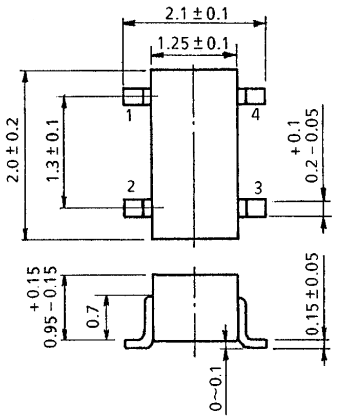
TOSHIBA FIELD EFFECT TRANSISTOR SILICON N-CHANNEL DUAL GATE MOS TYPE

3SK294

TV TUNER, VHF RF AMPLIFIER APPLICATION

- Superior Cross Modulation Performance
- Low Reverse Transfer Capacitance : C_{rss} = 20fF (Typ.)
- Low Noise Figure : NF = 1.4dB (Typ.)

Unit in mm



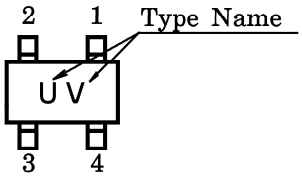
1. GATE 1
2. GATE 2
3. DRAIN
4. SOURCE

JEDEC	—
EIAJ	—
TOSHIBA	2-2K1B

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
Channel 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_{G1S} = 0, V_{G2S} = 4.5V	—	—	0.1	mA
Gate 1-Source Cut-off Voltage	$V_{G1S(OFF)}$	V_{DS} = 6V, V_{G2S} = 4.5V, I_D = 100μA	0.3	0.9	1.3	V
Gate 2-Source Cut-off Voltage	$V_{G2S(OFF)}$	V_{DS} = 6V, V_{G2S} = 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	19.5	23.5	—	mS
Input Capacitance	C_{iss}	V_{DS} = 6V, V_{G2S} = 4.5V, I_D = 10mA, f = 1MHz	—	2.5	3.1	pF
Reverse Transfer Capacitance	C_{rss}		—	20	40	fF
Power Gain	G_{ps}	V_{DS} = 6V, V_{G2S} = 4.5V, I_D = 10mA, f = 500MHz	23.5	26.0	—	dB
Noise Figure	NF		—	1.4	2.5	

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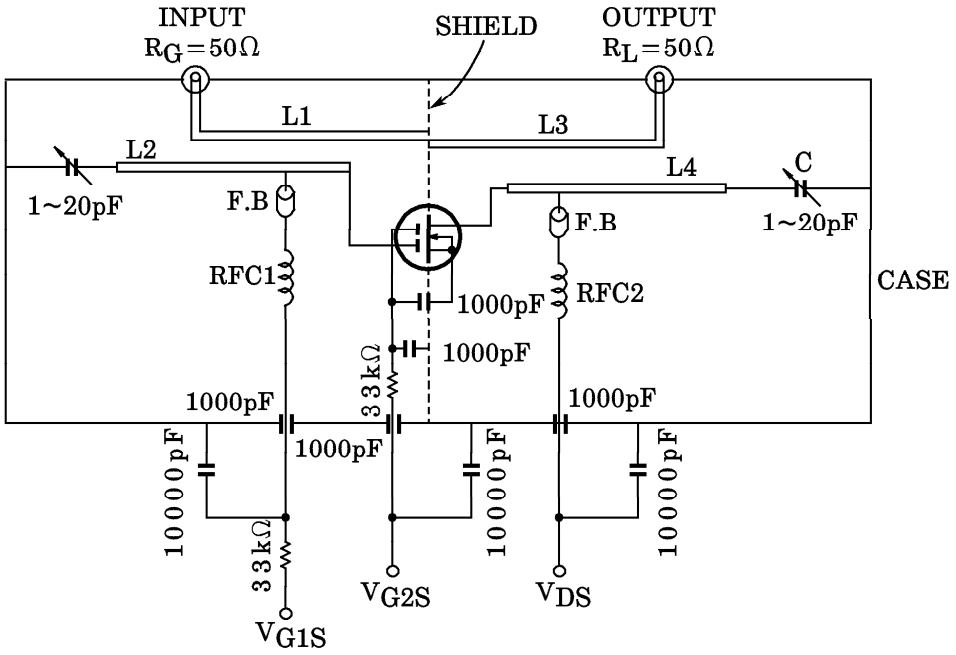
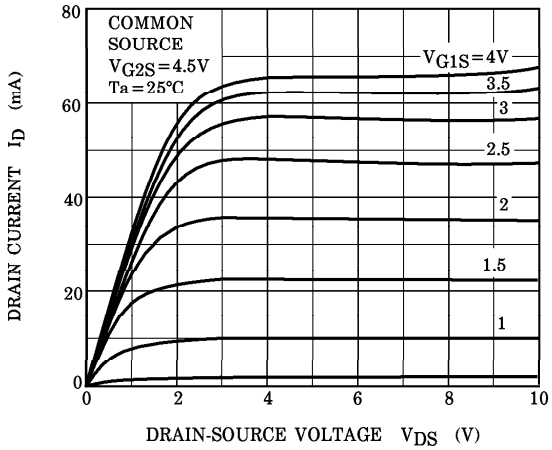
Fig.1 G_{ps} / NF TEST CIRCUIT

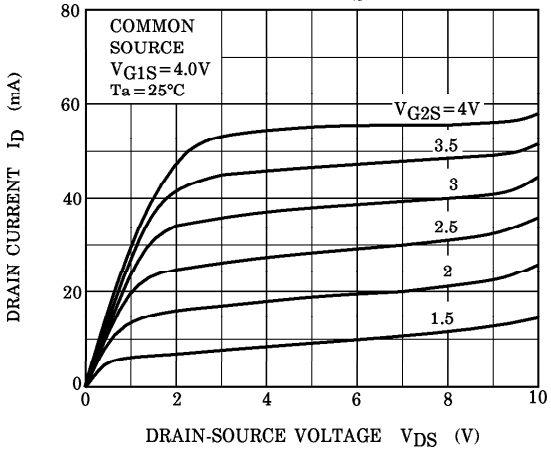


L1~L4 : ϕ0.8mm SILVER PLATED COPPER WIRE
C : AIR TRIMMER TTA25A200A (MURATA MFG, Co., Ltd.)
RFC 1 : ϕ0.35mm VEW 3I.D.7T
RFC 2 : ϕ0.35mm VEW 3I.D.10T

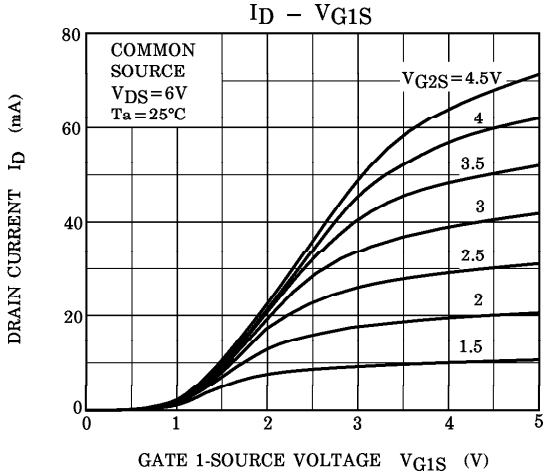
I_D – V_{DS}



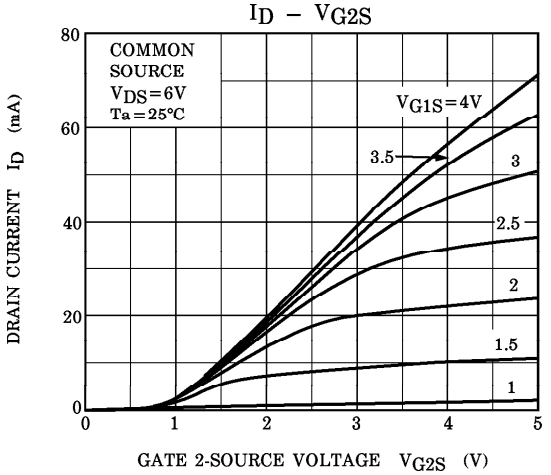
I_D – V_{DS}



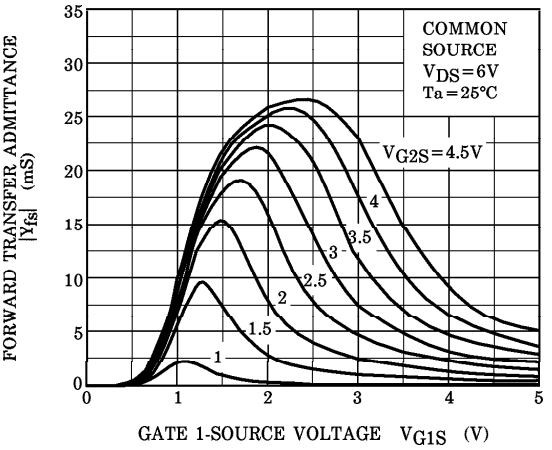
I_D – V_{G1S}



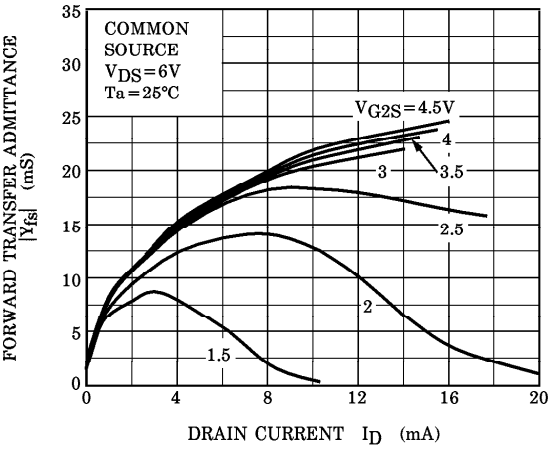
I_D – V_{G2S}



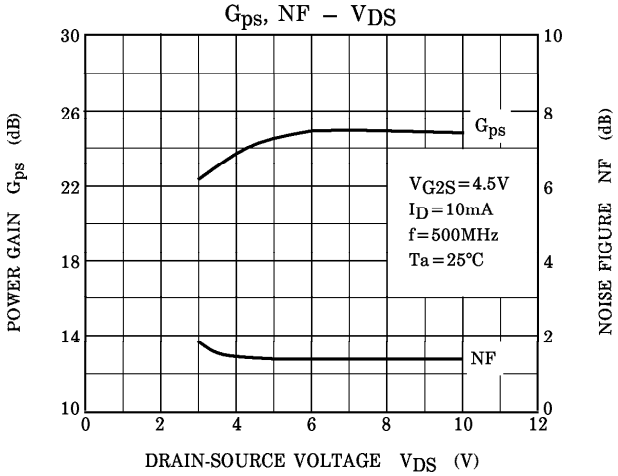
$|Y_{fs}|$ – V_{G1S}



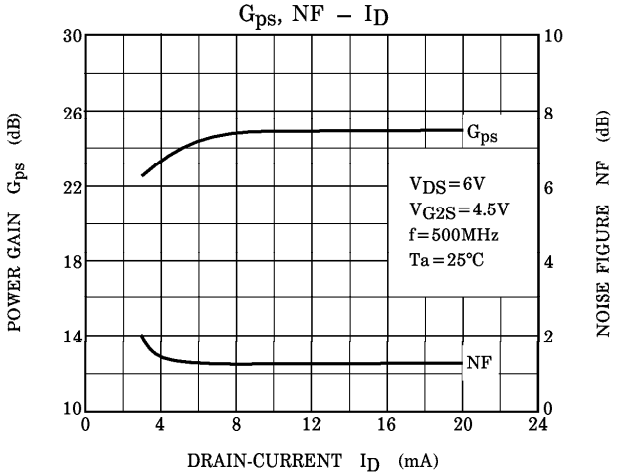
$|Y_{fs}|$ – I_D



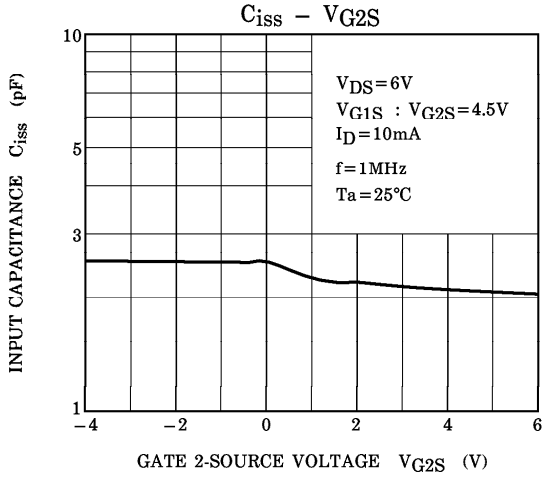
G_{ps}, NF – V_{DS}



G_{ps}, NF – I_D



C_{iss} – V_{G2S}



P_D – Ta