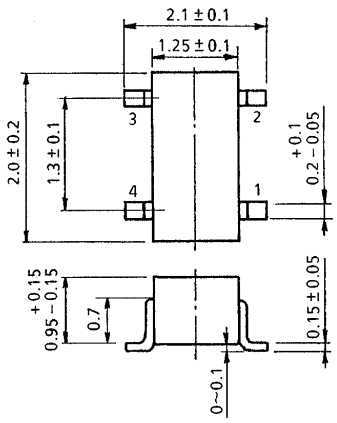
TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL DUAL GATE MOS TYPE

3SK249

TV TUNER, UHF RF AMPLIFIER APPLICATIONS

- Superior Cross Modulation Performance.
- Low Reverse Transfer Capacitance : C_{rss} = 20fF (Typ.)
- Low Noise Figure. : NF = 1.5dB (Typ.)

Unit in mm



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

USQ

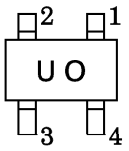
JEDEC	—
EIAJ	—
TOSHIBA	2-2K1B

Weight : 0.006g

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DS}	12.5	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
Chanel Temperature	T_{ch}	125	°C
Storage Temperature Range	T_{stg}	−55~125	°C

Marking



ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate 1 Leakage Current	I_{G1SS}	V_{DS}=0, V_{G1S}=±6V, V_{G2S}=0	—	—	±50	nA
Gate 2 Leakage Current	I_{G2SS}	V_{DS}=0, V_{G1S}=0, V_{G2S}=±6V	—	—	±50	nA
Drain-Source Voltage	$V_{(BR)DSX}$	V_{G1S}=−0.5V, V_{G2S}=−0.5V, I_D=100μA	12.5	—	—	V
Drain Current	I_{DSS}	V_{DS}=6V, V_{G2S}=4.5V, V_{G1S}=0V	0	—	0.1	mA
Gate 1-Source Cut-off Voltage	$V_{G1S(OFF)}$	V_{DS}=6V, V_{G2S}=4.5V, I_D=100μA	0.4	0.9	1.4	V
Gate 2-Source Cut-off Voltage	$V_{G2S(OFF)}$	V_{DS}=6V, V_{G1S}=4.0V, I_D=100μA	0.5	1.0	1.5	V
Forward Transfer Admittance	$\|Y_{fs}\|$	V_{DS}=6V, V_{G2S}=4.5V, I_D=10mA, f=1kHz	17	21	—	mS
Input Capacitance	C_{iss}	V_{DS}=6V, V_{G2S}=4.5V, I_D=10mA, f=1MHz	0.9	1.5	2.1	pF
Reverse Transfer Capacitance	C_{rss}		—	20	40	fF
Power Gain	G_{ps}	V_{DS}=6V, V_{G2S}=4.5V, I_D=10mA, f=800MHz	18	20	—	dB
Noise Figure	NF		—	1.5	2.5	

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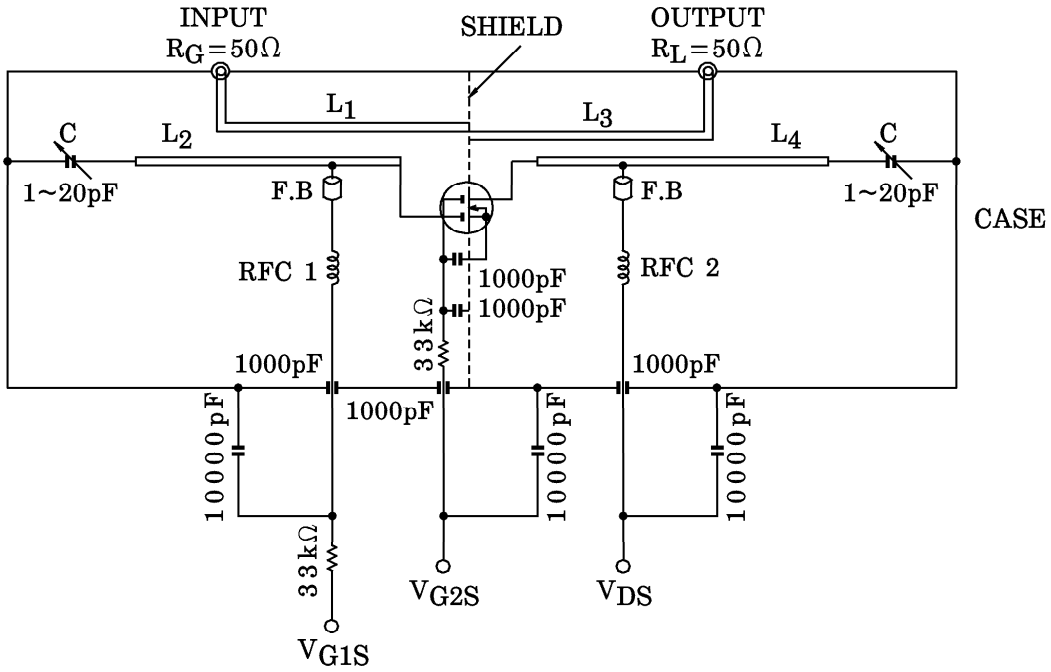
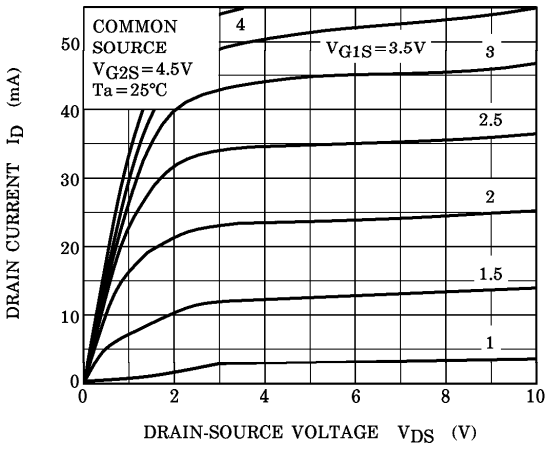
Fig.1 G_{ps}, NF Test Circuit

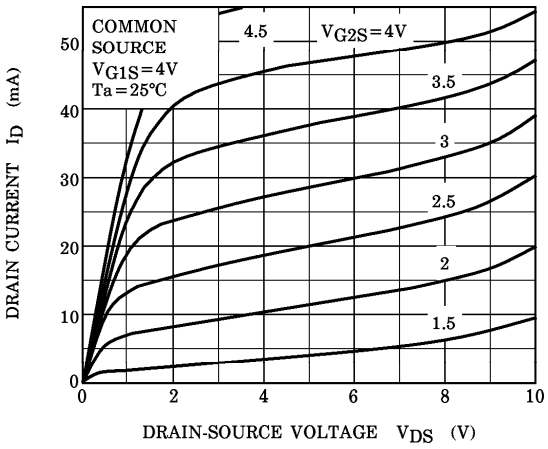


L_1~L_4 : ϕ0.8mm SILVER PLATED COPPER WIRE
C : AIR TRIMMER TTA25A200A (MURATA MFG. Co., Ltd.)
RFC 1 : ϕ0.35mm COPPER WIRE 3mm ID, 7T
RFC 2 : ϕ0.35mm COPPER WIRE 3mm ID, 10T

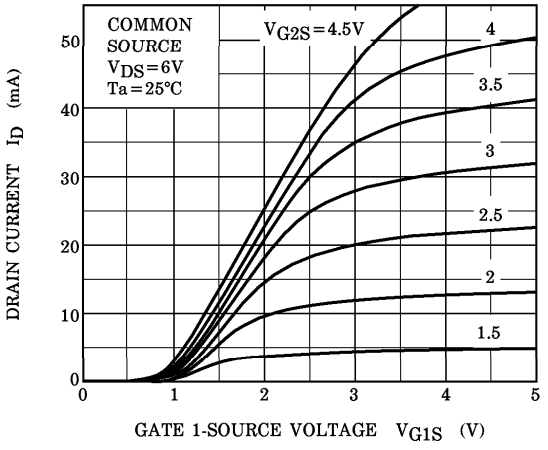
I_D – V_{DS}



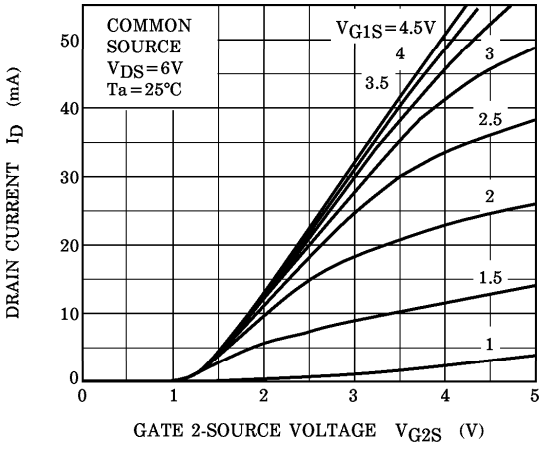
I_D – V_{DS}



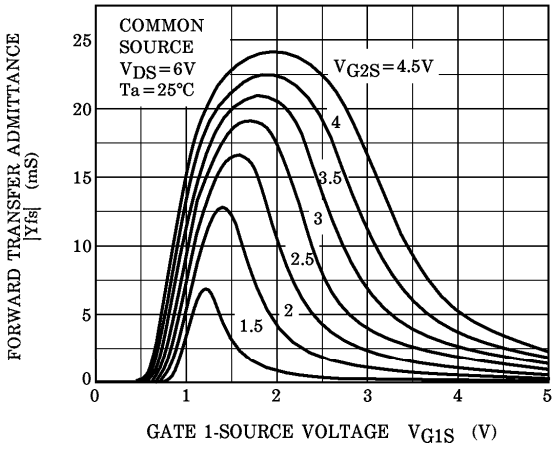
I_D – V_{G1S}



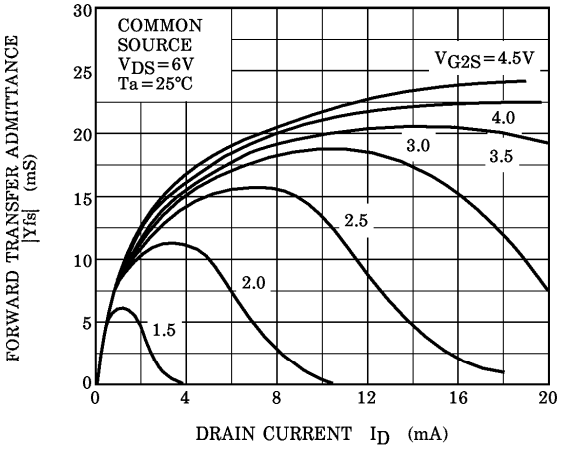
I_D – V_{G2S}



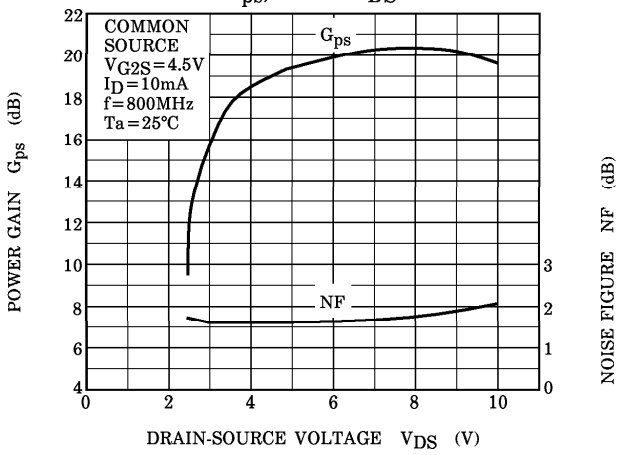
$|Y_{fs}|$ – V_{G1S}



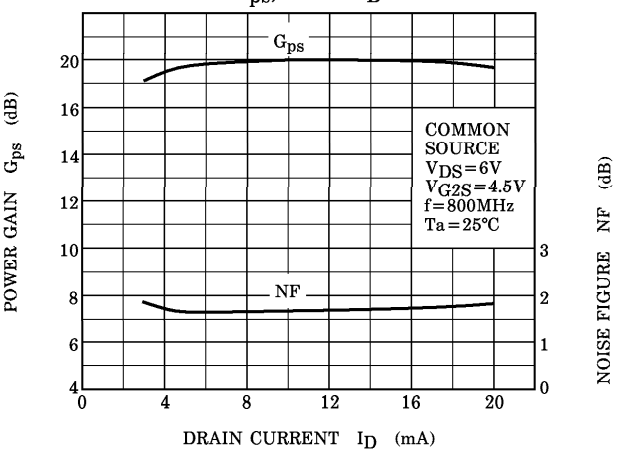
$|Y_{fs}|$ – I_D



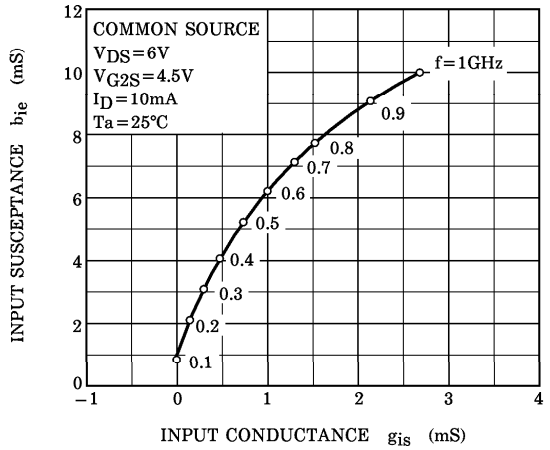
G_{ps}, NF – V_{DS}



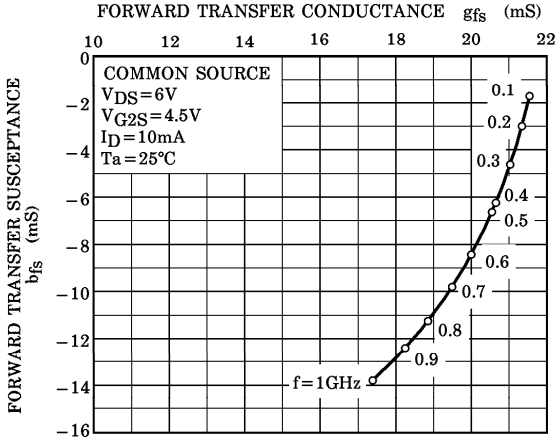
G_{ps}, NF – I_D



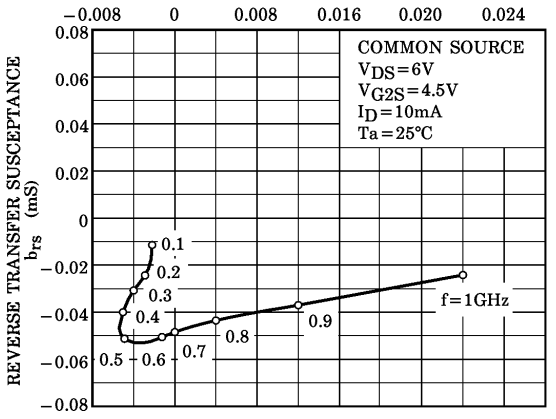
Y_{is} – f



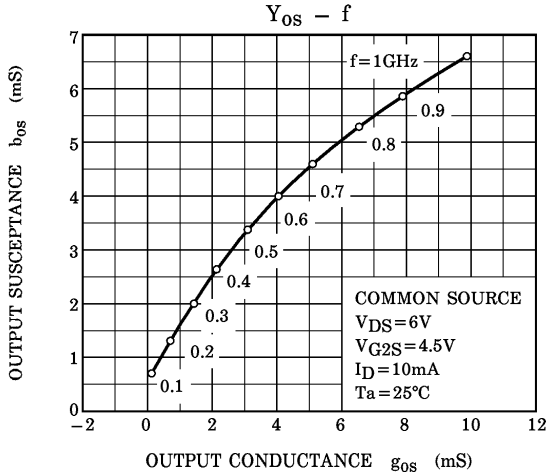
Y_{fs} – f

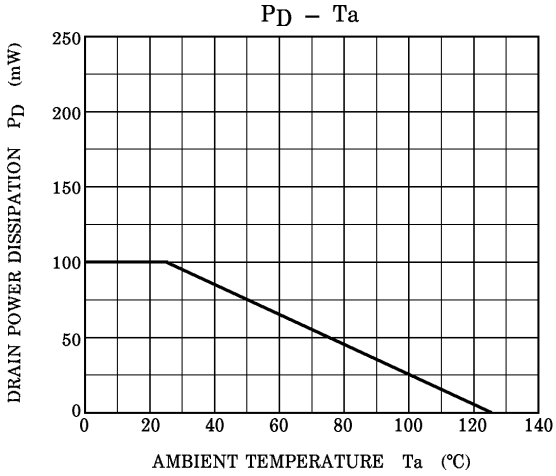


Y_{rs} – f



Y_{os} – f




P_D – Ta
DRAIN POWER DISSIPATION P_D (mW)
250
200
150
100
50
0
0
20
40
60
80
100
120
140
AMBIENT TEMPERATURE Ta (°C)