

# 2SK211

FM Tuner Applications

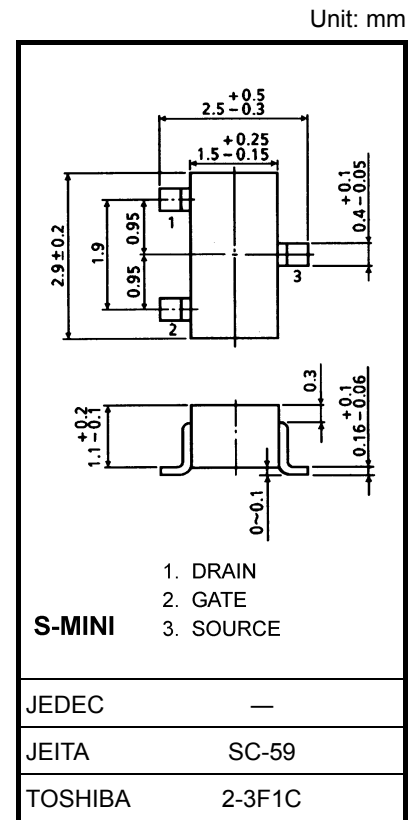
VHF Band Amplifier Applications

- Low noise figure:  $NF = 2.5\text{dB (typ.)}$  ( $f = 100\text{ MHz}$ )
- High forward transfer admittance:  $|Y_{fs}| = 9\text{ mS (typ.)}$
- Extremely low reverse transfer capacitance:  $C_{rss} = 0.1\text{ pF (typ.)}$

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

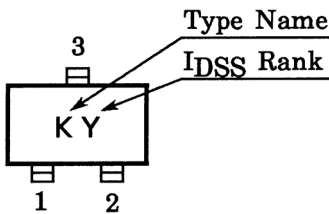
Characteristics	Symbol	Rating	Unit
Gate-drain voltage	$V_{GDO}$	-18	V
Gate current	$I_G$	10	mA
Drain power dissipation	$P_D$	150	mW
Junction temperature	$T_j$	125	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-55~125	$^\circ\text{C}$

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).



Weight: 0.012 g (typ.)

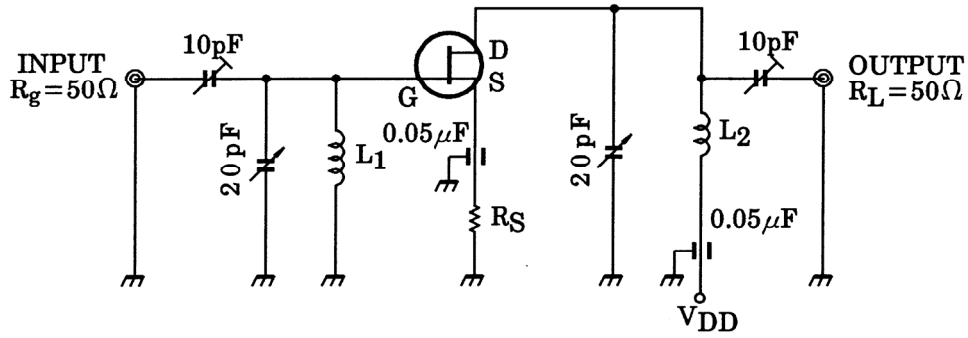
### Marking



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

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	$I_{GSS}$	$V_{GS} = -0.5\text{ V}, V_{DS} = 0\text{ V}$	—	—	-10	nA
Gate-drain breakdown voltage	$V_{(BR)GDO}$	$I_G = -100\text{ }\mu\text{A}$	-18	—	—	V
Drain current	$I_{DSS}$ (Note)	$V_{GS} = 0\text{ V}, V_{DS} = 10\text{ V}$	1.0	—	10	mA
Gate-source cut-off voltage	$V_{GS(OFF)}$	$V_{DS} = 10\text{ V}, I_D = 1\text{ }\mu\text{A}$	-0.4	—	-4.0	V
Forward transfer admittance	$ Y_{fs} $	$V_{GS} = 0\text{ V}, V_{DS} = 10\text{ V}, f = 1\text{ kHz}$	—	9	—	mS
Input capacitance	$C_{iss}$	$V_{DS} = 10\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$	—	6.0	—	pF
Reverse transfer capacitance	$C_{rss}$	$V_{GD} = -10\text{ V}, f = 1\text{ MHz}$	—	—	0.15	pF
Power gain	$G_{PS}$	$V_{DD} = 10\text{ V}, f = 100\text{ MHz (Figure)}$	—	18	—	dB
Noise figure	NF	$V_{DD} = 10\text{ V}, f = 100\text{ MHz (Figure)}$	—	2.5	3.5	dB

Note:  $I_{DSS}$  classification O: 1.0~3.0 mA, Y: 2.5~6.0 mA, GR (G): 5.0~10.0 mA



L<sub>1</sub>: 0.8 mmφ Ag PLATED Cu WIRE 3 TURNS, 10 mm ID, 10 mm LENGTH

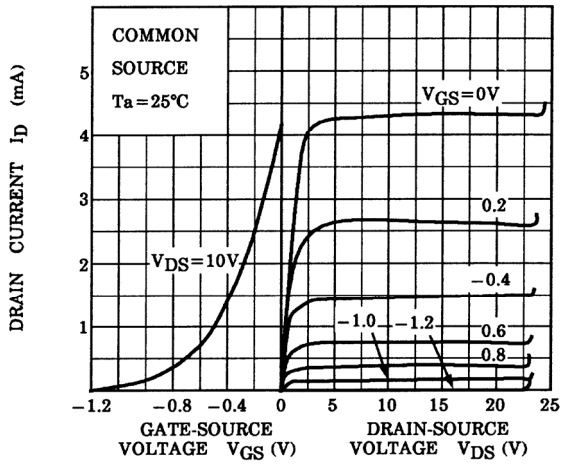
L<sub>2</sub>: 0.8 mmφ Ag PLATED Cu WIRE 3.5 TURNS, 10 mm ID, 10 mm LENGTH

**Figure 100 MHz G<sub>ps</sub>, NF Test Circuit**

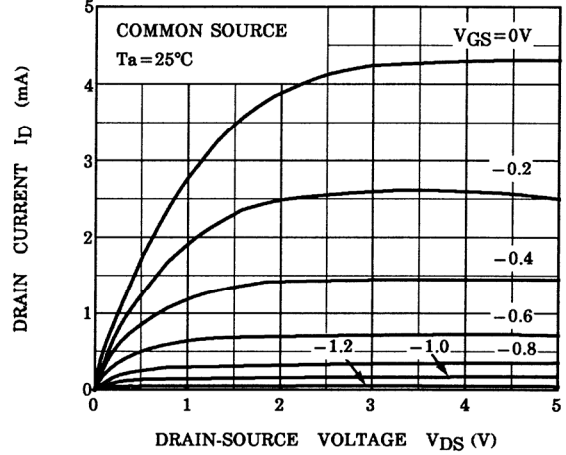
2SK211 is measured at each group by changing R<sub>s</sub>.

Group	R <sub>S</sub> (Ω)
2SK211-O	0
2SK211-Y	18 Ω ± 5%
2SK211-GR	100 Ω ± 5%

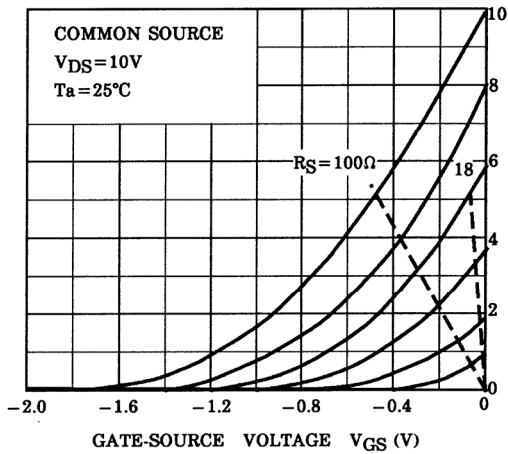
STATIC CHARACTERISTICS



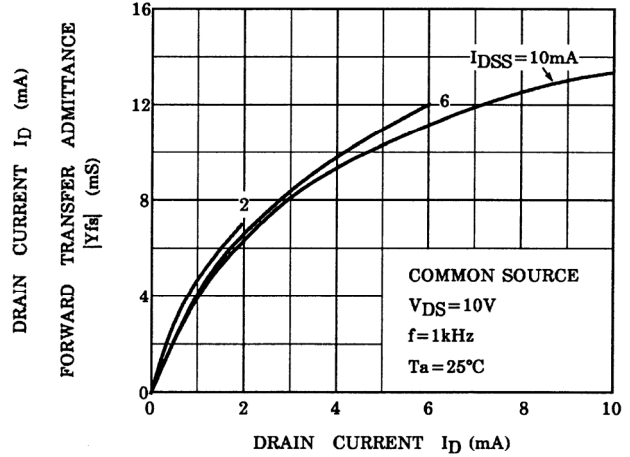
$I_D - V_{DS}$  (LOW VOLTAGE REGION)



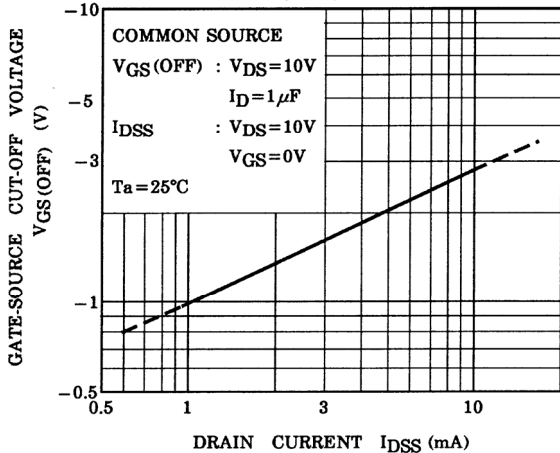
$I_D - V_{GS}$



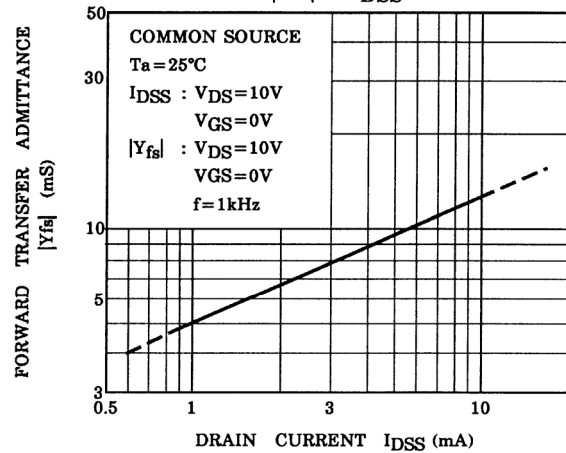
$|Y_{fs}| - I_D$

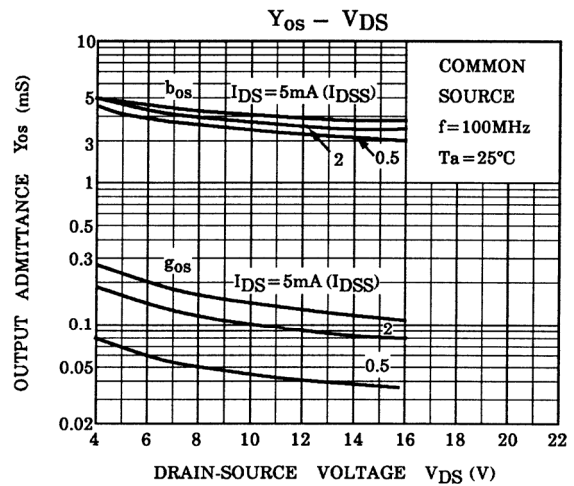
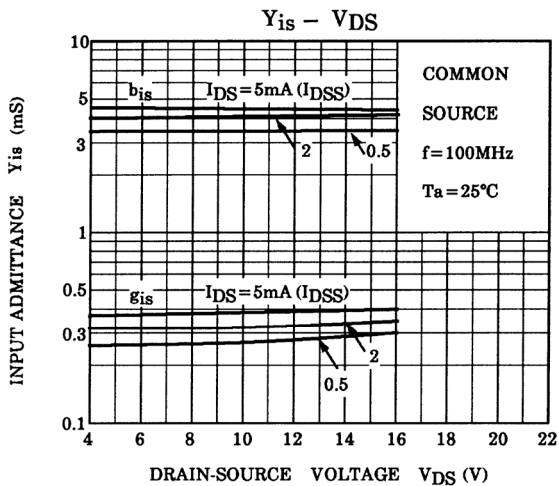
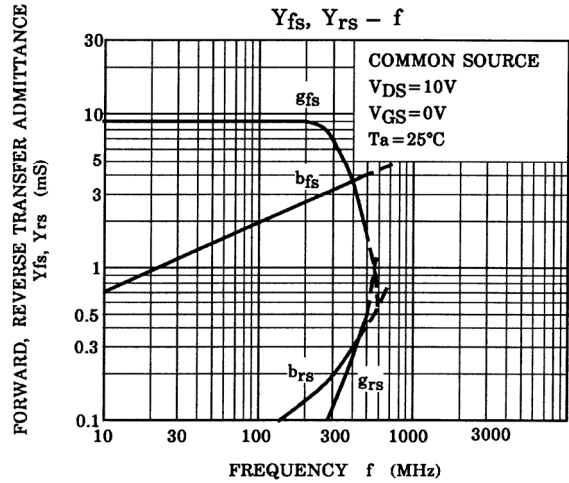
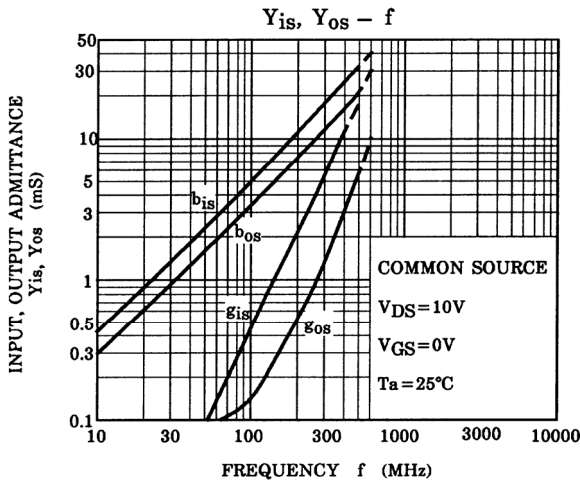
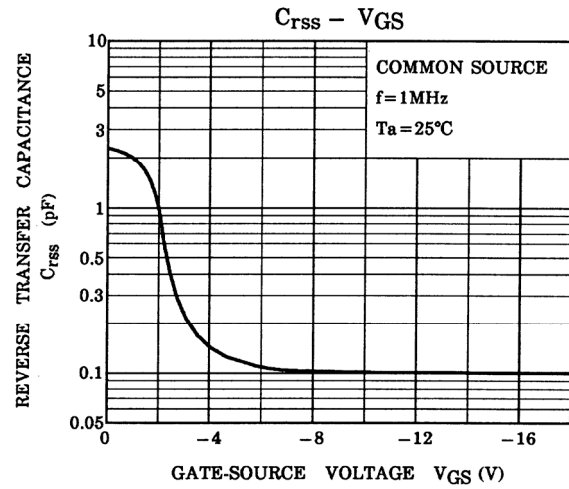
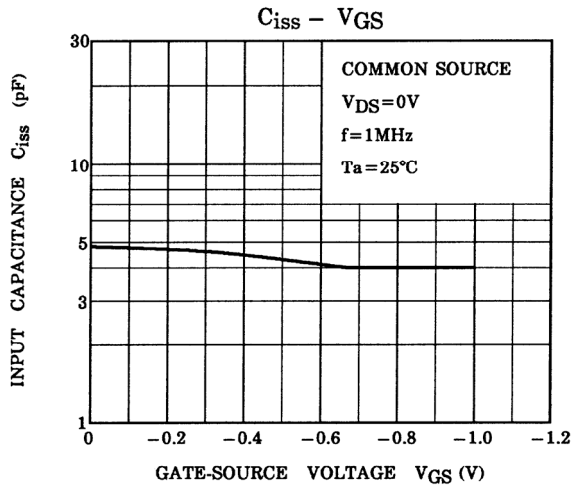


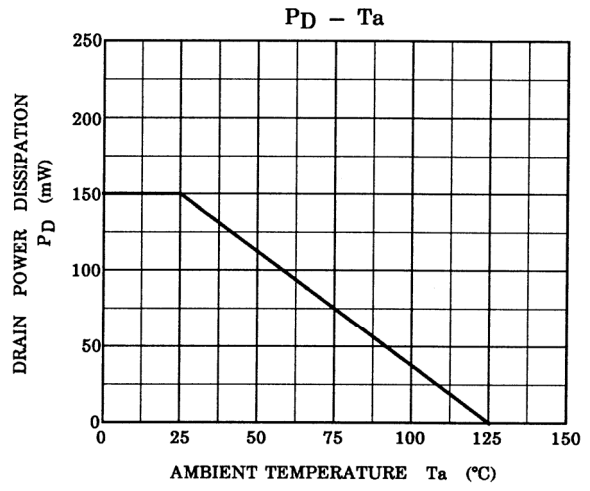
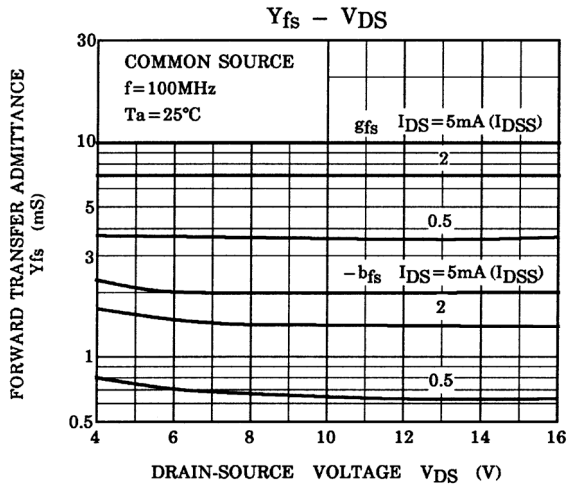
$V_{GS(OFF)} - I_{DSS}$



$|Y_{fs}| - I_{DSS}$







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20070701-EN GENERAL

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