

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL JUNCTION TYPE

2SK170

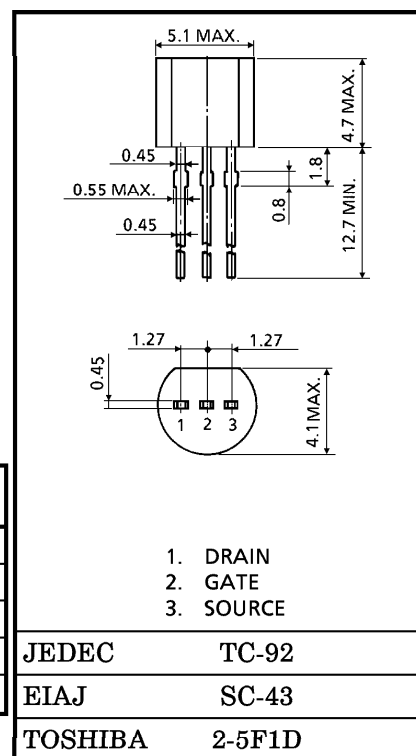
LOW NOISE AUDIO AMPLIFIER APPLICATIONS

Unit in mm

- Recommended for first stages of EQ and M.C. Head Amplifiers.
- High $|Y_{fs}|$: $|Y_{fs}| = 22 \text{ mS (typ.)}$
($V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $I_{DSS} = 3 \text{ mA}$)
- High Breakdown Voltage : $V_{GDS} = -40 \text{ V}$
- Low Noise : $E_n = 0.95 \text{ nV} / \sqrt{\text{Hz}}$ (typ.)
($V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$, $f = 1 \text{ kHz}$)
- High Input Impedance : $I_{GSS} = -1 \text{ nA (max.)}$ ($V_{GS} = -30 \text{ V}$)

MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Gate-Drain Voltage	V_{GDS}	-40	V
Gate Current	I_G	10	mA
Drain Power Dissipation	P_D	400	mW
Junction Temperature	T_j	125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~125	$^\circ\text{C}$



Weight : 0.21 g

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

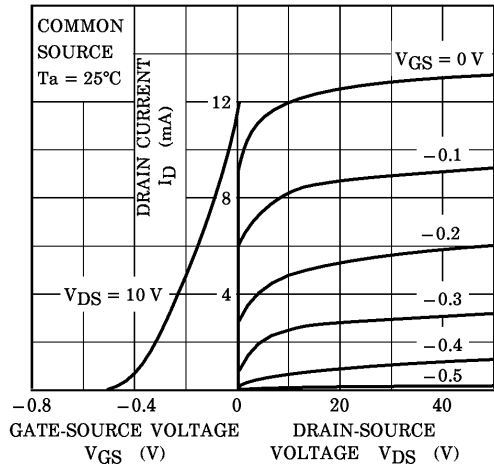
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Cut-off Current	I_{GSS}	$V_{GS} = -30 \text{ V}$, $V_{DS} = 0$	—	—	-1.0	nA
Gate-Drain Breakdown Voltage	$V_{(BR)GDS}$	$V_{DS} = 0$, $I_G = -100 \mu\text{A}$	-40	—	—	V
Drain Current	I_{DSS} (Note)	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$	2.6	—	20	mA
Gate-Source Cut-off Voltage	$V_{GS(OFF)}$	$V_{DS} = 10 \text{ V}$, $I_D = 0.1 \mu\text{A}$	-0.2	—	-1.5	V
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ kHz}$	—	22	—	mS
Input Capacitance	C_{iss}	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$	—	30	—	pF
Reverse Transfer Capacitance	C_{rss}	$V_{DG} = 10 \text{ V}$, $I_D = 0$, $f = 1 \text{ MHz}$	—	6	—	pF
Noise Figure	NF (1)	$V_{DS} = 10 \text{ V}$, $I_D = 1.0 \text{ mA}$, $R_G = 1 \text{ k}\Omega$, $f = 1 \text{ kHz}$	—	1.0	10	dB
	NF (2)	$V_{DS} = 10 \text{ V}$, $I_D = 1.0 \text{ mA}$, $R_G = 1 \text{ k}\Omega$, $f = 1 \text{ kHz}$	—	0.5	2	

(Note) : I_{DSS} Classification GR : 2.6~6.5 mA, BL : 6.0~12 mA, V : 10~20 mA

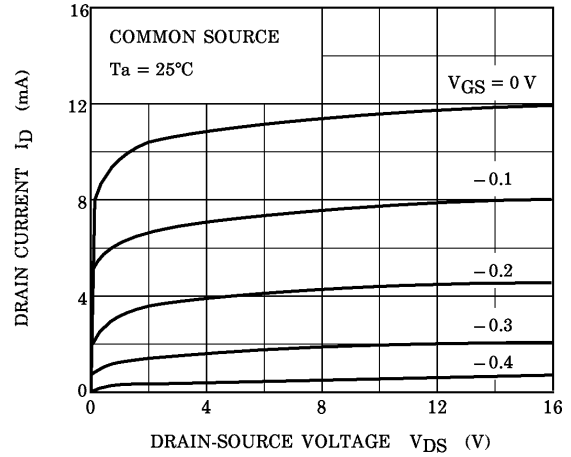
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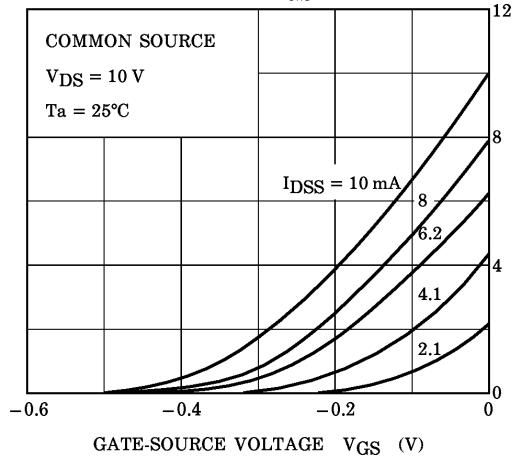
STATIC CHARACTERISTICS



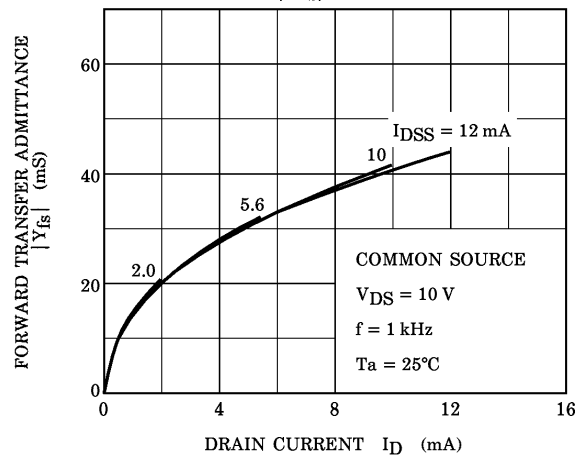
ID - VDS (LOW VOLTAGE REGION)



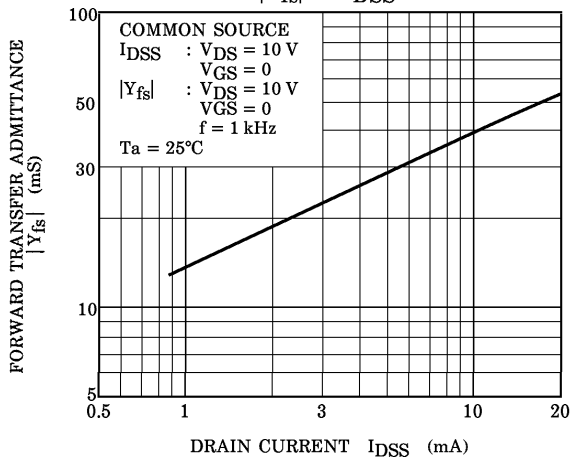
ID - VGS



|Yfs| - ID



|Yfs| - IDSS



VGS(OFF) - IDSS

