

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL JUNCTION TYPE

# 2SK371

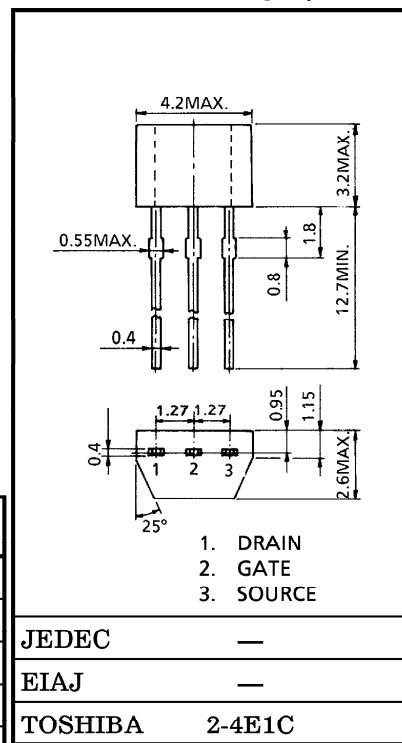
FOR LOW NOISE AUDIO AMPLIFIER APPLICATIONS

Unit in mm

- Suitable for Use as First Stage for Equalizer and MC Head Amplifiers.
- High  $|Y_{fs}|$  :  $|Y_{fs}| = 40\text{mS (Typ.)}$  ( $V_{DS} = 10\text{V}$ ,  $V_{GS} = 0$ ,  $I_{DSS} = 5\text{mA}$ )
- High Breakdown Voltage :  $V_{GDS} = -40\text{V}$
- Super Low Noise  
:  $NF = 1.0\text{dB (Typ.)}$  ( $V_{DS} = 10\text{V}$ ,  $I_D = 5\text{mA}$ ,  $f = 1\text{kHz}$ ,  $R_G = 100\Omega$ )
- High Input Impedance :  $I_{GSS} = -1\text{nA (Max.)}$  ( $V_{GS} = -30\text{V}$ )
- Small Package

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   | $P_D$     | 200     | mW               |
| Junction Temperature      | $T_j$     | 125     | $^\circ\text{C}$ |
| Storage Temperature Range | $T_{stg}$ | -55~125 | $^\circ\text{C}$ |



|         |        |
|---------|--------|
| JEDEC   | —      |
| EIAJ    | —      |
| TOSHIBA | 2-4E1C |

Weight : 0.13g

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                | $I_{DSS}$<br>(Note 1) | $V_{DS} = 10\text{V}$ , $V_{GS} = 0$  | 5.0  | —    | 30   | mA   |
| Gate-Source Cut-off Voltage  | $V_{GS(OFF)}$         | $V_{DS} = 10\text{V}$ , $I_D = 0.1\mu\text{A}$  | -0.3 | —    | -1.2 | V    |
| Forward Transfer Admittance  | $ Y_{fs} $            | $V_{DS} = 10\text{V}$ , $V_{GS} = 0$ , $f = 1\text{kHz}$ ,<br>(TYP : $I_{DSS} = 5\text{mA}$ ) | 25   | 40   | —    | mS   |
| Input Capacitance            | $C_{iss}$             | $V_{DS} = 10\text{V}$ , $V_{GS} = 0$ , $f = 1\text{MHz}$                                      | —    | 75   | —    | pF   |
| Reverse Transfer Capacitance | $C_{rss}$             | $V_{DG} = 10\text{V}$ , $I_D = 0$ , $f = 1\text{MHz}$   | —    | 15   | —    | pF   |
| Noise Figure (Note 2)        | NF (1)                | $V_{DS} = 10\text{V}$ , $R_G = 100\Omega$ ,<br>$I_D = 5\text{mA}$ , $f = 100\text{Hz}$        | —    | 5    | 10   | dB   |
|                              | NF (2)                | $V_{DS} = 10\text{V}$ , $R_G = 100\Omega$ ,<br>$I_D = 5\text{mA}$ , $f = 1\text{kHz}$         | —    | 1    | 2    |      |

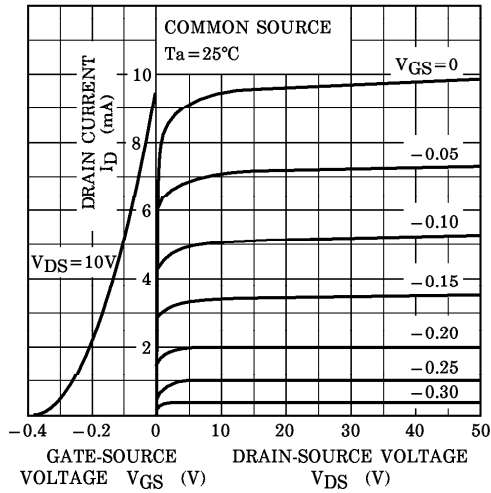
Note 1 :  $I_{DSS}$  Classification GR : 5.0~10.0mA, BL : 8.0~16.0mA, V : 14.0~30.0mA

Note 2 : Use this in the low voltage region ( $V_{DS} < 15\text{V}$ ) for low noise applications.

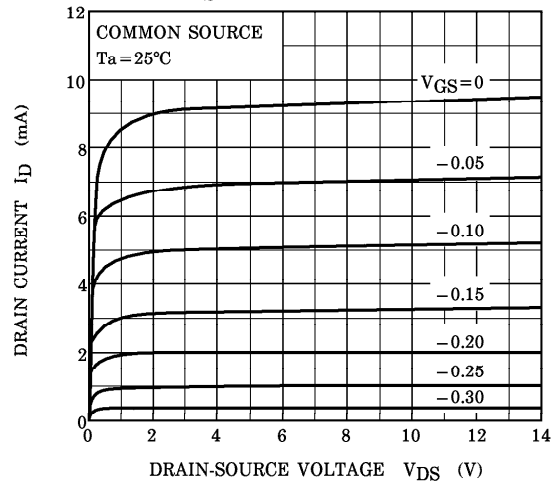
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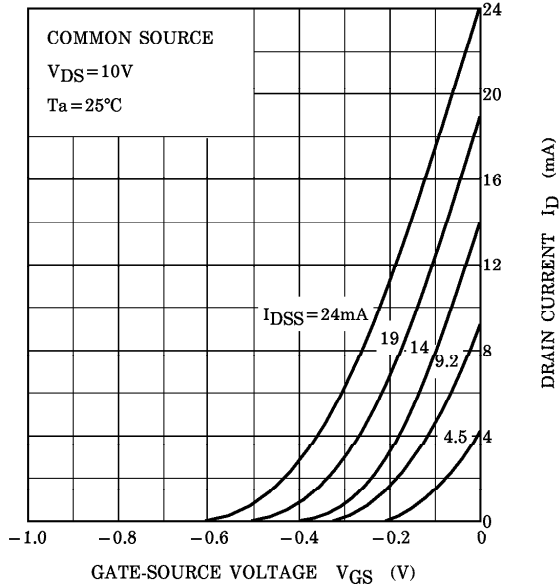
STATIC CHARACTERISTIC



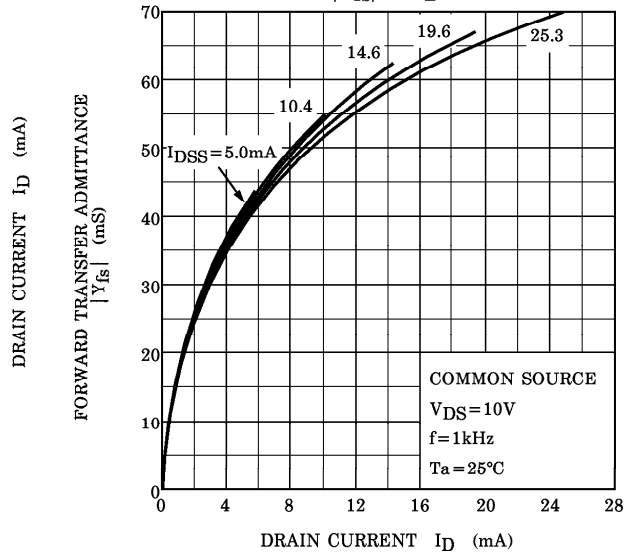
$I_D - V_{DS}$  (LOW VOLTAGE REGION)



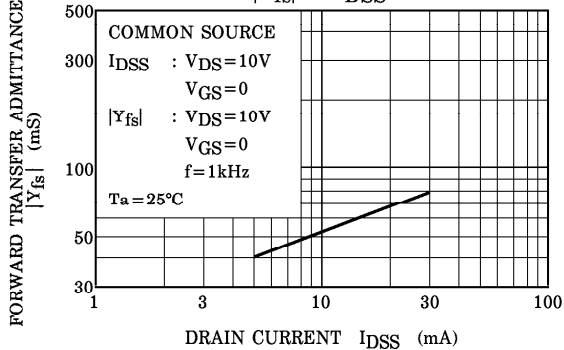
$I_D - V_{GS}$



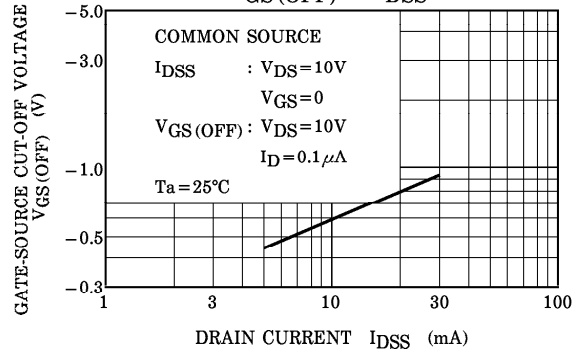
$|Y_{fs}| - I_D$



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



VGS(OFF) - IDSS



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