

## N-Channel JFETs

**J210**            **SSTJ211**  
**J211**            **SSTJ212**  
**J212**

| PRODUCT SUMMARY |                   |                       |                   |                    |
|-----------------|-------------------|-----------------------|-------------------|--------------------|
| Part Number     | $V_{GS(off)}$ (V) | $V_{(BR)GSS}$ Min (V) | $g_{fs}$ Min (mS) | $I_{DSS}$ Min (mA) |
| J210            | -1 to -3          | -25                   | 4                 | 2                  |
| J/SSTJ211       | -2.5 to -4.5      | -25                   | 6                 | 7                  |
| J/SSTJ212       | -4 to -6          | -25                   | 7                 | 15                 |

### FEATURES

- Excellent High Frequency Gain: J211/212, Gps 12 dB (typ) @ 400 MHz
- Very Low Noise: 3 dB (typ) @ 400 MHz
- Very Low Distortion
- High ac/dc Switch Off-Isolation
- High Gain:  $A_V = 35$  @ 100  $\mu$ A

### BENEFITS

- Wideband High Gain
- Very High System Sensitivity
- High Quality of Amplification
- High-Speed Switching Capability
- High-Quality Low-Level Signal Amplification

### APPLICATIONS

- High-Frequency Amplifier/Mixer
- Oscillator
- Sample-and-Hold
- Very Low Capacitance Switches

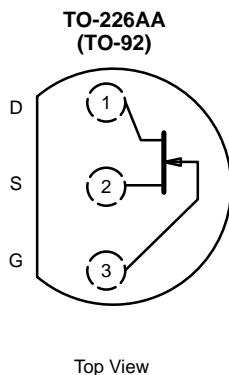
### DESCRIPTION

The J/SSTJ210 Series n-channel JFETs are general-purpose and high-frequency amplifiers for a wide range of applications. These devices feature low leakage ( $I_{GSS} < 100$  pA).

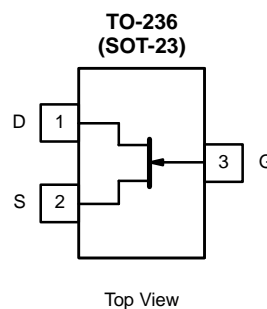
capability. The J/SSTJ210 Series is available in tape-and-reel for automated assembly (see Packaging Information).

The TO-226AA (TO-92) plastic package, provides low cost while the TO-236 (SOT-23) package provides surface-mount

For similar dual products, see the 2N5911/5912 and U440/441 data sheets.



J210  
J211  
J212



SSTJ211 (Z1)\*  
SSTJ212 (Z2)\*  
\*Marking Code for TO-236

For applications information see AN104.



### ABSOLUTE MAXIMUM RATINGS

Gate-Drain, Gate-Source Voltage ..... -25 V  
 Gate Current ..... 10 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<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       |
|   |                      |  |                  | J210   |      | J/SSTJ211 |      | J/SSTJ212 |      |            |
|   |                      |  |                  | 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              | -35              | -25    |      | -25       |      | -25       |      | V          |
| Gate-Source Cutoff Voltage                                    | V <sub>GS(off)</sub> | V <sub>DS</sub> = 15 V, I <sub>D</sub> = 1 nA              |                  | -1     | -3   | -2.5      | -4.5 | -4        | -6   |            |
| Saturation Drain Current <sup>b</sup>                         | I <sub>DSS</sub>     | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0 V              |                  | 2      | 15   | 7         | 20   | 15        | 40   | mA         |
| Gate Reverse Current  | I <sub>GSS</sub>     | V <sub>GS</sub> = -15 V, V <sub>DS</sub> = 0 V             | -1               |        | -100 |           | -100 |           | -100 | pA         |
|   |                      | T <sub>A</sub> = 125°C                                     | -0.5             |        |      |           |      |           |      | nA         |
| Gate Operating Current <sup>a</sup>                           | I <sub>G</sub>       | V <sub>DG</sub> = 10 V, I <sub>D</sub> = 1 mA              | -1               |        |      |           |      |           |      | pA         |
| Drain Cutoff Current  | I <sub>D(off)</sub>  | V <sub>DS</sub> = 10 V, V <sub>GS</sub> = -8 V             | 1                |        |      |           |      |           |      |            |
| 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 <sup>b</sup>           | g <sub>fs</sub>      | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0 V<br>f = 1 kHz |                  | 4      | 12   | 6         | 12   | 7         | 12   | mS         |
| Common-Source Output Conductance                              | g <sub>os</sub>      |  |                  |        | 150  |           | 200  |           | 200  | μS         |
| 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                |        |      |           |      |           |      | pF         |
| Common-Source Reverse Transfer Capacitance                    | C <sub>rss</sub>     |  | 1.5              |        |      |           |      |           |      |            |
| Equivalent Input Noise Voltage                                | e <sub>n</sub>       | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0 V<br>f = 1 kHz | 5                |        |      |           |      |           |      | nV/<br>√Hz |

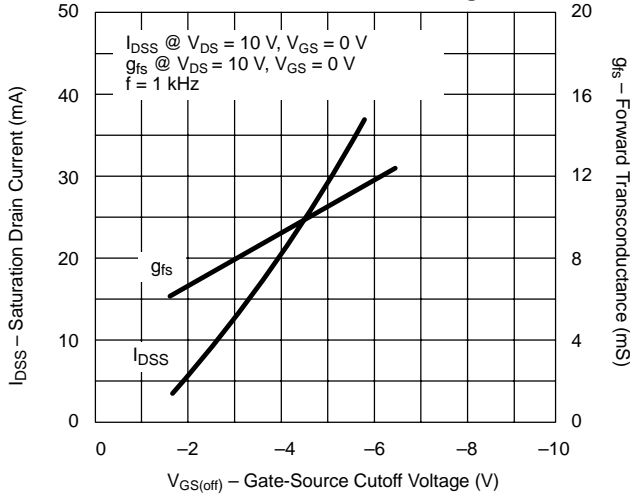
**Notes**

a. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.  
 b. Pulse test: PW ≤ 300 μs duty cycle ≤ 3%.

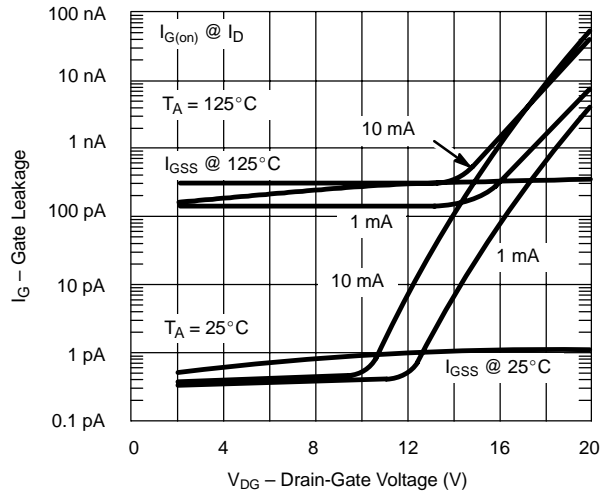
NZF

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

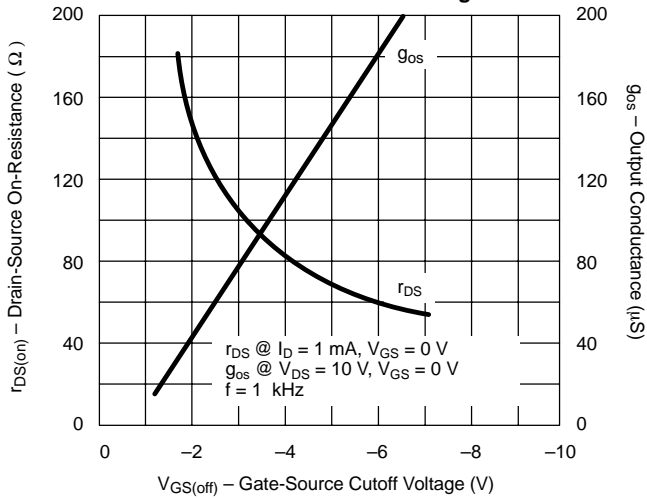
**Drain Current and Transconductance vs. Gate-Source Cutoff Voltage**



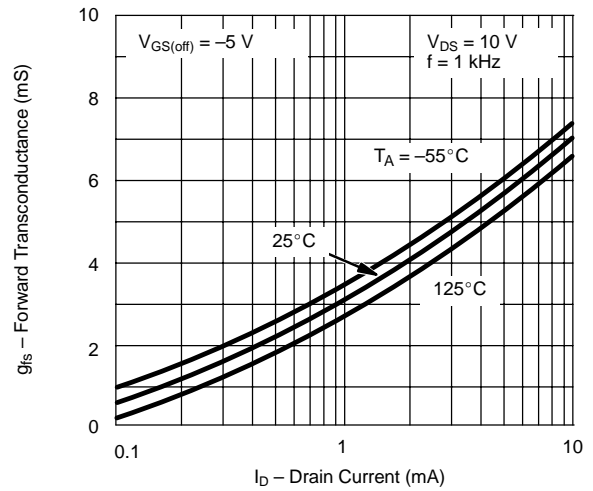
**Gate Leakage Current**



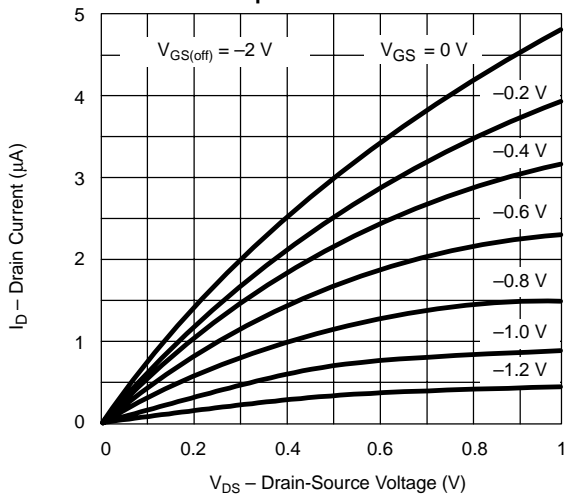
**On-Resistance and Output Conductance vs. Gate-Source Cutoff Voltage**



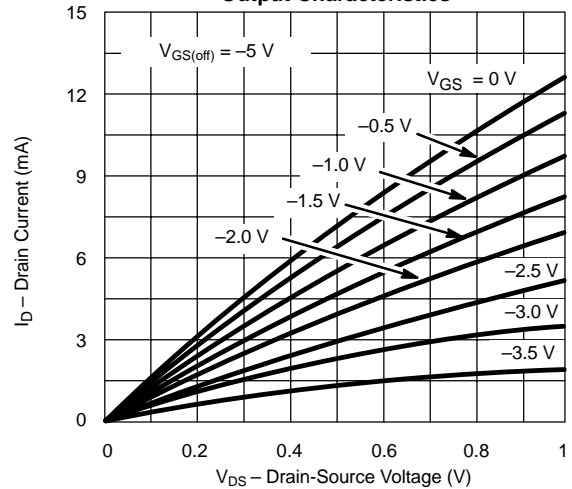
**Common-Source Forward Transconductance vs. Drain Current**



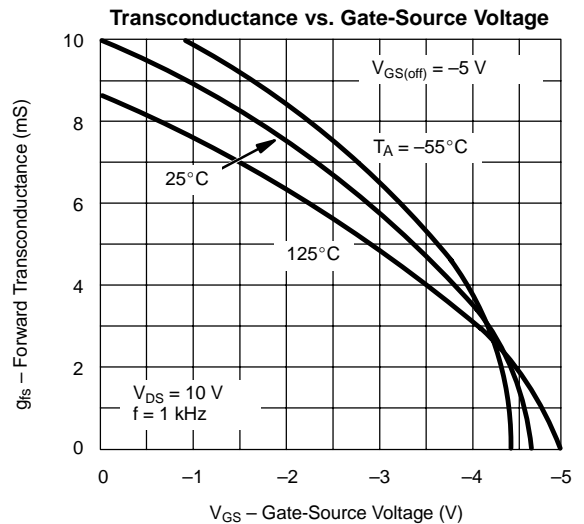
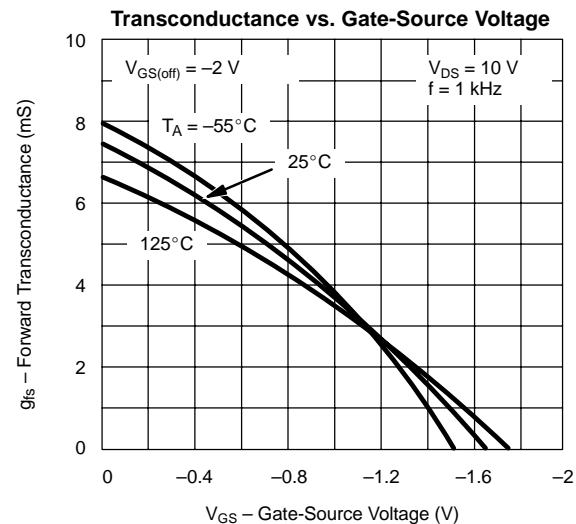
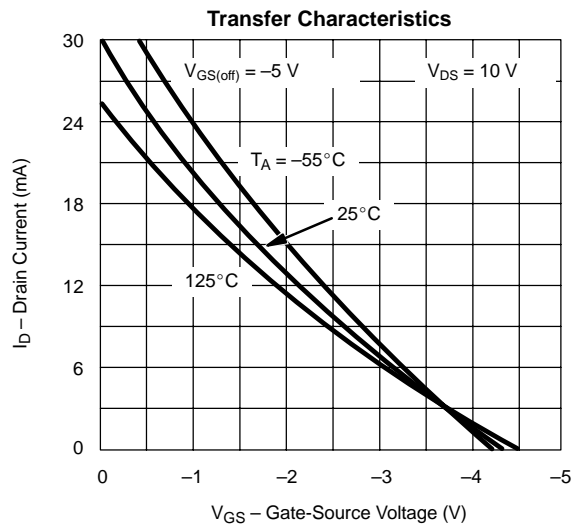
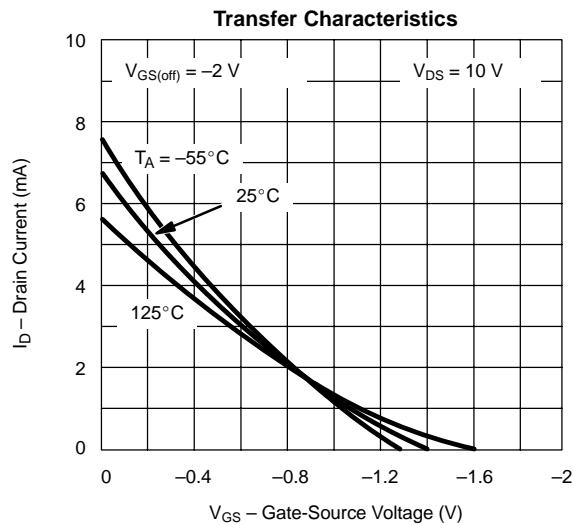
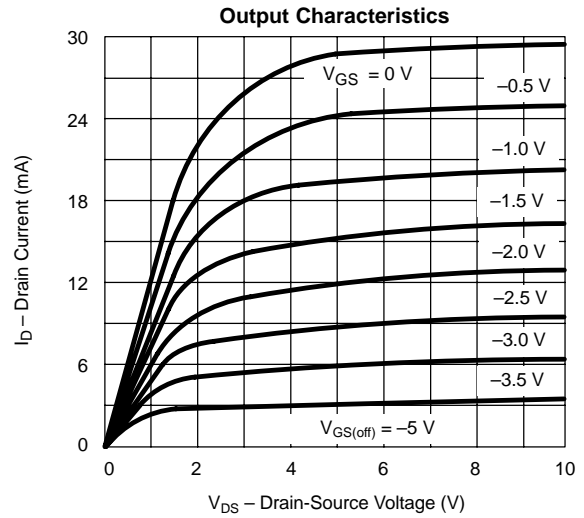
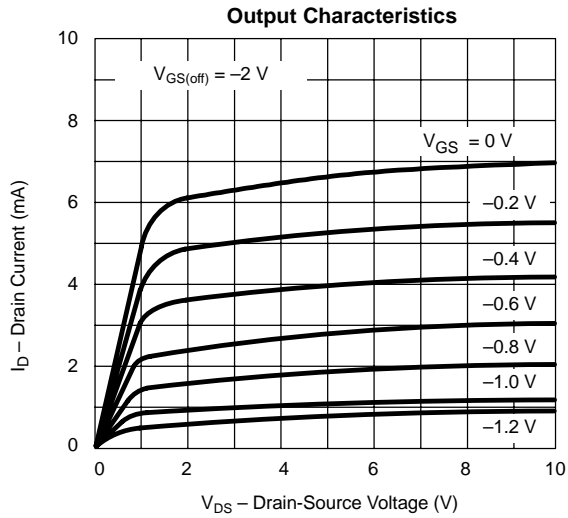
**Output Characteristics**



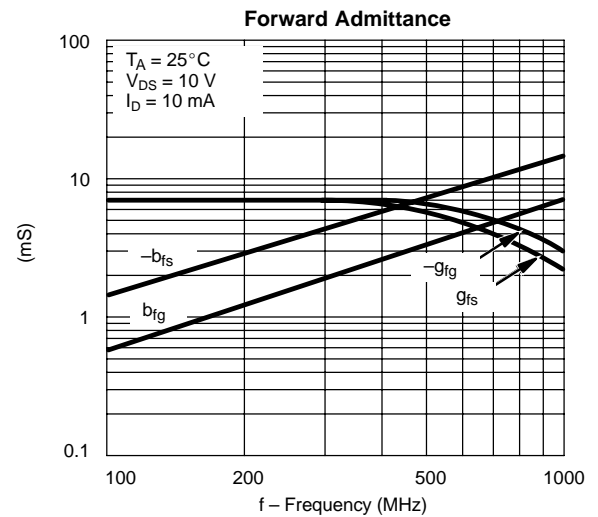
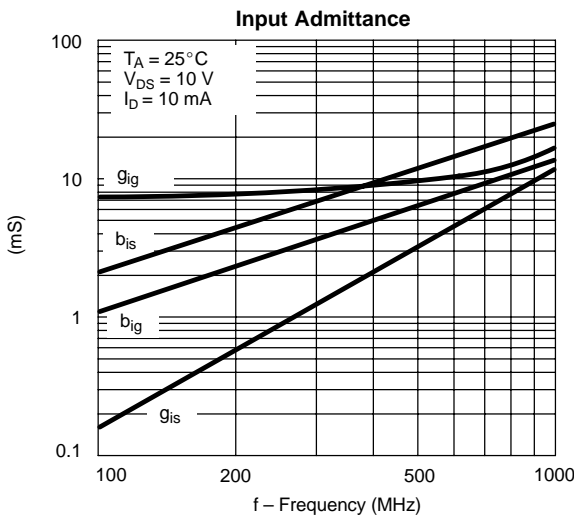
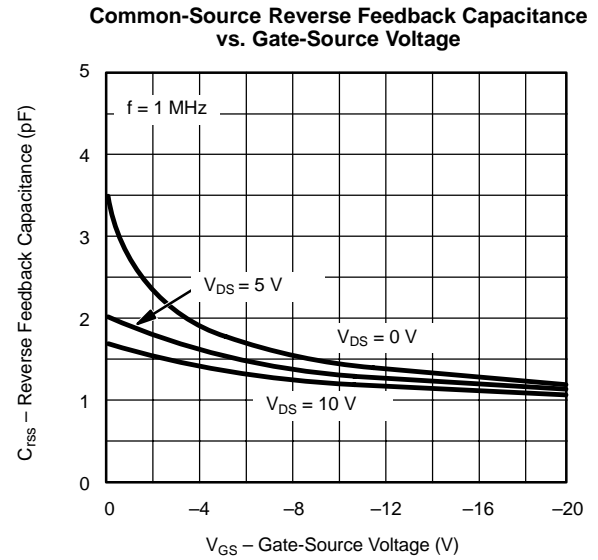
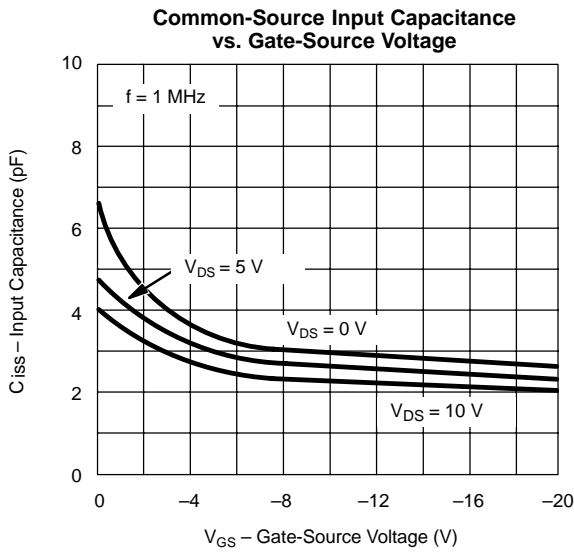
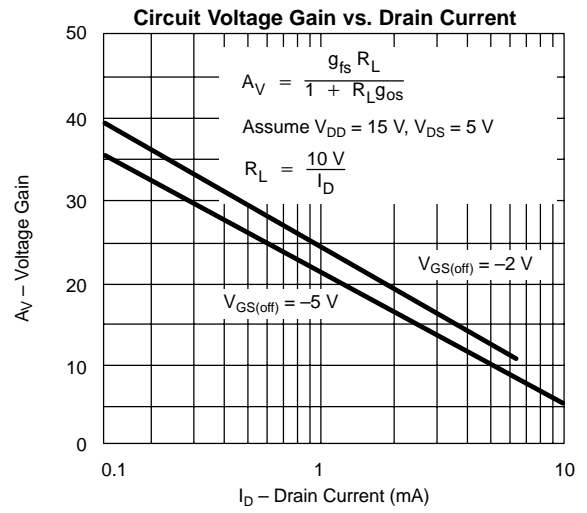
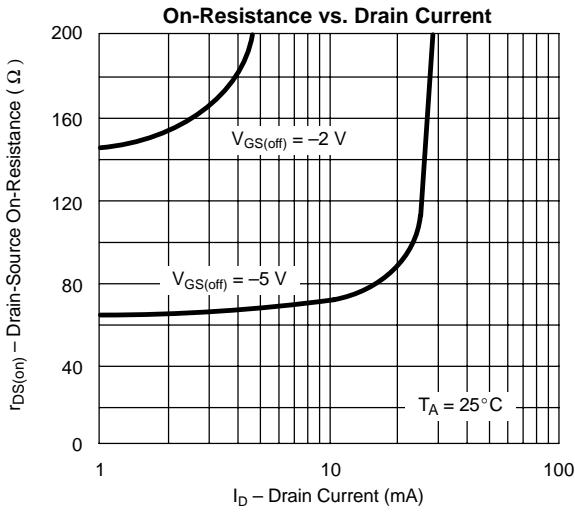
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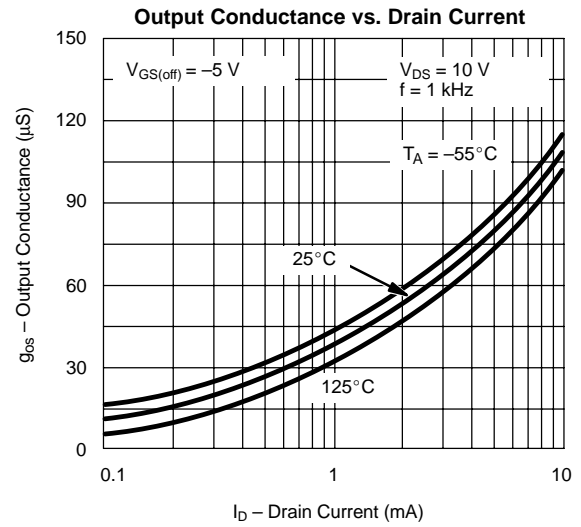
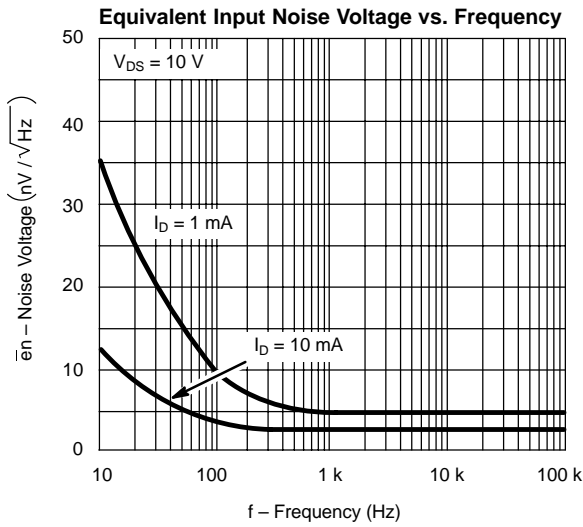
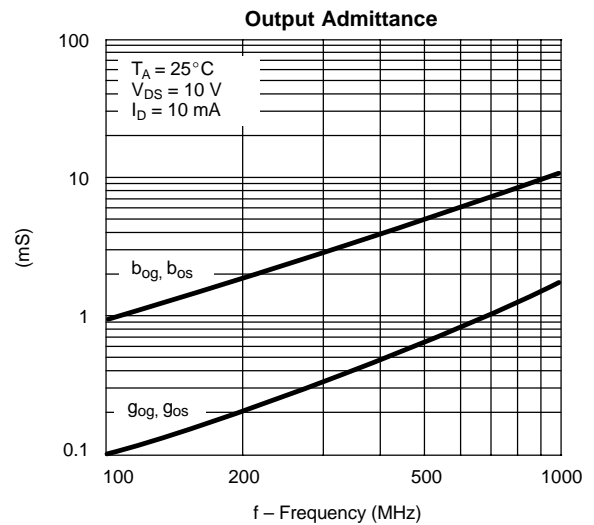
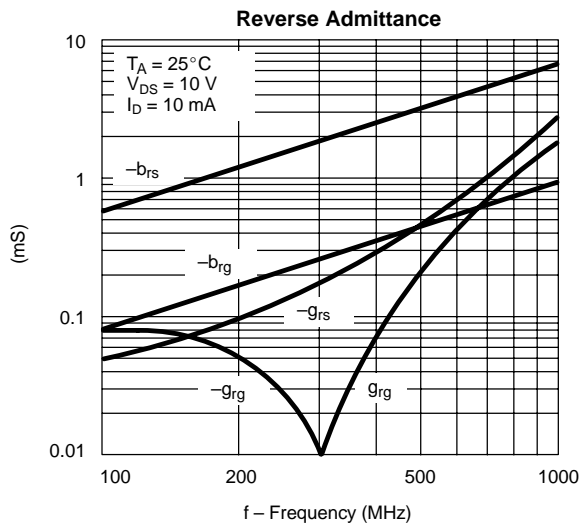


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