

TOSHIBA Field Effect Transistor Silicon N Channel Junction Type

# 2SK208

General Purpose and Impedance Converter and  
Condenser Microphone Applications

Unit: mm

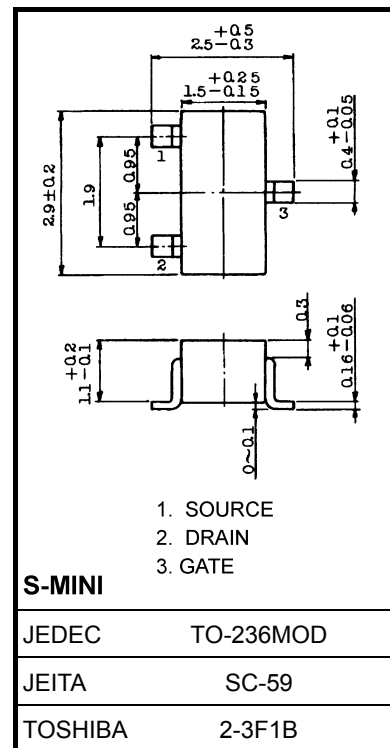
- High breakdown voltage:  $V_{GDS} = -50$  V
- High input impedance:  $I_{GSS} = -1.0$  nA (max) ( $V_{GS} = -30$  V)
- Low noise:  $NF = 0.5$  dB (typ.) ( $R_G = 100$  k $\Omega$ ,  $f = 120$  Hz)
- Small package.

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

| Characteristics           | Symbol    | Rating     | Unit             |
|---------------------------|-----------|------------|------------------|
| Gate-drain voltage        | $V_{GDS}$ | -50        | V                |
| Gate current              | $I_G$     | 10         | mA               |
| Drain power dissipation   | $P_D$     | 100        | mW               |
| Junction temperature      | $T_j$     | 125        | $^\circ\text{C}$ |
| Storage temperature range | $T_{stg}$ | -55 to 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).



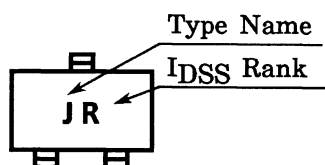
Weight: 0.012 g (typ.)

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

| Characteristics              | Symbol              | Test Condition                                                         | Min  | Typ. | Max  | Unit |
|------------------------------|---------------------|------------------------------------------------------------------------|------|------|------|------|
| Gate cut-off current         | $I_{GSS}$           | $V_{GS} = -30$ V, $V_{DS} = 0$                                         | —    | —    | -1.0 | nA   |
| Gate-drain breakdown voltage | $V_{(BR) GDS}$      | $V_{DS} = 0$ , $I_G = -100$ $\mu$ A                                    | -50  | —    | —    | V    |
| Drain current                | $I_{DSS}$<br>(Note) | $V_{DS} = 10$ V, $V_{GS} = 0$                                          | 0.3  | —    | 6.5  | mA   |
| Gate-source cut-off voltage  | $V_{GS (OFF)}$      | $V_{DS} = 10$ V, $I_D = 0.1$ $\mu$ A                                   | -0.4 | —    | -5.0 | V    |
| Forward transfer admittance  | $ Y_{fs} $          | $V_{DS} = 10$ V, $V_{GS} = 0$ , $f = 1$ kHz                            | 1.2  | —    | —    | mS   |
| Input capacitance            | $C_{iss}$           | $V_{DS} = 10$ V, $V_{GS} = 0$ , $f = 1$ MHz                            | —    | 8.2  | —    | pF   |
| Reverse transfer capacitance | $C_{rss}$           | $V_{GD} = -10$ V, $I_D = 0$ , $f = 1$ MHz                              | —    | 2.6  | —    | pF   |
| Noise figure                 | NF                  | $V_{DS} = 15$ V, $V_{GS} = 0$<br>$R_G = 100$ k $\Omega$ , $f = 120$ Hz | —    | 0.5  | —    | dB   |

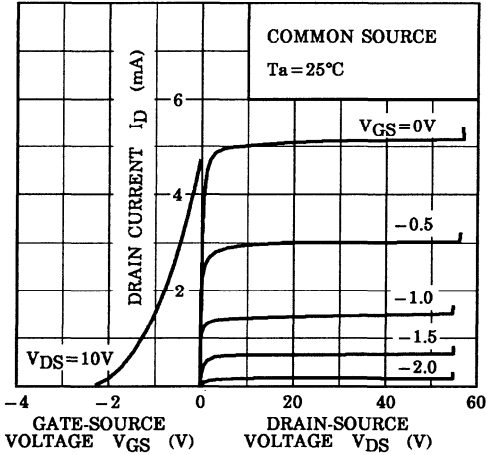
Note:  $I_{DSS}$  classification R: 0.30 to 0.75 mA, O: 0.60 to 1.40 mA, Y: 1.2 to 3.0 mA, GR: 2.6 to 6.5 mA

## Marking

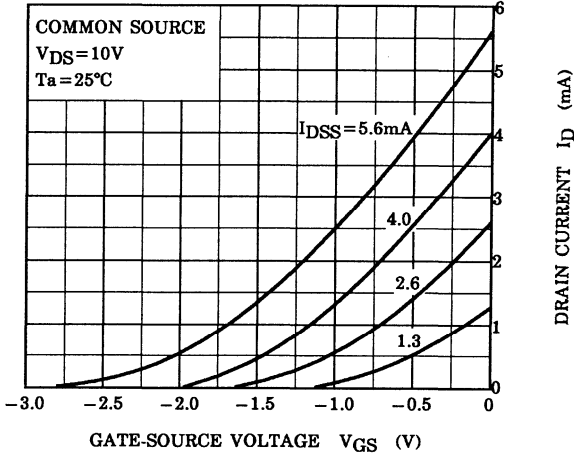


Start of commercial production  
1981-06

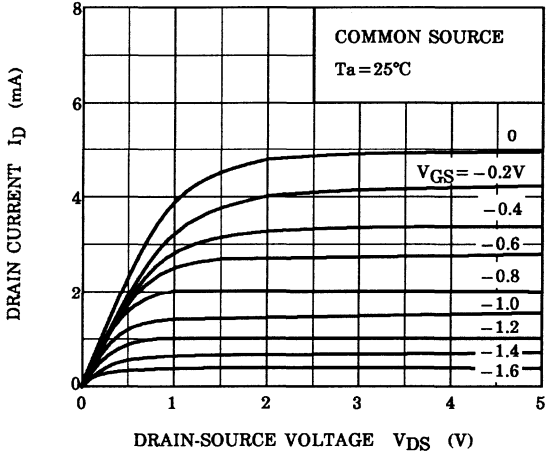
STATIC CHARACTERISTICS



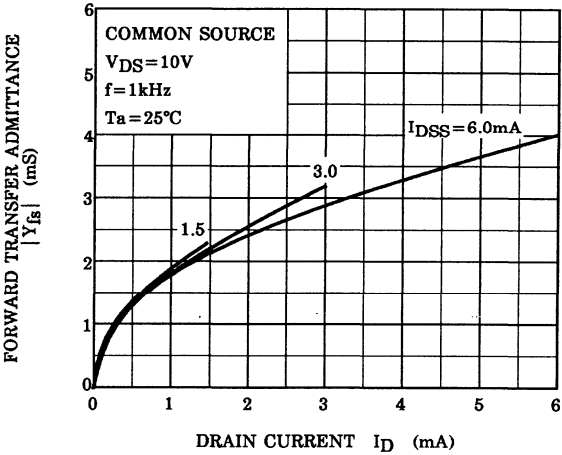
$I_D - V_{GS}$



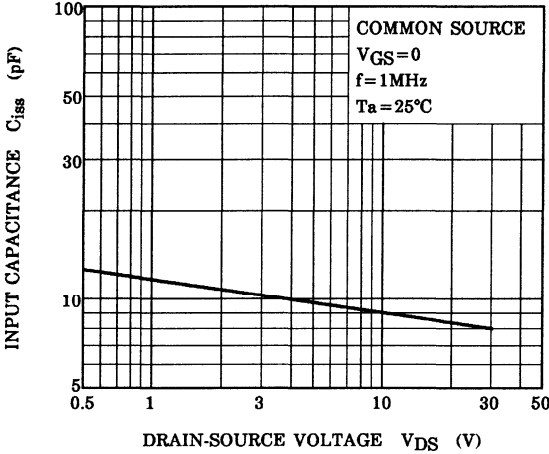
$I_D - V_{DS}$  (LOW VOLTAGE REGION)



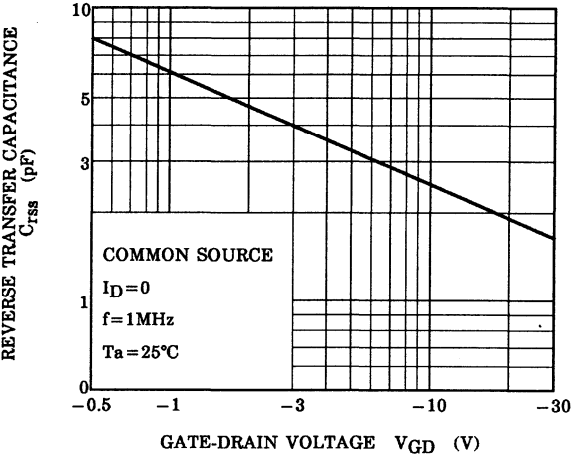
$|Y_{fs}| - I_D$

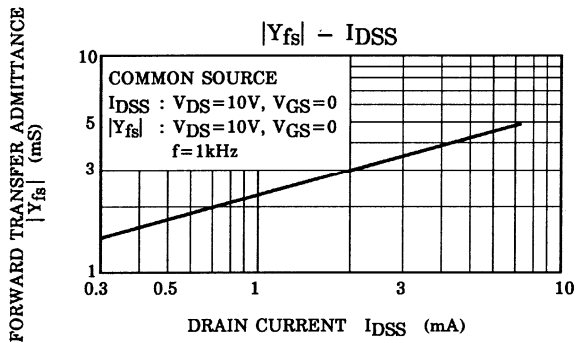
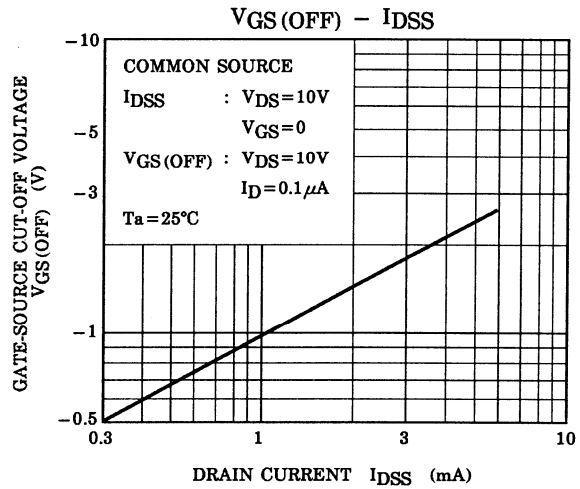
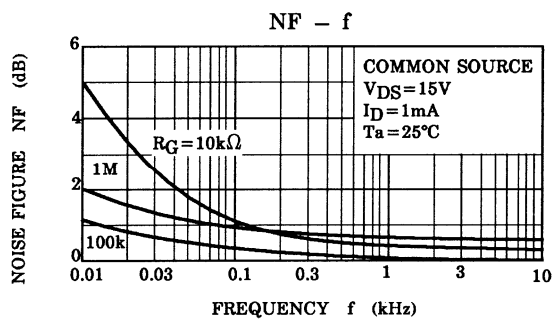
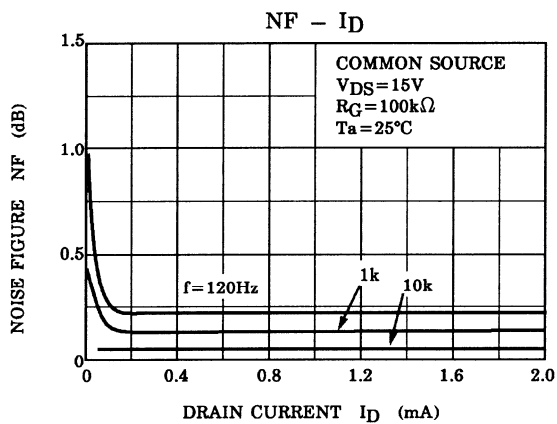
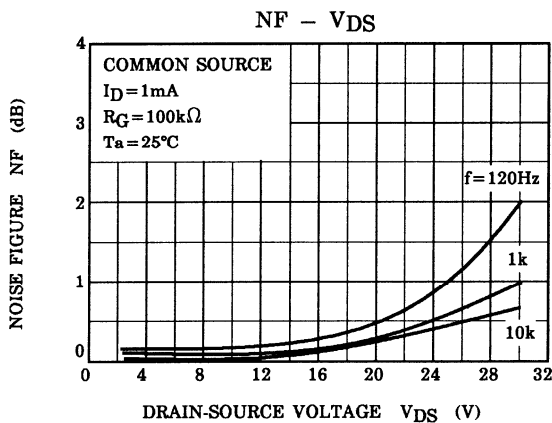
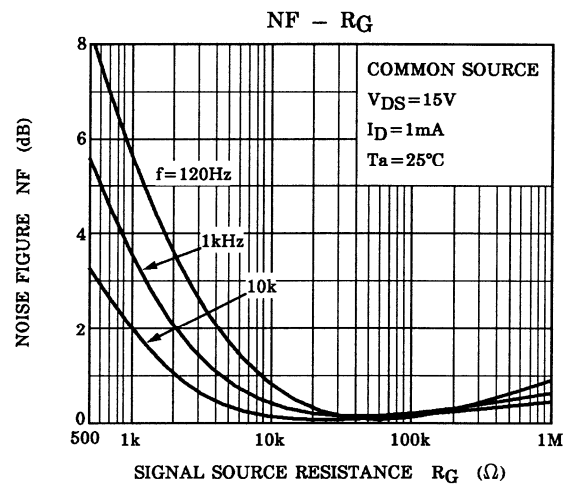
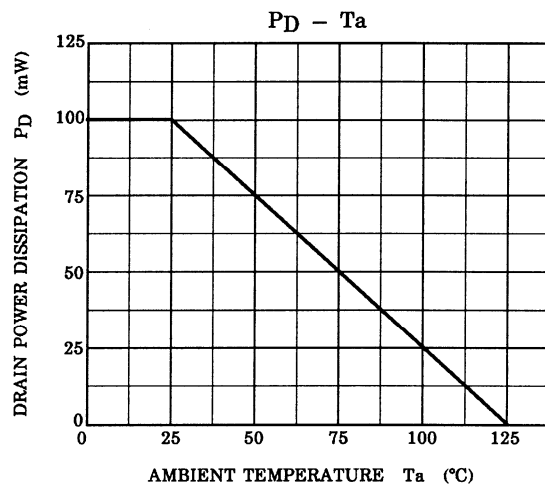


$C_{iss} - V_{DS}$



$C_{rss} - V_{GD}$





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