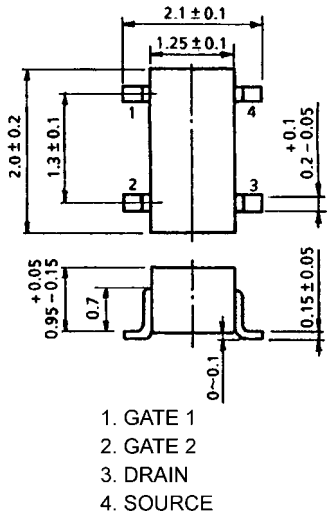
TOSHIBA Field Effect Transistor Silicon N Channel Dual Gate MOS Type

3SK260

TV Tuner VHF Mixer Applications
VHF RF Amplifier Applications

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

Unit: mm



1. GATE 1
2. GATE 2
3. DRAIN
4. SOURCE

USQ

JEDEC	—
JEITA	—
TOSHIBA	2-2K1B

Weight: 0.006 g (typ.)

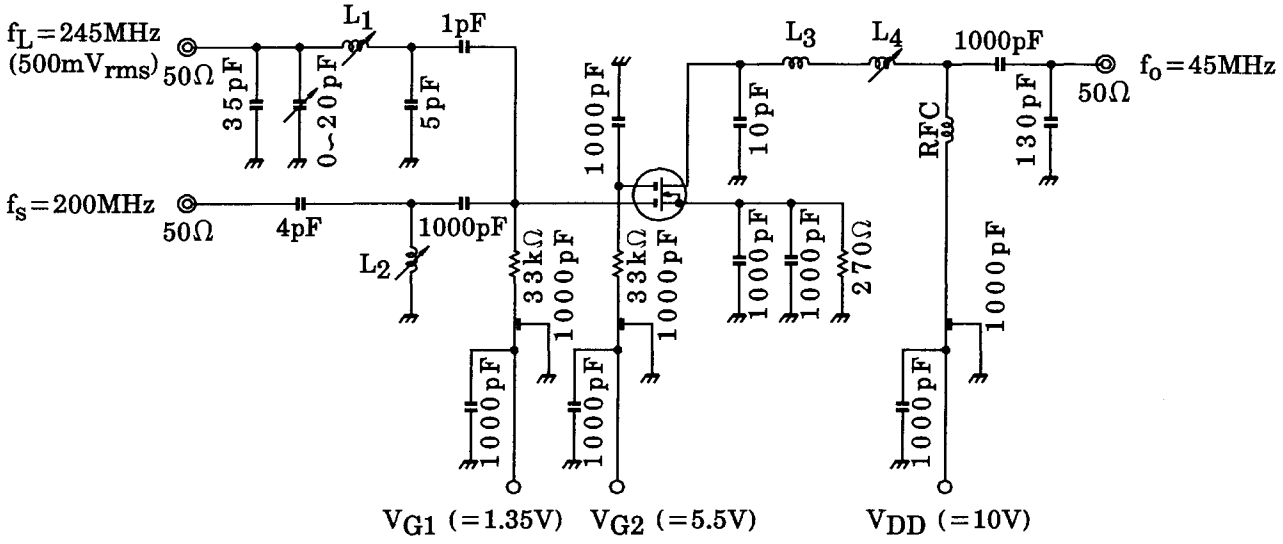
Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Drain-source voltage	V_{DS}	13.5	V
Gate 1-source voltage	V_{G1S}	±8	V
Gate 2-source voltage	V_{G2S}	±8	V
Drain current	I_D	30	mA
Drain power dissipation	P_D	100	mW
Channel temperature	T_{ch}	125	°C
Storage temperature range	T_{stg}	−55~125	°C

Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate 1 leakage current	I_{G1SS}	V_{DS} = 0, V_{G1S} = ±6 V, V_{G2S} = 0	—	—	±50	nA
Gate 2 leakage current	I_{G2SS}	V_{DS} = 0, V_{G1S} = 0, V_{G2S} = ±6 V	—	—	±50	nA
Drain-source voltage	$V_{(BR)\ DSX}$	V_{G1S} = −4 V, V_{G2S} = −4 V I_D = 100 μA	15	—	—	V
Drain current (Note)	I_{DSS}	V_{DS} = 6 V, V_{G1S} = 0, V_{G2S} = 3 V	3	—	14	mA
Gate 1-source cut-off voltage	$V_{G1S\ (OFF)}$	V_{DS} = 6 V, V_{G2S} = 3 V, I_D = 100 μA	−0.15	—	−1.5	V
Gate 2-source cut-off voltage	$V_{G2S\ (OFF)}$	V_{DS} = 6 V, V_{G1S} = 0 V, I_D = 100 μA	0	—	−1.0	V
Forward transfer admittance	$\lvert Y_{fs} \rvert$	V_{DS} = 6 V, V_{G2S} = 3 V, I_D = 10 mA f = 1 kHz	—	27	—	mS
Input capacitance	C_{iss}	V_{DS} = 6 V, V_{G2S} = 3 V, I_D = 10 mA	—	2.7	3.8	pF
Reverse transfer capacitance	C_{rss}	f = 1 MHz	—	0.025	0.04	pF
Conversion gain	G_{CS}	V_{DD} = 10 V, f = 200 MHz	21	24.5	—	dB
Noise figure	NF_{CS}	f_L = 245 MHz (500 mV_{rms}) (Figure 1)	—	3.3	5.5	dB

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



L_1: ϕ6.5 mm bobbin with ferrite core, ϕ0.7 mm UEW, 2 T

L_2: ϕ6.5 mm bobbin with ferrite core, ϕ0.7 mm UEW, 2 T

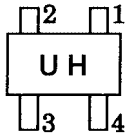
L_3: 3 mm ID, ϕ0.5 mm UEW, 4 T

L_4: ϕ8 mm bobbin with ferrite core, ϕ0.35 mm UEW, 7 T

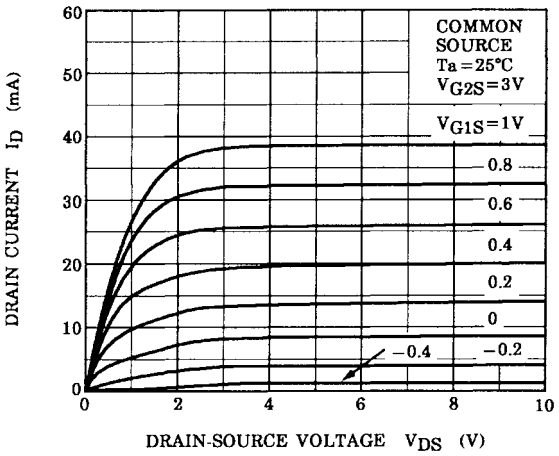
RFC: 100 μH

Figure 1 G_{CS} and NF_{CS} Test Circuit

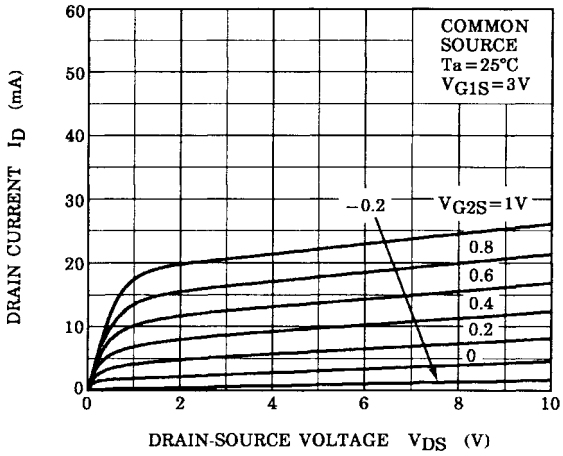
Marking



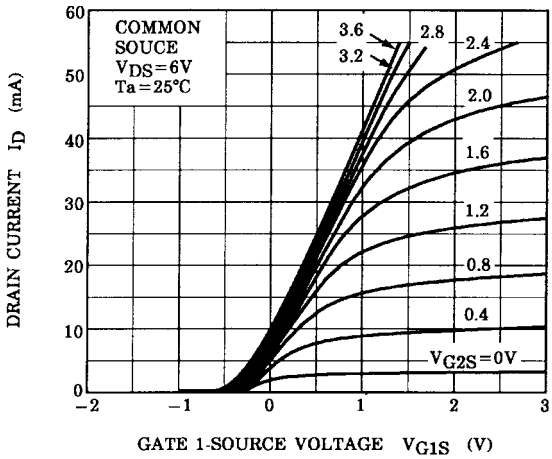
$I_D - V_{DS}$



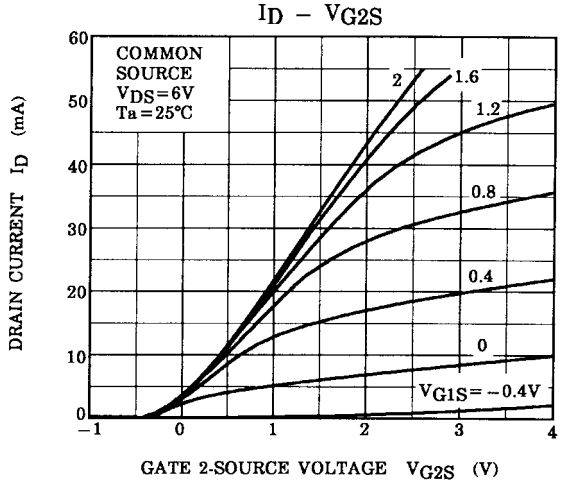
$I_D - V_{DS}$



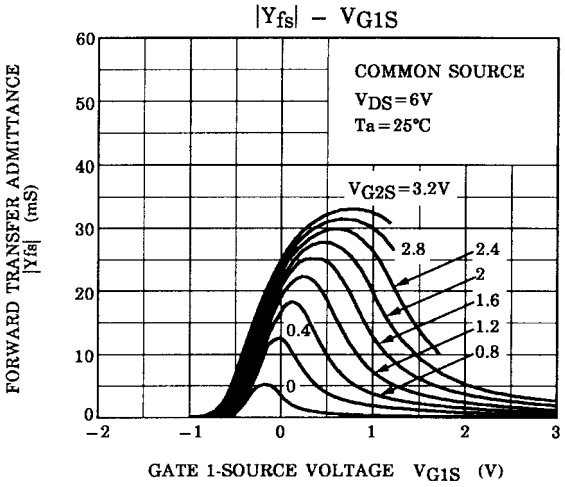
$I_D - V_{G1S}$



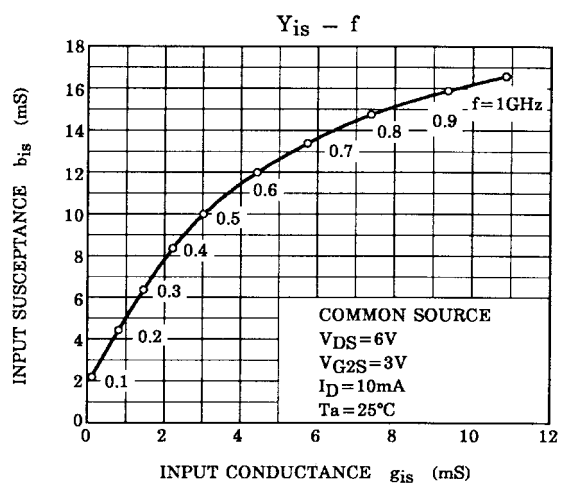
$I_D - V_{G2S}$



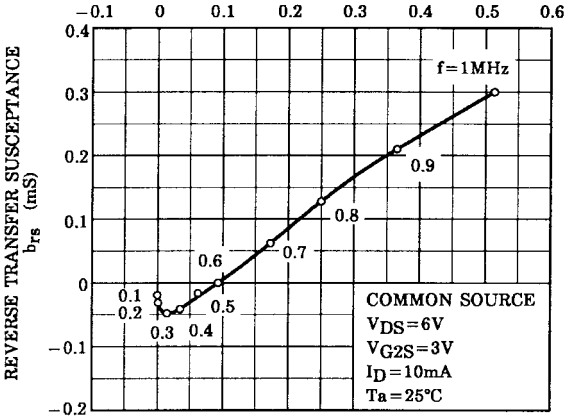
$|Y_{fs}| - V_{G1S}$



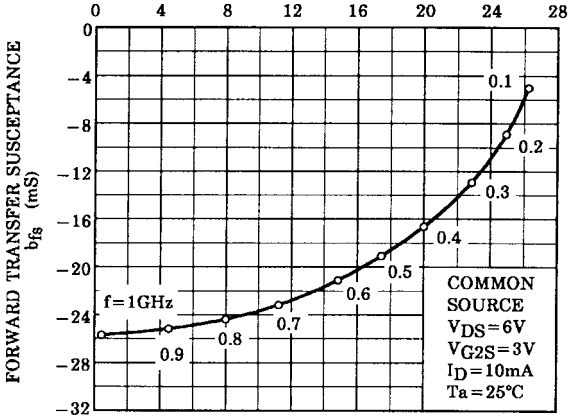
$Y_{is} - f$



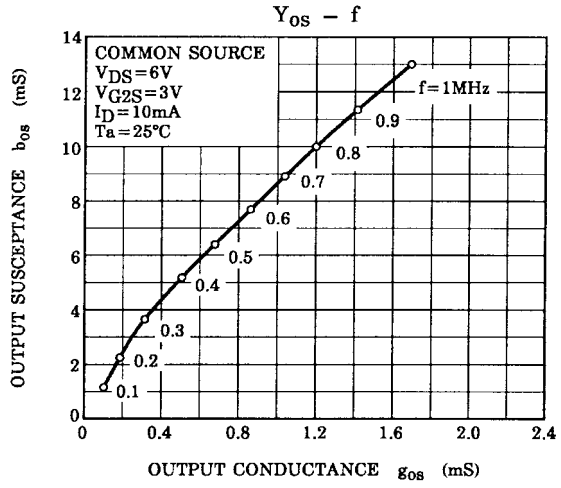
Y_{rs} – f



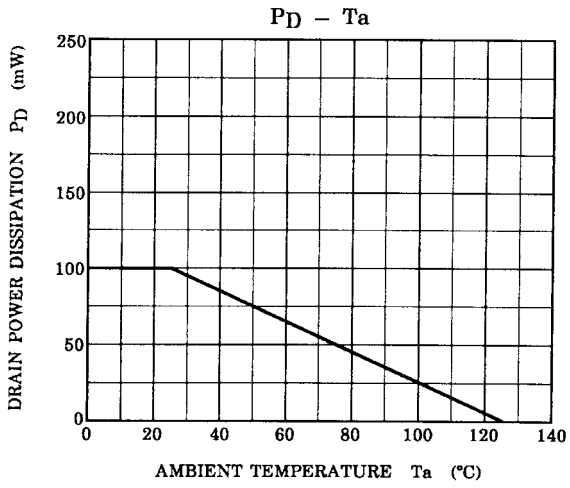
Y_{fs} – f



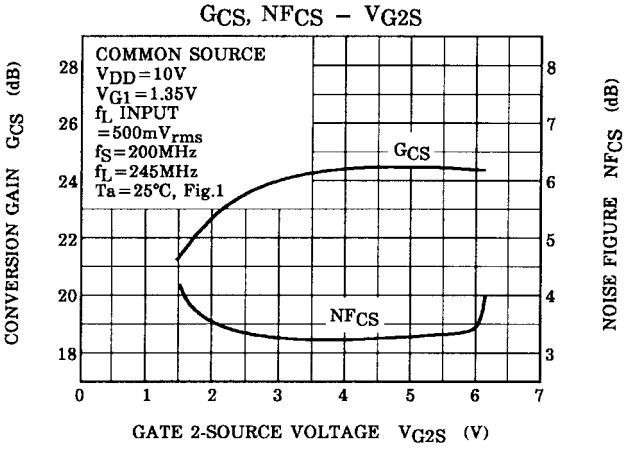
Y_{os} – f



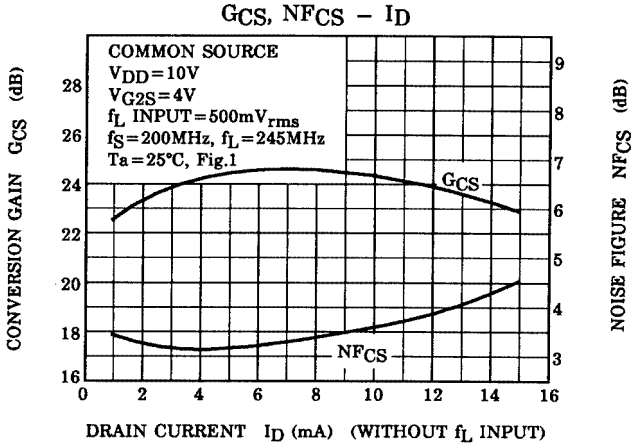
P_D – Ta



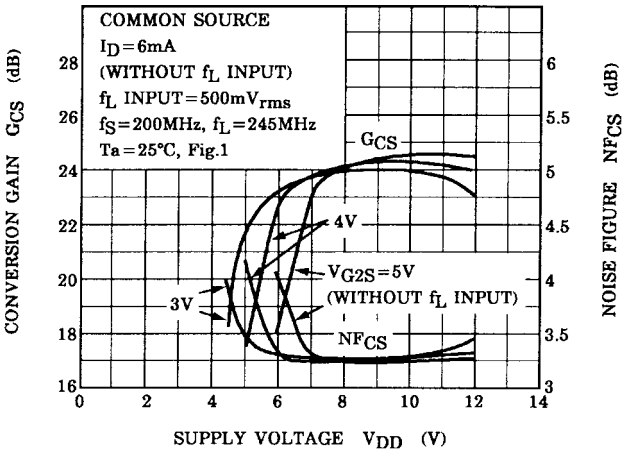
G_{CS}, NF_{CS} – V_{G2S}



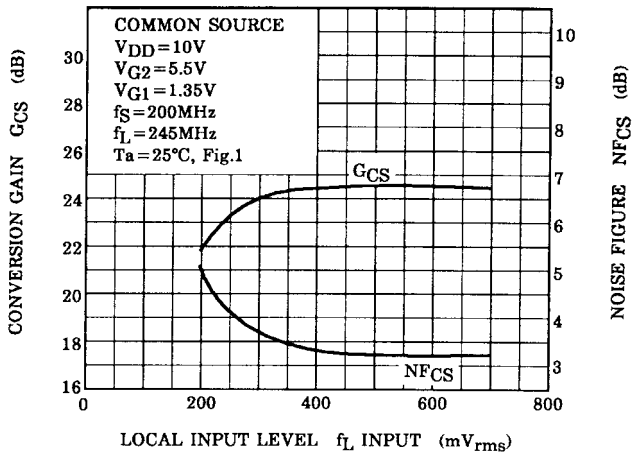
G_{CS}, NF_{CS} – I_D



G_{CS}, NF_{CS} – V_{DD}



G_{CS}, NF_{CS} – f_L INPUT



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