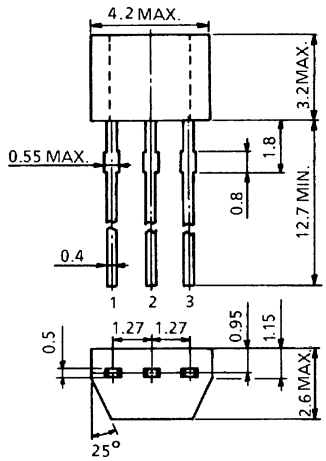
TOSHIBA Field Effect Transistor Silicon N Channel Junction Type

2SK118

General Purpose and Impedance Converter and Condenser Microphone Applications

- High breakdown voltage: V_{GDS} = −50 V
- High input impedance: I_{GSS} = −1 nA (max) (V_{GS} = −30 V)
- Low noise: NF = 0.5dB (typ.) (R_G = 100 kΩ, f = 120 Hz)
- Small package

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	2-4E1B

Weight: 0.13 g (typ.)

Absolute Maximum Ratings (Ta = 25°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	°C
Storage temperature range	T_{stg}	−55~125	°C

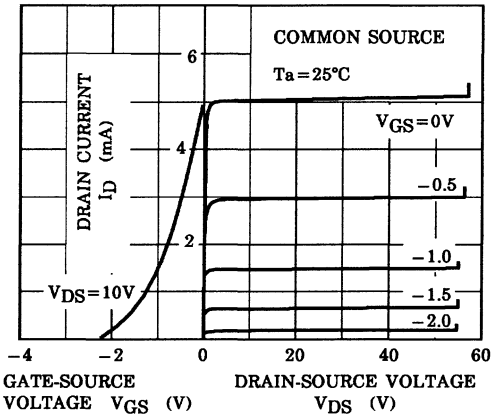
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

Electrical Characteristics (Ta = 25°C)

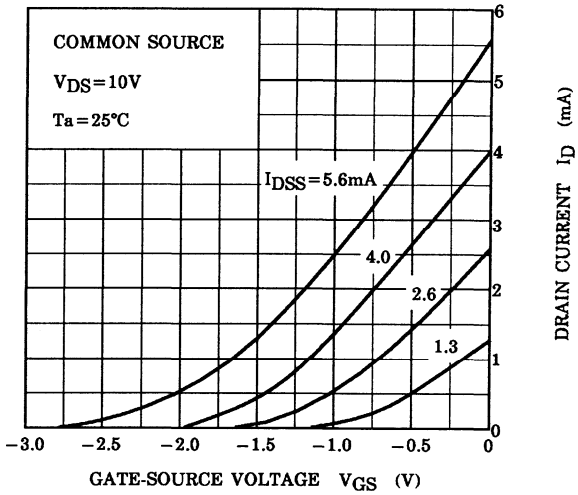
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate cut-off current	I_{GSS}	V_{GS} = −30 V, V_{DS} = 0	—	—	−1.0	nA
Gate-drain breakdown voltage	$V_{(BR)\ GDS}$	V_{DS} = 0, I_G = −100 μA	−50	—	—	V
Drain current	I_{DSS} (Note)	V_{DS} = 10 V, V_{GS} = 0	0.3	—	6.5	mA
Gate-source cut-off voltage	$V_{GS\ (OFF)}$	V_{DS} = 10 V, I_D = 0.1 μA	−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 kΩ, f = 120 Hz	—	0.5	5.0	dB

Note: I_{DSS} classification R: 0.3~0.75 mA, O: 0.6~1.4 mA, Y: 1.2~3.0 mA, GR: 2.6~6.5 mA

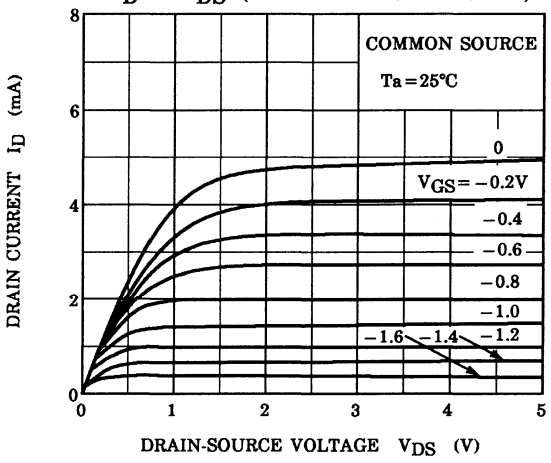
STATIC CHARACTERISTICS



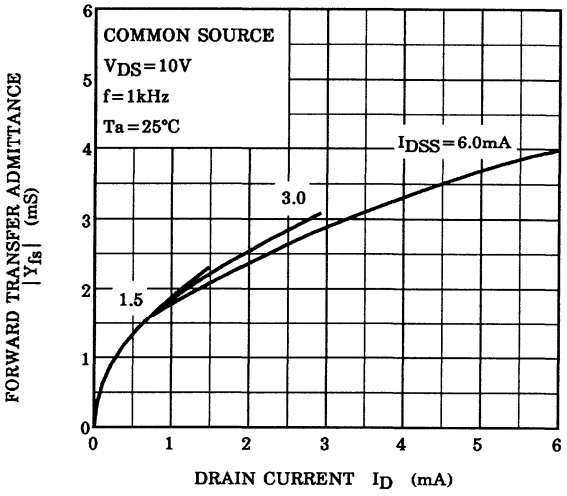
I_D – V_{GS}



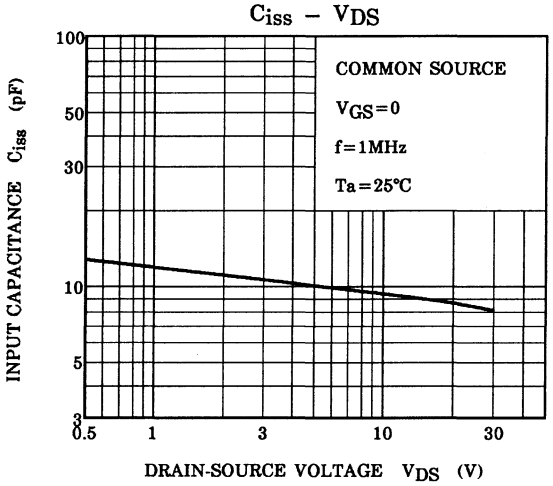
I_D – V_{DS} (LOW VOLTAGE REGION)



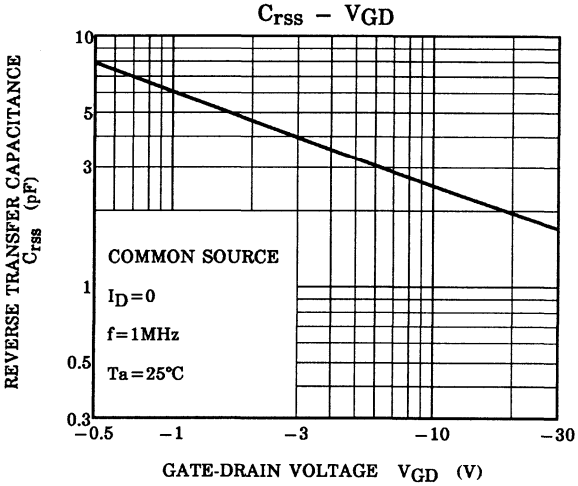
$|Y_{fs}|$ – I_D



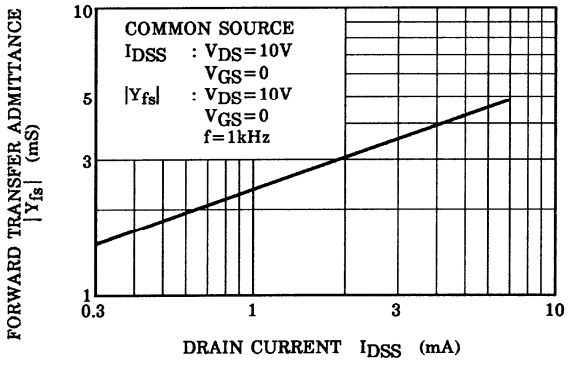
C_{iss} – V_{DS}



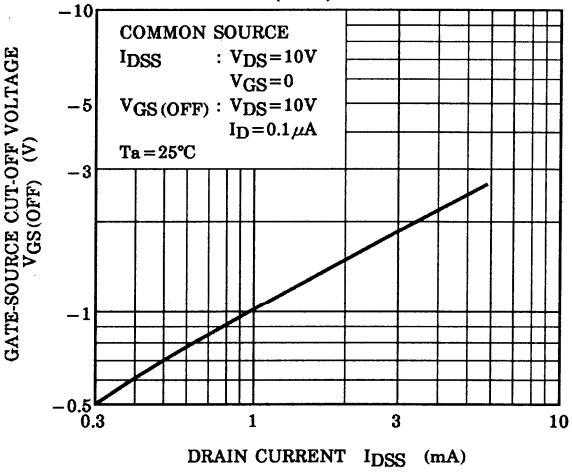
C_{rss} – V_{GD}



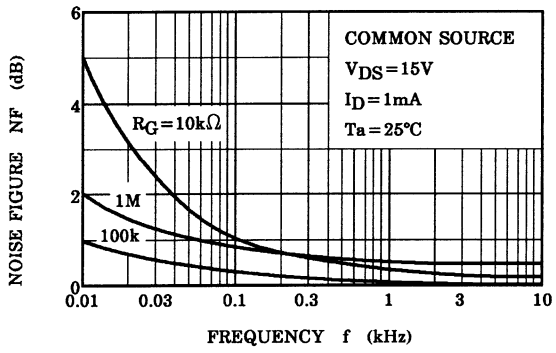
$|Y_{fs}|$ – I_{DSS}



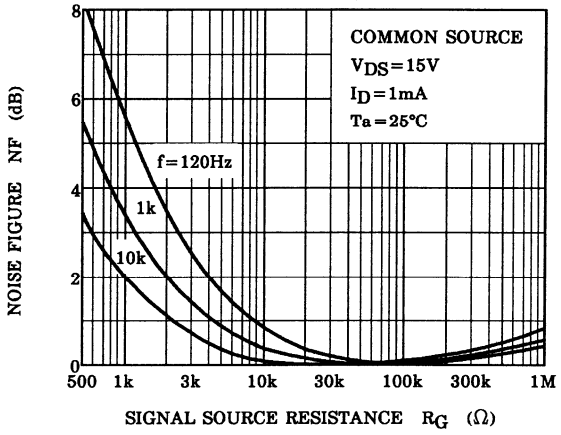
$V_{GS(OFF)}$ – I_{DSS}



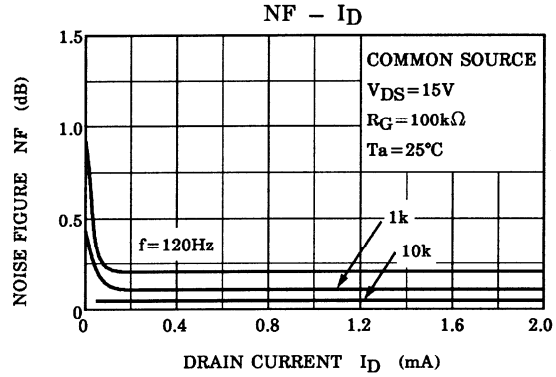
NF – f



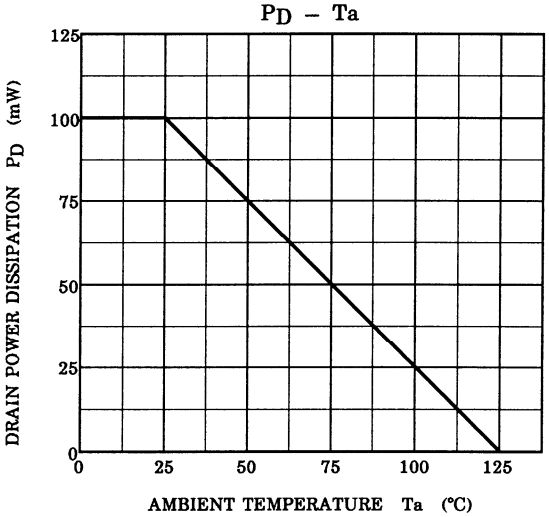
NF – R_G



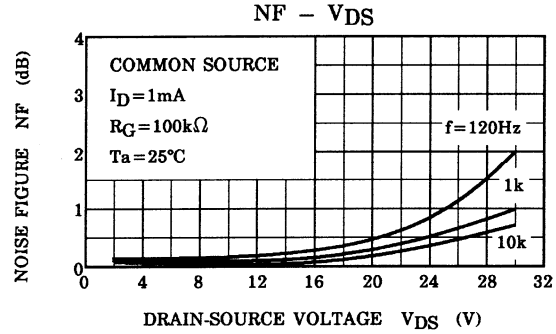
NF – I_D



P_D – Ta



NF – V_{DS}



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