

# 2SK302

## FM Tuner, VHF RF Amplifier Applications

- Low reverse transfer capacitance:  $C_{rss} = 0.035 \text{ pF}$  (typ.)
- Low noise figure:  $NF = 1.7\text{dB}$  (typ.)
- High power gain:  $G_{ps} = 28\text{dB}$  (typ.)
- Recommend operation voltage: 5~15 V

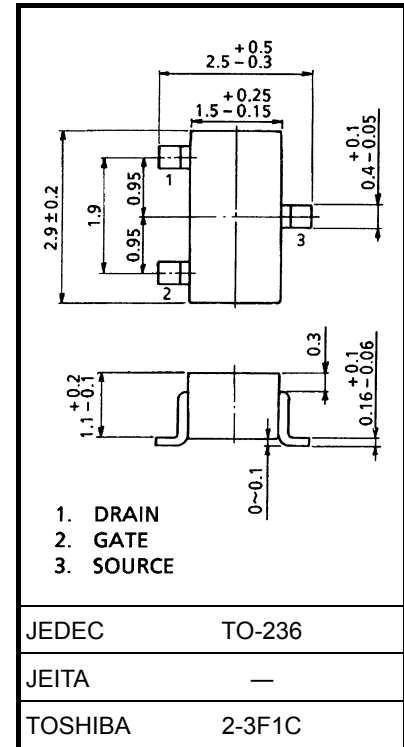
### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Characteristics	Symbol	Rating	Unit
Drain-source voltage	$V_{DS}$	20	V
Gate-source voltage	$V_{GS}$	$\pm 5$	V
Drain current	$I_D$	30	mA
Drain power dissipation	$P_D$	150	mW
Channel temperature	$T_{ch}$	125	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55~125	$^\circ\text{C}$

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).

Unit: mm

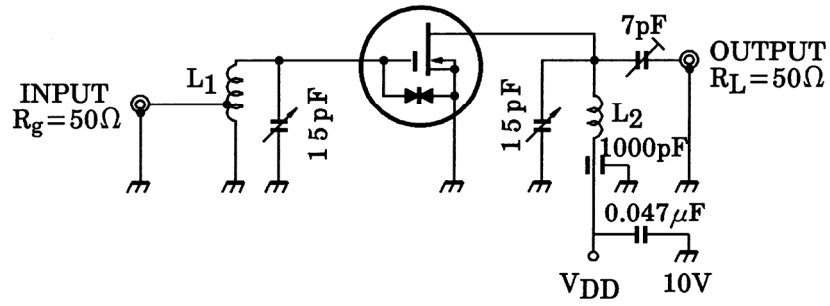


Weight: 0.012 g (typ.)

### Electrical Characteristics ( $T_a = 25^\circ\text{C}$ )

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	$I_{GSS}$	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 5 \text{ V}$	—	—	$\pm 50$	nA
Drain-source voltage	$V_{DSX}$	$V_{GS} = -4 \text{ V}, I_D = 100 \mu\text{A}$	20	—	—	V
Drain current	$I_{DSS}$ (Note)	$V_{DS} = 10 \text{ V}, V_{GS} = 0 \text{ V}$	1.5	—	14	mA
Gate-source cut-off voltage	$V_{GS(OFF)}$	$V_{DS} = 10 \text{ V}, I_D = 100 \mu\text{A}$	—	—	-2.5	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ kHz}$	—	10	—	mS
Input capacitance	$C_{iss}$	$V_{DS} = 10 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	—	3.0	—	pF
Reverse transfer capacitance	$C_{rss}$		—	0.035	0.050	pF
Power gain	$G_{ps}$	$V_{DS} = 10 \text{ V}, V_{GS} = 0 \text{ V},$ $f = 100 \text{ MHz}$ (Figure 1)	—	28	—	dB
Noise figure	NF		—	1.7	3.0	dB

Note:  $I_{DSS}$  classification O: 1.5~3.5 mA, Y: 3.0~7.0 mA, GR: 6.0~14.0 mA

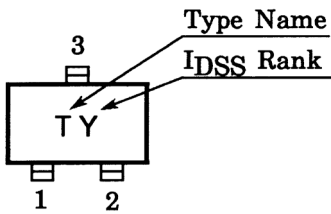


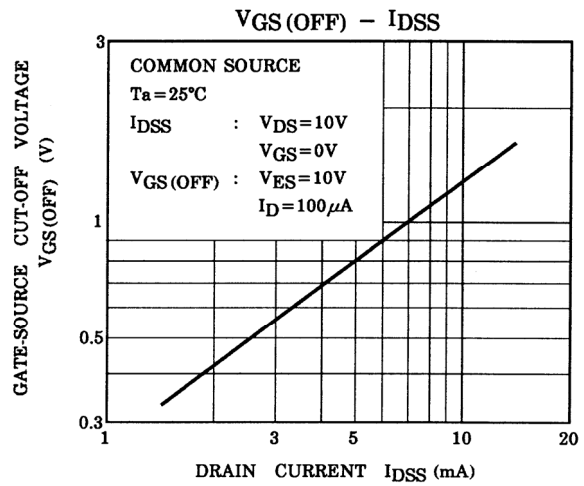
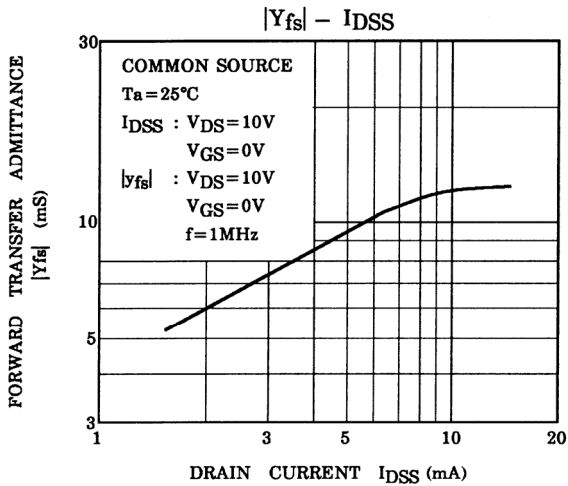
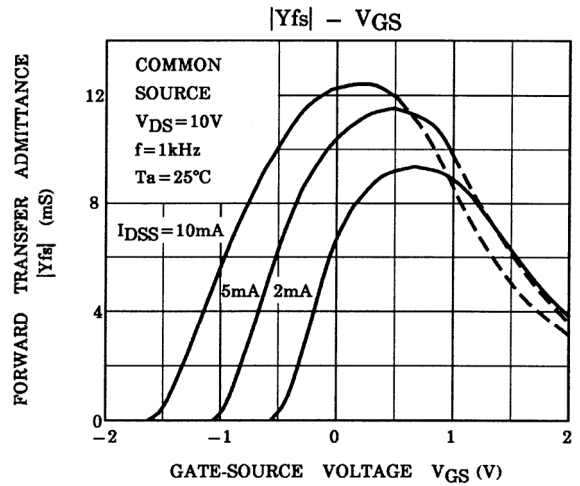
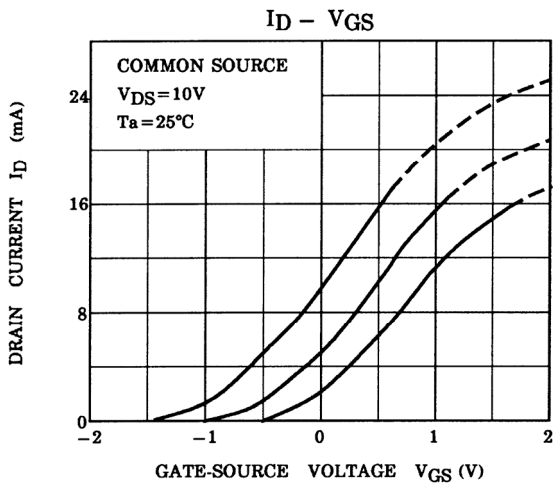
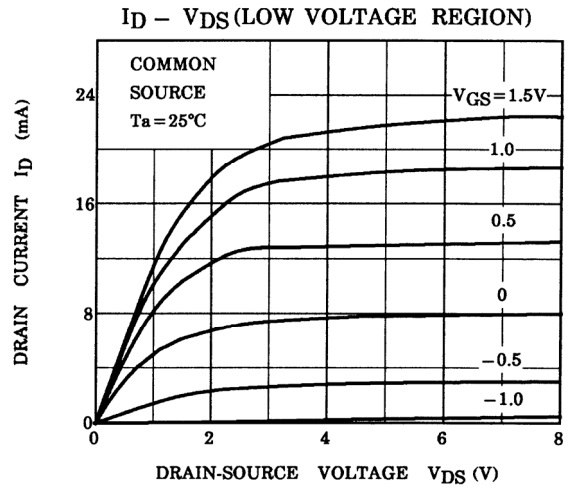
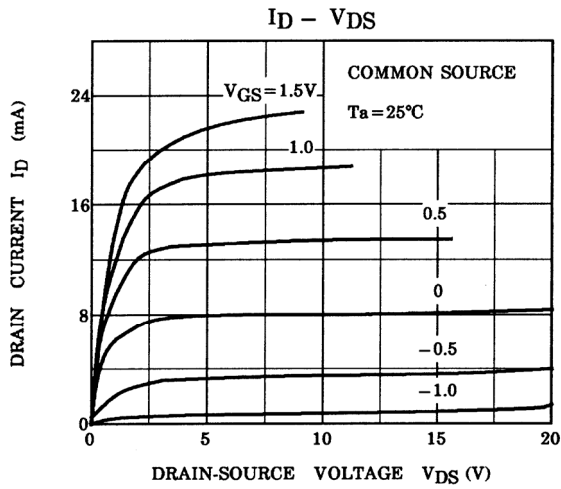
L1: 1.0 mmφ silver plated copper wire 4.0 T, 8 mmφ ID TAP at 1.0 T from coil end

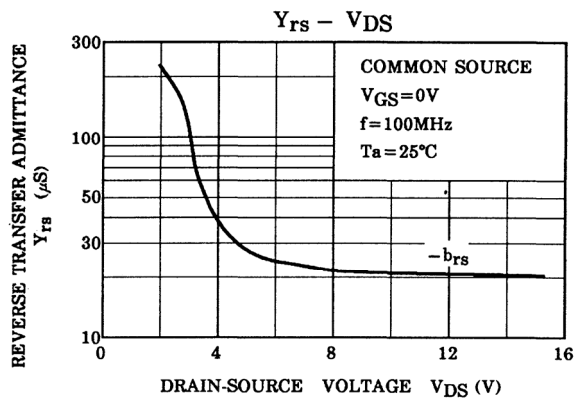
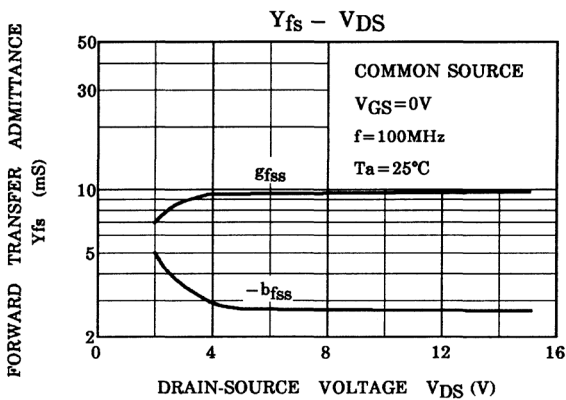
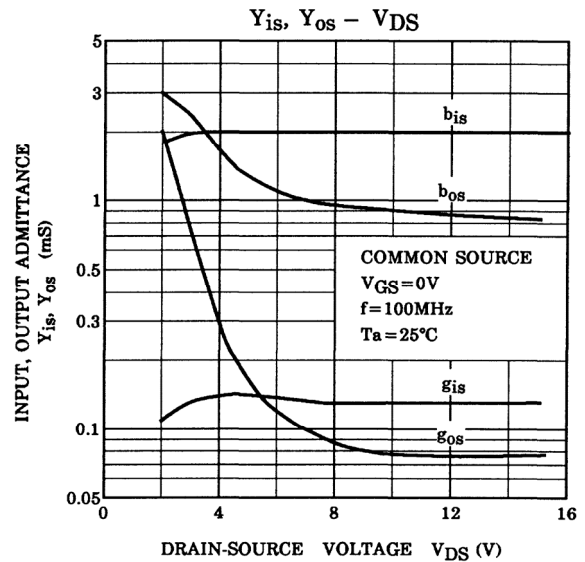
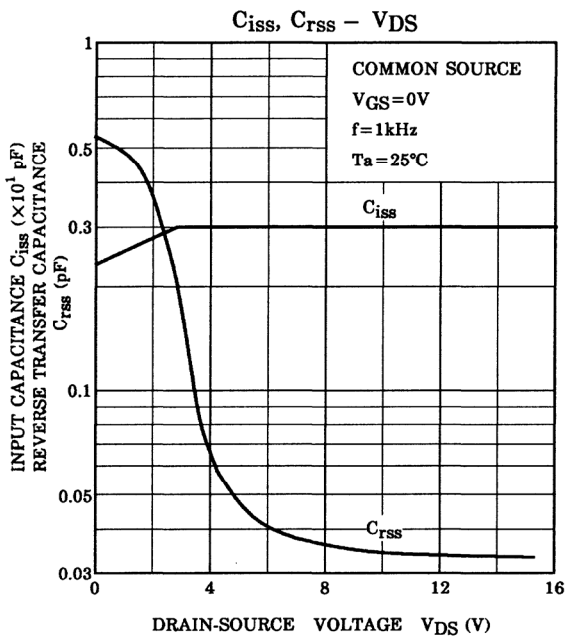
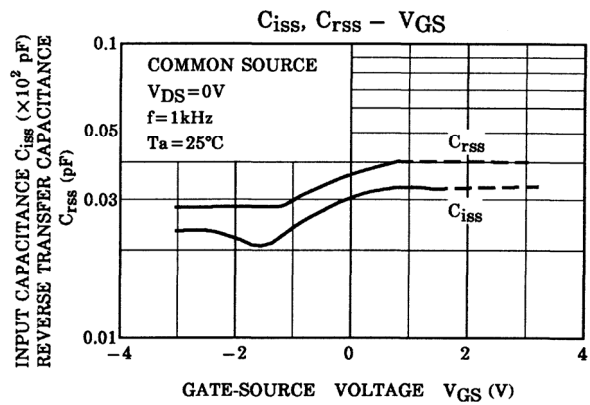
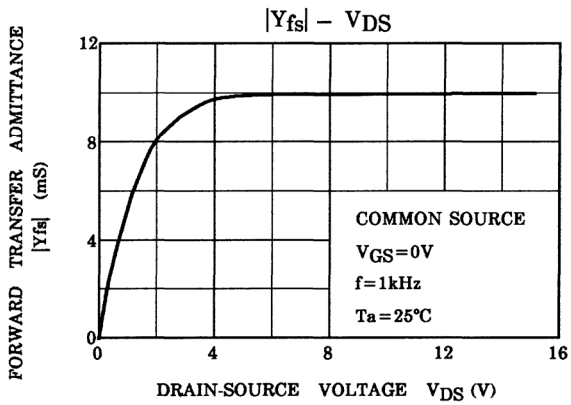
L2: 1.0 mmφ silver plated copper wire 3.0 T, 8 mmφ ID, 10 mm length

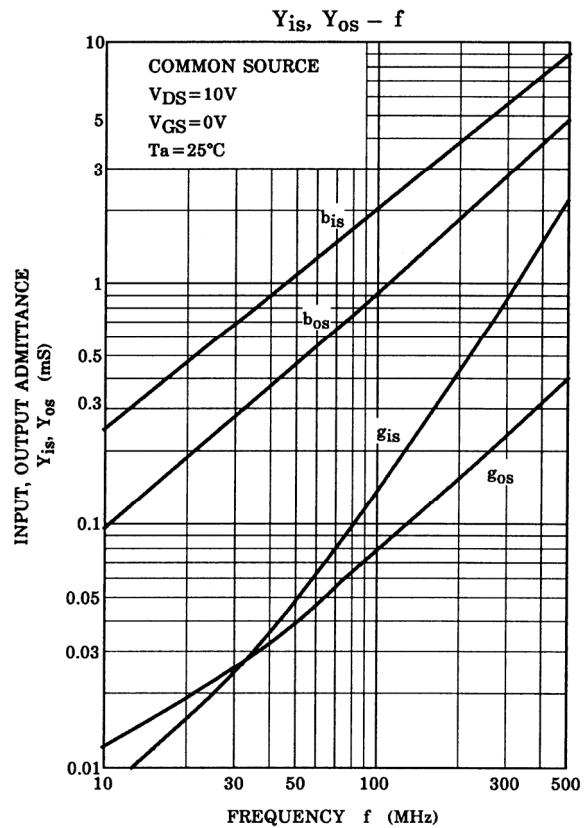
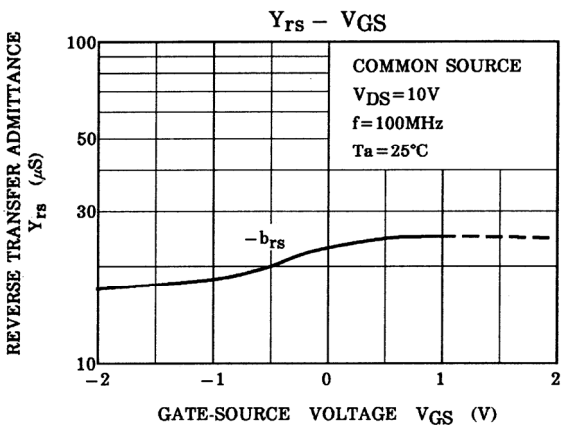
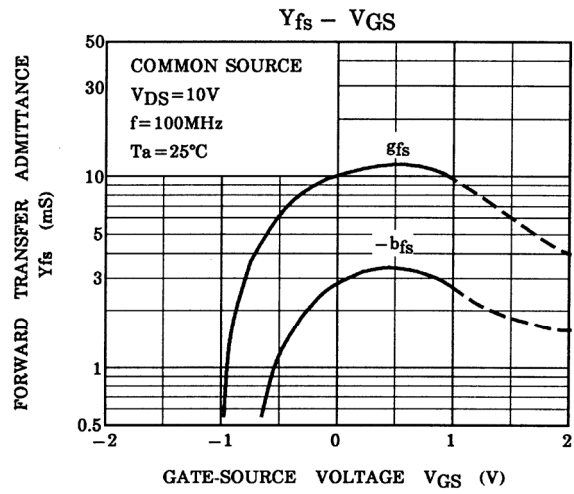
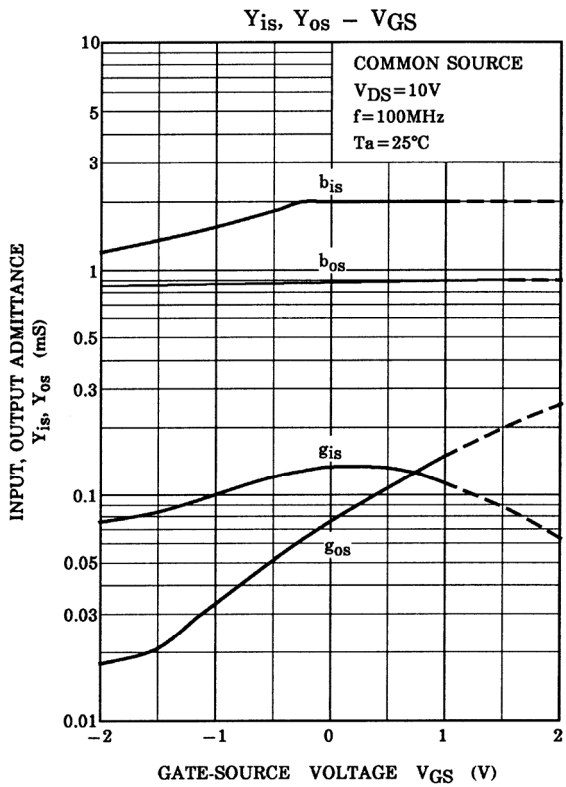
**Figure 1 Gps, NF Test Circuit**

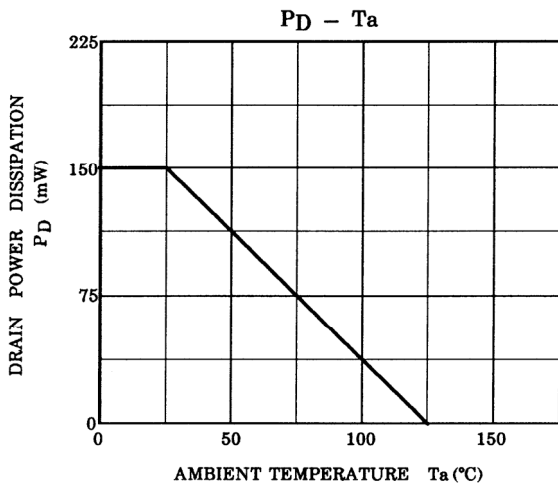
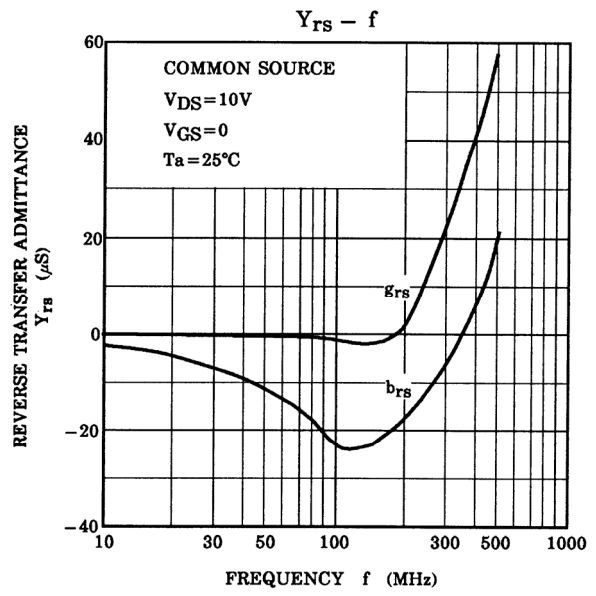
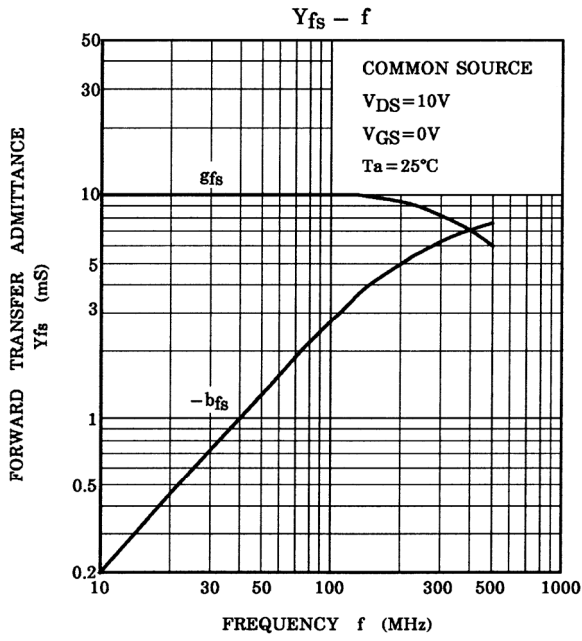
**Marking**











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20070701-EN GENERAL

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