TEMIC
Siliconix
N-Channel JFETs

J/SST201 Series
J201  SST201
J202  SST202
J204  SST204

Product Summary

<table>
<thead>
<tr>
<th>Part Number</th>
<th>$V_{GS(\text{off})}$ (V)</th>
<th>$V_{(\text{BR})GSS}$ Min (V)</th>
<th>$g_{m}$ Min (mS)</th>
<th>$I_{DSS}$ Min (mA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>J/SST201</td>
<td>−0.3 to −1.5</td>
<td>−40</td>
<td>0.5</td>
<td>0.2</td>
</tr>
<tr>
<td>J/SST202</td>
<td>−0.8 to −4</td>
<td>−40</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>J/SST204</td>
<td>−0.3 to −2</td>
<td>−25</td>
<td>0.5</td>
<td>0.2</td>
</tr>
</tbody>
</table>

For applications information see AN102, page 6, and AN106, page 28.

Features

• Low Cutoff Voltage: J201 <1.5 V
• High Input Impedance
• Very Low Noise
• High Gain: $A_{V} = 80 @ 20 \mu A$

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.

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
# J/SST201 Series

## Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Test Conditions</th>
<th>Typb</th>
<th>Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>J/SST201</td>
</tr>
<tr>
<td>Gate-Source Breakdown Voltage</td>
<td>$V_{BR\text{GSS}}$</td>
<td>$I_G = -1 \mu A, V_{DS} = 0 V$</td>
<td>-40</td>
<td>-40</td>
</tr>
<tr>
<td>Gate-Source Cutoff Voltage</td>
<td>$V_{GS\text{(off)}}$</td>
<td>$V_{DS} = 15 V, I_D = 10 nA$</td>
<td>-0.3</td>
<td>-1.5</td>
</tr>
<tr>
<td>Saturation Drain Current(c)</td>
<td>$I_{DSS}$</td>
<td>$V_{DS} = 15 V, V_{GS} = 0 V$</td>
<td>0.2</td>
<td>1</td>
</tr>
<tr>
<td>Gate Reverse Current</td>
<td>$I_{GSS}$</td>
<td>$V_{GS} = -20 V, V_{DS} = 0 V$</td>
<td>-2</td>
<td>-100</td>
</tr>
<tr>
<td>Gate Operating Current</td>
<td>$I_G$</td>
<td>$V_{DG} = 10 V, I_D = 0.1 mA$</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Drain Cutoff Current</td>
<td>$I_{D\text{(off)}}$</td>
<td>$V_{DS} = 15 V, V_{GS} = -5 V$</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Gate-Source Forward Voltage</td>
<td>$V_{G\text{S(F)}}$</td>
<td>$I_G = 1 mA, V_{DS} = 0 V$</td>
<td>0.7</td>
<td></td>
</tr>
</tbody>
</table>

### 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 | $C_{rss}$ | $V_{DS} = 15 V, V_{GS} = 0 V$ | $f = 1 kHz$ | 1.3  |       |       | pF |
| Equivalent Input Noise Voltage      | $r_{in}$  | $V_{DS} = 10 V, V_{GS} = 0 V$ | $f = 1 kHz$ | 6    |       |       | nV/√Hz |

### 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 $\leq 3\%$.
- See 2N/SST5484 Series for J204 typical characteristic curves.

## Typical Characteristics

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

![Drain Current and Transconductance graph](image)

### Gate Leakage Current

![Gate Leakage Current graph](image)
Typical Characteristics (Cont’d)

**Output Conductance vs. Drain Current**

- $V_{GS(off)} = -1.5 \text{ V}$
- $V_{DS} = 10 \text{ V}$
- $f = 1 \text{ kHz}$
- $T_A = -55^\circ C$
- $25^\circ C$
- $125^\circ C$

**Equivalent Input Noise Voltage vs. Frequency**

- $V_{DS} = 10 \text{ V}$
- $I_D @ 100 \mu A$
- $V_{GS} = 0 \text{ V}$

**Output Characteristics**

- $V_{GS(off)} = -0.7 \text{ V}$
- $V_{GS} = 0 \text{ V}$

- $I_D$ vs. $V_{DS}$

- $V_{GS(off)} = -1.5 \text{ V}$
- $V_{GS} = 0 \text{ V}$

- $I_D$ vs. $V_{DS}$