

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL JUNCTION TYPE

2SK117

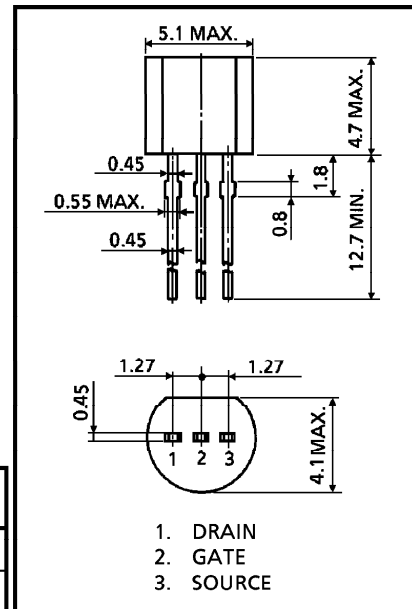
LOW NOISE AUDIO AMPLIFIER APPLICATIONS

Unit in mm

- High $|Y_{fs}|$: $|Y_{fs}| = 15\text{mS}$ (Typ.)
($V_{DS} = 10\text{V}$, $V_{GS} = 0$)
- High Breakdown Voltage : $V_{GDS} = -50\text{V}$
- Low Noise : $NF = 1.0\text{dB}$ (Typ.) ($V_{DS} = 10\text{V}$,
 $I_D = 0.5\text{mA}$, $f = 1\text{kHz}$, $R_G = 1\text{k}\Omega$)
- 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} | -50 | V |
| Gate Current | I_G | 10 | mA |
| Drain Power Dissipation | P_D | 300 | mW |
| Junction Temperature | T_j | 125 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | -55~125 | $^\circ\text{C}$ |



| | |
|---------|--------|
| JEDEC | TO-92 |
| EIAJ | SC-43 |
| TOSHIBA | 2-5F1D |

Weight : 0.21g

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

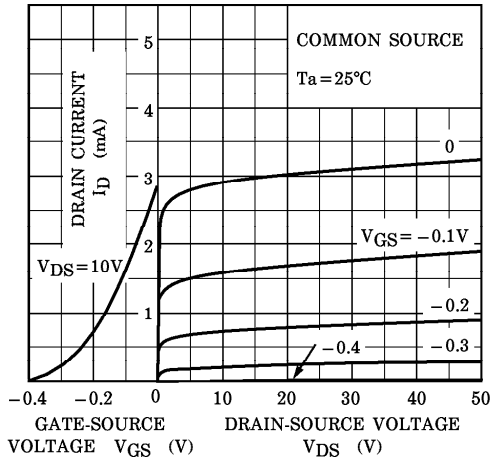
| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|------------------------------|------------------|---|------|------|------|------|
| Gate Cut-off Current | I_{GSS} | $V_{GS} = -30\text{V}$, $V_{DS} = 0$ | — | — | -1.0 | nA |
| Gate-Drain Breakdown Voltage | $V_{(BR)GDS}$ | $V_{DS} = 0$, $I_G = -100\mu\text{A}$ | -50 | — | — | V |
| Drain Current | I_{DSS} (Note) | $V_{DS} = 10\text{V}$, $V_{GS} = 0$ | 1.2 | — | 14 | 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} $ | $V_{DS} = 10\text{V}$, $V_{GS} = 0$, $f = 1\text{kHz}$ | 4.0 | 15 | — | mS |
| Input Capacitance | C_{iss} | $V_{DS} = 10\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$ | — | 13 | — | pF |
| Reverse Transfer Capacitance | C_{rss} | $V_{GD} = -10\text{V}$, $I_D = 0$, $f = 1\text{MHz}$ | — | 3 | — | pF |
| Noise Figure | NF (1) | $V_{DS} = 10\text{V}$, $R_G = 1\text{k}\Omega$ $I_D = 0.5\text{mA}$, $f = 10\text{Hz}$ | — | 5 | 10 | dB |
| | NF (2) | $V_{DS} = 10\text{V}$, $R_G = 1\text{k}\Omega$ $I_D = 0.5\text{mA}$, $f = 1\text{kHz}$ | — | 1 | 2 | |

Note : I_{DSS} Classification Y : 1.2~3.0mA, GR : 2.6~6.5mA, BL : 6~14mA

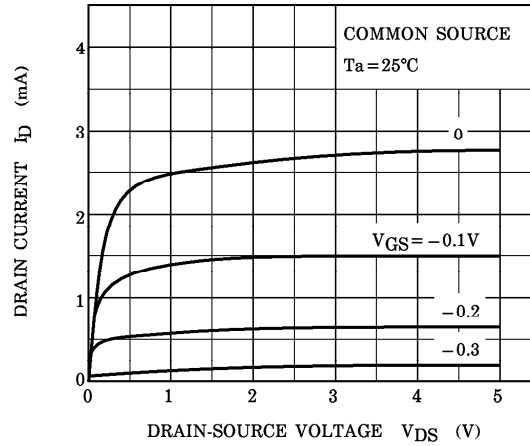
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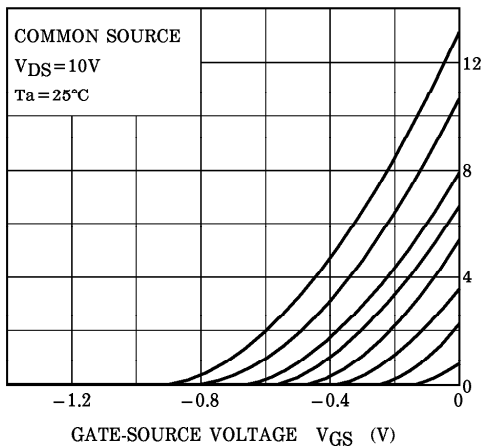
STATIC CHARACTERISTICS



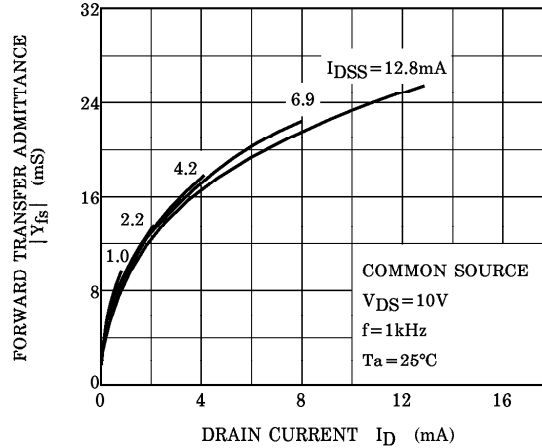
$I_D - V_{DS}$ (LOW VOLTAGE REGION)



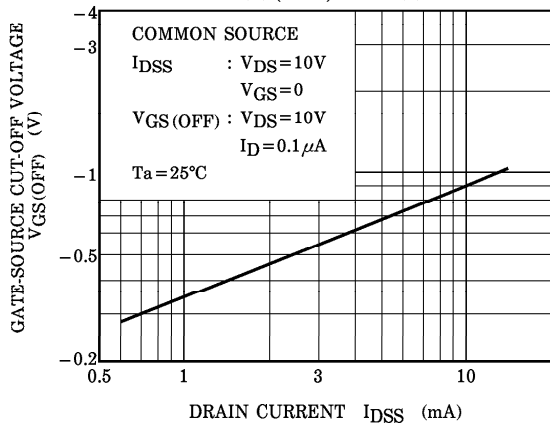
$I_D - V_{GS}$



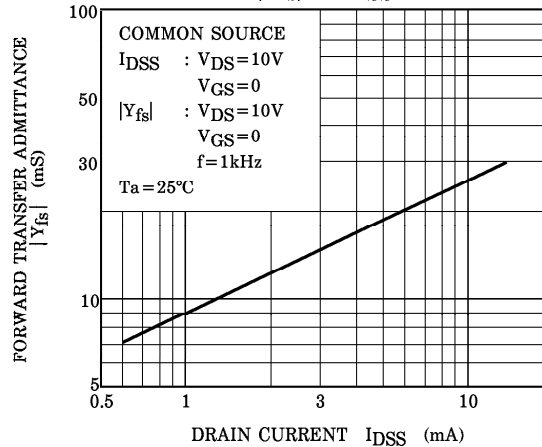
$|Y_{fs}| - I_D$



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



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



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