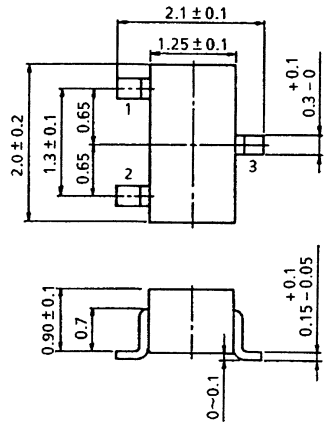
TOSHIBA Field Effect Transistor Silicon N Channel MOS Type

# 2SK882

FM Tuner, VHF RF Amplifier Applications

- Low reverse transfer capacitance: $C_{rss}$ = 0.025 pF (typ.)
- Low noise figure: NF = 1.7dB (typ.)
- High power gain: $G_{ps}$ = 28dB (typ.)
- Recommend operation voltage: 5~15 V

Unit: mm




| | |
|---|---|
| JEDEC | — |
| JEITA | SC-70 |
| TOSHIBA | 2-2E1C |

Weight: 0.006 g (typ.)

## Absolute Maximum Ratings (Ta = 25°C)

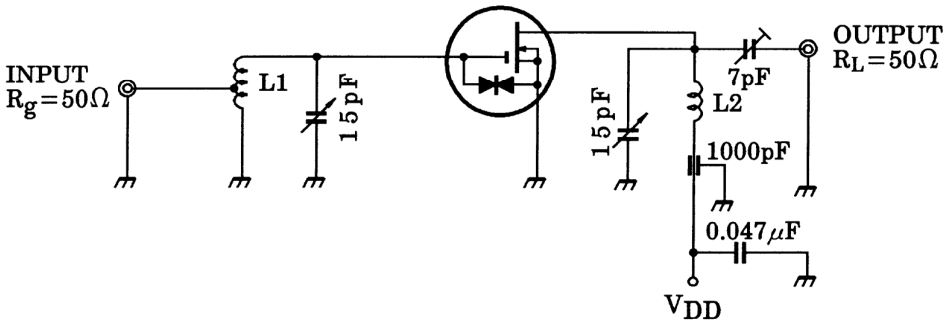
| Characteristics | Symbol | Rating | Unit |
|---|---|---|---|
| Drain-source voltage | $V_{DS}$ | 20 | V |
| Gate-source voltage | $V_{GS}$ | ±5 | V |
| Drain current | $I_D$ | 30 | mA |
| Drain power dissipation | $P_D$ | 100 | mW |
| Channel temperature | $T_{ch}$ | 125 | °C |
| Storage temperature | $T_{stg}$ | −55~125 | °C |

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/“Derating Concept and Methods”) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

## Electrical Characteristics (Ta = 25°C)

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|
| Gate leakage current | $I_{GSS}$ | $V_{DS}$ = 0, $V_{GS}$ = ±5 V | — | — | ±50 | nA |
| Drain-source voltage | $V_{DSX}$ | $V_{GS}$ = −4 V, $I_D$ = 100 μA | 20 | — | — | V |
| Drain current | $I_{DSS}$ (Note) | $V_{DS}$ = 10 V, $V_{GS}$ = 0 | 3 | — | 14 | mA |
| Gate-source cut-off voltage | $V_{GS\ (OFF)}$ | $V_{DS}$ = 10 V, $I_D$ = 100 μA | — | — | −2.5 | V |
| Forward transfer admittance | $\|Y_{fs}\|$ | $V_{DS}$ = 10 V, $V_{GS}$ = 0, f = 1 kHz | — | 10 | — | mS |
| Input capacitance | $C_{iss}$ | $V_{DS}$ = 10 V, $V_{GS}$ = 0, f = 1 MHz | — | 3.0 | 4.3 | pF |
| Reverse transfer capacitance | $C_{rss}$ | | — | 0.025 | 0.04 | pF |
| Power gain | $G_{ps}$ | $V_{DS}$ = 10 V, f = 100 MHz (Figure 1) | 20 | 28 | — | dB |
| Noise figure | NF | | — | 1.7 | 3.0 | dB |

Note: $I_{DSS}$ classification Y: 3.0~7.0 mA, GR: 6.0~14.0 mA

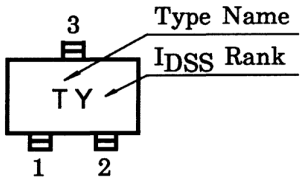



L1: 1.0 mmϕ silver plated copper wire 4.0 T, 8 mmϕ ID TAP at 1.0 T from coil end

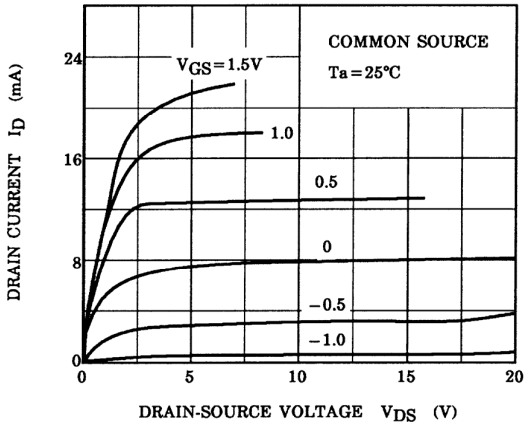
L2: 1.0 mmϕ silver plated copper wire 3.0 T, 8 mmϕ ID, 10 mm length

**Figure 1 $G_{ps}$, NF Test Circuit**

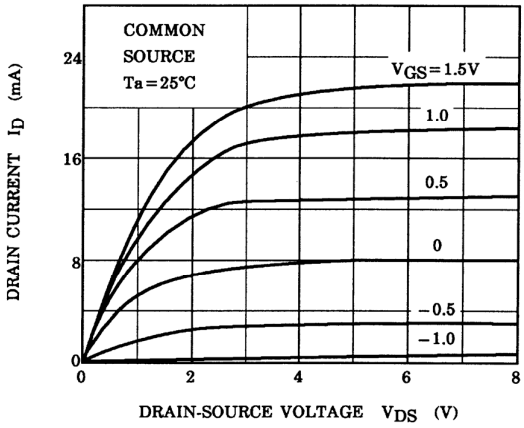
## Marking



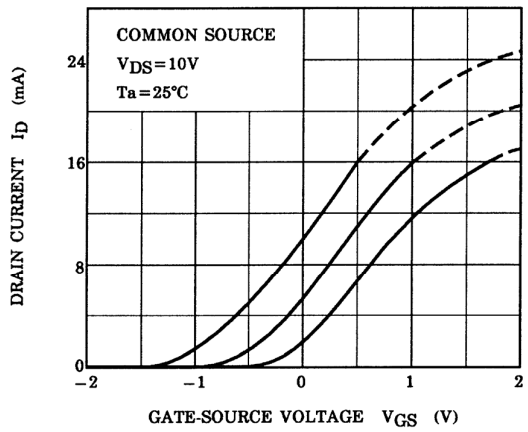
$I_D$ – $V_{DS}$



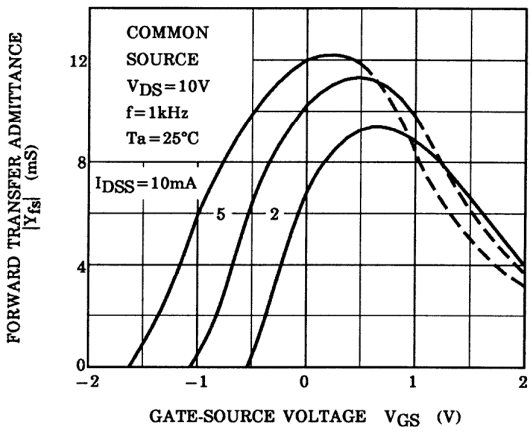

$I_D$ – $V_{DS}$ (LOW VOLTAGE REHION)



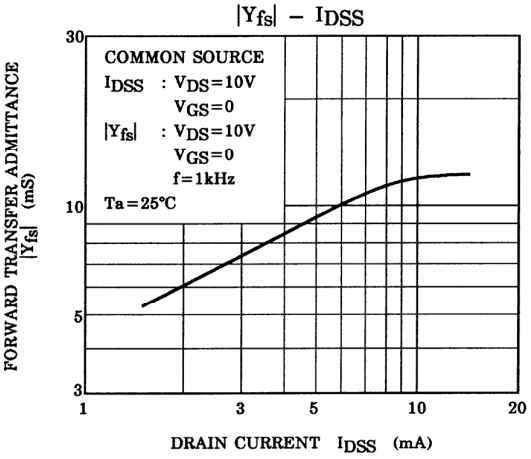

$I_D$ – $V_{GS}$



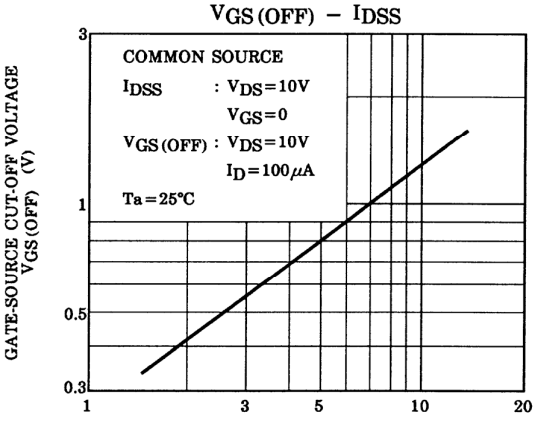

$|Y_{fs}|$ – $V_{GS}$



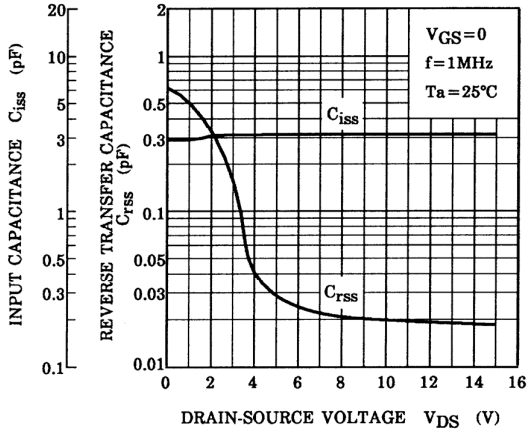

$|Y_{fs}|$ – $I_{DSS}$



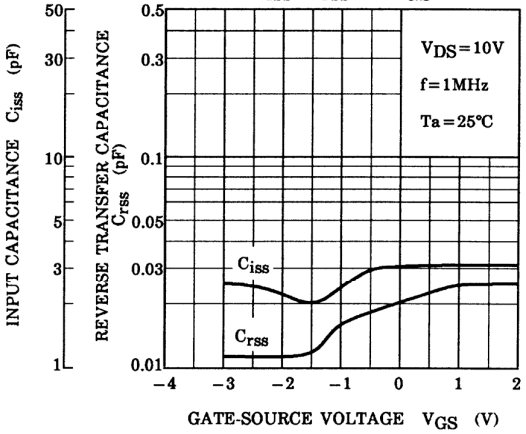

$V_{GS\,(OFF)}$ – $I_{DSS}$



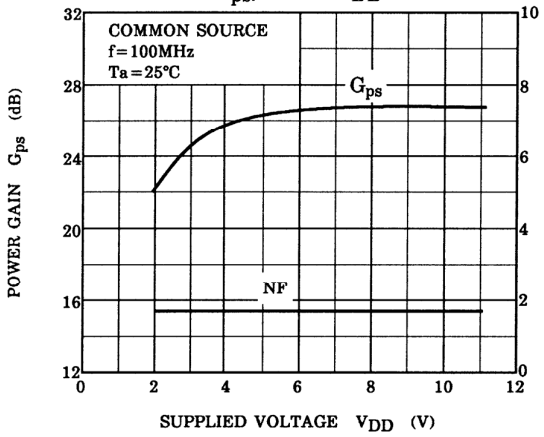
$C_{iss}$, $C_{rss}$ – $V_{DS}$



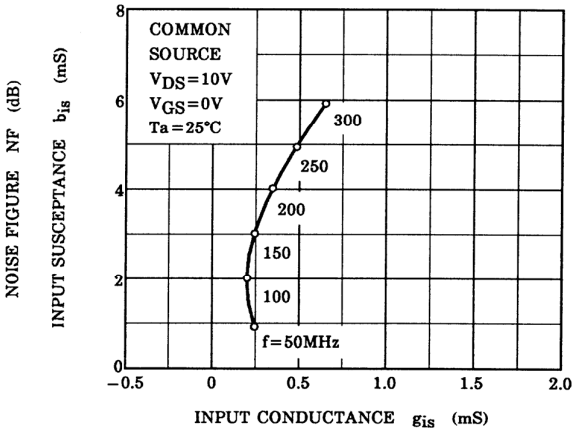

$C_{iss}$, $C_{rss}$ – $V_{GS}$



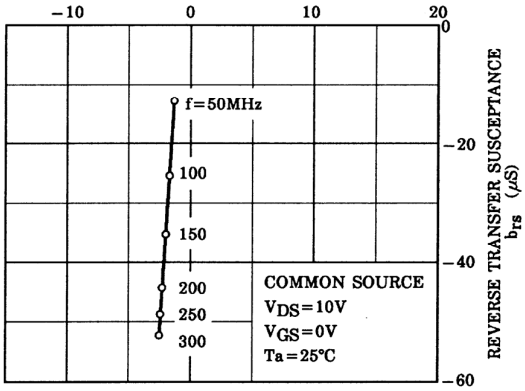

$G_{ps}$, NF – $V_{DD}$



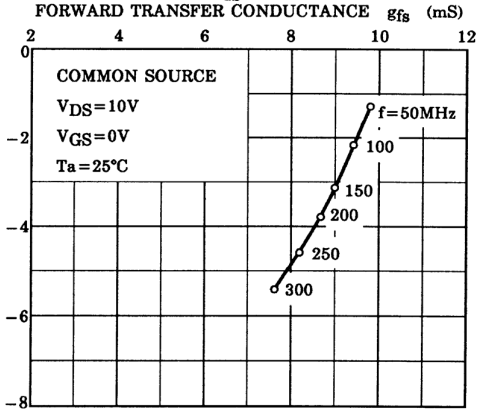

$Y_{is}$ – f

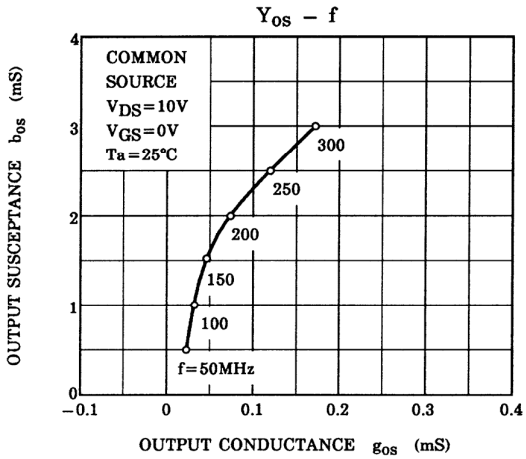


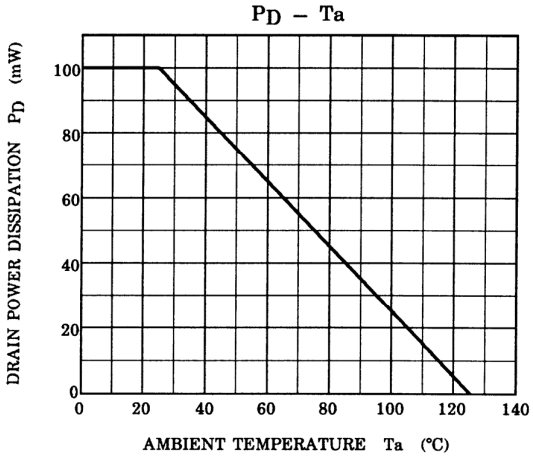

$Y_{rs}$ – f




$Y_{fs}$ – f





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20070701-EN GENERAL

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