# N-Channel JFETs

**J201 SST201**
**J202 SST202**
**J204 SST204**

| PRODUCT SUMMARY | | | | |
|---|---|---|---|---|
| Part Number | $V_{GS(off)}$ (V) | $V_{(BR)GSS}$ Min (V) | $g_{fs}$ Min (mS) | $I_{DSS}$ Min (mA) |
| J/SST201 | −0.3 to −1.5 | −40 | 0.5 | 0.2 |
| J/SST202 | −0.8 to −4 | −40 | 1 | 0.9 |
| J/SST204 | −0.3 to −2 | −25 | 0.5 | 0.2 |

## FEATURES

- Low Cutoff Voltage: J201 <1.5 V
- High Input Impedance
- Very Low Noise
- High Gain: $A_V$ = 80 @ 20 μA

## BENEFITS

- Full Performance from Low Voltage Power Supply: Down to 1.5 V
- Low Signal Loss/System Error
- High System Sensitivity
- High Quality Low-Level Signal Amplification

## APPLICATIONS

- High-Gain, Low-Noise Amplifiers
- Low-Current, Low-Voltage Battery-Powered Amplifiers
- Infrared Detector Amplifiers
- Ultra High Input Impedance Pre-Amplifiers

## DESCRIPTION

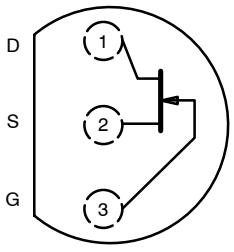
The J/SST201 series features low leakage, very low noise, and low cutoff voltage for use with low-level power supplies. The J/SST201 is excellent for battery powered equipment and low current amplifiers.

The J series, TO-226 (TO-92) plastic package, provides low cost, while the SST series, TO-236 (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).

For similar products in TO-206AA (TO-18) packaging, see the 2N4338/4339/4340/4341 data sheet.

For applications information see AN102 and AN106.

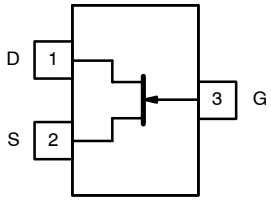
TO-226AA
(TO-92)




Top View

J201
J202
J204

TO-236
(SOT-23)




Top View

SST201 (P1)*
SST202 (P2)*
SST204 (P4)*

*Marking Code for TO-236

## ABSOLUTE MAXIMUM RATINGS

Gate-Drain, Gate-Source Voltage . . . . . –40 V
Gate Current . . . . . 50 mA
Lead Temperature ($^1/_{16}$" from case for 10 sec.) . . . . . 300°C
Storage Temperature . . . . . –55 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

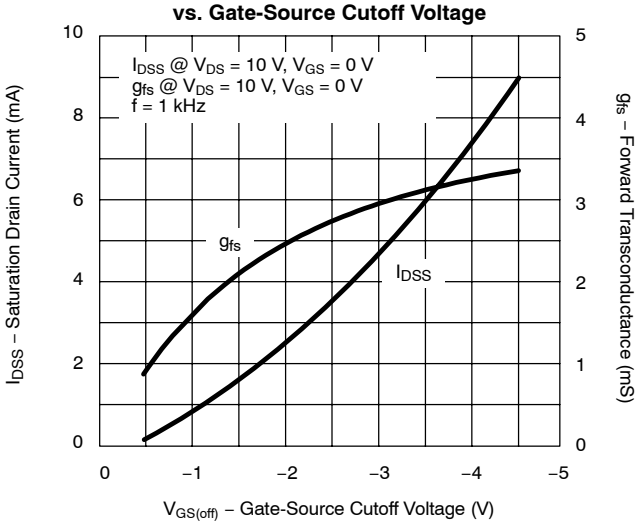
## SPECIFICATIONS ($T_A$ = 25°C UNLESS OTHERWISE NOTED)

| Parameter | Symbol | Test Conditions | Typ[a] | Limits J/SST201 Min | J/SST201 Max | J/SST202 Min | J/SST202 Max | J/SST204[c] Min | J/SST204[c] Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Static** | | | | | | | | | | |
| Gate-Source Breakdown Voltage | $V_{(BR)GSS}$ | $I_G$ = –1 µA , $V_{DS}$ = 0 V | | –40 | | –40 | | –25 | | V |
| Gate-Source Cutoff Voltage | $V_{GS(off)}$ | $V_{DS}$ = 15 V, $I_D$ = 10 nA | | –0.3 | –1.5 | –0.8 | –4 | –0.3 | –2 | |
| Saturation Drain Current[b] | $I_{DSS}$ | $V_{DS}$ = 15 V, $V_{GS}$ = 0 V | | 0.2 | 1 | 0.9 | 4.5 | 0.2 | 3 | mA |
| Gate Reverse Current | $I_{GSS}$ | $V_{GS}$ = –20 V, $V_{DS}$ = 0 V | –2 | | –100 | | –100 | | –100 | pA |
| | | $T_A$ = 125°C | –1 | | | | | | | nA |
| Gate Operating Current | $I_G$ | $V_{DG}$ = 10 V, $I_D$ = 0.1 mA | –2 | | | | | | | pA |
| Drain Cutoff Current | $I_{D(off)}$ | $V_{DS}$ = 15 V, $V_{GS}$ = –5 V | 2 | | | | | | | |
| Gate-Source Forward Voltage | $V_{GS(F)}$ | $I_G$ = 1 mA , $V_{DS}$ = 0 V | 0.7 | | | | | | | V |
| **Dynamic** | | | | | | | | | | |
| Common-Source Forward Transconductance | $g_{fs}$ | $V_{DS}$ = 15 V, $V_{GS}$ = 0 V f = 1 kHz | | 0.5 | | 1 | | 0.5 | | mS |
| Common-Source Input Capacitance | $C_{iss}$ | $V_{DS}$ = 15 V, $V_{GS}$ = 0 V f = 1 MHz | 4.5 | | | | | | | pF |
| Common-Source Reverse Transfer Capacitance | $C_{rss}$ | | 1.3 | | | | | | | |
| Equivalent Input Noise Voltage | $\overline{e}_n$ | $V_{DS}$ = 10 V, $V_{GS}$ = 0 V f = 1 kHz | 6 | | | | | | | nV/√Hz |

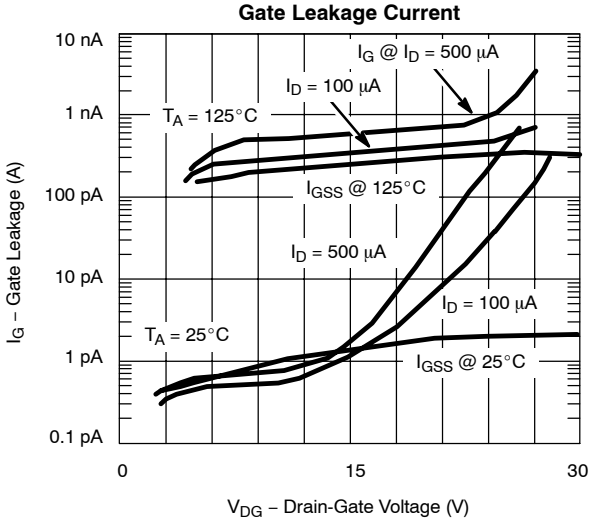
Notes
a. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing. NPA, NH
b. Pulse test: PW ≤300 µs duty cycle ≤3%.
c. See 2N/SST5484 Series for J204 and SST204 typical characteristic curves.

## TYPICAL CHARACTERISTICS ($T_A$ = 25°C UNLESS OTHERWISE NOTED)

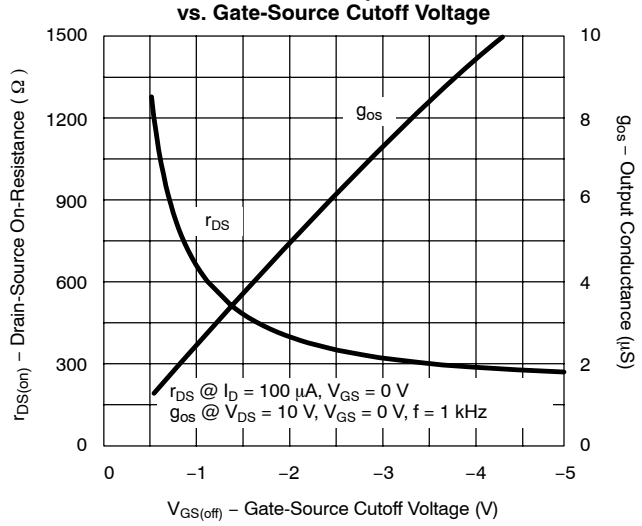
**Drain Current and Transconductance vs. Gate-Source Cutoff Voltage**



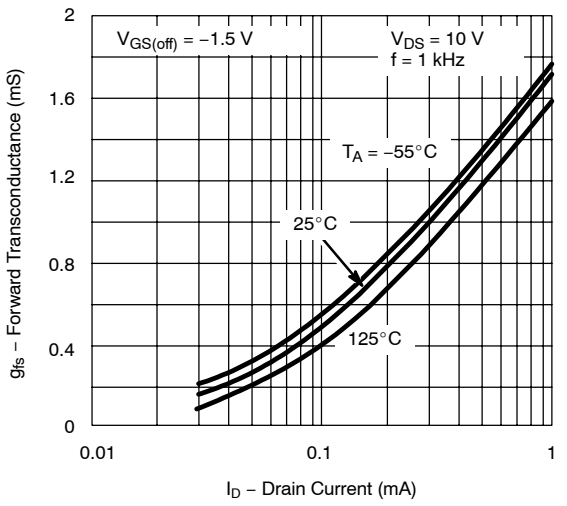

**Gate Leakage Current**



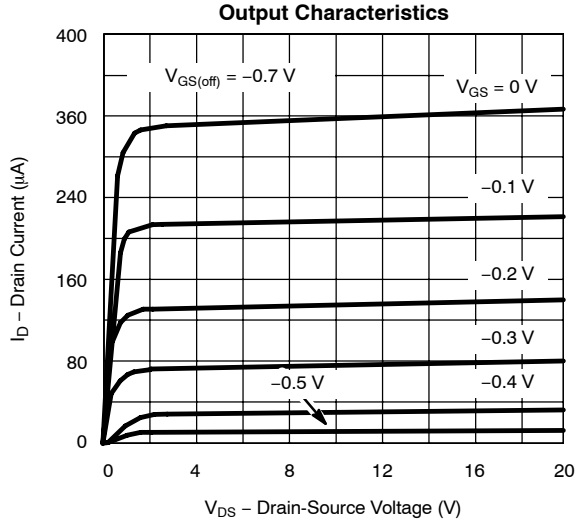

**On-Resistance and Output Conductance vs. Gate-Source Cutoff Voltage**



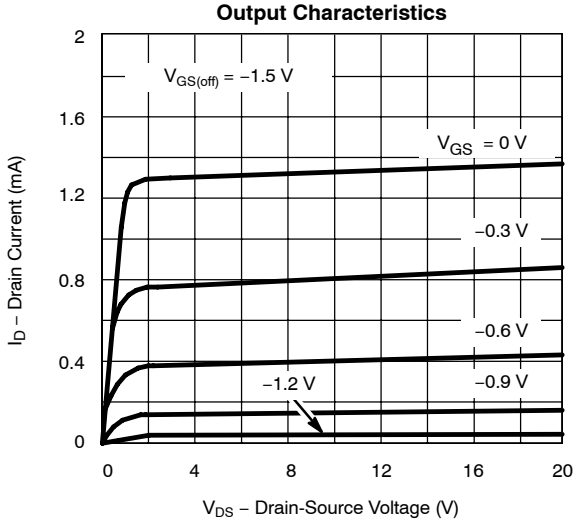

**Common-Source Forward Transconductance vs. Drain Current**




**Output Characteristics**

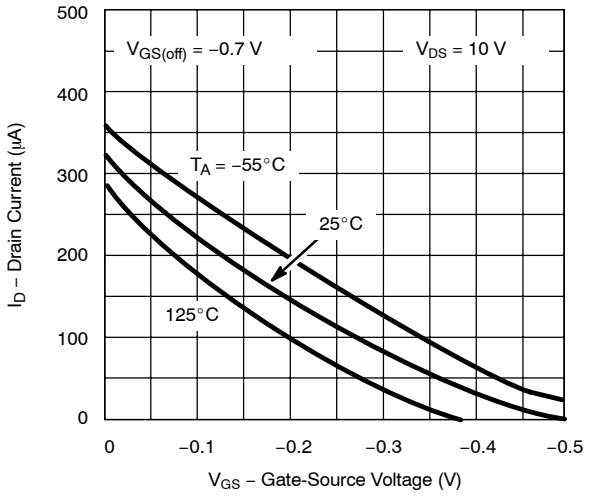



**Output Characteristics**

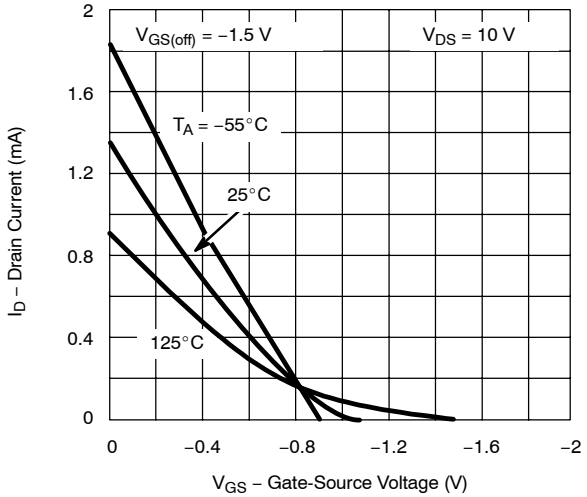


## TYPICAL CHARACTERISTICS ($T_A$ = 25°C UNLESS OTHERWISE NOTED)

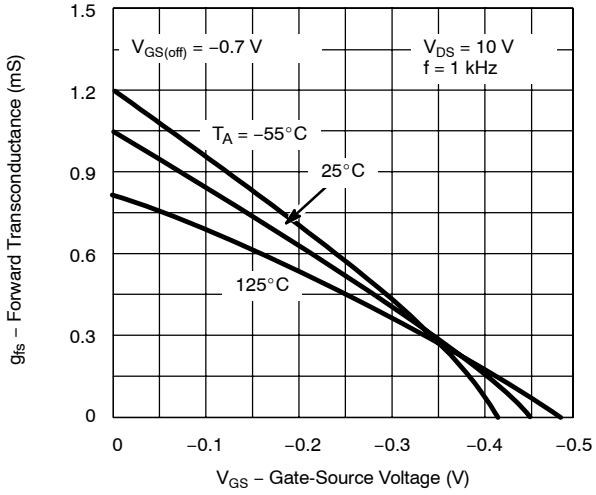
**Transfer Characteristics**



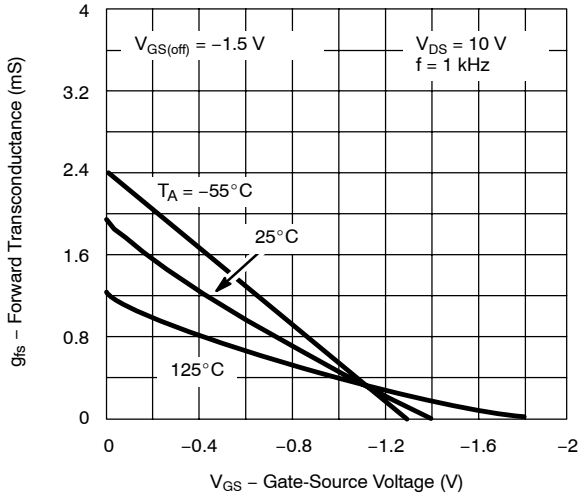

**Transfer Characteristics**



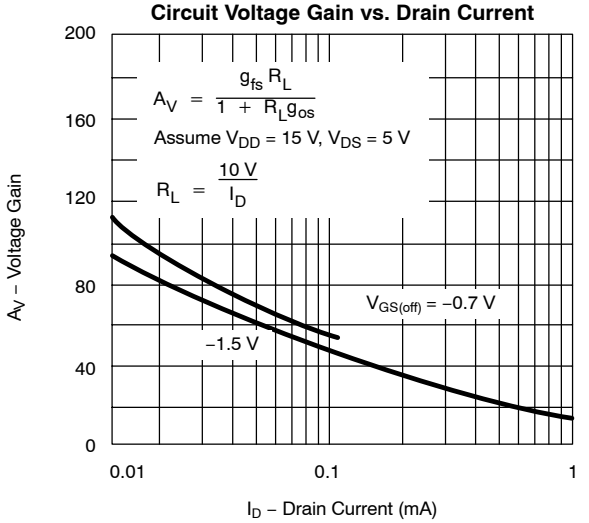

**Transconductance vs. Gate-Source Voltage**



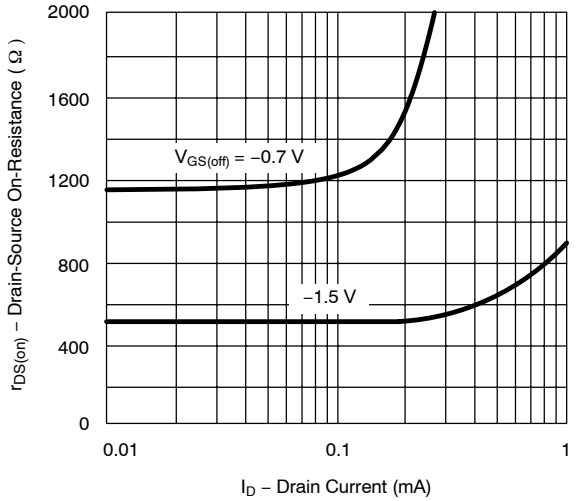

**Transconductance vs. Gate-Source Voltage**




**Circuit Voltage Gain vs. Drain Current**

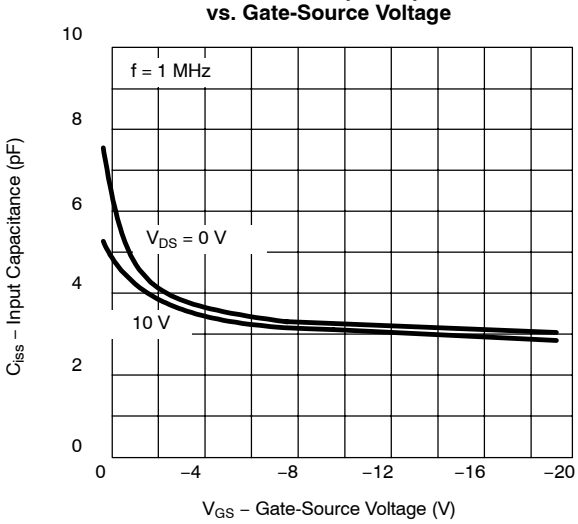



**On-Resistance vs. Drain Current**

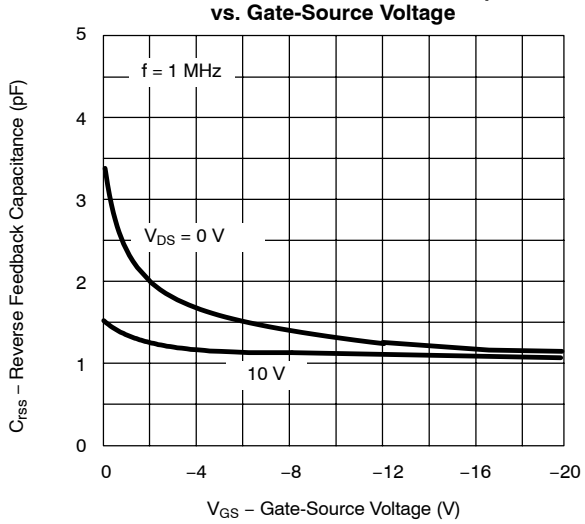


## TYPICAL CHARACTERISTICS ($T_A$ = 25°C UNLESS OTHERWISE NOTED)

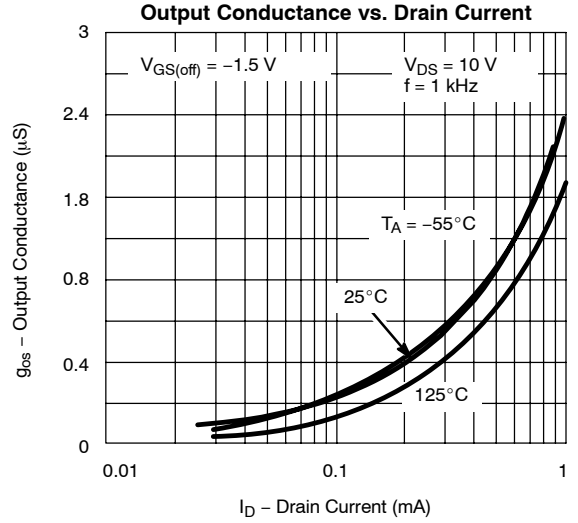
**Common-Source Input Capacitance vs. Gate-Source Voltage**



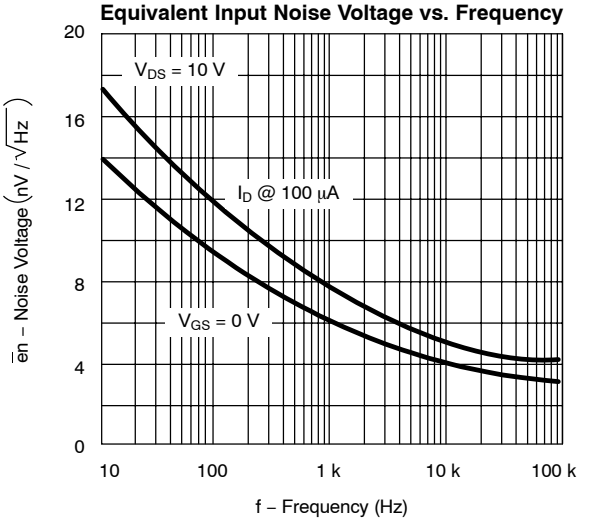

**Common-Source Reverse Feedback Capacitance vs. Gate-Source Voltage**



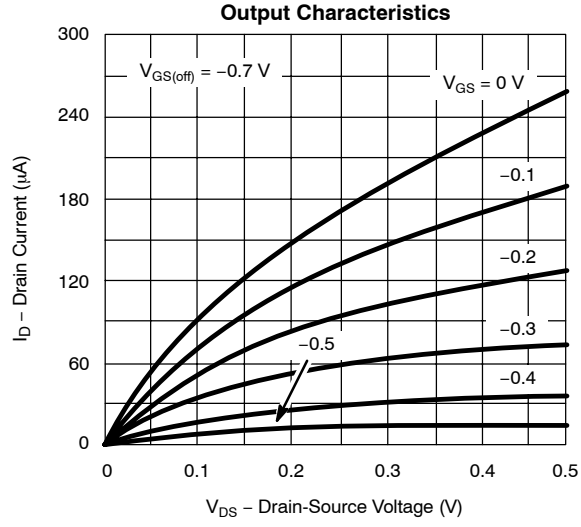

**Output Conductance vs. Drain Current**



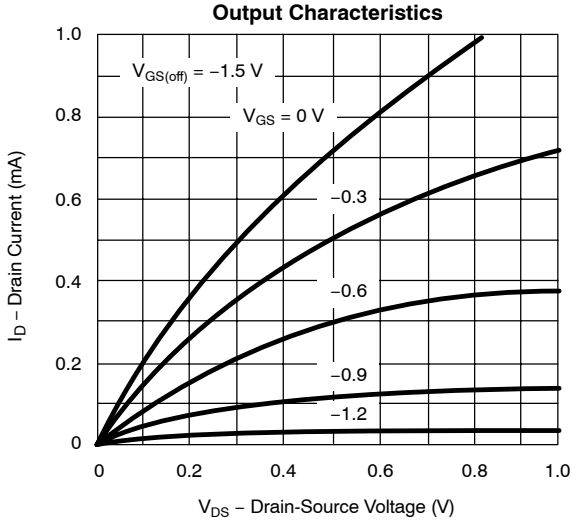

**Equivalent Input Noise Voltage vs. Frequency**




**Output Characteristics**




**Output Characteristics**



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