

## 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:  $A_V = 80 @ 20 \mu A$

### 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

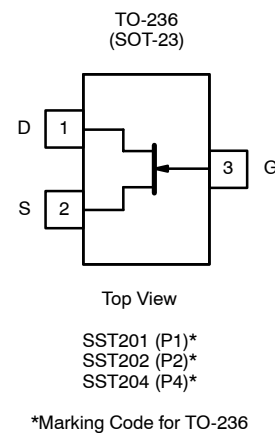
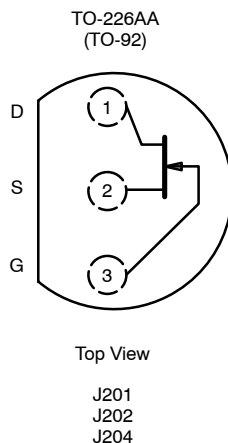
The J/SST201 series features low leakage, very low noise, and low cutoff voltage for use with low-level power supplies. The J/SST201 is excellent for battery powered equipment and low current amplifiers.

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.

For applications information see AN102 and AN106.





### ABSOLUTE MAXIMUM RATINGS

Gate-Drain, Gate-Source Voltage ..... -40 V  
 Gate Current ..... 50 mA  
 Lead Temperature (<sup>1</sup>/<sub>16</sub>" from case for 10 sec.) ..... 300°C  
 Storage Temperature ..... -55 to 150°C

Operating Junction Temperature ..... -55 to 150°C  
 Power Dissipation<sup>a</sup> ..... 350 mW

Notes  
 a. Derate 2.8 mW/°C above 25°C

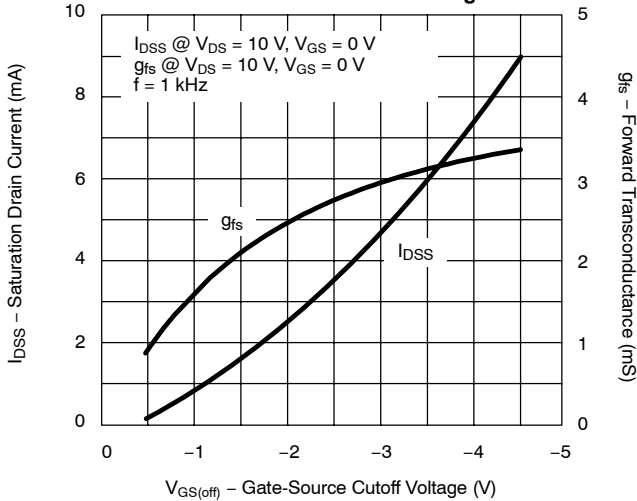
| SPECIFICATIONS (T <sub>A</sub> = 25°C UNLESS OTHERWISE NOTED) |                      |  |                  |          |      |          |      |                       |      |            |
|---|----------------------|--|------------------|----------|------|----------|------|-----------------------|------|------------|
| Parameter   | Symbol               | Test Conditions  | Typ <sup>a</sup> | Limits   |      |          |      |                       |      | Unit       |
|   |                      |  |                  | J/SST201 |      | J/SST202 |      | J/SST204 <sup>c</sup> |      |            |
|   |                      |  |                  | Min      | Max  | Min      | Max  | Min                   | Max  |            |
| <b>Static</b>   |                      |  |                  |          |      |          |      |                       |      |            |
| Gate-Source Breakdown Voltage                                 | V <sub>(BR)GSS</sub> | I <sub>G</sub> = -1 μA, V <sub>DS</sub> = 0 V                            |                  | -40      |      | -40      |      | -25                   |      | V          |
| Gate-Source Cutoff Voltage                                    | V <sub>GS(off)</sub> | V <sub>DS</sub> = 15 V, I <sub>D</sub> = 10 nA                           |                  | -0.3     | -1.5 | -0.8     | -4   | -0.3                  | -2   |            |
| Saturation Drain Current <sup>b</sup>                         | I <sub>DSS</sub>     | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0 V                            |                  | 0.2      | 1    | 0.9      | 4.5  | 0.2                   | 3    | mA         |
| Gate Reverse Current  | I <sub>GSS</sub>     | V <sub>GS</sub> = -20 V, V <sub>DS</sub> = 0 V<br>T <sub>A</sub> = 125°C | -2               |          | -100 |          | -100 |                       | -100 | pA         |
|   |                      |  | -1               |          |      |          |      |                       | nA   |            |
| Gate Operating Current  | I <sub>G</sub>       | V <sub>DG</sub> = 10 V, I <sub>D</sub> = 0.1 mA                          | -2               |          |      |          |      |                       |      | pA         |
| Drain Cutoff Current  | I <sub>D(off)</sub>  | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = -5 V                           | 2                |          |      |          |      |                       |      |            |
| Gate-Source Forward Voltage                                   | V <sub>GS(F)</sub>   | I <sub>G</sub> = 1 mA, V <sub>DS</sub> = 0 V                             | 0.7              |          |      |          |      |                       |      | V          |
| <b>Dynamic</b>  |                      |  |                  |          |      |          |      |                       |      |            |
| Common-Source Forward Transconductance                        | g <sub>fs</sub>      | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0 V<br>f = 1 kHz               |                  | 0.5      |      | 1        |      | 0.5                   |      | mS         |
| Common-Source Input Capacitance                               | C <sub>iss</sub>     | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0 V<br>f = 1 MHz               | 4.5              |          |      |          |      |                       |      | pF         |
| Common-Source Reverse Transfer Capacitance                    | C <sub>rss</sub>     |  | 1.3              |          |      |          |      |                       |      |            |
| Equivalent Input Noise Voltage                                | e <sub>n</sub>       | V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0 V<br>f = 1 kHz               | 6                |          |      |          |      |                       |      | nV/<br>√Hz |

- 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%.  
 c. See 2N/SST5484 Series for J204 and SST204 typical characteristic curves.

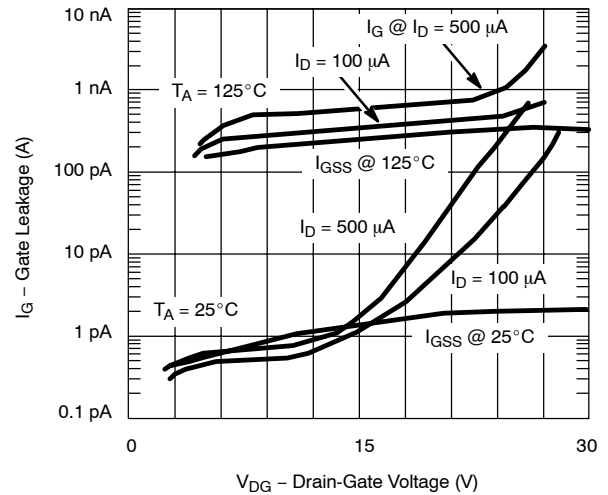
NPA, NH

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

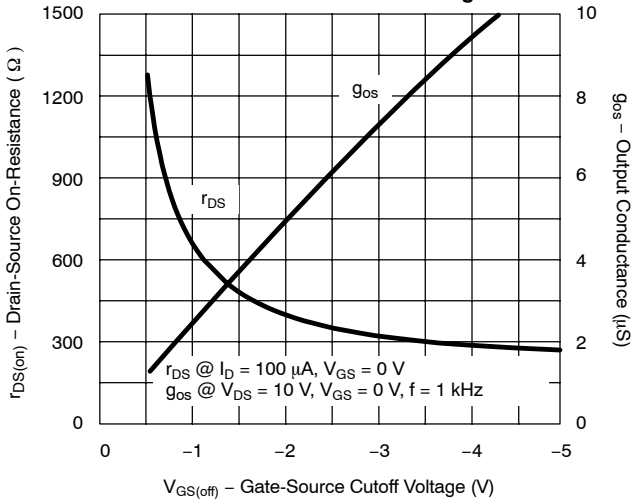
**Drain Current and Transconductance vs. Gate-Source Cutoff Voltage**



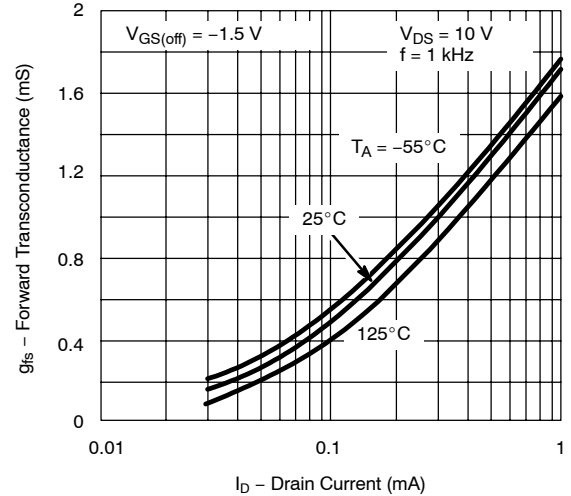
**Gate Leakage Current**



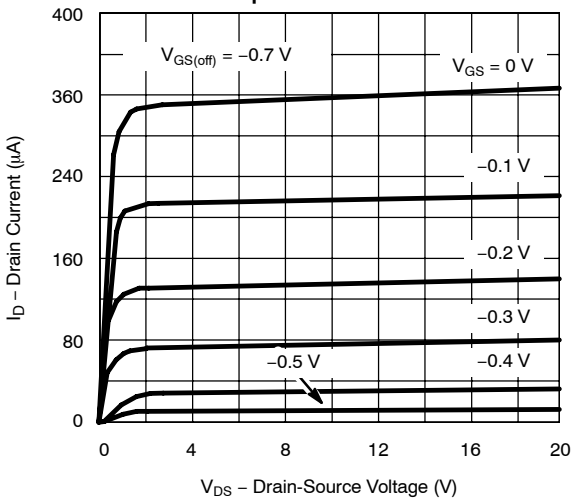
**On-Resistance and Output Conductance vs. Gate-Source Cutoff Voltage**



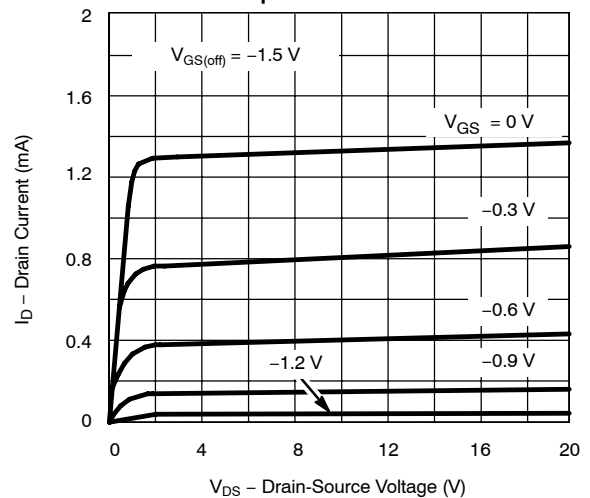
**Common-Source Forward Transconductance vs. Drain Current**



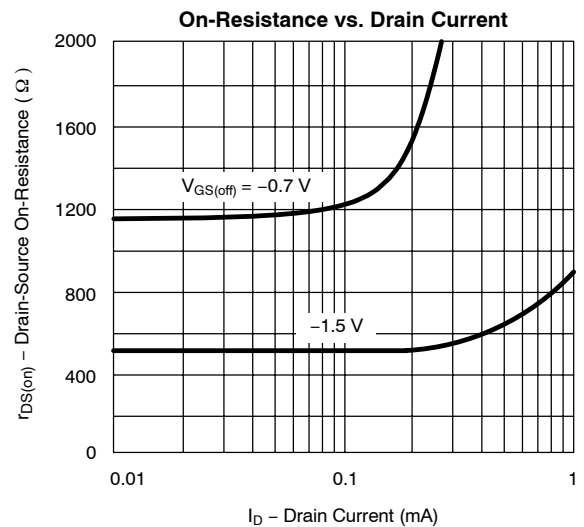
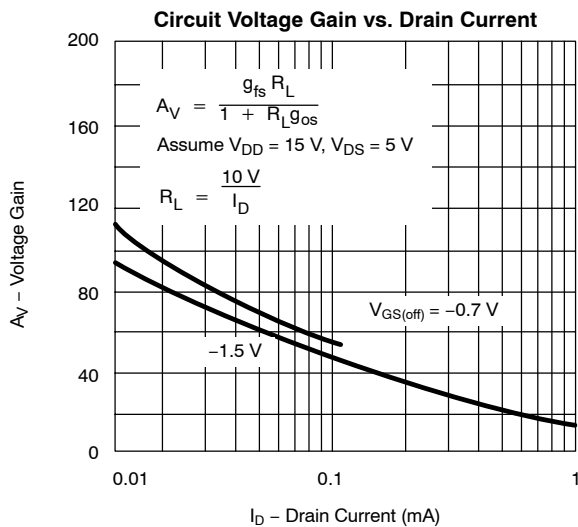
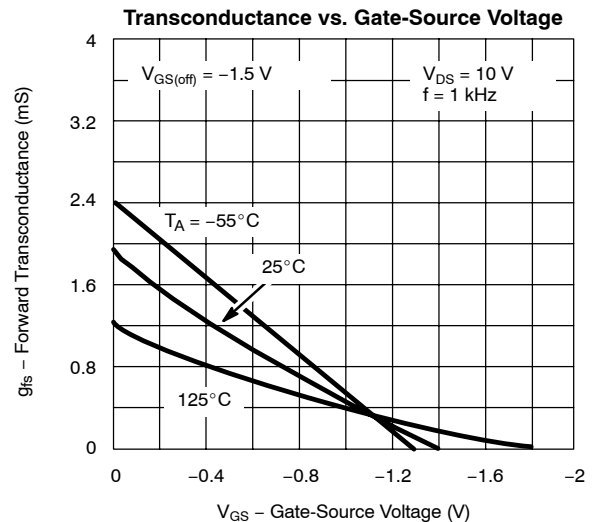
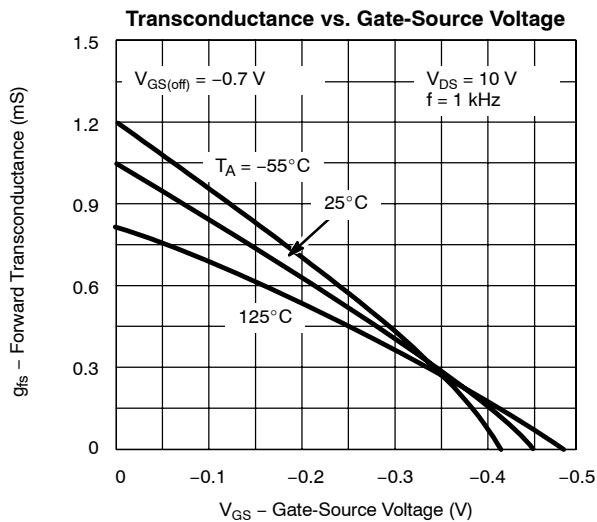
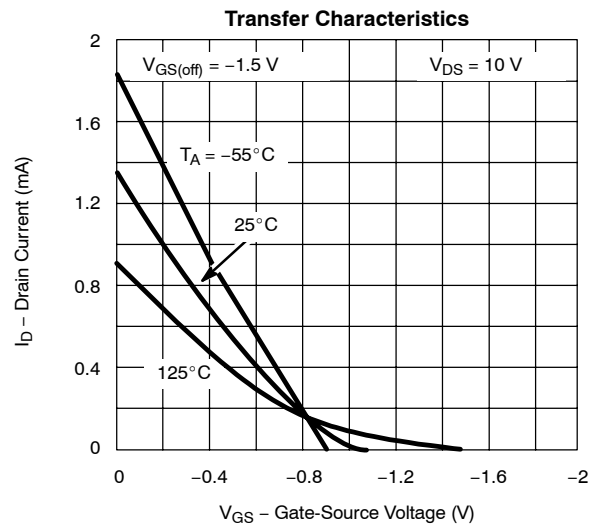
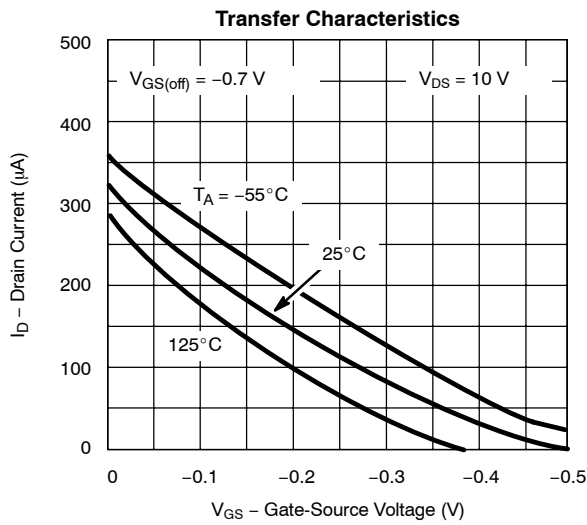
**Output Characteristics**



**Output Characteristics**

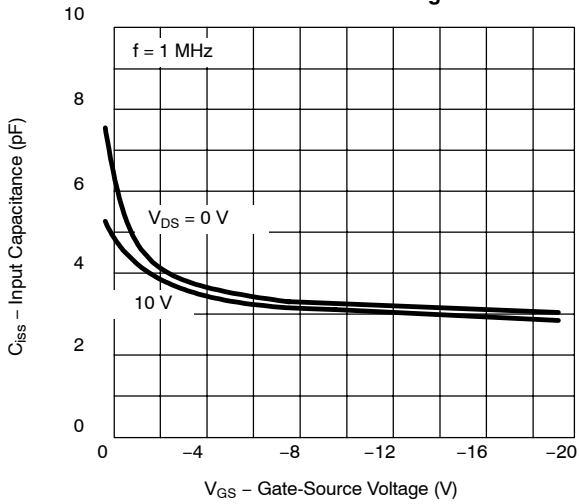


### TYPICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

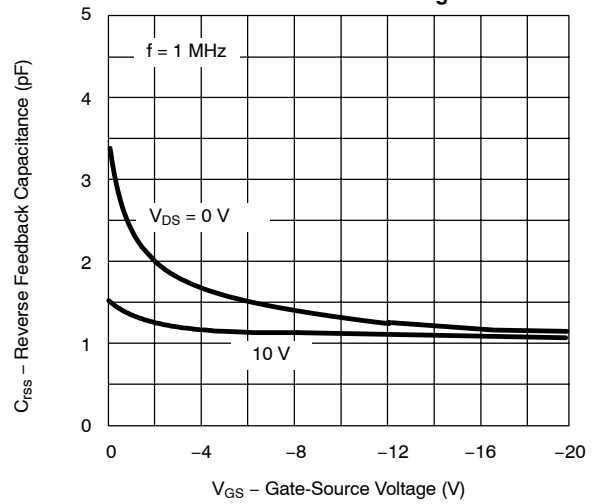


**TYPICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$  UNLESS OTHERWISE NOTED)**

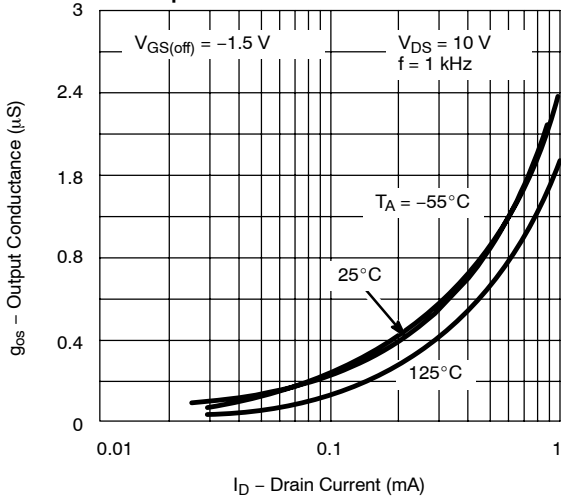
**Common-Source Input Capacitance vs. Gate-Source Voltage**



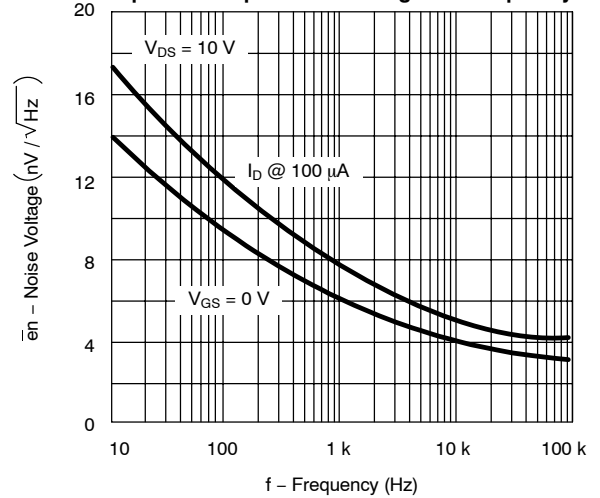
**Common-Source Reverse Feedback Capacitance vs. Gate-Source Voltage**



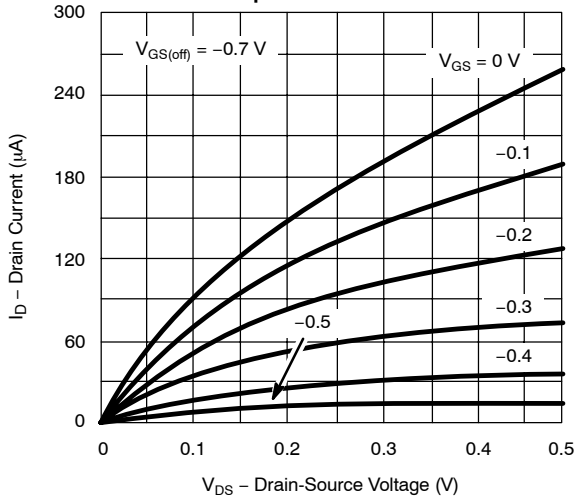
**Output Conductance vs. Drain Current**



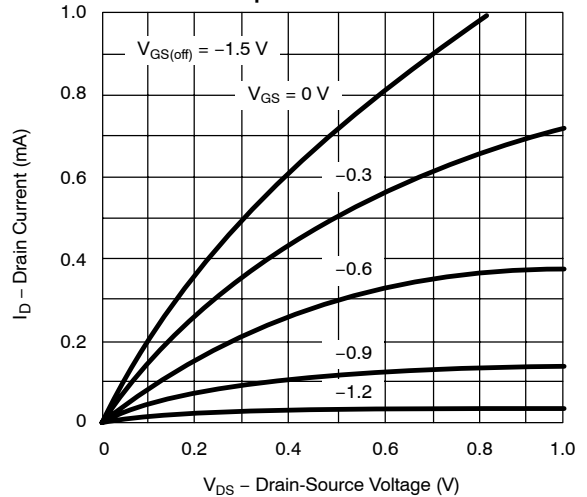
**Equivalent Input Noise Voltage vs. Frequency**



**Output Characteristics**



**Output Characteristics**





## Disclaimer

All product specifications and data are subject to change without notice.

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