

TOSHIBA Field Effect Transistor Silicon N Channel Junction Type

2SK210

FM Tuner Applications

VHF Band Amplifier Applications

Unit: mm

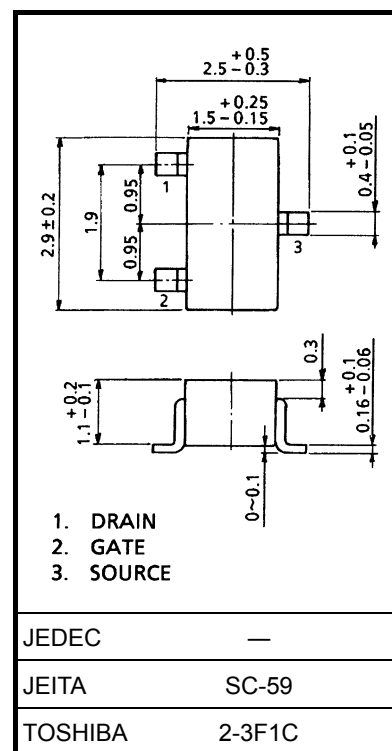
- High power gain: $G_{PS} = 24\text{dB}$ (typ.) ($f = 100\text{ MHz}$)
- Low noise figure: $NF = 1.8\text{dB}$ (typ.) ($f = 100\text{ MHz}$)
- High forward transfer admittance: $|Y_{fs}| = 7\text{ mS}$ (typ.) ($f = 1\text{ kHz}$)

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	100	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).

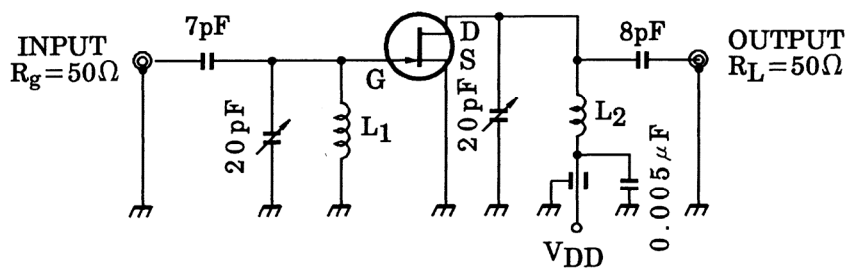


Weight: 0.012 g (typ.)

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

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	I_{GSS}	$V_{GS} = -1.0\text{ V}$, $V_{DS} = 0\text{ V}$	—	—	-10	nA
Gate-drain breakdown voltage	$V_{(BR) GDO}$	$I_G = -100\text{ }\mu\text{A}$	-18	—	—	V
Drain current	I_{DSS} (Note)	$V_{GS} = 0\text{ V}$, $V_{DS} = 10\text{ V}$	3	—	24	mA
Gate-source cut-off voltage	$V_{GS (OFF)}$	$V_{DS} = 10\text{ V}$, $I_D = 1\text{ }\mu\text{A}$	-1.2	-3	—	V
Forward transfer admittance	$ Y_{fs} $	$V_{GS} = 0\text{ V}$, $V_{DS} = 10\text{ V}$, $f = 1\text{ kHz}$	—	7	—	mS
Input capacitance	C_{iss}	$V_{DS} = 10\text{ V}$, $V_{GS} = 0$, $f = 1\text{ MHz}$	—	3.5	—	pF
Reverse transfer capacitance	C_{rss}	$V_{GD} = -10\text{ V}$, $f = 1\text{ MHz}$	—	—	0.65	pF
Power gain	G_{PS}	$V_{DD} = 10\text{ V}$, $f = 100\text{ MHz}$ (Figure 1)	—	24	—	dB
Noise figure	NF	$V_{DD} = 10\text{ V}$, $f = 100\text{ MHz}$ (Figure 1)	—	1.8	3.5	dB

Note: I_{DSS} classification: Y: 3.0~7.0 mA, GR (R): 6.0~14.0 mA, BL (L): 12.0~24.0 mA

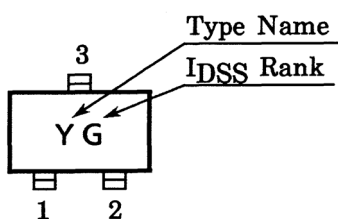


L₁: 0.8 mmφ A_g plated Cu wire 3 turns, 10 mm ID, 10 mm length

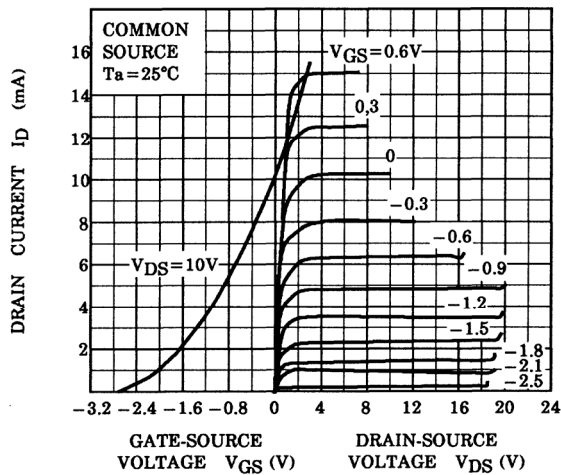
L₂: 0.8 mmφ A_g plated Cu wire 3.5 turns, 10 mm ID, 10 mm length

Figure 1 100 MHz G_{ps} NF Test Circuit

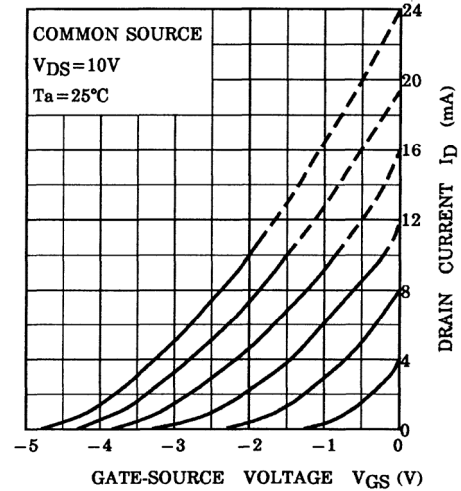
Marking



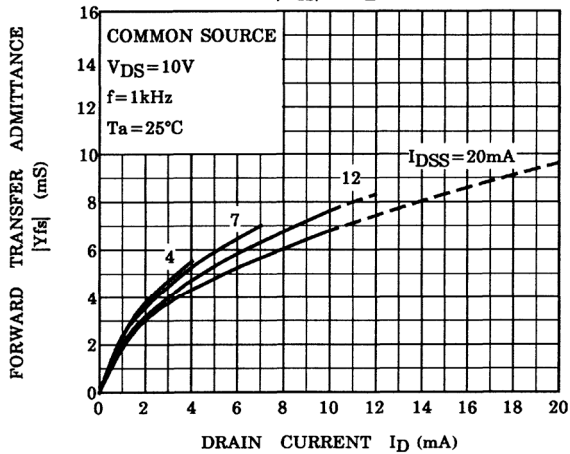
STATIC CHARACTERISTICS



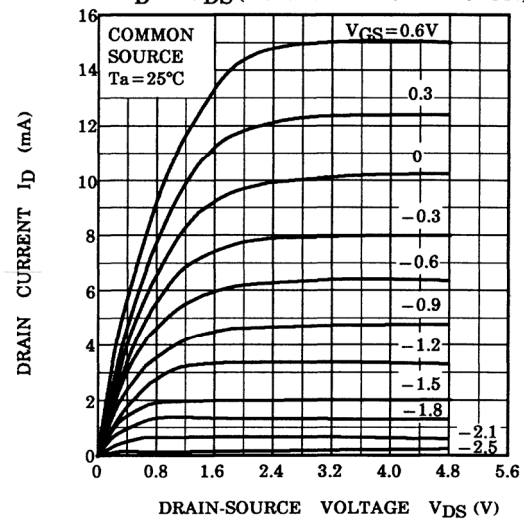
$I_D - V_{GS}$



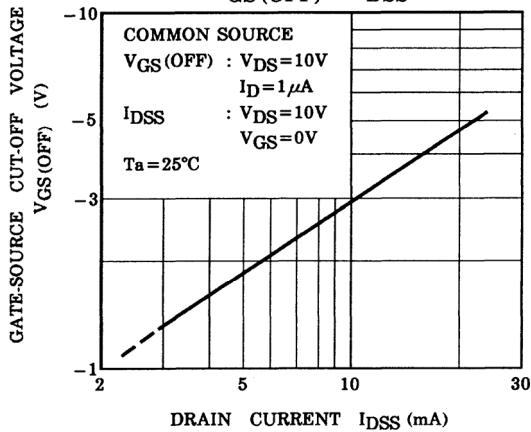
$|Y_{fs}| - I_D$



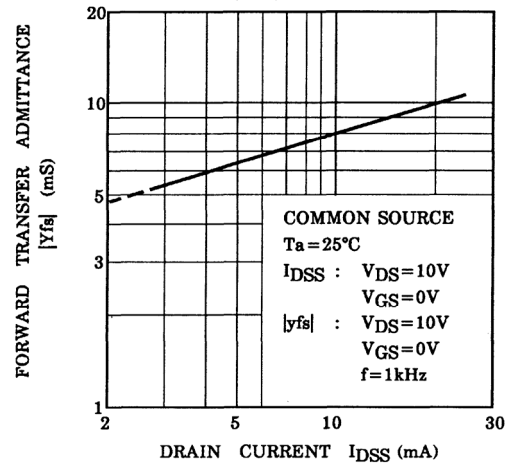
$I_D - V_{DS}$ (LOW VOLTAGE REGION)

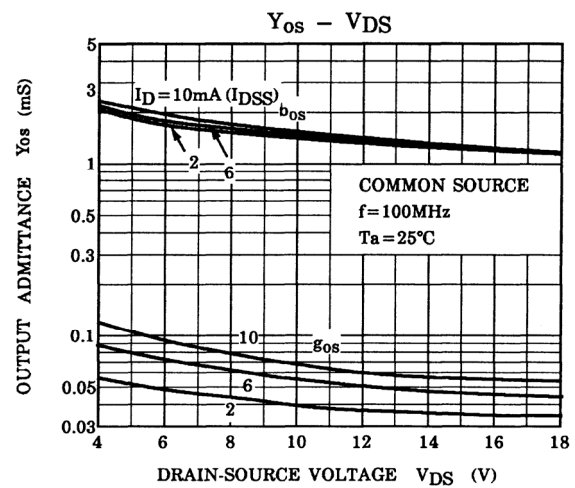
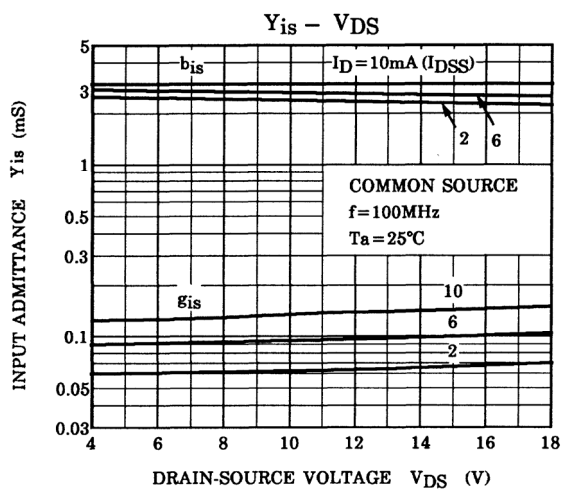
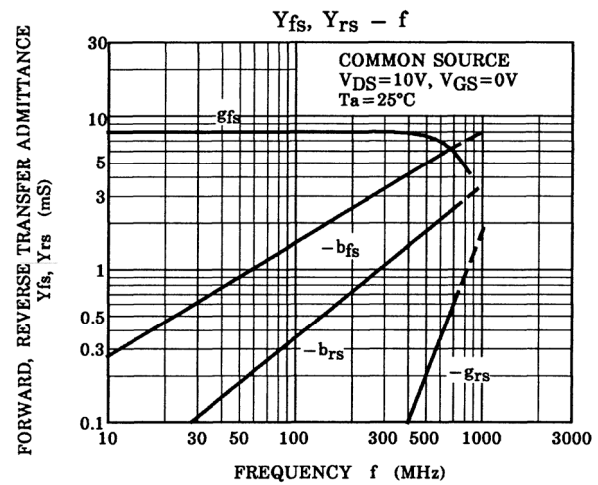
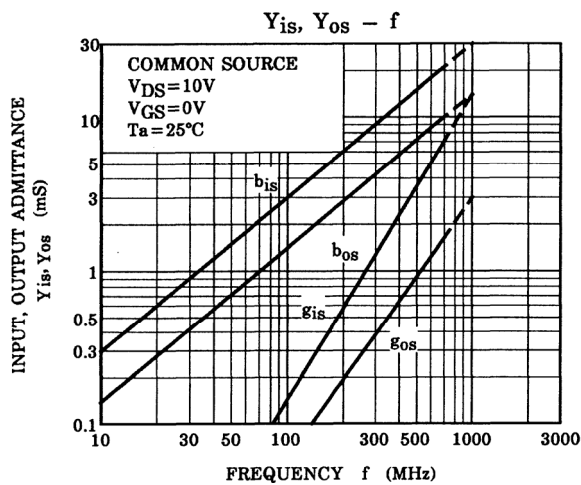
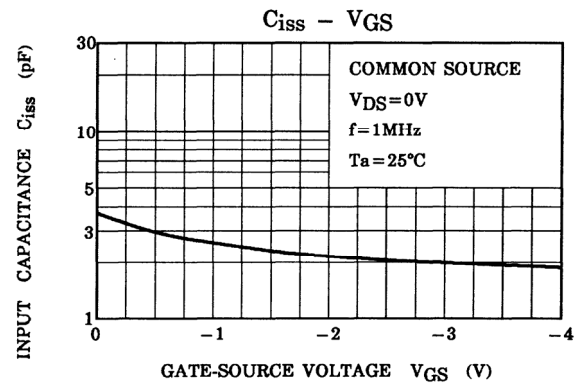
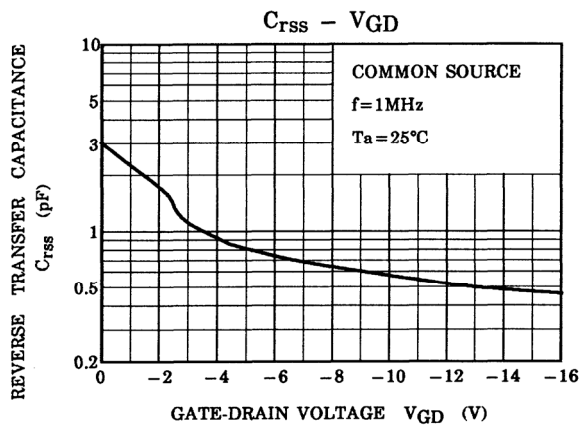


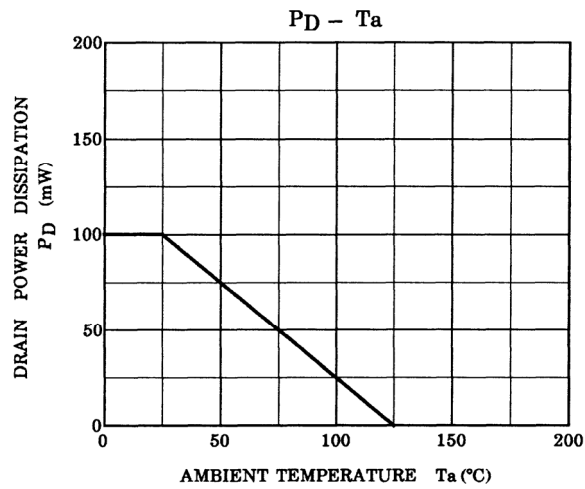
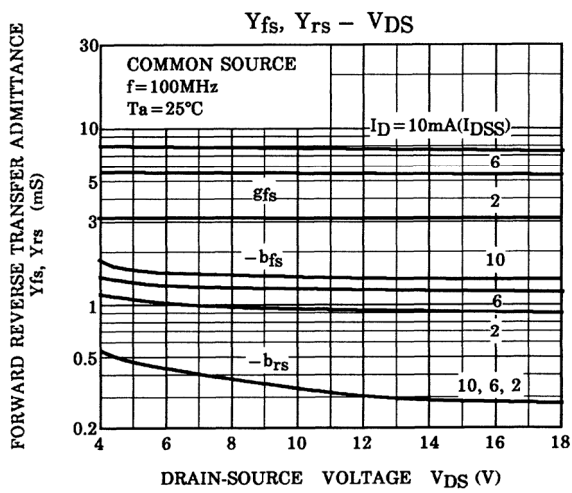
$V_{GS(OFF)} - I_{DSS}$



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







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20070701-EN GENERAL

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