

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL JUNCTION TYPE

2SK170

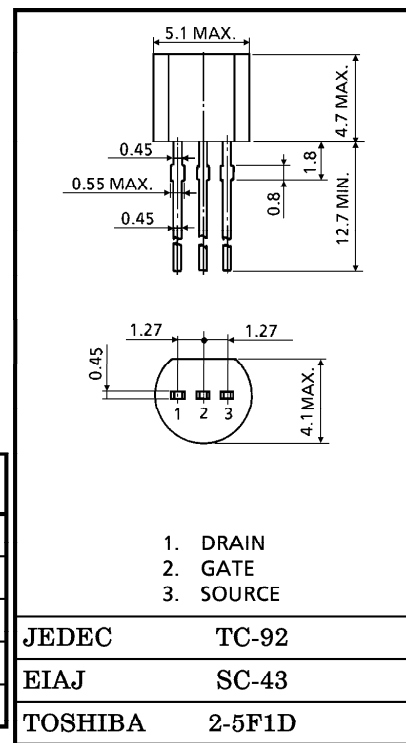
LOW NOISE AUDIO AMPLIFIER APPLICATIONS

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 : 0.21g

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

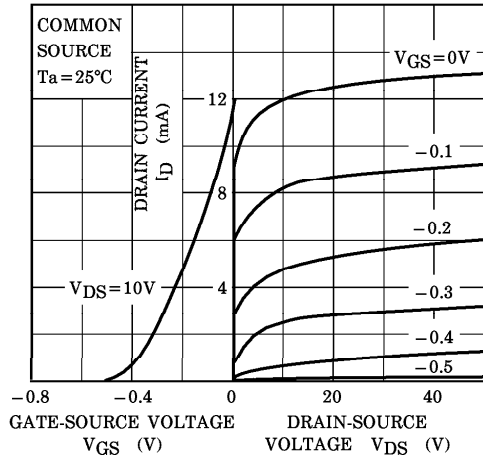
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Cut-off Current	I_{GSS}	$V_{GS} = -30\text{V}$, $V_{DS} = 0$	—	—	-1.0	nA
Gate-Drain Breakdown Voltage	$V_{(BR)GDS}$	$V_{DS} = 0$, $I_G = -100\mu\text{A}$	-40	—	—	V
Drain Current	I_{DSS} (Note)	$V_{DS} = 10\text{V}$, $V_{GS} = 0$	2.6	—	20	mA
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 : 2.6~6.5mA, BL : 6.0~12mA, V : 10~20mA

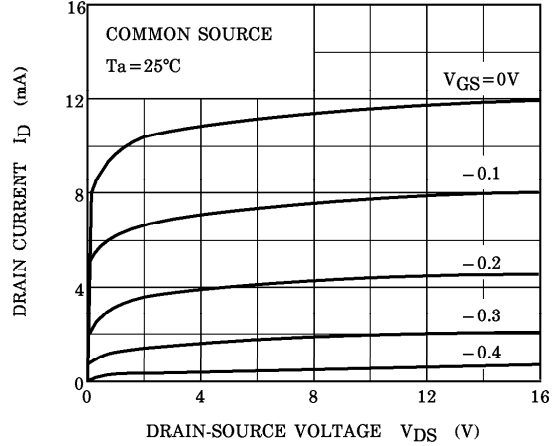
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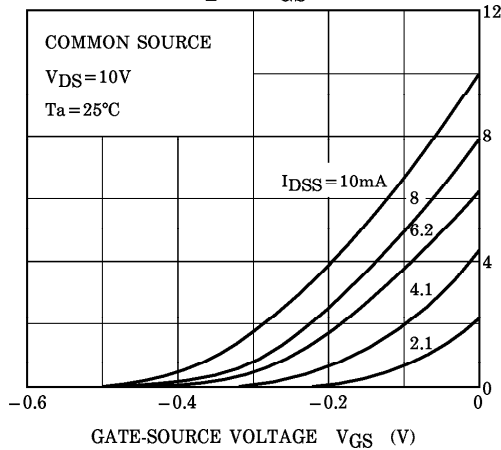
STATIC CHARACTERISTICS



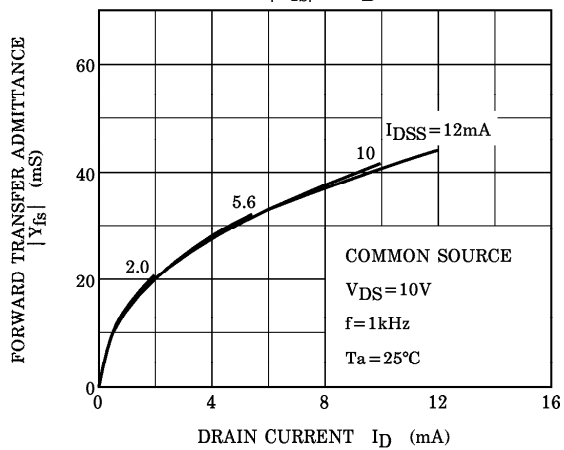
$I_D - V_{DS}$ (LOW VOLTAGE REGION)



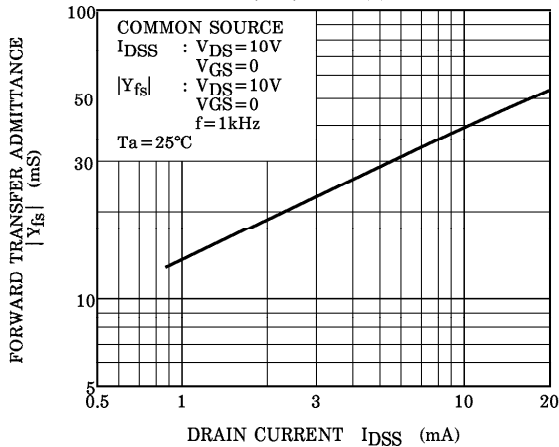
$I_D - V_{GS}$



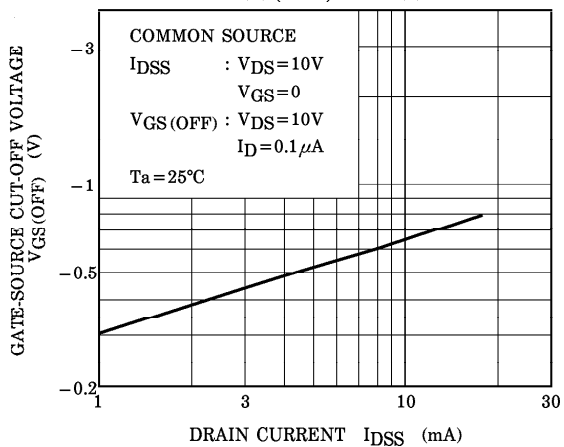
$|Y_{fs}| - I_D$



$|Y_{fs}| - I_{DSS}$



$V_{GS(OFF)} - I_{DSS}$



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