

TOSHIBA Field Effect Transistor Silicon P Channel Junction Type

## 2SJ74

### Low Noise Audio Amplifier Applications

Unit: mm

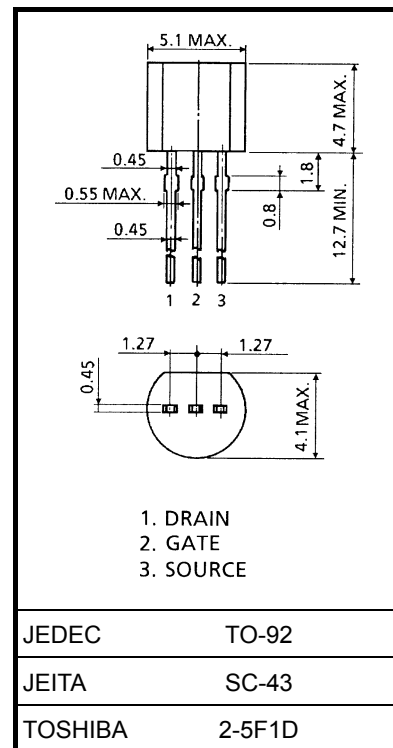
- Recommended for first stages of EQ amplifiers and M.C. head amplifiers.
- High  $|Y_{fs}|$ :  $|Y_{fs}| = 22 \text{ mS (typ.)}$   
( $V_{DS} = -10 \text{ V}$ ,  $V_{GS} = 0$ ,  $I_{DSS} = -3 \text{ mA}$ )
- Low noise:  $E_n = 0.95 \text{ nV/Hz}^{1/2} \text{ (typ.)}$   
( $V_{DS} = -10 \text{ V}$ ,  $I_D = -1 \text{ mA}$ ,  $f = 1 \text{ kHz}$ )
- High input impedance:  $I_{GSS} = 1.0 \text{ nA (max)}$  ( $V_{GS} = 25 \text{ V}$ )
- Complimentary to 2SK170

### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Characteristics	Symbol	Rating	Unit
Gate-drain voltage	$V_{GDS}$	25	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	$^\circ\text{C}$

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).



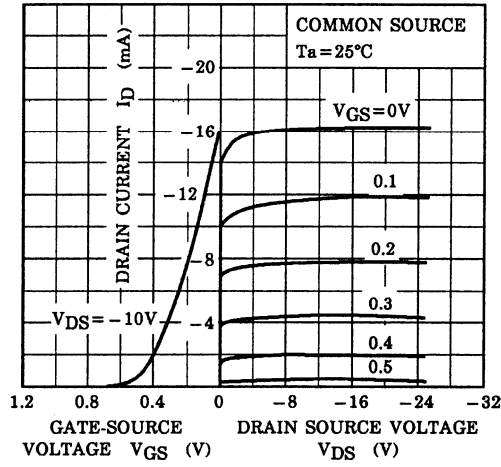
Weight: 0.21 g (typ.)

### Electrical Characteristics ( $T_a = 25^\circ\text{C}$ )

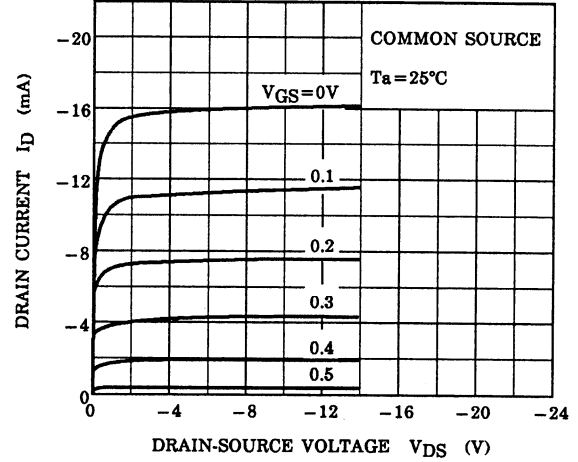
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate cut-off current	$I_{GSS}$	$V_{GS} = 25 \text{ V}$ , $V_{DS} = 0$	—	—	1.0	nA
Gate-drain breakdown voltage	$V_{(BR) GDS}$	$V_{DS} = 0$ , $I_G = 100 \mu\text{A}$	25	—	—	V
Drain current	$I_{DSS}$ (Note)	$V_{DS} = -10 \text{ V}$ , $V_{GS} = 0$	-2.6	—	-20	mA
Gate-source cut-off voltage	$V_{GS (OFF)}$	$V_{DS} = -10 \text{ V}$ , $I_D = -0.1 \mu\text{A}$	0.15	—	2.0	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = -10 \text{ V}$ , $V_{GS} = 0$ , $f = 1 \text{ kHz}$	8	22	—	mS
Input capacitance	$C_{iss}$	$V_{DS} = -10 \text{ V}$ , $V_{GS} = 0$ , $f = 1 \text{ MHz}$	—	105	—	pF
Reverse transfer capacitance	$C_{rss}$	$V_{DG} = -10 \text{ V}$ , $I_D = 0$ , $f = 1 \text{ MHz}$	—	32	—	pF
Noise figure	NF (1)	$V_{DS} = -10 \text{ V}$ , $I_D = -1 \text{ mA}$ , $R_G = 1 \text{ k}\Omega$ , $f = 10 \text{ Hz}$	—	1.0	10	dB
	NG (2)	$V_{DS} = -10 \text{ V}$ , $I_D = -1 \text{ mA}$ , $R_G = 1 \text{ k}\Omega$ , $f = 1 \text{ kHz}$	—	0.5	2	

Note:  $I_{DSS}$  classification GR: -2.6~-6.5 mA, BL: -6.0~-12 mA, V: -10~-20 mA

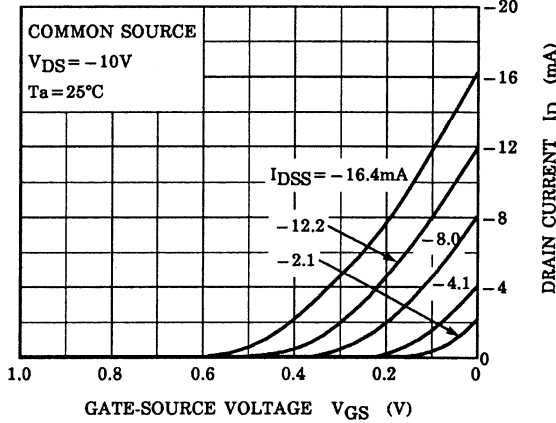
STATIC CHARACTERISTICS



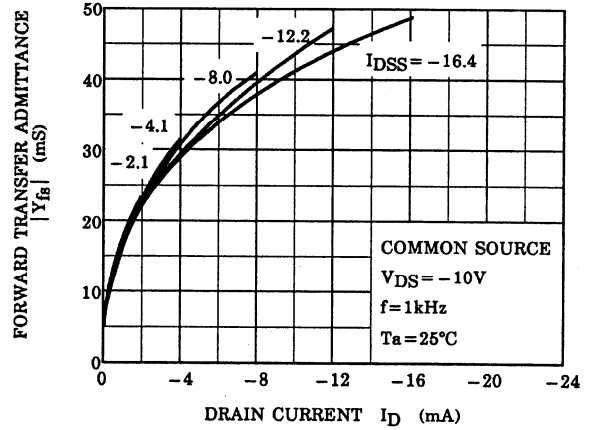
$I_D - V_{DS}$  (LOW VOLTAGE REGION)



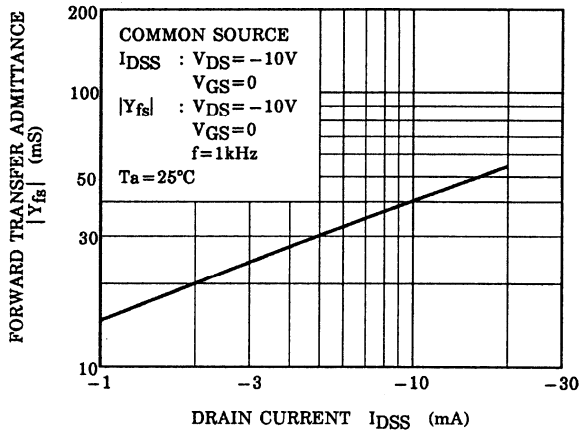
$I_D - V_{GS}$



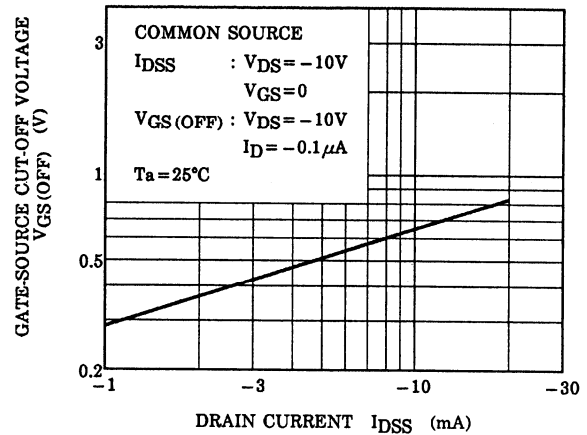
$|Y_{fs}| - I_D$

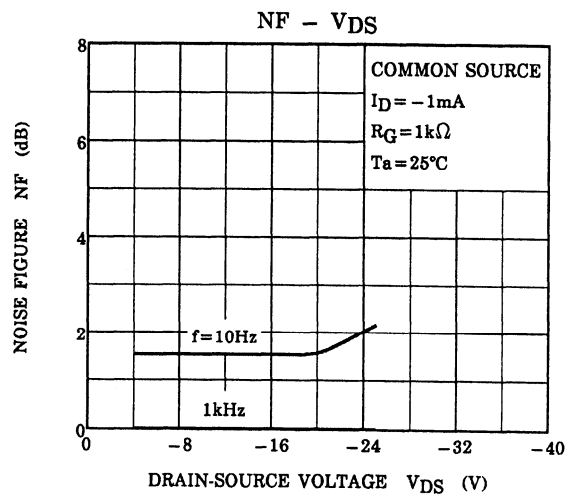
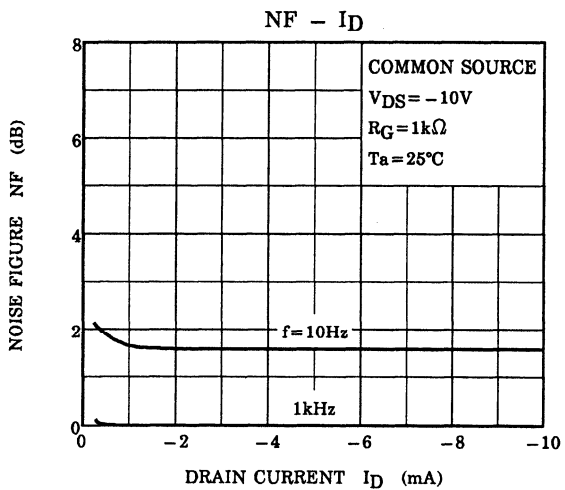
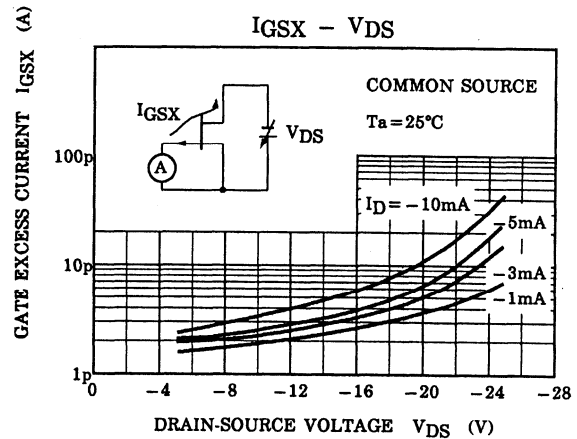
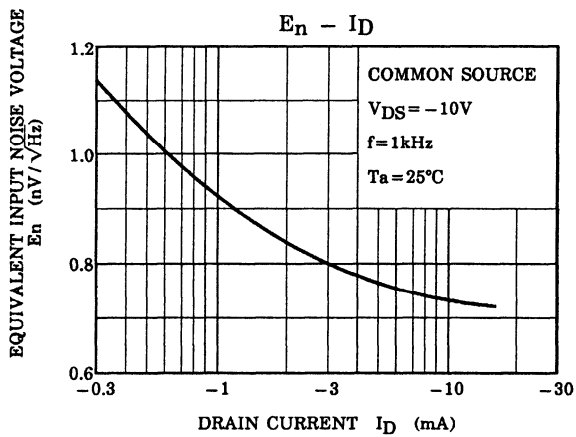
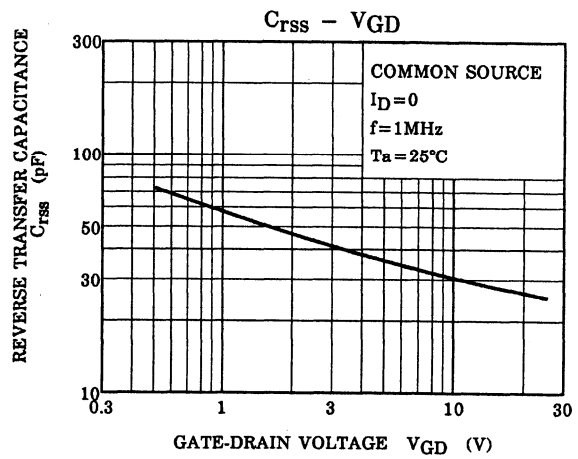
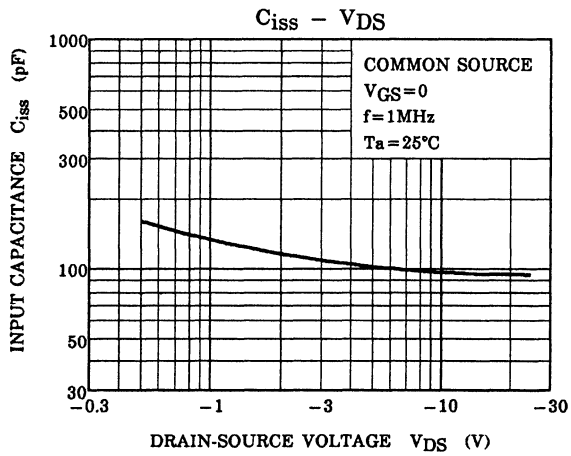


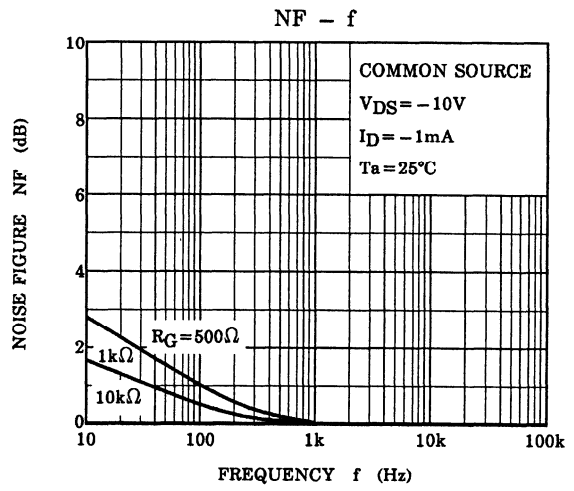
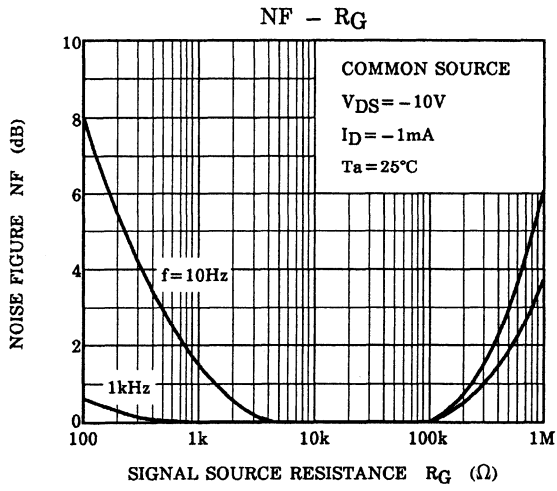
$|Y_{fs}| - I_{DSS}$



VGS(OFF) - IDSS







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