

TOSHIBA Field Effect Transistor Silicon N Channel Dual Gate MOS Type

# 3SK225

TV Tuner, VHF RF Amplifier Applications

FM Tuner Applications

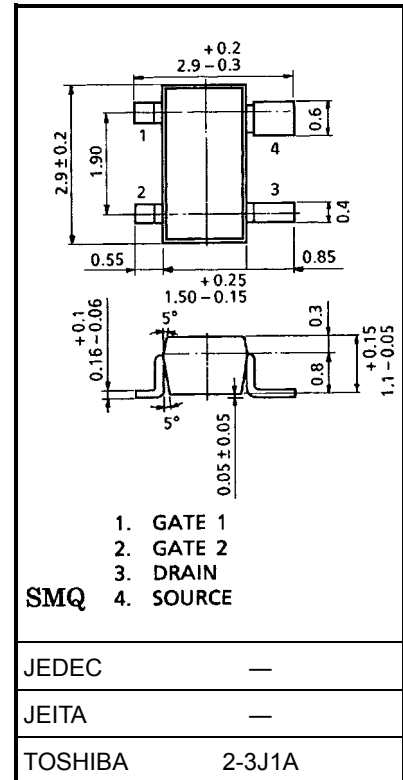
TV Tuner, UHF RF Amplifier Applications

Unit: mm

- Superior cross modulation performance.
- Low noise figure: NF = 2.0dB (typ.)

### Maximum Ratings (Ta = 25°C)

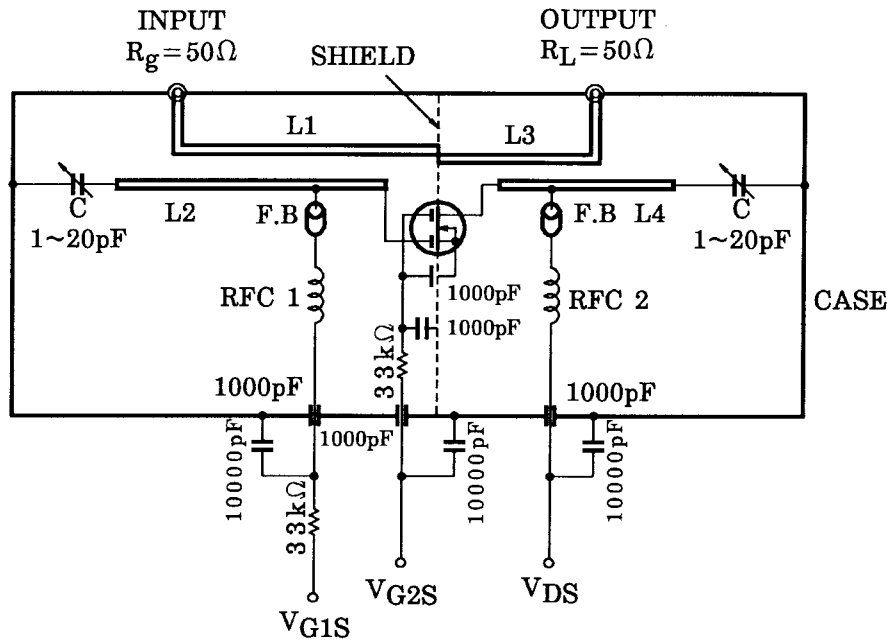
Characteristics	Symbol	Rating	Unit
Drain-source voltage	V <sub>DS</sub>	13.5	V
Gate 1-source voltage	V <sub>G1S</sub>	±8	V
Gate 2-source voltage	V <sub>G2S</sub>	±8	V
Drain current	I <sub>D</sub>	30	mA
Drain power dissipation	P <sub>D</sub>	150	mW
Channel temperature	T <sub>ch</sub>	125	°C
Storage temperature range	T <sub>stg</sub>	-55~125	°C



Weight: 0.013 g (typ.)

### Electrical Characteristics (Ta = 25°C)

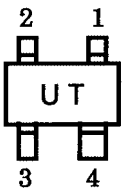
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate 1 leakage current	I <sub>G1SS</sub>	V <sub>DS</sub> = 0, V <sub>G1S</sub> = ±6 V, V <sub>G2S</sub> = 0	—	—	±50	nA
Gate 2 leakage current	I <sub>G2SS</sub>	V <sub>DS</sub> = 0, V <sub>G1S</sub> = 0, V <sub>G2S</sub> = ±6 V	—	—	±50	nA
Drain-source voltage	V <sub>(BR)DSX</sub>	V <sub>G1S</sub> = -4 V, V <sub>G2S</sub> = -4 V, I <sub>D</sub> = 100 μA	13.5	—	—	V
Drain current	I <sub>DSS</sub>	V <sub>DS</sub> = 6 V, V <sub>G1S</sub> = 0, V <sub>G2S</sub> = 4.5 V	0	—	0.1	mA
Gate 1-source cut-off voltage	V <sub>G1S(OFF)</sub>	V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 4.5 V, I <sub>D</sub> = 100 μA	0	—	1.0	V
Gate 2-source cut-off voltage	V <sub>G2S(OFF)</sub>	V <sub>DS</sub> = 6 V, V <sub>G1S</sub> = 4 V, I <sub>D</sub> = 100 μA	0.5	1.0	1.5	V
Forward transfer admittance	Y <sub>fs</sub>	V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 4.5 V, I <sub>D</sub> = 10 mA, f = 1 kHz	—	21	—	mS
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 4.5 V, I <sub>D</sub> = 10 mA, f = 1 MHz	—	3.4	4.4	pF
Reverse transfer capacitance	C <sub>rss</sub>		—	0.020	0.05	pF
Power gain	G <sub>ps</sub>	V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 4.5 V, I <sub>D</sub> = 10 mA, f = 500 MHz (Figure 1)	19	22	—	dB
Noise figure	NF		—	2.0	3.5	dB

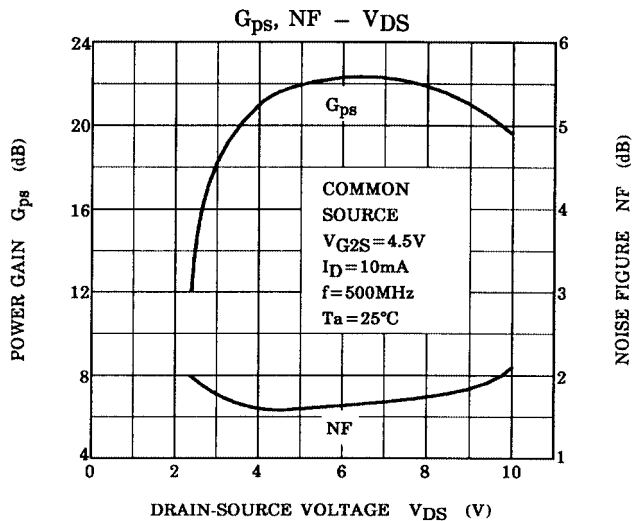
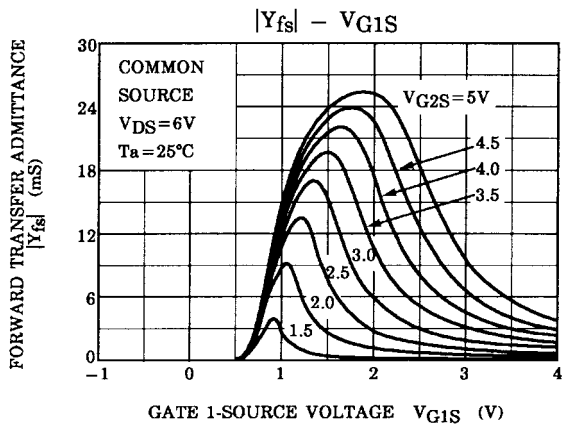
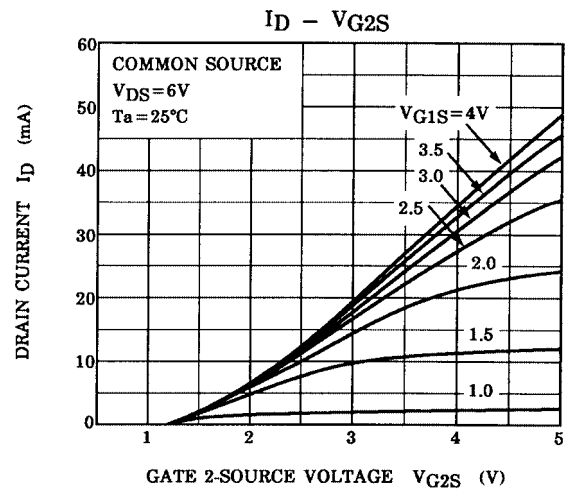
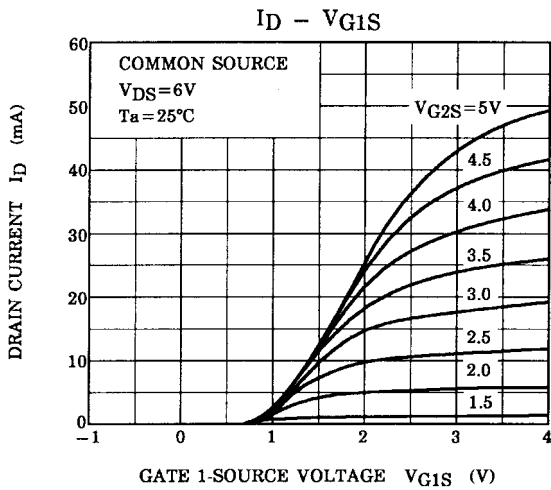
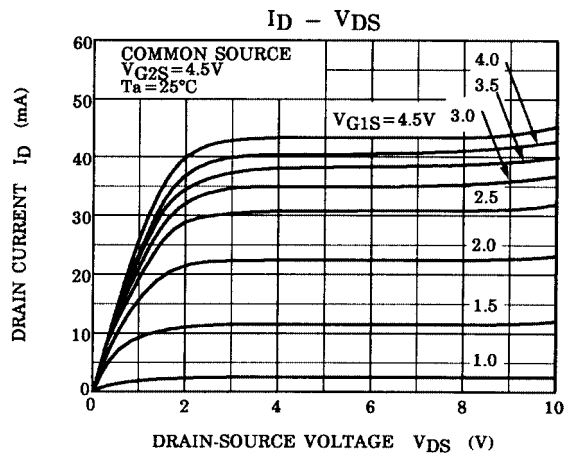
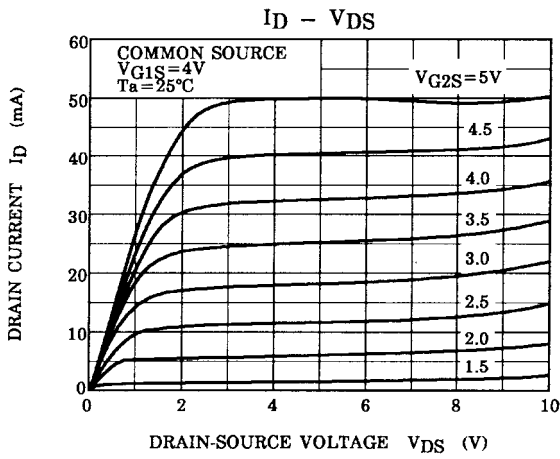


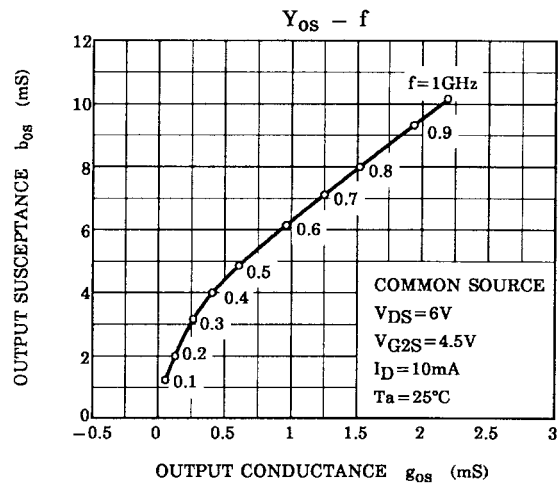
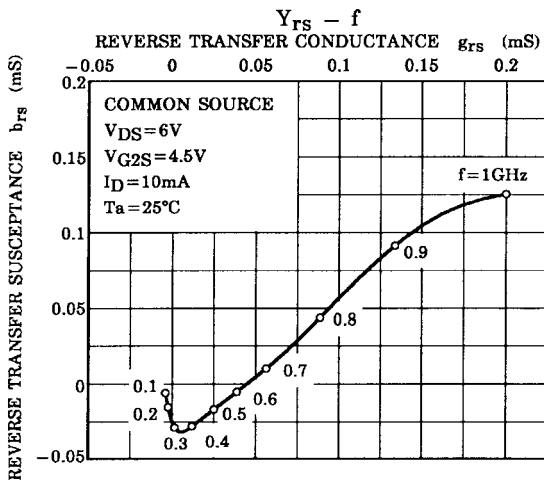
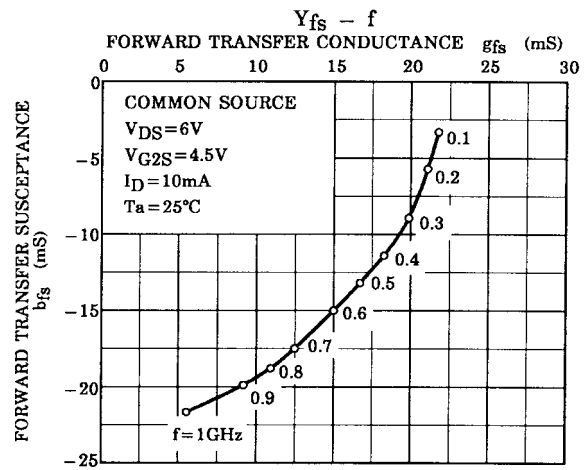
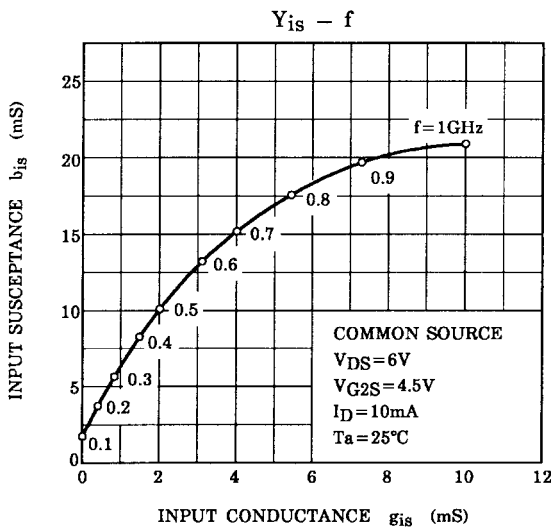
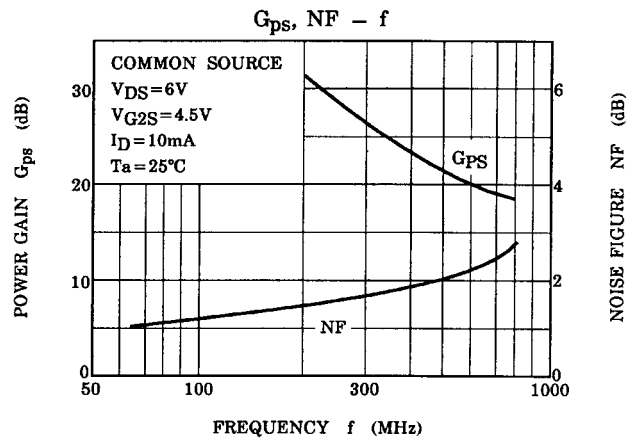
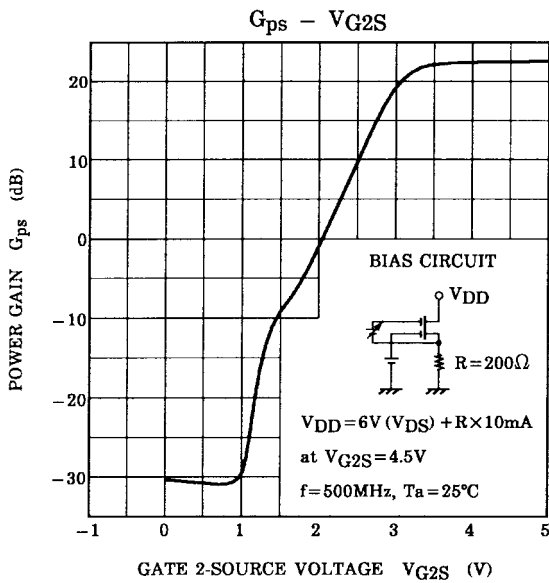
- L1 L4:  $\phi$ 0.8 mm silver plated copper wire
- C: Air trimmer TTA25A200A (MURATA Manufacturing. Co., Ltd.)
- RFC 1:  $\phi$ 0.35 mm copper wire 3 mm ID, 7 T
- RFC 2:  $\phi$ 0.35 mm copper wire 3 mm ID, 10 T

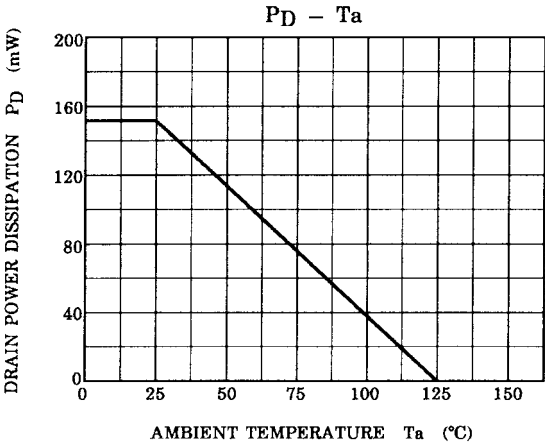
**Figure 1 500 MHz,  $G_{ps}$ , NF Test Circuit**

**Marking**









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