

# 3SK260

TV Tuner VHF Mixer Applications  
 VHF RF Amplifier Applications

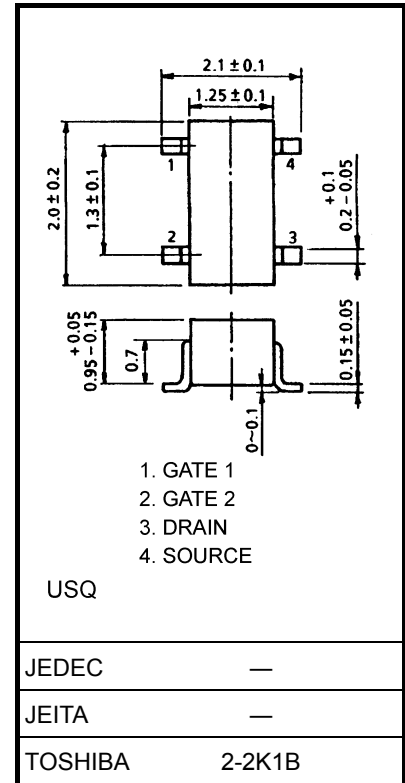
- High conversion gain:  $G_{CS} = 24.5\text{dB}$  (typ.)
- Low noise figure:  $NF_{CS} = 3.3\text{dB}$  (typ.)

### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Characteristics	Symbol	Rating	Unit
Drain-source voltage	$V_{DS}$	13.5	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	$P_D$	100	mW
Channel temperature	$T_{ch}$	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).

Unit: mm

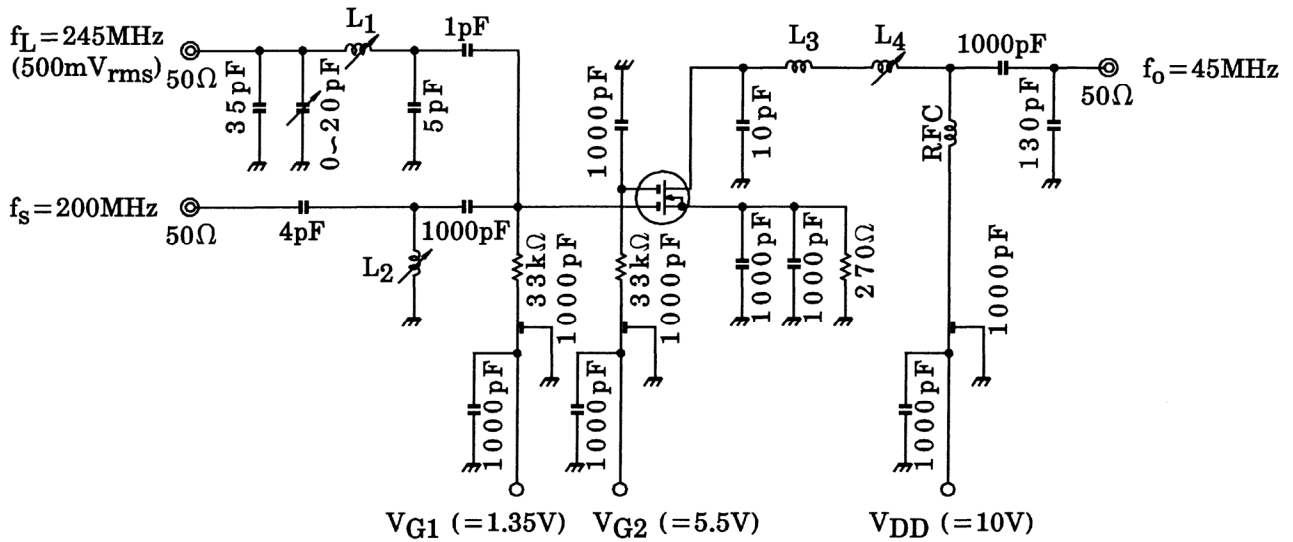


Weight: 0.006 g (typ.)

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

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	$V_{(BR)DSX}$	$V_{G1S} = -4\text{ V}, V_{G2S} = -4\text{ V}$ $I_D = 100\ \mu\text{A}$	15	—	—	V
Drain current (Note)	$I_{DSS}$	$V_{DS} = 6\text{ V}, V_{G1S} = 0, V_{G2S} = 3\text{ V}$	3	—	14	mA
Gate 1-source cut-off voltage	$V_{G1S(OFF)}$	$V_{DS} = 6\text{ V}, V_{G2S} = 3\text{ V}, I_D = 100\ \mu\text{A}$	-0.15	—	-1.5	V
Gate 2-source cut-off voltage	$V_{G2S(OFF)}$	$V_{DS} = 6\text{ V}, V_{G1S} = 0\text{ V}, I_D = 100\ \mu\text{A}$	0	—	-1.0	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 6\text{ V}, V_{G2S} = 3\text{ V}, I_D = 10\text{ mA}$ $f = 1\text{ kHz}$	—	27	—	mS
Input capacitance	$C_{iss}$	$V_{DS} = 6\text{ V}, V_{G2S} = 3\text{ V}, I_D = 10\text{ mA}$	—	2.7	3.8	pF
Reverse transfer capacitance	$C_{rss}$	$f = 1\text{ MHz}$	—	0.025	0.04	pF
Conversion gain	$G_{CS}$	$V_{DD} = 10\text{ V}, f = 200\text{ MHz}$	21	24.5	—	dB
Noise figure	$NF_{CS}$	$f_L = 245\text{ MHz}$ (500 mV <sub>rms</sub> ) (Figure 1)	—	3.3	5.5	dB

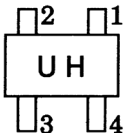
Note:  $I_{DSS}$  classification Y: 3~7 mA, GR: 6~14 mA

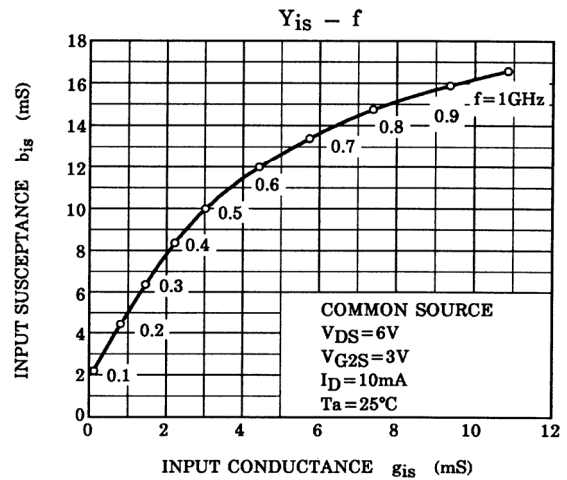
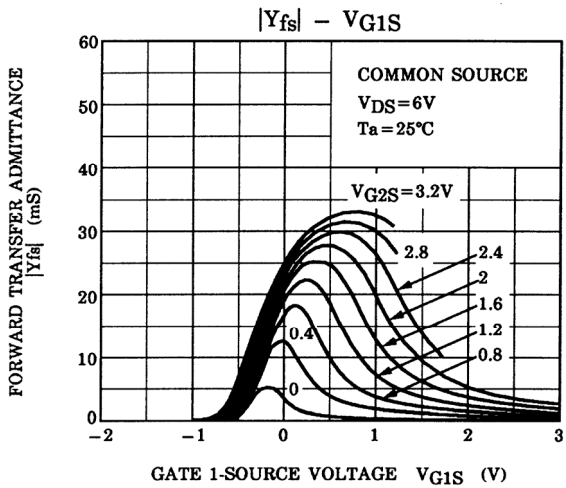
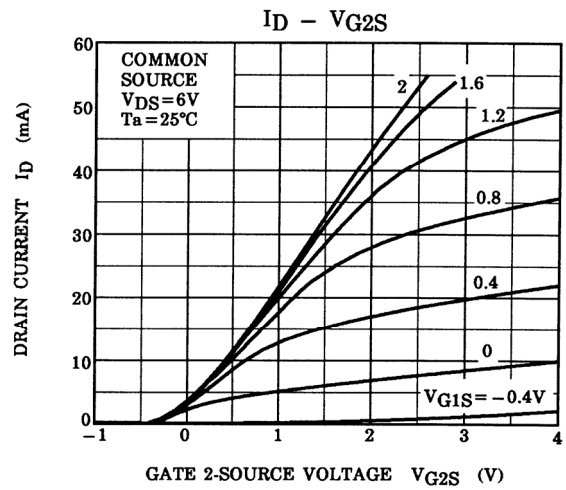
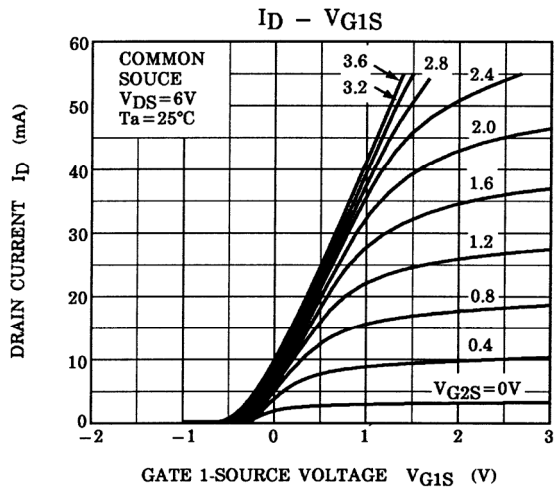
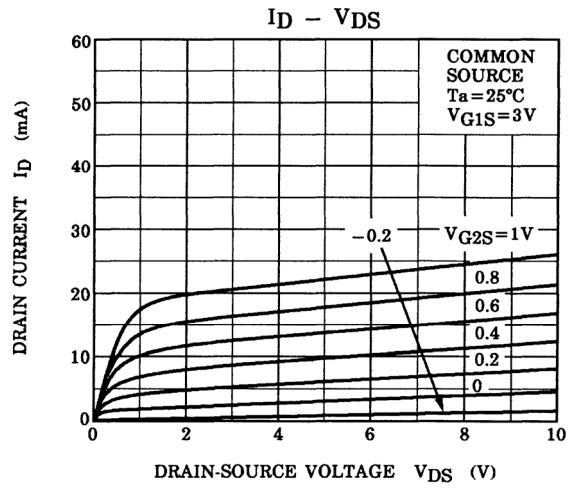
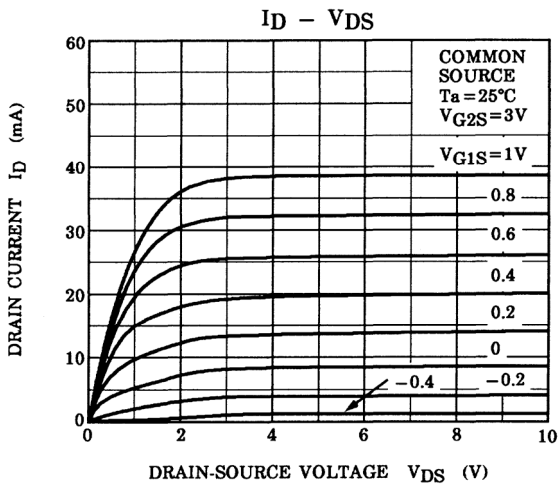


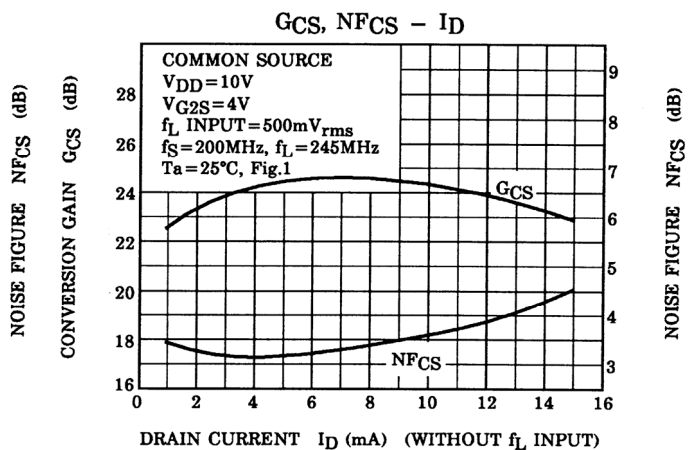
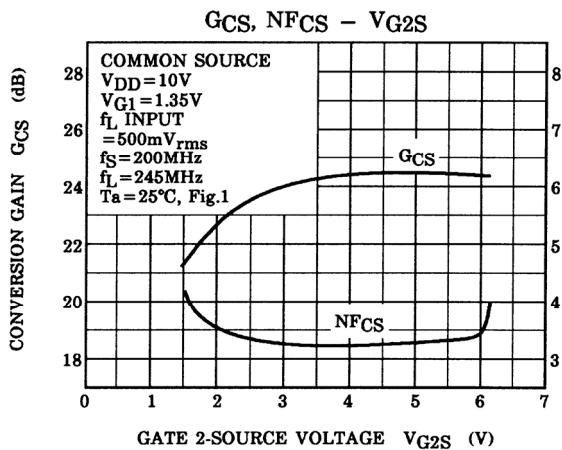
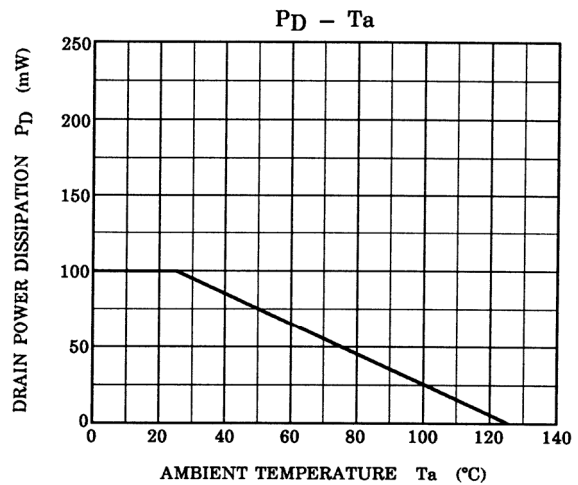
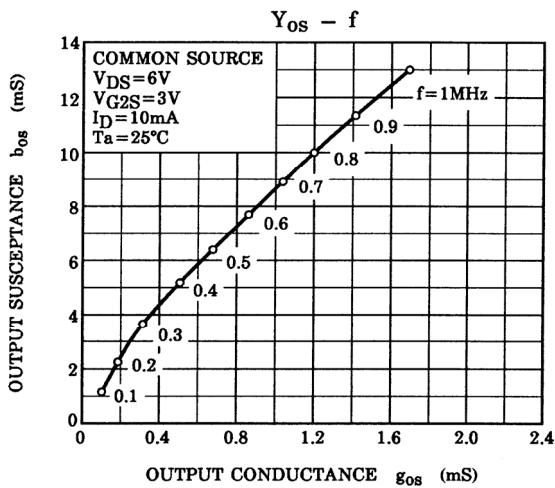
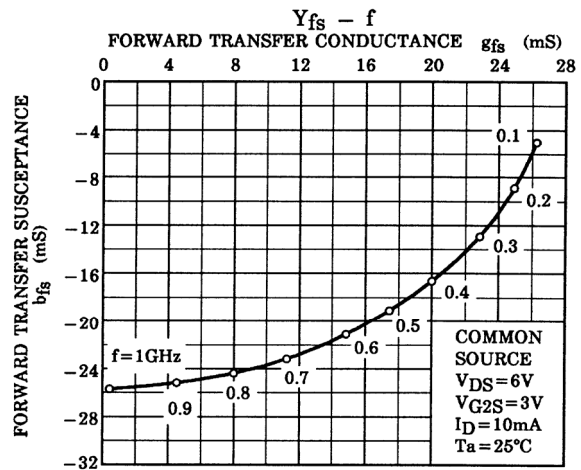
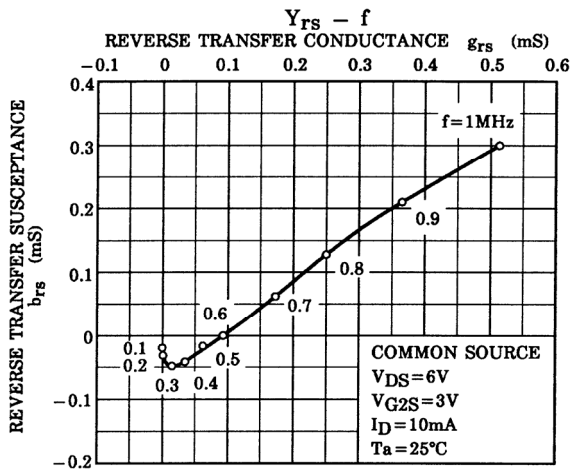
- L1:  $\phi$ 6.5 mm bobbin with ferrite core,  $\phi$ 0.7 mm UEW, 2 T
- L2:  $\phi$ 6.5 mm bobbin with ferrite core,  $\phi$ 0.7 mm UEW, 2 T
- L3: 3 mm ID,  $\phi$ 0.5 mm UEW, 4 T
- L4:  $\phi$ 8 mm bobbin with ferrite core,  $\phi$ 0.35 mm UEW, 7 T
- RFC: 100  $\mu$ H

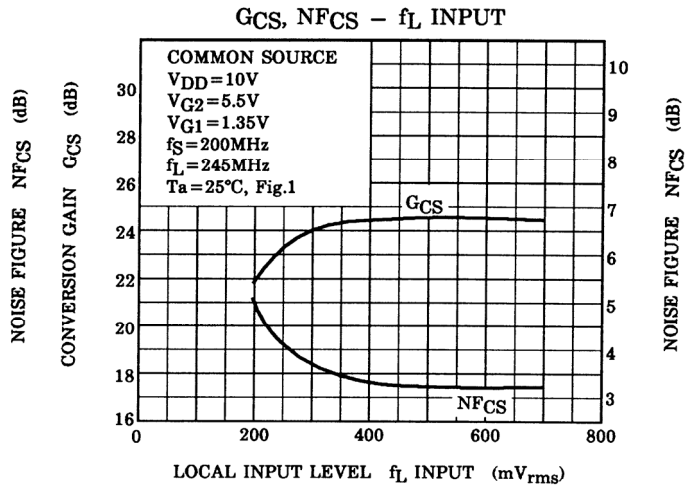
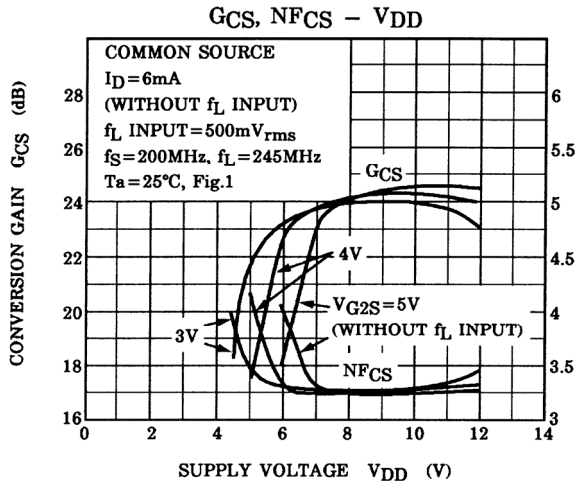
**Figure 1 Gcs and NFcs Test Circuit**

**Marking**









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20070701-EN GENERAL

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