



# n-channel JFETs designed for . . .

## ■ General Purpose Amplifiers

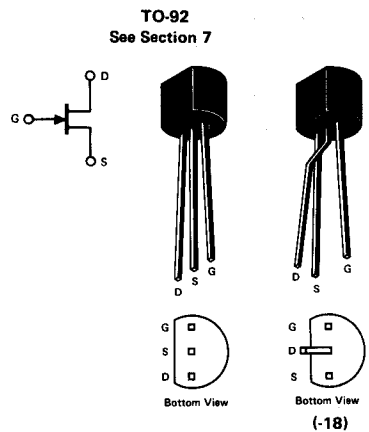
**Performance Curves NP**  
See Section 5

**BENEFITS**

- High Input Impedance  
I<sub>G</sub> = 35 pA Typical
- Good for Low Power Supply Operation  
V<sub>GS(off)</sub> < 1.5 V (J201)

**ABSOLUTE MAXIMUM RATINGS (25°C)**

Gate-Drain or Gate-Source Voltage (Note 1)	.....	-40 V
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)**

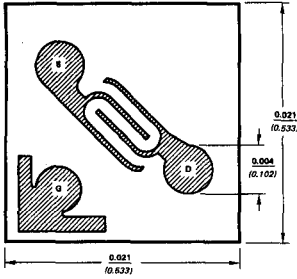
Characteristic	J201			J202			J203			Unit	Test Conditions	
	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max			
1   I <sub>GSS</sub>   Gate Reverse Current (Note 2)			-100			-100			-100	pA	V <sub>DS</sub> = 0, V <sub>GS</sub> = -20 V	
2   V <sub>GS(off)</sub>   Gate-Source Cutoff Voltage	-0.3		-1.5	-0.8		-4.0	-2.0		-10.0	V	V <sub>DS</sub> = 20 V, I <sub>D</sub> = 10 nA	
3   BV <sub>GSS</sub>   Gate-Source Breakdown Voltage	-40			-40			-40				V <sub>DS</sub> = 0, I <sub>G</sub> = -1 μA	
4   I <sub>DSS</sub>   Saturation Drain Current (Note 3)	0.2		1.0	0.9		4.5	4.0		20	mA	V <sub>DS</sub> = 20 V, V <sub>GS</sub> = 0	
5   I <sub>G</sub>   Gate Current (Note 2)		-35			-35			-35		pA	V <sub>DG</sub> = 20 V, I <sub>D</sub> = I <sub>DSS</sub> (min)	
6   g <sub>fs</sub>   Common-Source Forward Transconductance (Note 3)	500			1,000			1,500			μmho	V <sub>DS</sub> = 20 V, V <sub>GS</sub> = 0	
7   g <sub>os</sub>   Common-Source Output Conductance		1			3.5			10				f = 1 kHz
8   C <sub>iss</sub>   Common-Source Input Capacitance		4			4			4		pF		f = 1 MHz
9   C <sub>rss</sub>   Common-Source Reverse Transfer Capacitance		1			1			1				
10   ē <sub>n</sub>   Equivalent Short-Circuit Input Noise Voltage		5			5			5		nV/√Hz	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0 f = 1 kHz	

**NOTES:**

1. Geometry is symmetrical. Units may be operated with source and drain leads interchanged.
2. Approximately doubles for every 10°C increase in T<sub>A</sub>.
3. Pulse test duration = 2 ms.

NP

GATE ALSO BACKSIDE CONTACT  
S AND D ARE SYMMETRICAL



ALL DIMENSIONS IN INCHES  
(ALL DIMENSIONS IN MILLIMETERS)

## n-channel JFET designed for . . .

- Small Signal Amplifiers
- Choppers
- Voltage-Controlled Resistors

TYPE	PACKAGE
Single	TO-18
Dual	TO-71
Single	TO-92
Single	TO-92 Lead-form
Single	Chip



### BENEFITS:

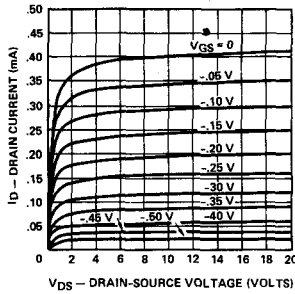
- Low Noise NF < 1 dB at 1 kHz
- Operation From Low Power Supply Voltages,  $V_{GS(off)} < 1 V$  (2N4338)
- High Off-Isolation As a Switch  $I_{D(off)} < 50 pA$
- High Input Impedance

### PRINCIPAL DEVICES

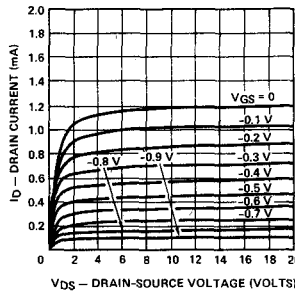
2N3368-70, 2N3436-8, 2N3458-60,  
2N4338-41, VCR4N  
2N5196-9, U231-5, 2N5545-47  
J201-203, J204, PN4302-04  
J201-18 - 203-18, J204-18,  
All of the above  
PN4302-18 - 4304-18

## PERFORMANCE CURVES (25°C unless otherwise noted)

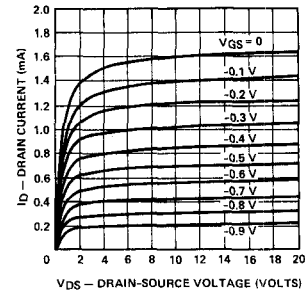
Output Characteristic



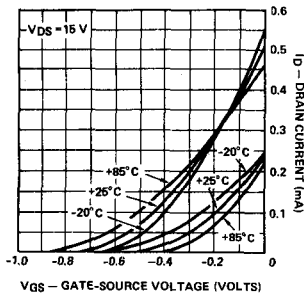
Output Characteristic



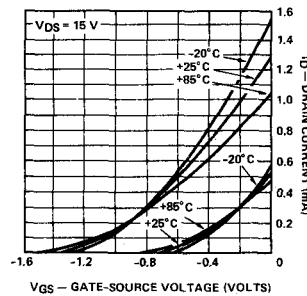
Output Characteristic



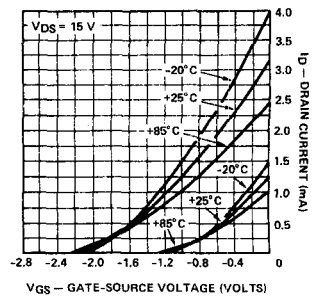
Transfer Characteristics



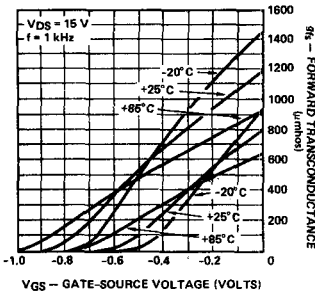
Transfer Characteristics



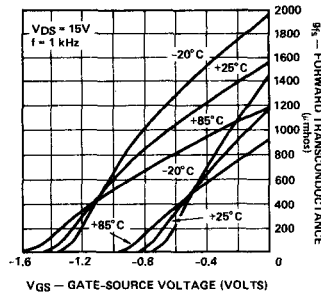
Transfer Characteristics



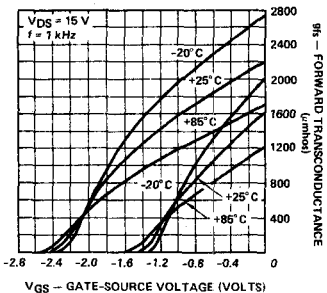
Transconductance Characteristics



Transconductance Characteristics

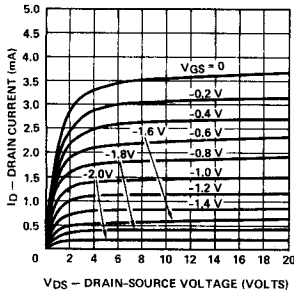


Transconductance Characteristics

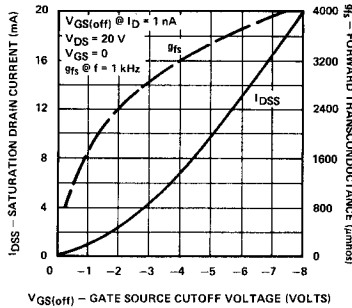


PERFORMANCE CURVES (Cont'd) (25°C unless otherwise noted)

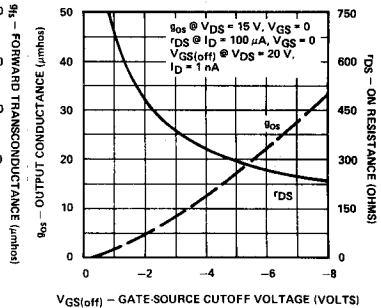
Output Characteristic



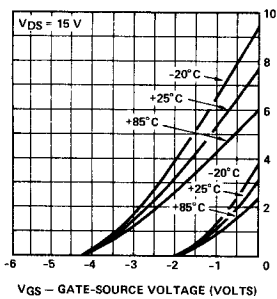
Drain Current and Transconductance vs Gate-Source Cutoff Voltage



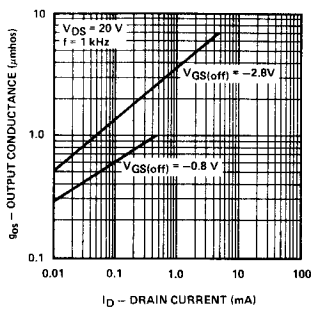
ON Resistance & Output Conductance vs Gate-Source Cutoff Voltage



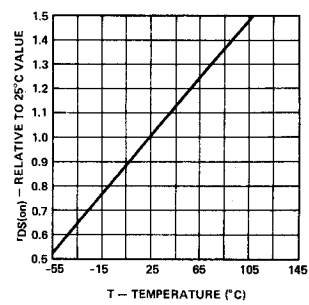
Transfer Characteristics



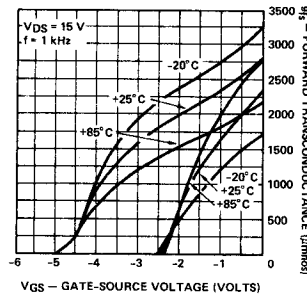
Common-Source Output Conductance vs Drain Current



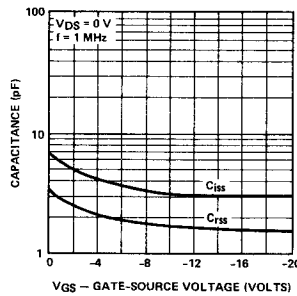
ON Resistance vs Ambient Temperature



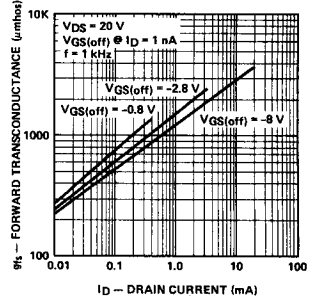
Transconductance Characteristics



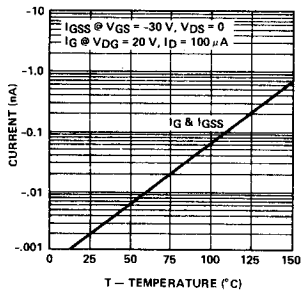
Common-Source Capacitances vs Gate-Source Voltage



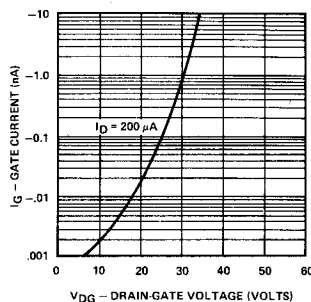
Common-Source Forward Transconductance vs Drain Current



Gate Currents vs Ambient Temperature



Gate Operating Current vs Drain-Gate Voltage



Equivalent Input Noise Voltage and Noise Current vs Frequency

