
2SK168

Silicon N-Channel Junction FET

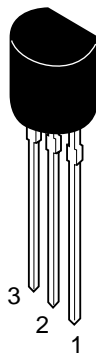
HITACHI

Application

VHF Amplifier, Mixer, Local oscillator

Outline

TO-92 (2)



1. Gate
2. Source
3. Drain

Absolute Maximum Ratings (Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---------------------------|-----------|-------------|------|
| Gate to drain voltage | V_{GDO} | -30 | V |
| Gate to source voltage | V_{GSS} | -1 | V |
| Gate current | I_G | 10 | mA |
| Drain current | I_D | 20 | mA |
| Channel power dissipation | Pch | 200 | mW |
| Channel temperature | Tch | 150 | °C |
| Storage temperature | Tstg | -55 to +150 | °C |

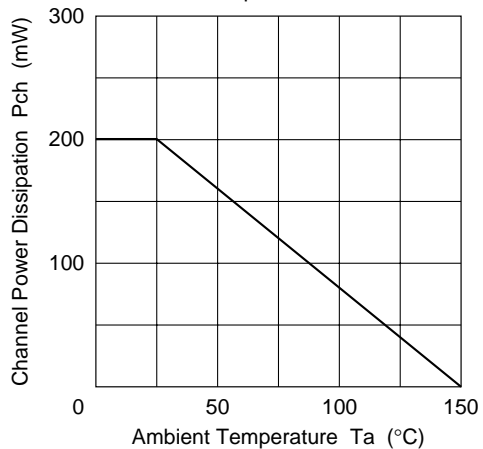
Electrical Characteristics (Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|---------------------------------|----------------|-----|-----|------|------|---|
| Gate to drain breakdown voltage | $V_{(BR)GDO}$ | -30 | — | — | V | $I_G = -100 \mu A, I_S = 0$ |
| Gate cutoff current | I_{GSS} | — | — | -10 | nA | $V_{GS} = -0.5 V, V_{DS} = 0$ |
| Drain current | I_{DSS}^{*1} | 4 | — | 20 | mA | $V_{DS} = 5 V, V_{GS} = 0$ |
| Gate to source cutoff voltage | $V_{GS(off)}$ | — | — | -3.0 | V | $V_{DS} = 5 V, I_D = 10 \mu A$ |
| Forward transfer admittance | $ y_{fs} $ | 8 | 10 | — | mS | $V_{DS} = 5 V, V_{GS} = 0, f = 1 \text{ kHz}$ |
| Input capacitance | Ciss | — | 6.8 | — | pF | $V_{DS} = 5 V, V_{GS} = 0, f = 1 \text{ MHz}$ |
| Reverse transfer capacitance | Crss | — | 0.1 | — | pF | $V_{DS} = 5 V, V_{GS} = 0, f = 1 \text{ MHz}$ |
| Power gain | PG | — | 27 | — | dB | $V_{DS} = 5 V, V_{GS} = 0, f = 100 \text{ MHz}$ |
| Noise figure | NF | — | 1.7 | — | dB | $V_{DS} = 5 V, V_{GS} = 0, f = 100 \text{ MHz}$ |

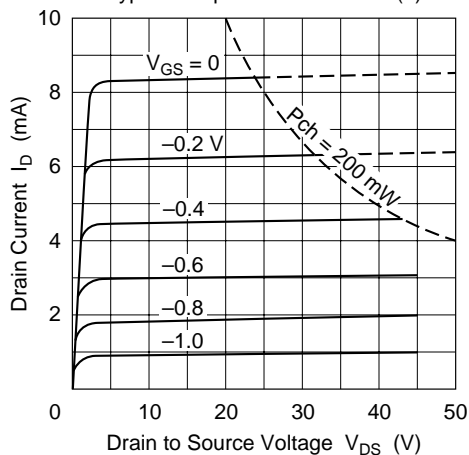
Note: 1. The 2SK168 is grouped by I_{DSS} as follows.

| D | E | F |
|--------|---------|----------|
| 4 to 8 | 6 to 12 | 10 to 20 |

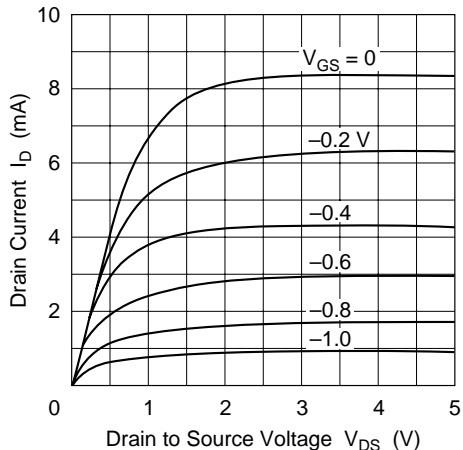
Maximum Channel Power Dissipation Curve



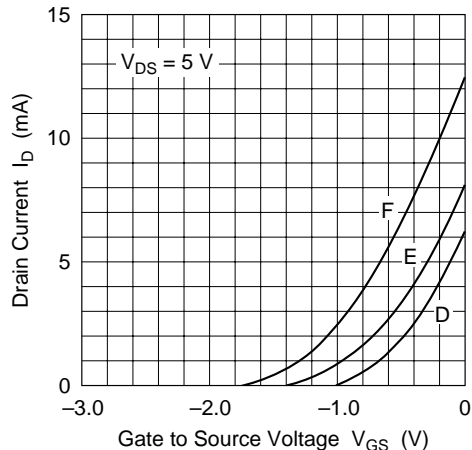
Typical Output Characteristics (1)

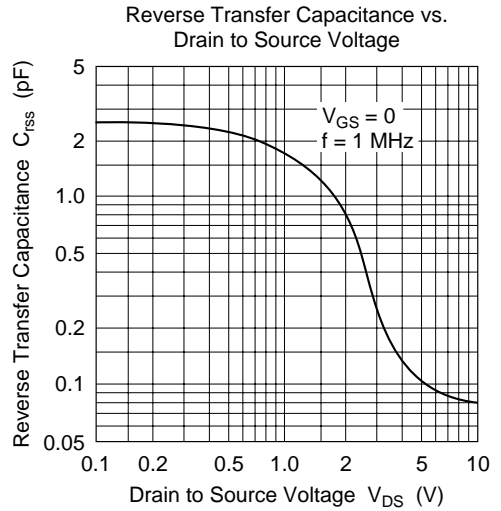
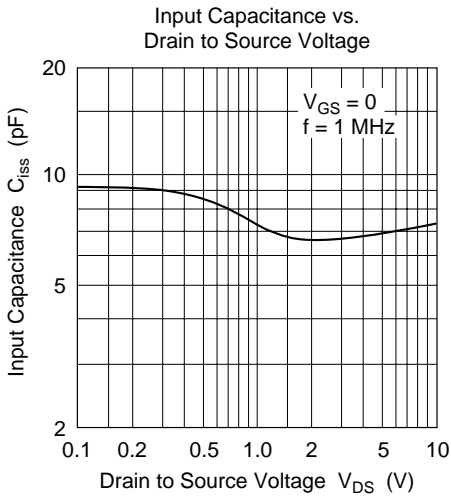
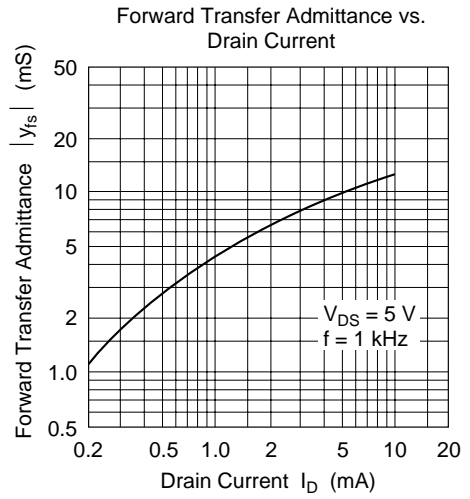
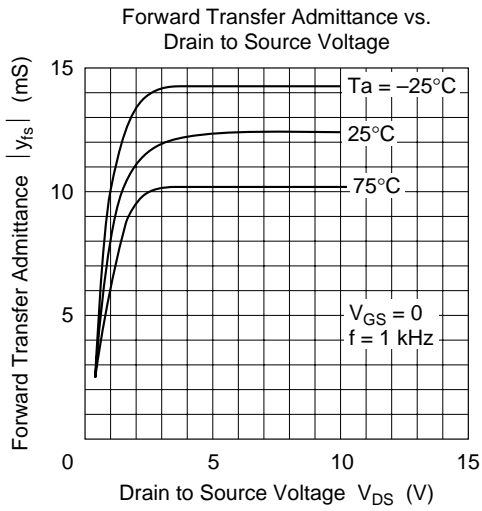


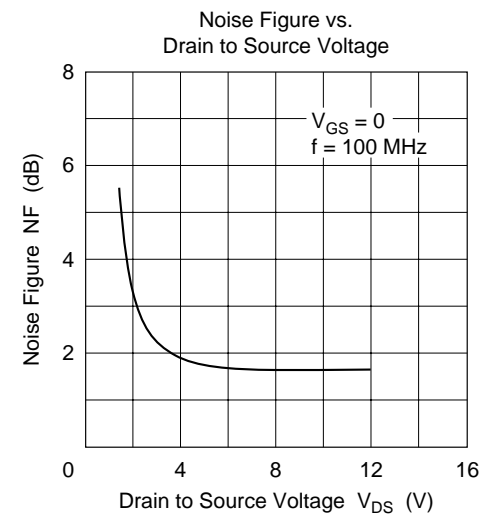
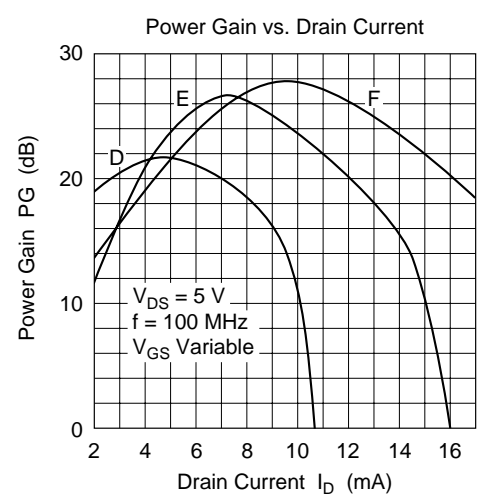
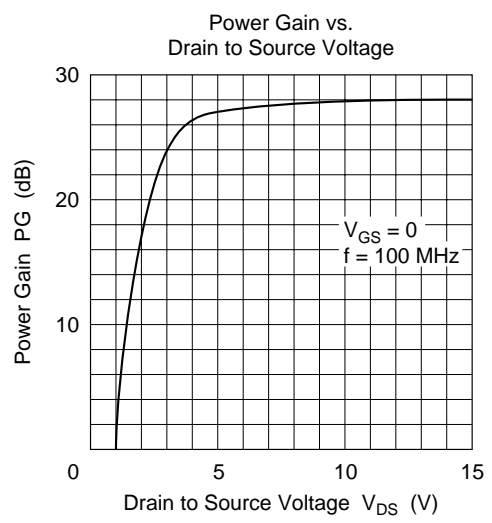
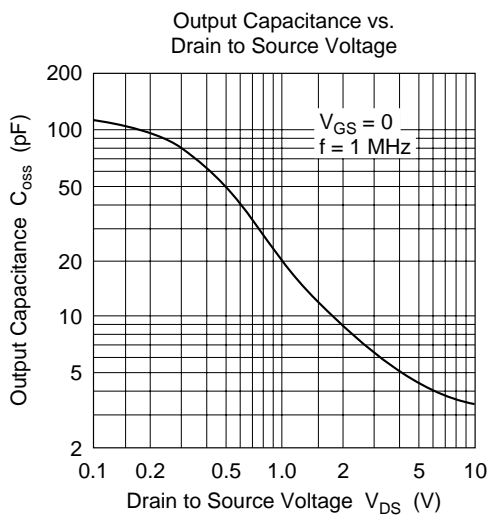
Typical Output Characteristics (2)



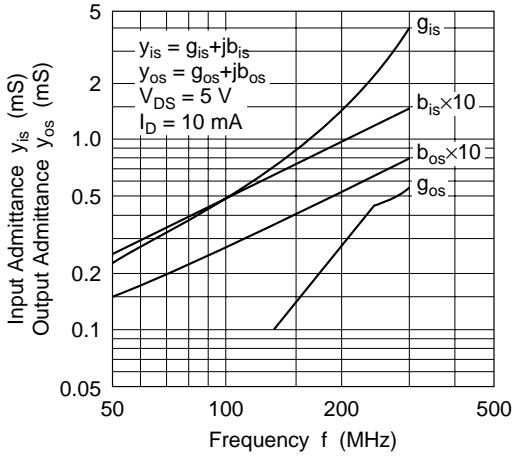
Typical Transfer Characteristics



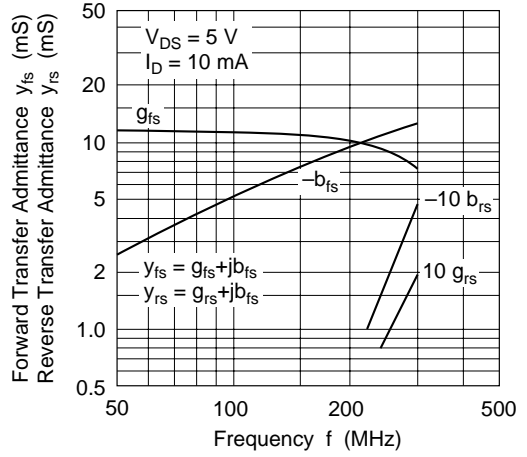




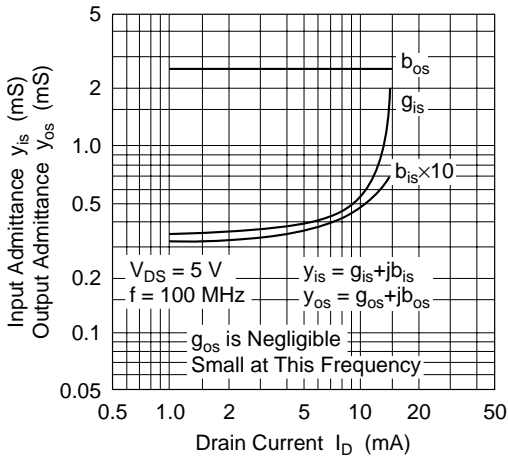
Input and Output Admittance vs. Frequency



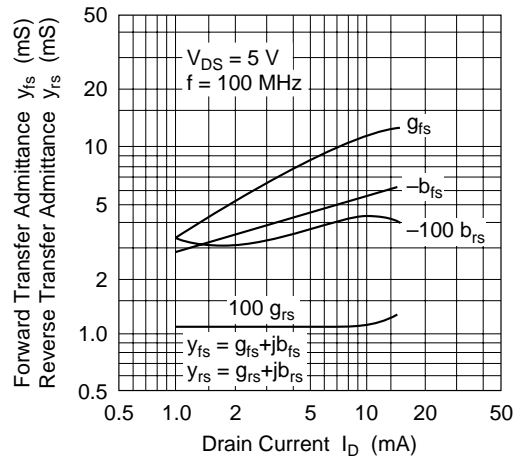
Transfer Admittance vs. Frequency



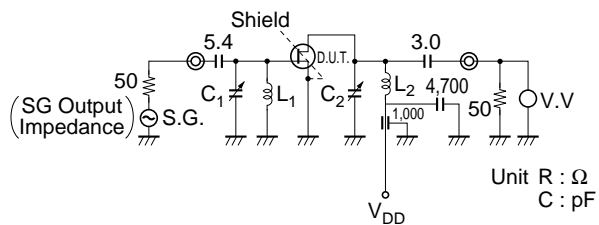
Input and Output Admittance vs. Drain Current



Transfer Admittance vs. Drain Current



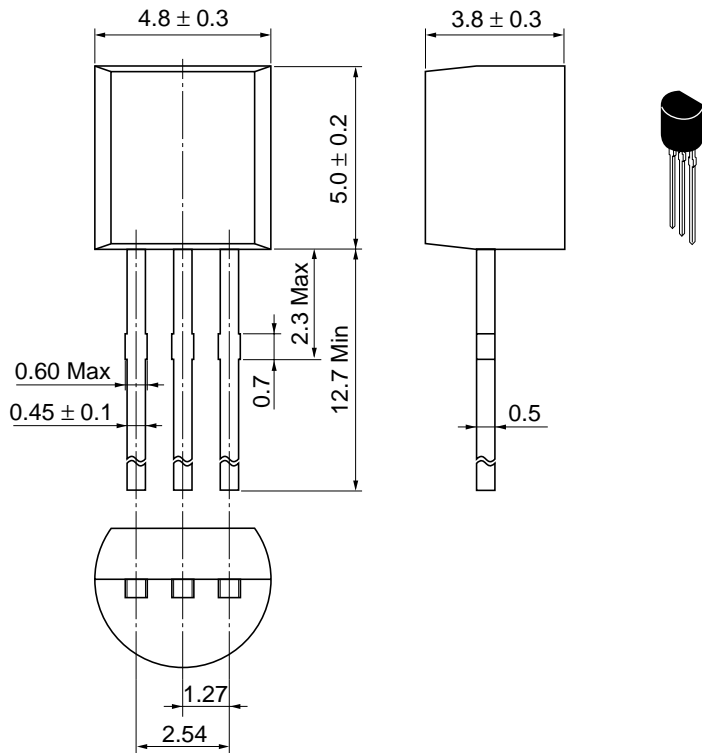
Power Gain and Noise Figure
Test Circuit



C_1, C_2 : 0 to 30 pF Variable Air

L_1 : 3.5 T 1 mm ϕ Copper Ribbon, Tin plated 10 mm Inside dia.

L_2 : 4.5 T 1 mm ϕ Copper Ribbon, Tin plated 10 mm Inside dia.



| | |
|--------------------------|-----------|
| Hitachi Code | TO-92 (2) |
| JEDEC | Conforms |
| EIAJ | Conforms |
| Weight (reference value) | 0.25 g |

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