

TOSHIBA Field Effect Transistor Silicon N-Channel Dual Gate MOS Type

# 3SK291

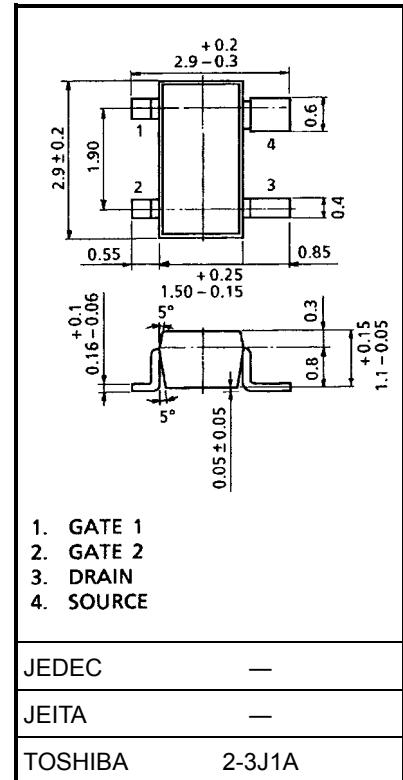
TV Tuner, UHF RF Amplifier Applications

Unit: mm

- Superior cross modulation performance
- Low reverse transfer capacitance:  $C_{RSS} = 0.016 \text{ pF (typ.)}$
- Low noise figure:  $NF = 1.5\text{dB (typ.)}$

## Maximum Ratings (Ta = 25°C)

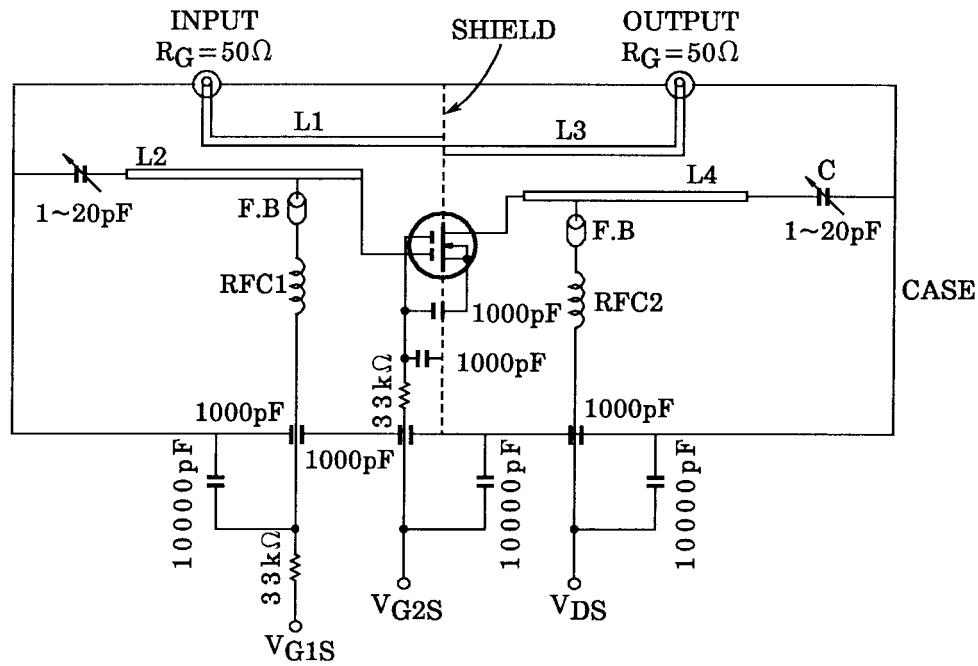
Characteristics	Symbol	Rating	Unit
Drain-source voltage	$V_{DS}$	12.5	V
Gate 1-source voltage	$V_{G1S}$	$\pm 8$	V
Gate 2-source voltage	$V_{G2S}$	$\pm 8$	V
Drain current	$I_D$	30	mA
Drain power dissipation	$P_D$	150	mW
Channel temperature	$T_{ch}$	125	°C
Storage temperature range	$T_{stg}$	-55~125	°C



Weight: 0.013 g (typ.)

## Electrical Characteristics (Ta = 25°C)

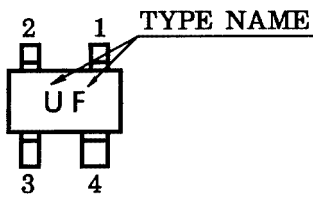
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate 1 leakage current	$I_{G1SS}$	$V_{DS} = 0, V_{G1S} = \pm 6 \text{ V}, V_{G2S} = 0$	—	—	$\pm 50$	nA
Gate 2 leakage current	$I_{G2SS}$	$V_{DS} = 0, V_{G1S} = 0, V_{G2S} = \pm 6 \text{ V}$	—	—	$\pm 50$	nA
Drain-source voltage	$V_{(BR)DSX}$	$V_{G1S} = -0.5 \text{ V}, V_{G2S} = -0.5 \text{ V}, I_D = 100 \mu\text{A}$	12.5	—	—	V
Drain current	$I_{DSS}$	$V_{DS} = 6 \text{ V}, V_{G1S} = 0, V_{G2S} = 4.5 \text{ V}$	—	—	0.1	mA
Gate 1-source cut-off voltage	$V_{G1S(OFF)}$	$V_{DS} = 6 \text{ V}, V_{G2S} = 4.5 \text{ V}, I_D = 100 \mu\text{A}$	0.3	0.8	1.3	V
Gate 2-source cut-off voltage	$V_{G2S(OFF)}$	$V_{DS} = 6 \text{ V}, V_{G1S} = 4.0 \text{ V}, I_D = 100 \mu\text{A}$	0.5	1.0	1.5	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 6 \text{ V}, V_{G2S} = 4.5 \text{ V}, I_D = 10 \text{ mA}, f = 1 \text{ kHz}$	22	26	—	mS
Input capacitance	$C_{iss}$	$V_{DS} = 6 \text{ V}, V_{G2S} = 4.5 \text{ V}, I_D = 10 \text{ mA}, f = 1 \text{ MHz}$	—	2.0	2.6	pF
Reverse transfer capacitance	$C_{rss}$		—	16	40	fF
Power gain	$G_{ps}$	$V_{DS} = 6 \text{ V}, V_{G2S} = 4.5 \text{ V}, I_D = 10 \text{ mA}, f = 800 \text{ MHz (Figure 1)}$	20	22.5	—	dB
Noise figure	NF		—	1.5	2.5	dB

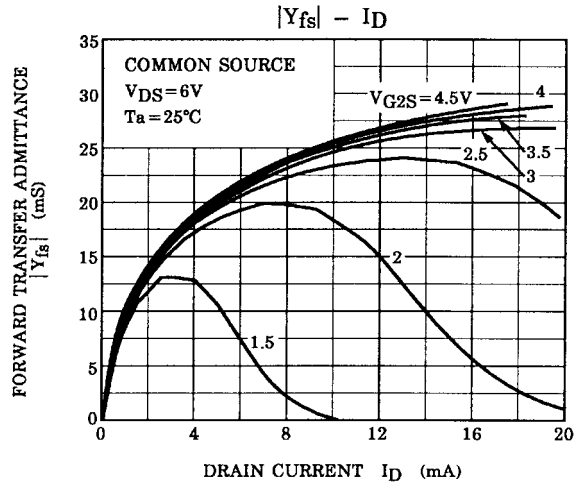
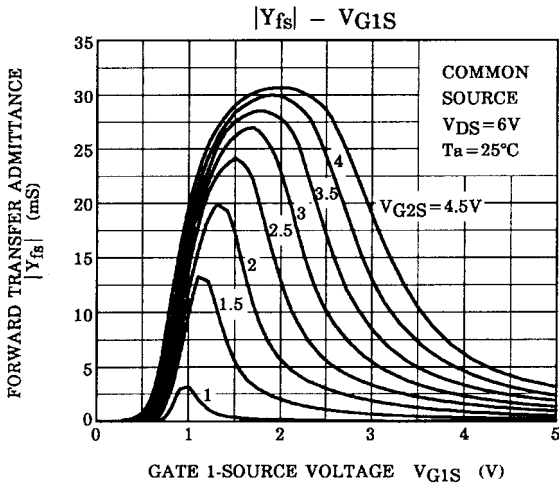
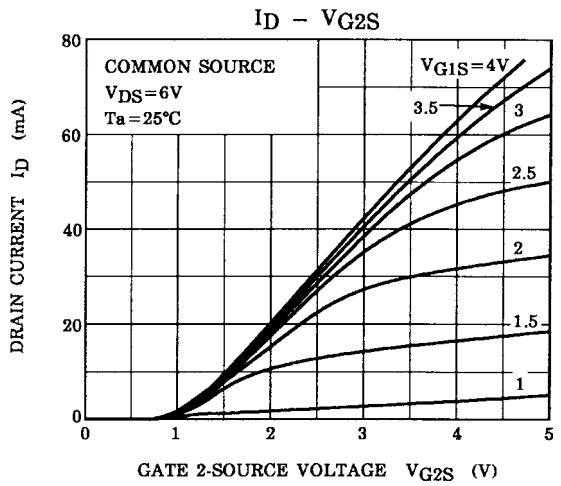
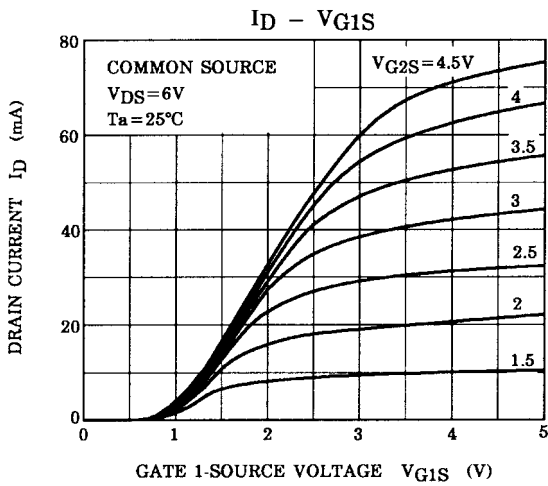
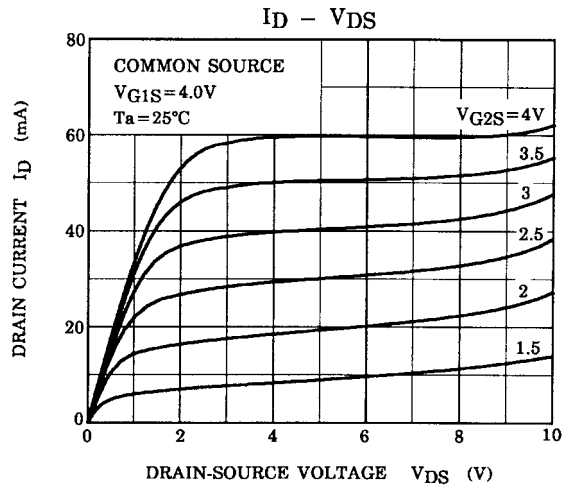
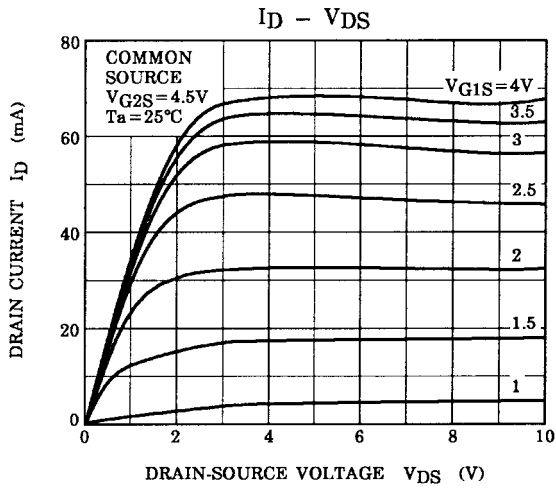


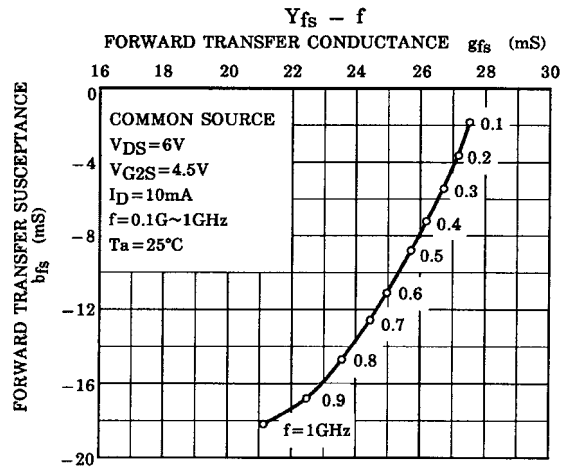
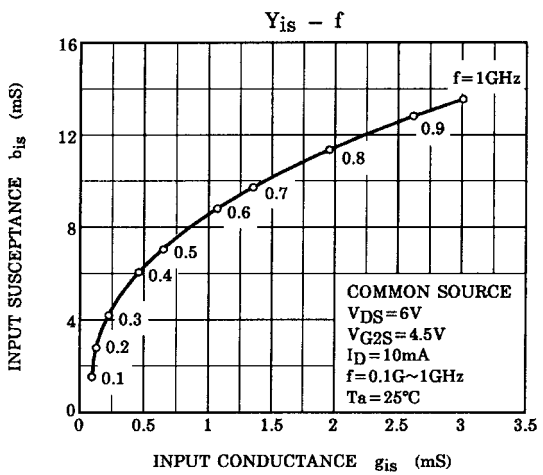
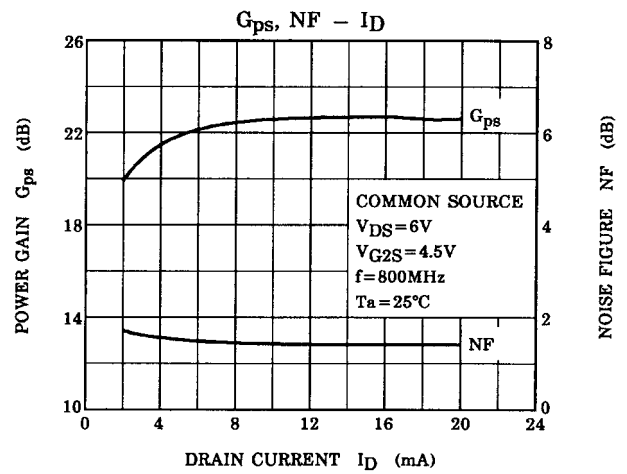
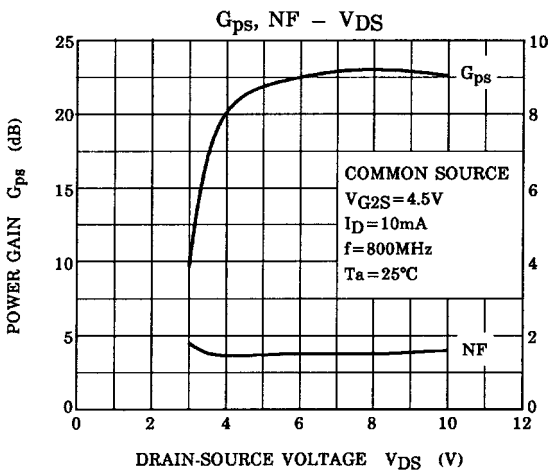
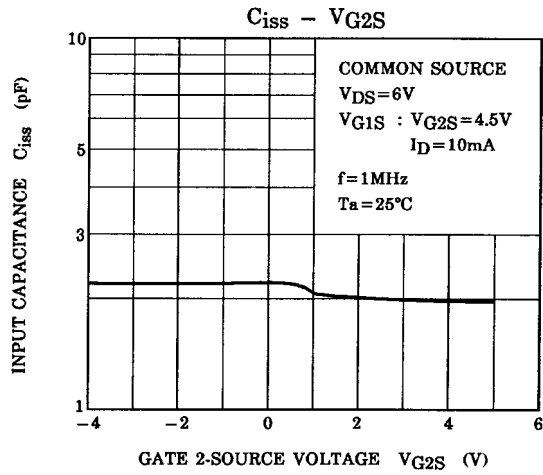
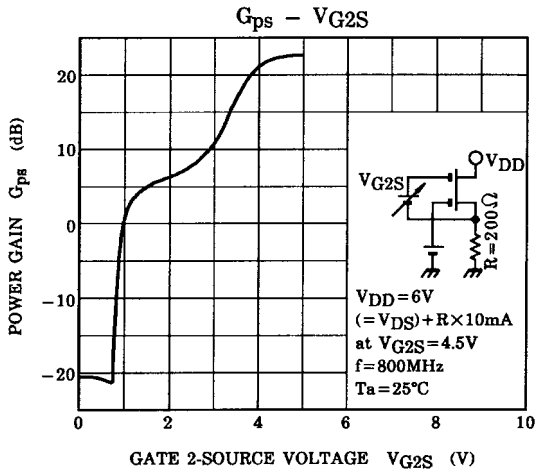
- L1~L4:  $\phi$ 0.8 mm silver plated copper wire
- C: Air trimmer TTA25A200A (MURATA Manufacturing, Co., Ltd.)
- RFC 1:  $\phi$ 0.35 mm copper wire 3 mm ID, 7 T
- RFC 2:  $\phi$ 0.35 mm copper wire 3 mm ID, 10 T

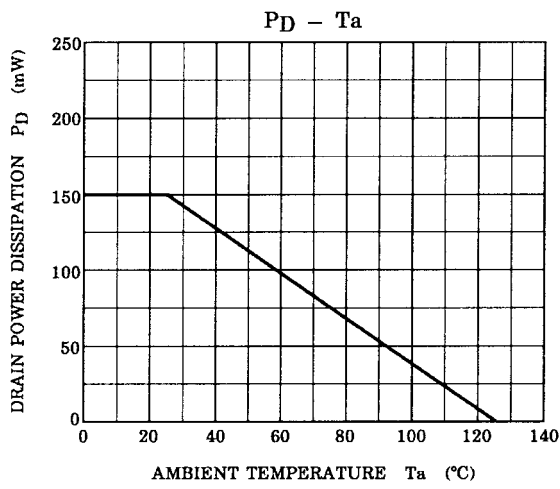
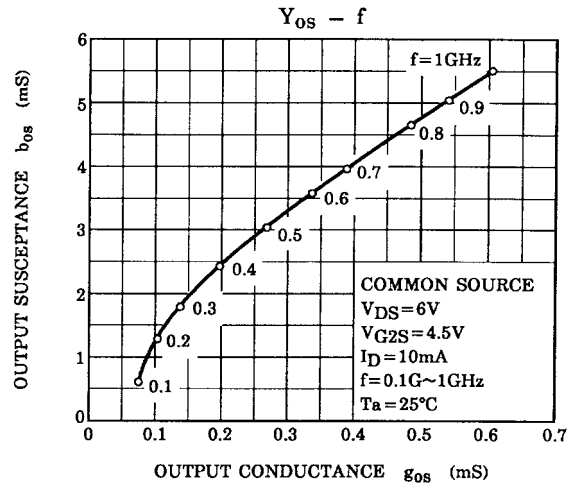
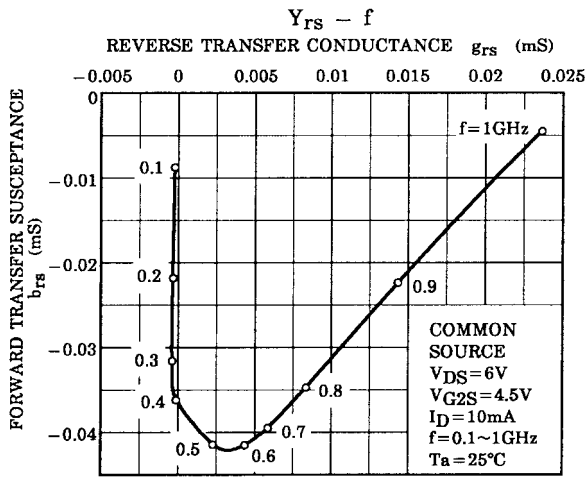
**Figure 1 800 MHz  $G_{ps}$ , NF Test Circuit**

**Marking**









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