

TOSHIBA Field Effect Transistor Silicon N Channel Junction Type

# 2SK208

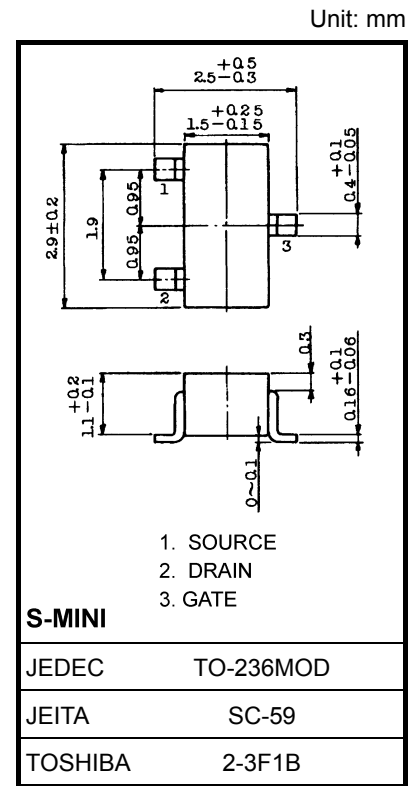
General Purpose and Impedance Converter and Condenser Microphone Applications

- 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).



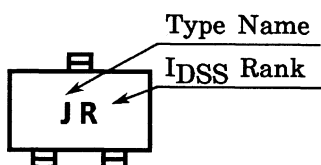
Weight: 0.012 g (typ.)

### 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	$V_{(BR)GDS}$	$V_{DS} = 0$ , $I_G = -100$ $\mu\text{A}$	-50	—	—	V
Drain current	$I_{DSS}$ (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, $I_D = 0.1$ $\mu\text{A}$	-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, $V_{GS} = 0$ $R_G = 100$ k $\Omega$ , $f = 120$ Hz	—	0.5	—	dB

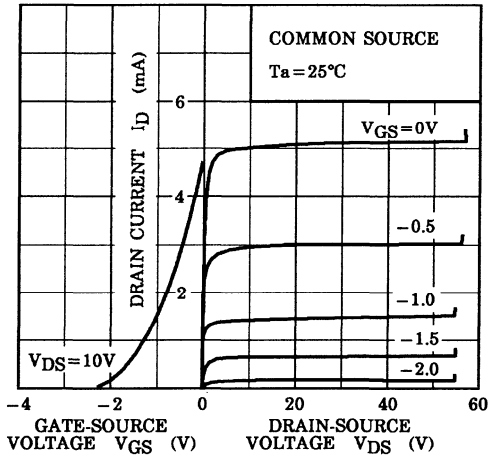
Note:  $I_{DSS}$  classification R: 0.30 to 0.75 mA, O: 0.60 to 1.40 mA, Y: 1.2 to 3.0 mA, GR: 2.6 to 6.5 mA

### Marking

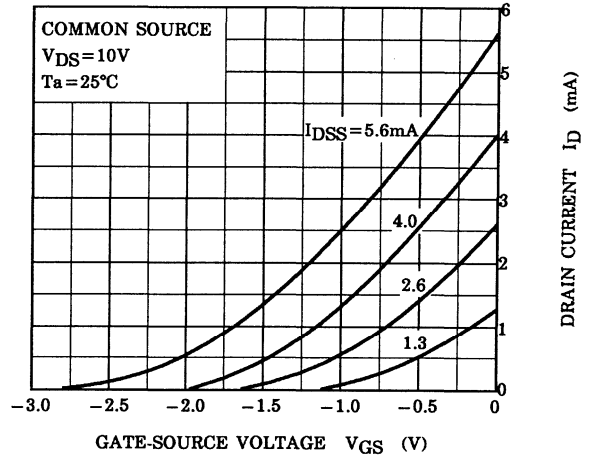


Start of commercial production  
1981-06

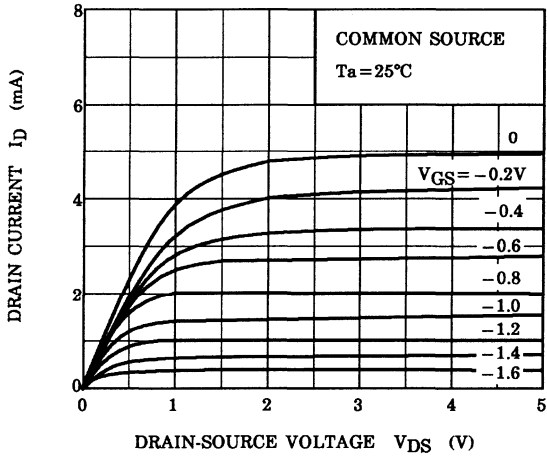
STATIC CHARACTERISTICS



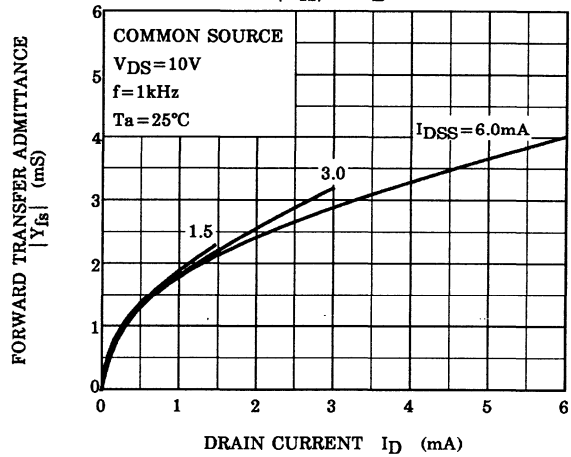
$I_D - V_{GS}$



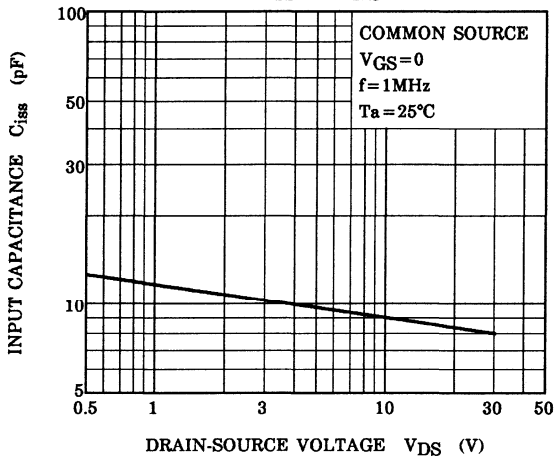
$I_D - V_{DS}$  (LOW VOLTAGE REGION)



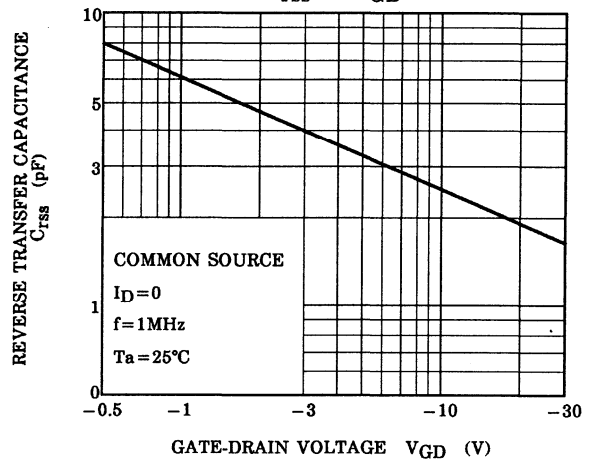
$|Y_{fs}| - I_D$

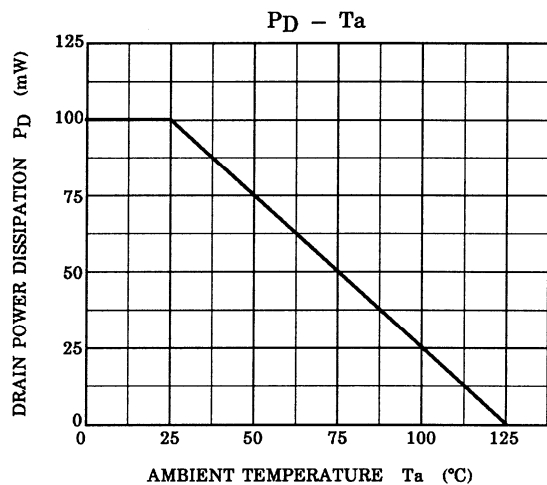
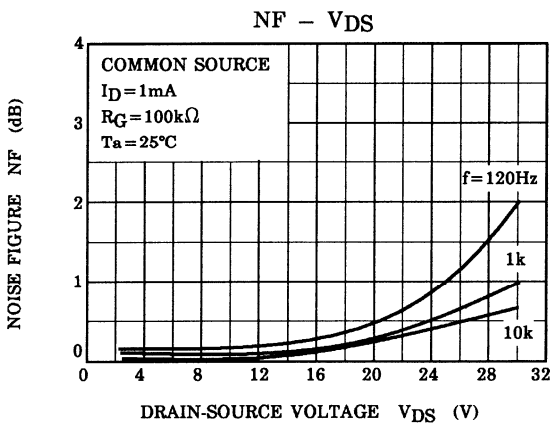
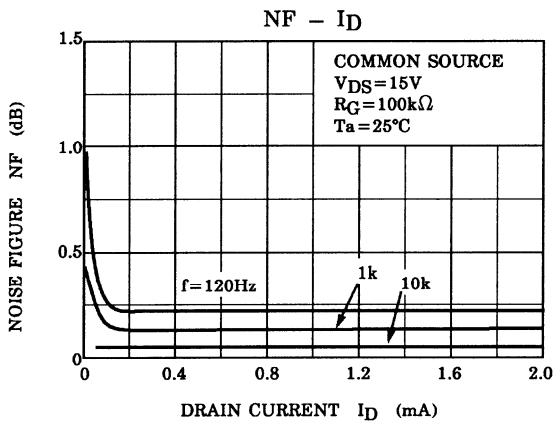
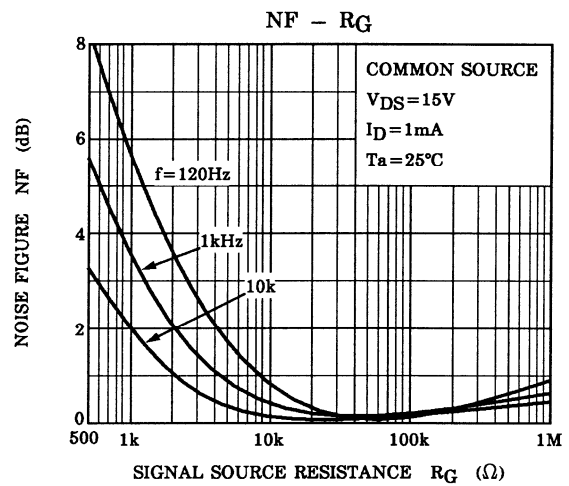
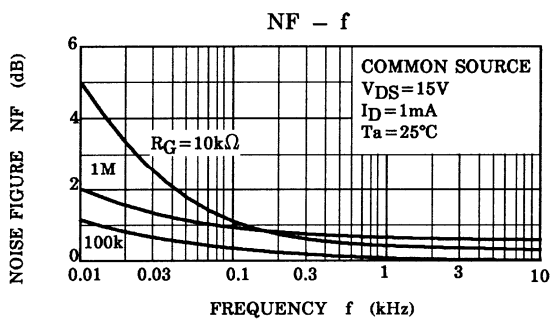
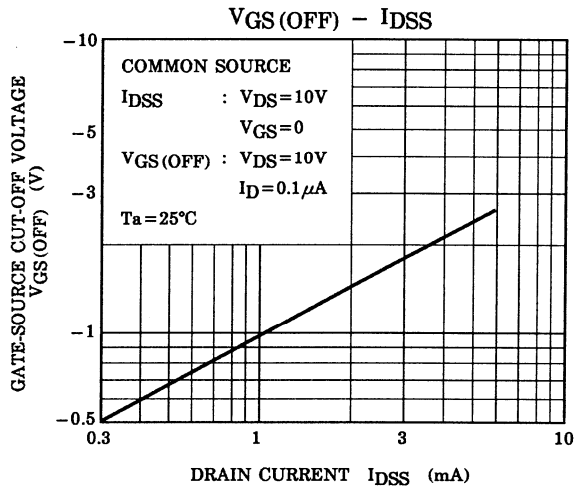
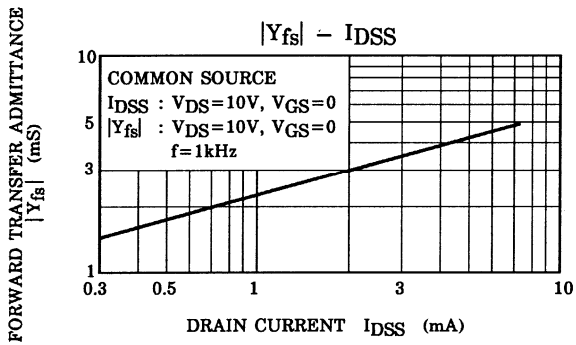


$C_{iss} - V_{DS}$



$C_{rss} - V_{GD}$





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