

TOSHIBA Field Effect Transistor Silicon N Channel Junction Type

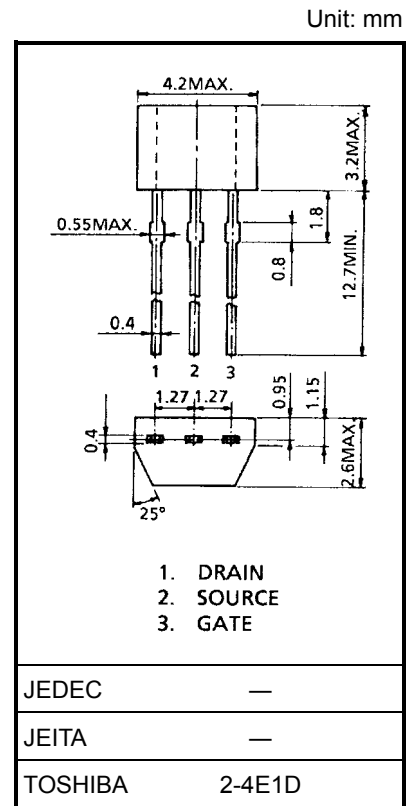
2SK161

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.)

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	200	mW
Junction temperature	T_j	125	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55~125	$^\circ\text{C}$

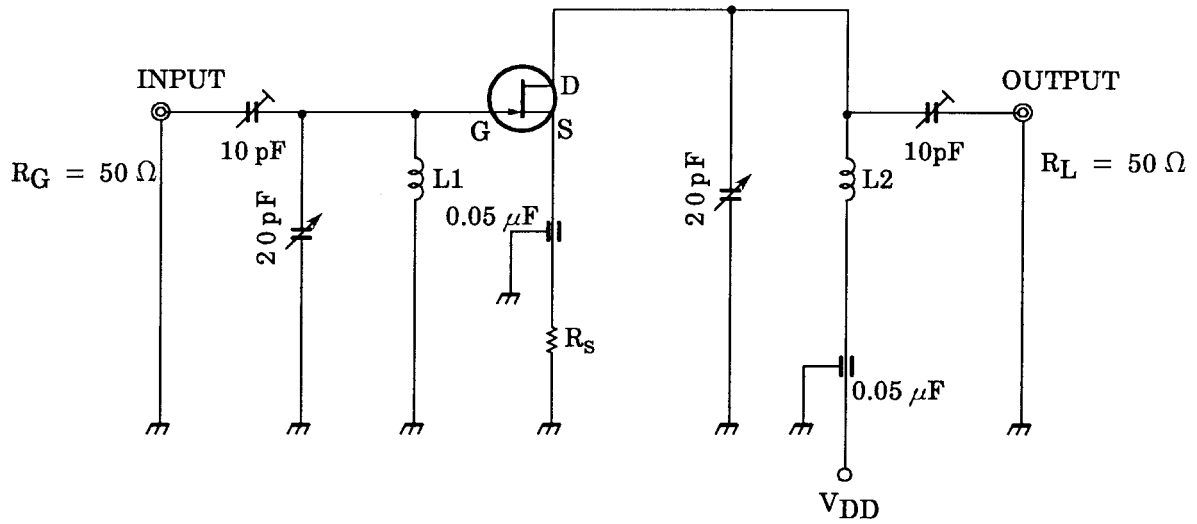


Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Weight: 0.13 g (typ.)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	I_{GSS}	$V_{GS} = -0.5\text{ V}, V_{DS} = 0$	—	—	-10	nA
Gate-drain breakdown voltage	$V_{(BR) GDO}$	$I_G = -100\text{ }\mu\text{A}$	-18	—	—	V
Drain current	I_{DSS} (Note)	$V_{GS} = 0, V_{DS} = 10\text{ V}$	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} $	$V_{GS} = 0, V_{DS} = 10\text{ V}, f = 1\text{ kHz}$	—	9	—	mS
Input capacitance	C_{iss}	$V_{DS} = 10\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	6.0	—	pF
Reverse transfer capacitance	C_{rss}	$V_{GD} = -10\text{ V}, f = 1\text{ MHz}$	—	0.10	0.15	pF
Power gain	G_{PS}	$V_{DD} = 10\text{ V}, f = 100\text{ MHz}$ (Figure 1)	—	18	—	dB
Noise figure	NF	$V_{DD} = 10\text{ V}, f = 100\text{ MHz}$ (Figure 1)	—	2.5	3.5	dB

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



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

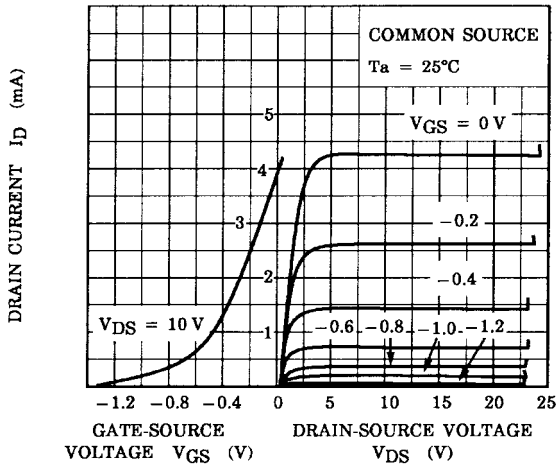
L2: 0.8 mmφ Ag plated Cu wire, 3 turns, 10 mm ID, 10 mm length.

Figure 1 100 MHz Gps, NF Test Circuit

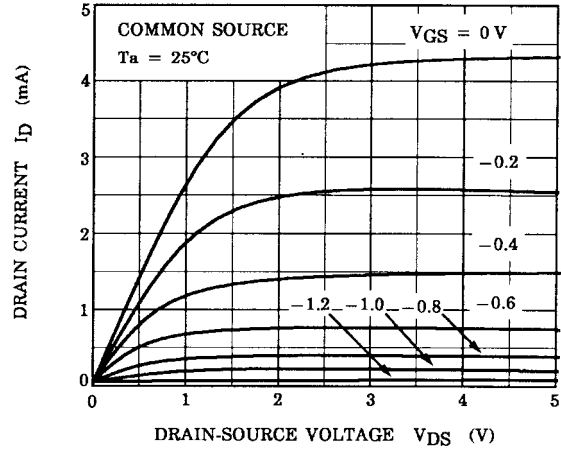
2SK161 is measured at each group by changing RS

Group	RS (Ω)
2SK161-O	0
2SK161-Y	18 Ω ± 5%
2SK161-GR	100 Ω ± 5%

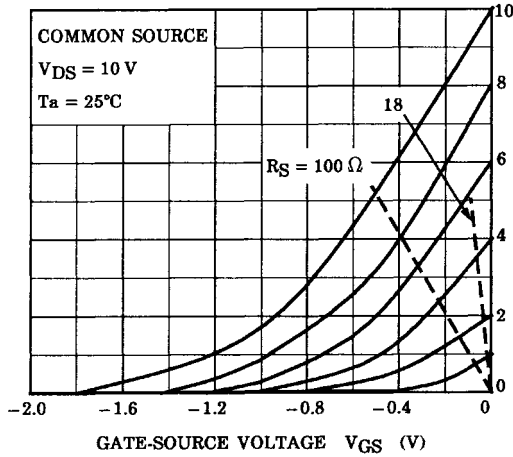
STATIC CHARACTERISTICS



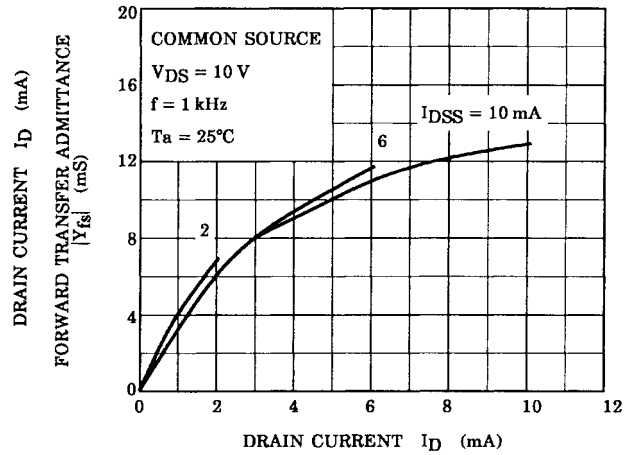
ID - VDS (LOW VOLTAGE REGION)



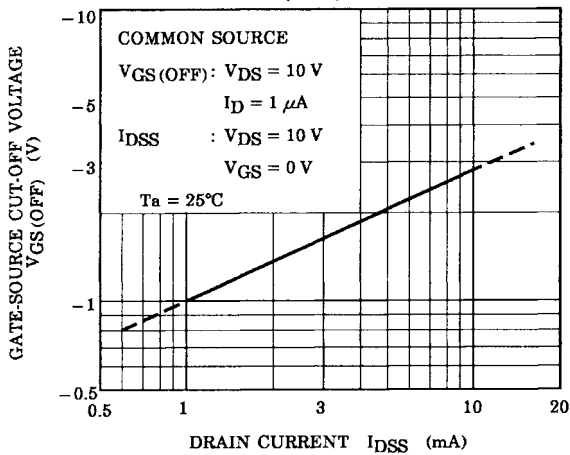
ID - VGS



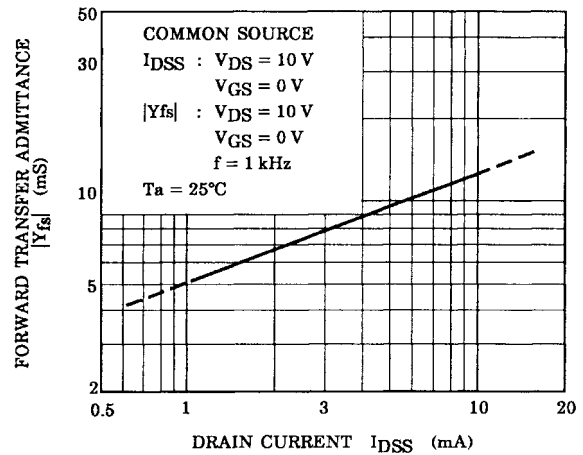
|Yfs| - ID

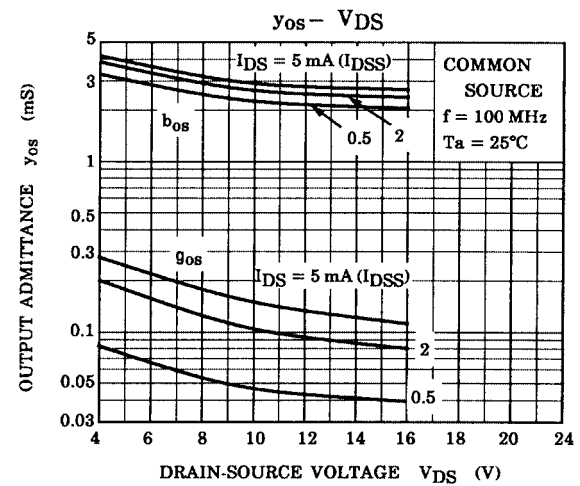
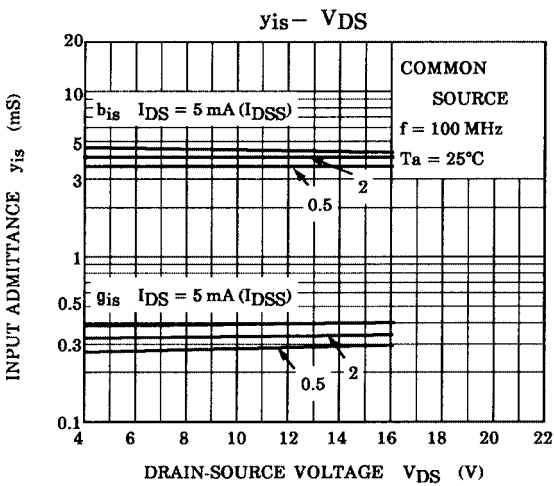
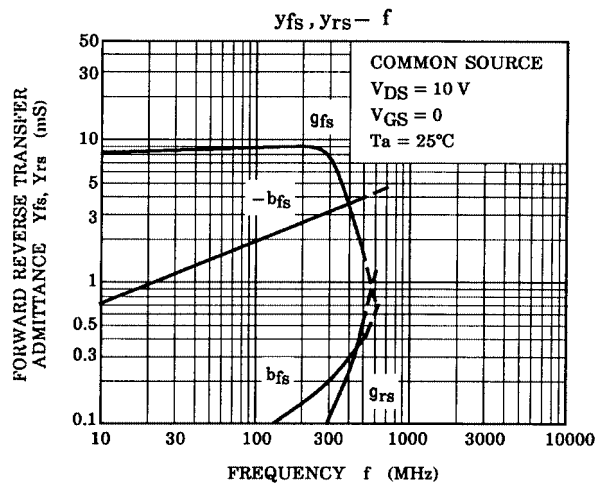
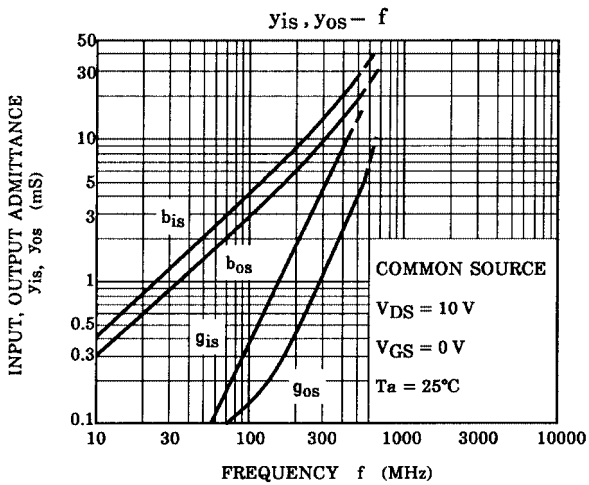
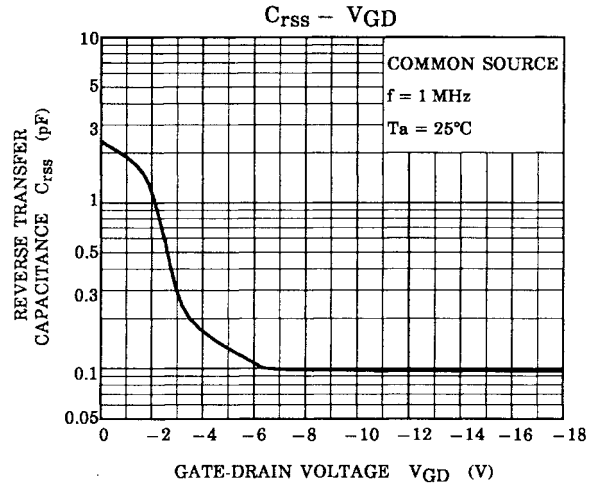
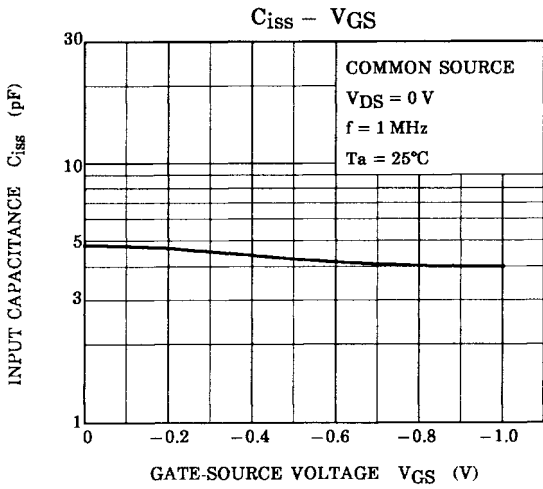


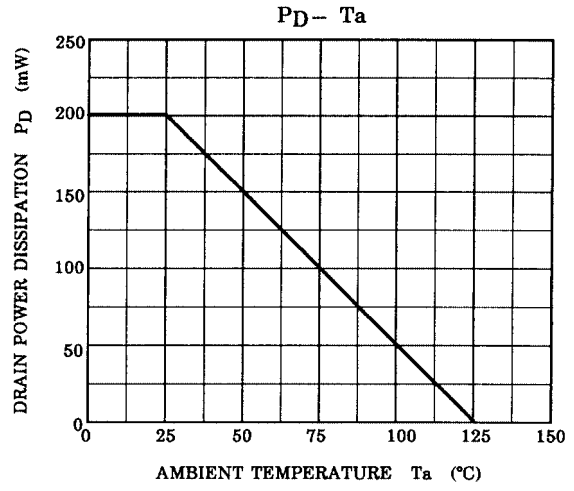
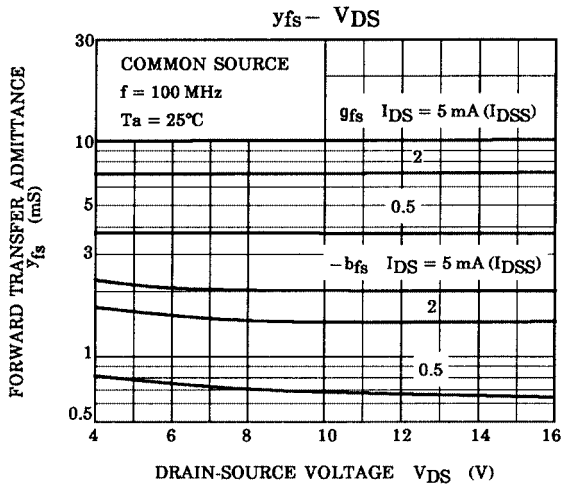
VGS(OFF) - IDSS



|Yfs| - IDSS







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