

2SK211

FM Tuner Applications

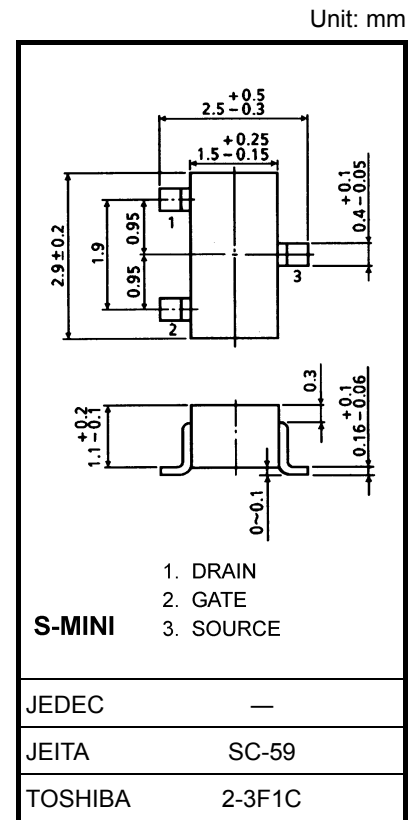
VHF Band Amplifier Applications

- 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 ($T_a = 25^\circ\text{C}$)

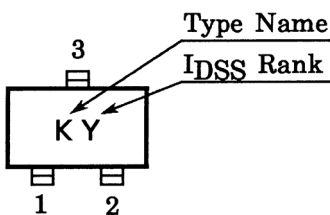
Characteristics	Symbol	Rating	Unit
Gate-drain voltage	V_{GDO}	-18	V
Gate current	I_G	10	mA
Drain power dissipation	P_D	150	mW
Junction temperature	T_j	125	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55~125	$^\circ\text{C}$

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.)

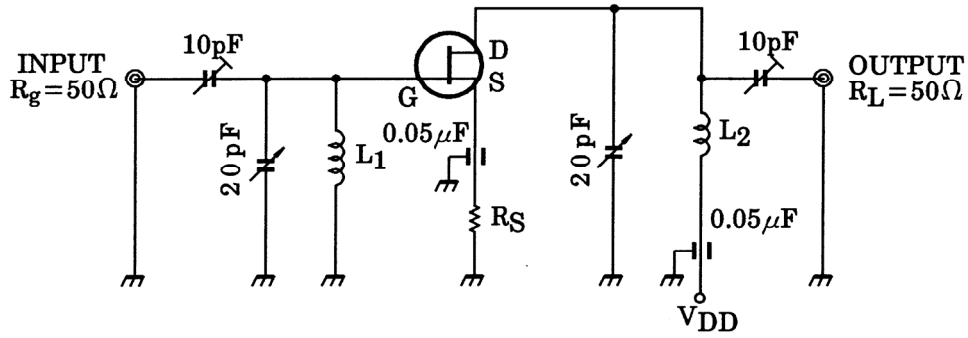
Marking



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



L1: 0.8 mmφ Ag PLATED Cu WIRE 3 TURNS, 10 mm ID, 10 mm LENGTH

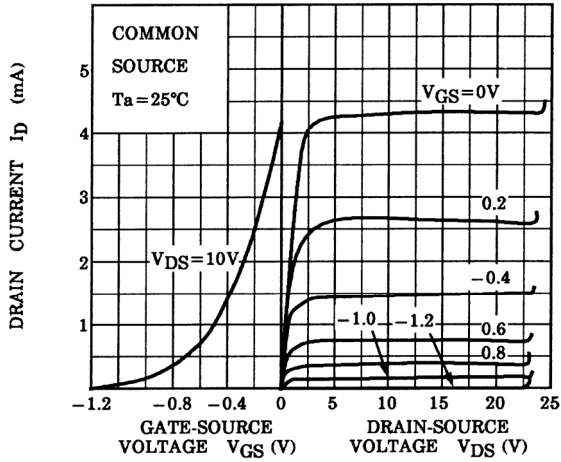
L2: 0.8 mmφ Ag PLATED Cu WIRE 3.5 TURNS, 10 mm ID, 10 mm LENGTH

Figure 100 MHz Gps, NF Test Circuit

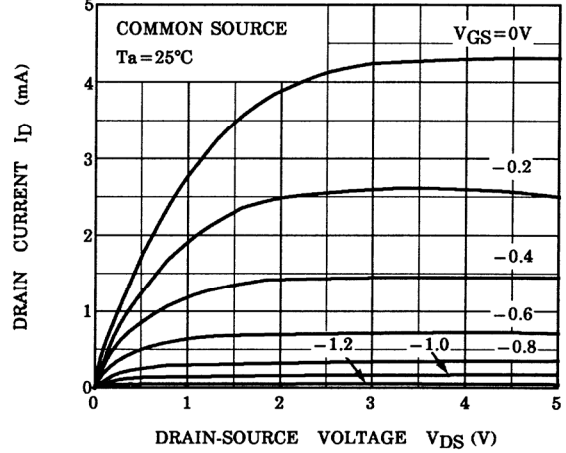
2SK211 is measured at each group by changing RS.

Group	RS (Ω)
2SK211-O	0
2SK211-Y	18 Ω ± 5%
2SK211-GR	100 Ω ± 5%

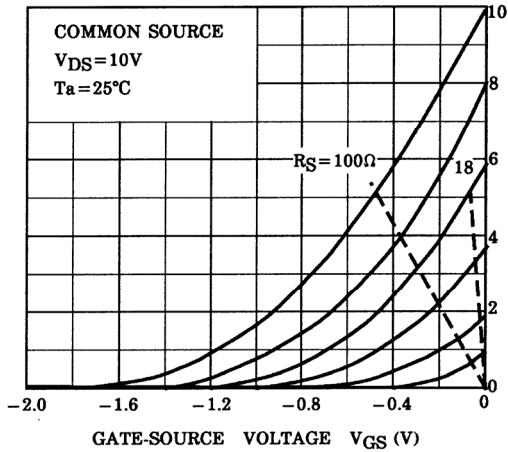
STATIC CHARACTERISTICS



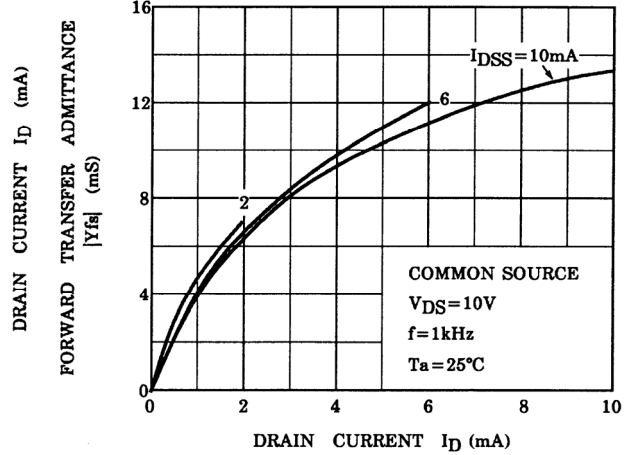
$I_D - V_{DS}$ (LOW VOLTAGE REGION)



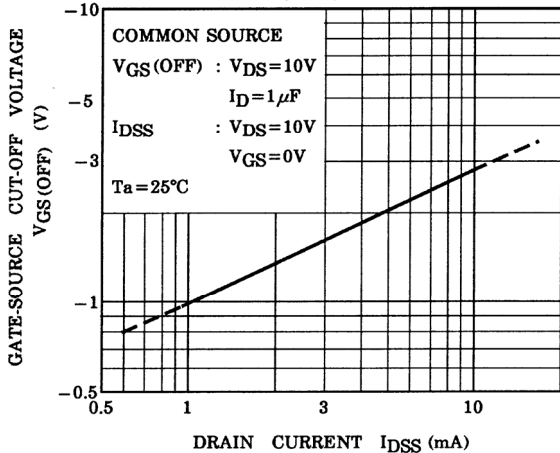
$I_D - V_{GS}$



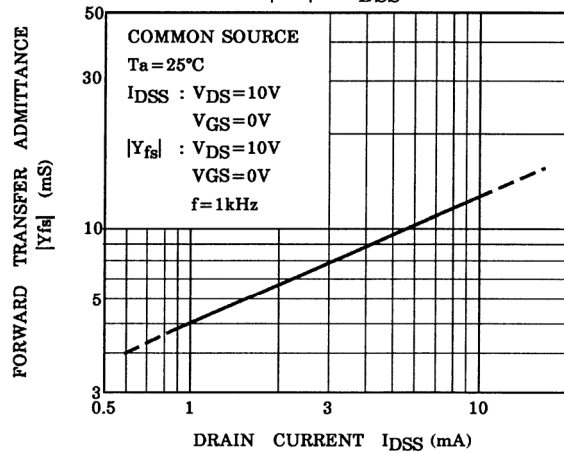
$|Y_{fs}| - I_D$

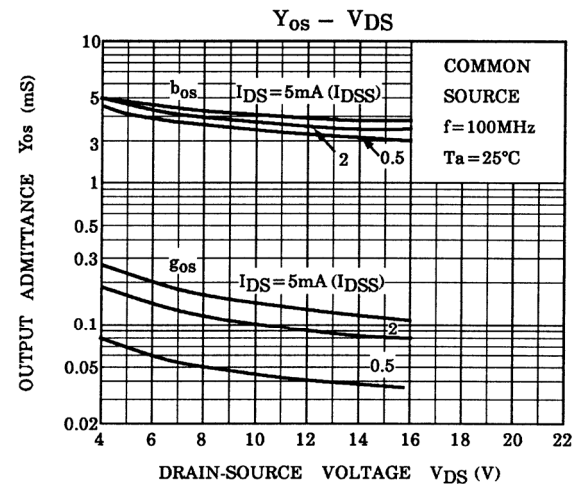
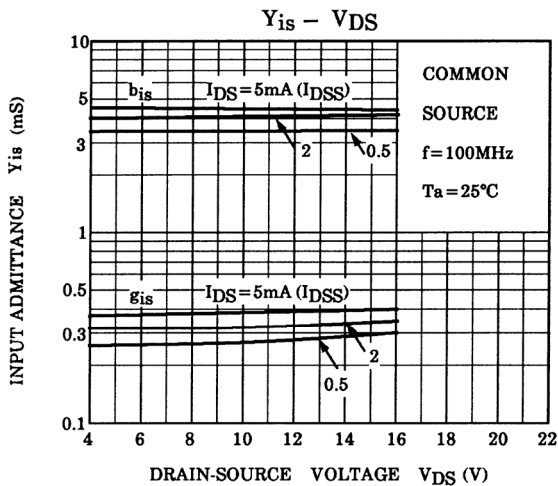
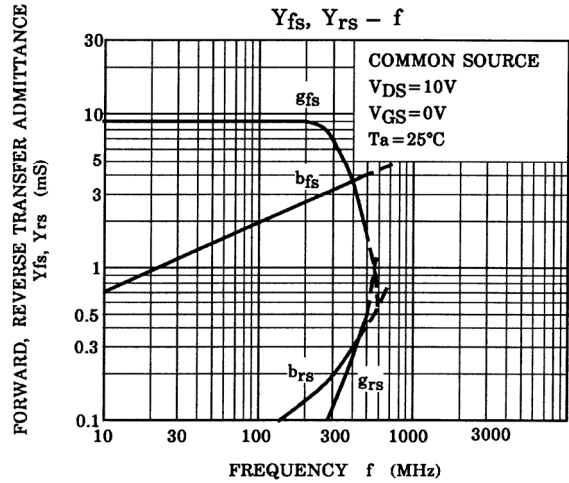
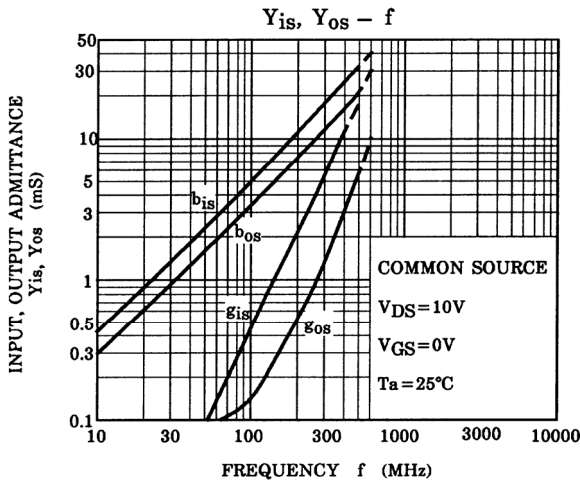
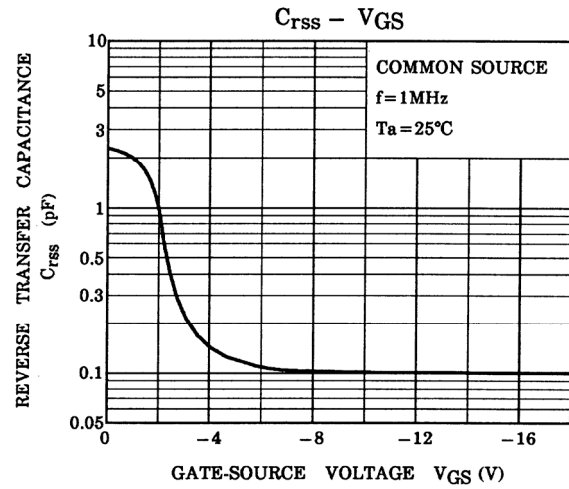
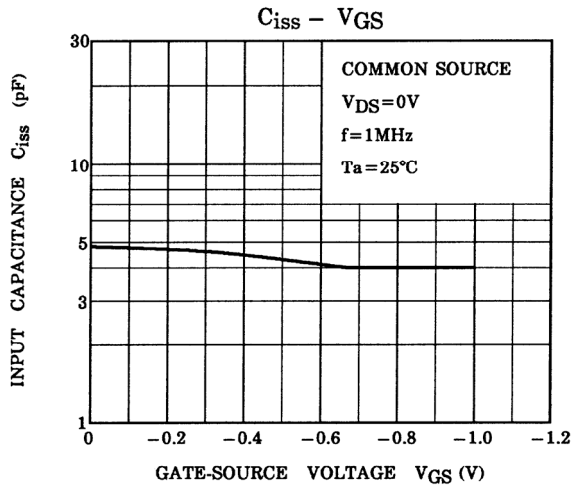


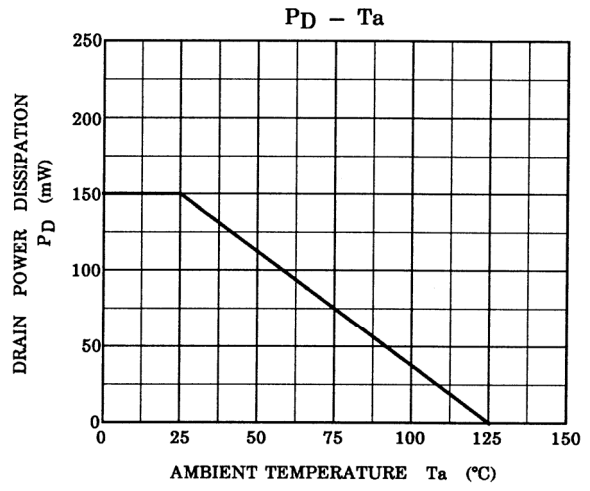
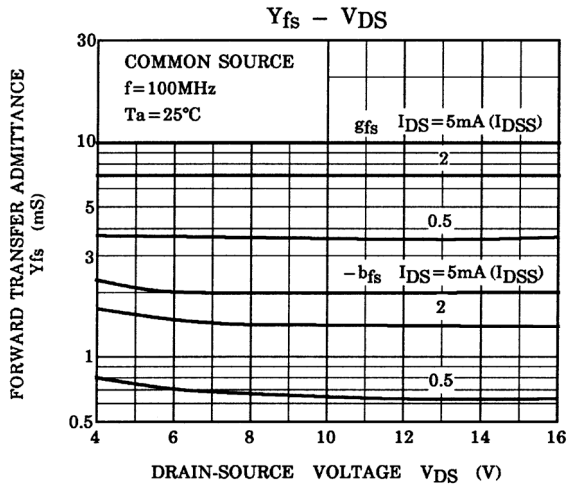
$V_{GS(OFF)} - I_{DSS}$



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







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20070701-EN GENERAL

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