical at 1 kHz

TO-92
See Section 7



ABSOLUTE MAXIMUM RATINGS (25°C)

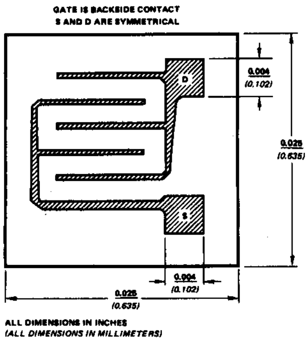
Gate-Drain or Gate-Source Voltage (Note 1) . . . . . –40V
Gate Current . . . . . 50 mA
Total Device Dissipation at 25°C Ambient
(Derate 3.27 mW/°C) . . . . . 360 mW
Operating Temperature Range . . . . . –55 to 135°C
Storage Temperature Range . . . . . –55 to 150°C
Lead Temperature Range
(1/16" from case for 10 seconds) . . . . . 300°C

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

		Characteristic		J230			J231			J232			Unit	Test Conditions	
				Min	Typ	Max	Min	Typ	Max	Min	Typ	Max			
1	STATIC	I_{GSS}	Gate Reverse Current (Note 2)			-250			-250			-250	pA	V_{DS} = 0, V_{GS} = -30 V	
2	STATIC	$V_{GS(off)}$	Gate-Source Cutoff Voltage	-1		-3	-2		-5	-4		-6	V	V_{DS} = 20 V, I_D = 1 μA	
3	STATIC	BV_{GSS}	Gate-Source Breakdown Voltage	-40			-40			-40				V_{DS} = 0, I_G = -1 μA	
4	STATIC	I_{DSS}	Saturation Drain Current (Note 3)	0.7		3	2		6	5		10	mA	V_{DS} = 20 V, V_{GS} = 0	
5	STATIC	I_G	Gate Current (Note 2)		-10			-10			-10		pA	V_{DG} = 10 V, I_D = 0.5 mA	
6	DYNAMIC	g_{fs}	Common-Source Forward Transconductance (Note 3)	1,000		2,500	1,500		3,000	2,500		4,000	μmho	V_{DS} = 20 V, V_{GS} = 0	f = 1 kHz
7	DYNAMIC	g_{os}	Common-Source Output Conductance			2			4			6			
8	DYNAMIC	C_{iss}	Common-Source Input Capacitance		12			12			12		pF		f = 1 MHz
9	DYNAMIC	C_{rss}	Common-Source Reverse Transfer Capacitance		2			2			2				
10	DYNAMIC	$\overline{e_n}$	Equivalent Short Circuit Input Noise Voltage		8	30		8	30		8	30	nV/$\sqrt{Hz}$	V_{DS} = 10 V, V_{GS} = 0	f = 10 Hz
11	DYNAMIC	$\overline{e_n}$	Equivalent Short Circuit Input Noise Voltage		2			2			2		nV/$\sqrt{Hz}$	V_{DS} = 10 V, V_{GS} = 0	f = 1 kHz

NOTES:
1. Geometry is symmetrical. Unit may be operated with source and drain leads interchanged.
2. Approximately doubles for every 10°C increase in T_A.
3. Pulse test duration = 2 ms.

NS



n-channel JFET
designed for . . .

Siliconix

- Low Noise Amplifiers
- Single and Differential Amplifiers

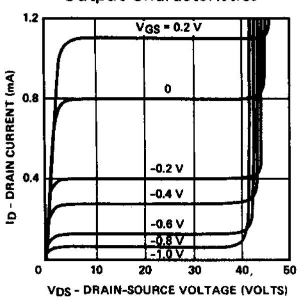
BENEFITS:

- Simplifies Amplifier Design
- Low Output Conductance
- Low 1/f Noise

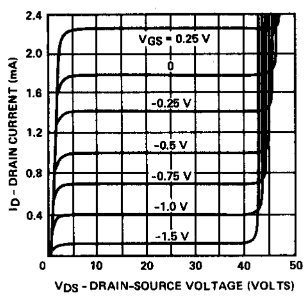
TYPE	PACKAGE	PRINCIPAL DEVICES
Dual	TO-71	2N5515-24
Single	TO-72	2N4867-9, 2N4867A-69A
Single	TO-92	J230-32
Single	TO-92 Lead-form	J230-18 - 232-18
Dual	Chip	2N5518CHP-9CHP, 2N5523CHP-4CHP
Single	Chip	All of the above single devices

PERFORMANCE CURVES (25°C unless otherwise noted)

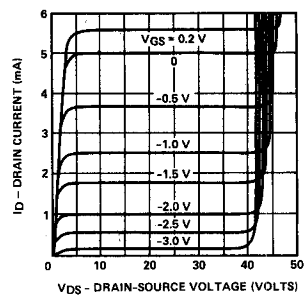
Output Characteristics



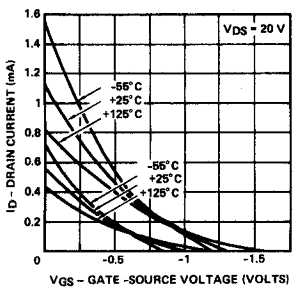
Output Characteristics



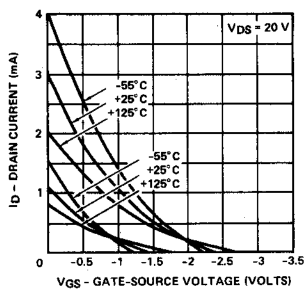
Output Characteristics



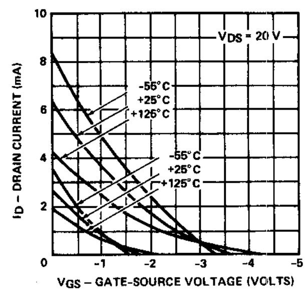
Transfer Characteristics



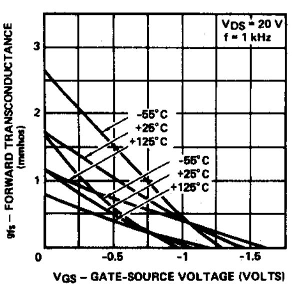
Transfer Characteristics



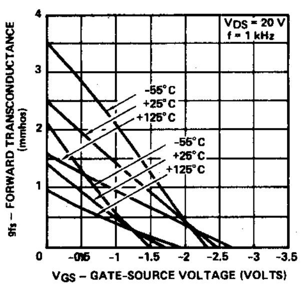
Transfer Characteristics



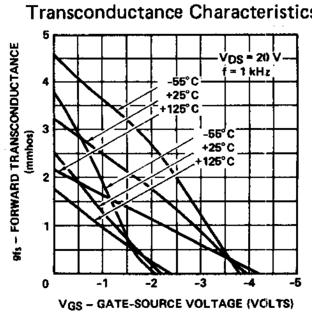
Transconductance Characteristics



Transconductance Characteristics

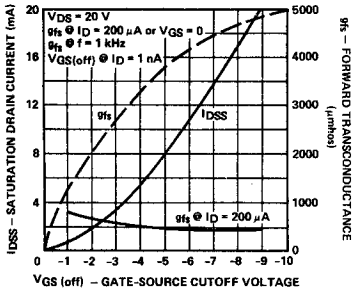


Transconductance Characteristics

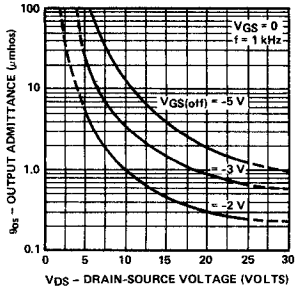


PERFORMANCE CURVES (Cont'd) (25°C unless otherwise noted)

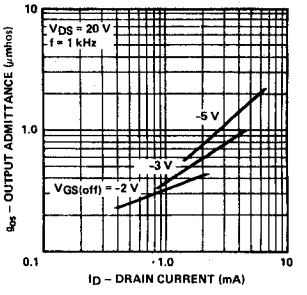
Saturation Drain Current and Forward Transconductance vs. Gate-Source Cutoff Voltage



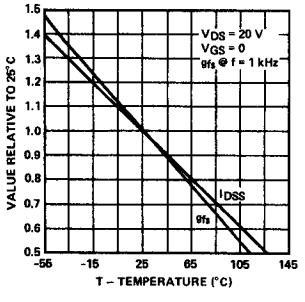
Common-Source Output Conductance vs Drain-Source Voltage



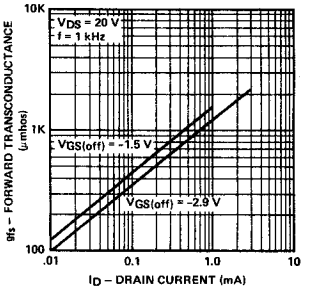
Common-Source Output Conductance vs Drain Current



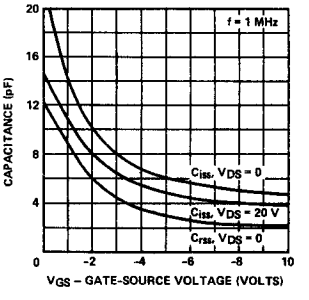
Drain Current & Transconductance vs Ambient Temperature



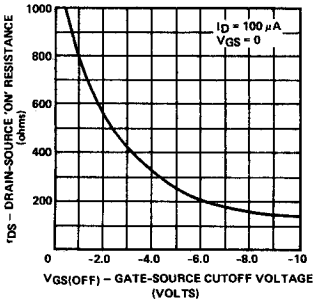
Common-Source Forward Transconductance vs Drain Current



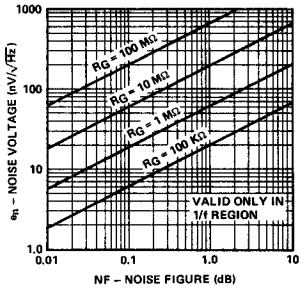
Common-Source Capacitance vs Gate-Source Voltage



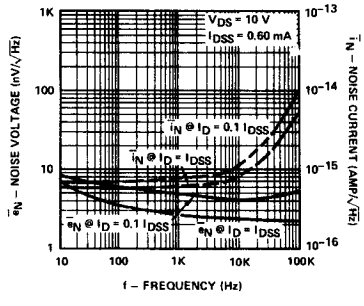
Static Drain-Source 'ON' Resistance vs Gate-Source Cutoff Voltage



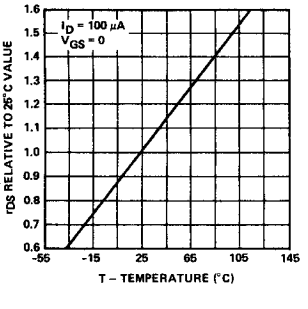
Approximate Noise Figure vs Input Noise Voltage



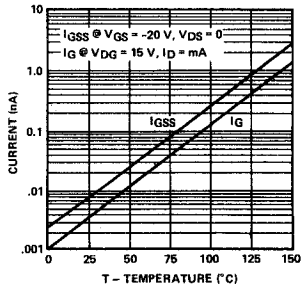
Equivalent Input Noise Voltage and Noise Current vs Frequency



Drain-Source 'ON' Resistance vs Ambient Temperature



Leakage Currents vs Ambient Temperature



Gate Operating Current vs Drain-Gate Voltage