

TOSHIBA Field Effect Transistor Silicon N Channel Junction Type

## 2SK330

For Audio Amplifier, Analog Switch, Constant Current and Impedance Converter Applications

Unit: mm

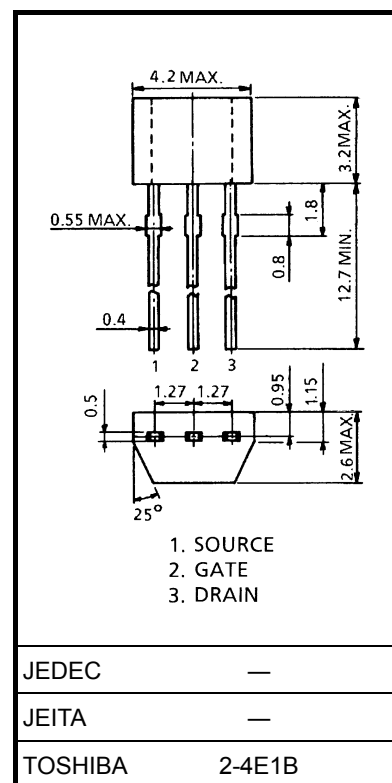
- High breakdown voltage:  $V_{GDS} = -50$  V
- High input impedance:  $I_{GSS} = -1$  nA (max) ( $V_{GS} = -30$  V)
- Low  $R_{DS}$  (ON):  $R_{DS}$  (ON) = 320  $\Omega$  (typ.) ( $I_{DSS} = 5$  mA)
- Complementary to 2SJ105
- Small package

### 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	$P_D$	200	mW
Junction temperature	$T_j$	125	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-55~125	$^\circ\text{C}$

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).



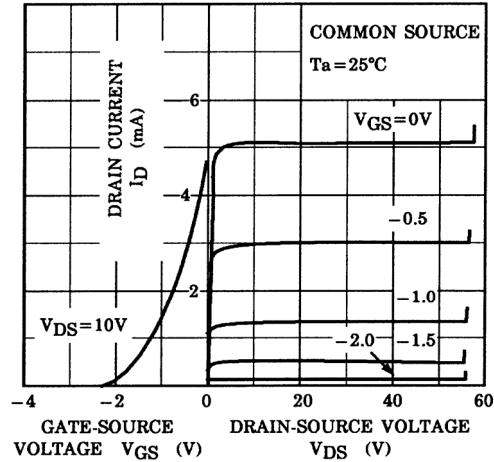
Weight: 0.13 g (typ.)

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

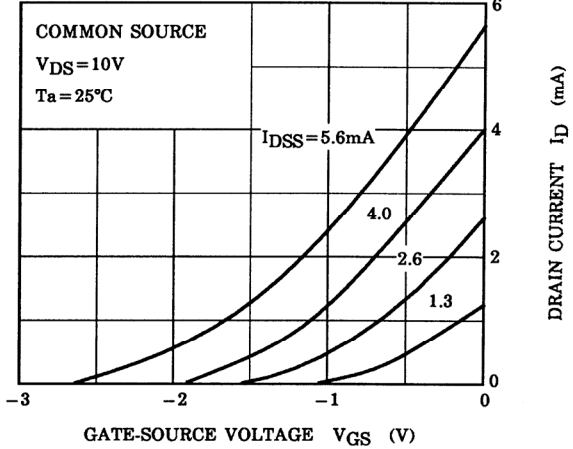
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate cut-off current	$I_{GSS}$	$V_{GS} = -30$ V, $V_{DS} = 0$	—	—	-1.0	nA
Gate-drain breakdown voltage	$V_{(BR)GDS}$	$V_{DS} = 0$ , $I_G = -100$ $\mu\text{A}$	-50	—	—	V
Drain current	$I_{DSS}$ (Note)	$V_{DS} = 10$ V, $V_{GS} = 0$	1.2	—	14	mA
Gate-source cut-off voltage	$V_{GS}$ (OFF)	$V_{DS} = 10$ V, $I_D = 0.1$ $\mu\text{A}$	-0.7	—	-6.0	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10$ V, $V_{GS} = 0$ , $f = 1$ kHz	1.5	4	—	mS
Drain-source ON resistance	$R_{DS}$ (ON)	$V_{DS} = 10$ mV, $V_{GS} = 0$ , $I_{DSS} = 5$ mA	—	320	—	$\Omega$
Input capacitance	$C_{iss}$	$V_{DS} = 10$ V, $V_{GS} = 0$ , $f = 1$ MHz	—	9.0	—	pF
Reverse transfer capacitance	$C_{rss}$	$V_{GD} = -10$ V, $I_D = 0$ , $f = 1$ MHz	—	2.5	—	pF

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

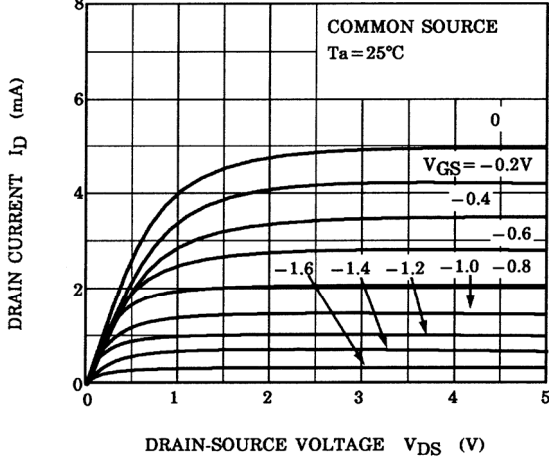
STATIC CHARACTERISTIC



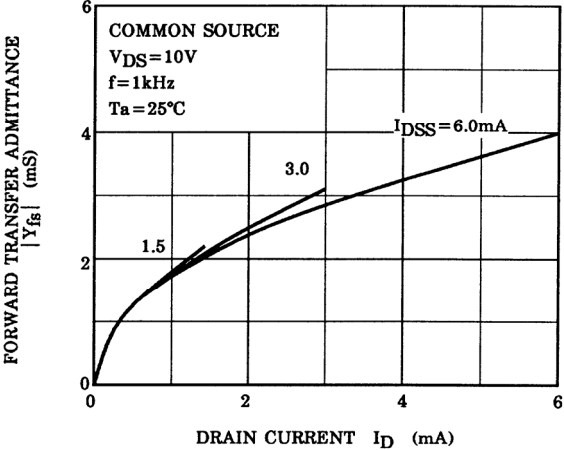
$I_D - V_{GS}$



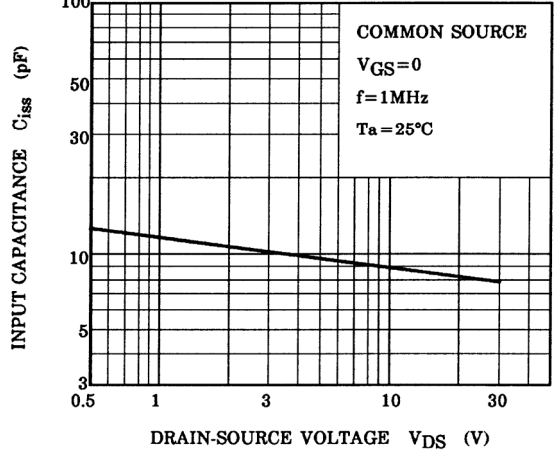
$I_D - V_{DS}$  (LOW VOLTAGE REGION)



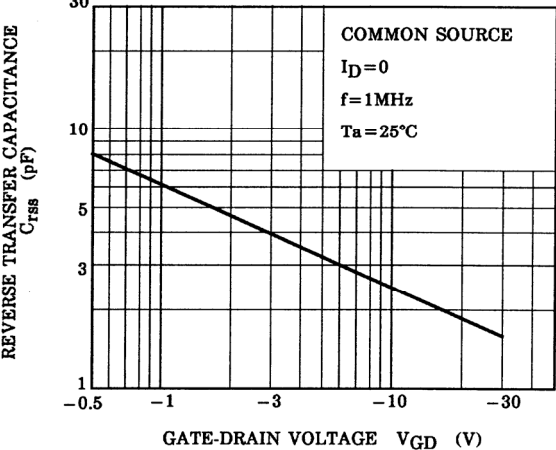
$|Y_{fs}| - I_D$

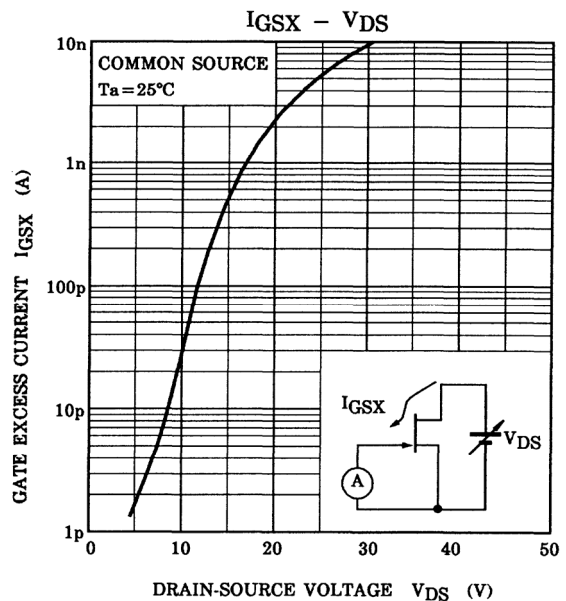
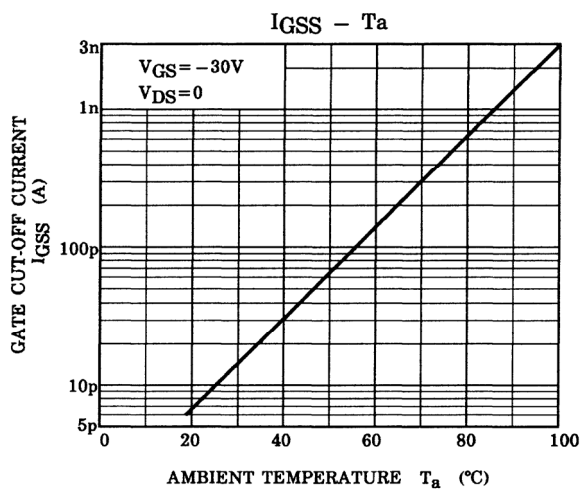
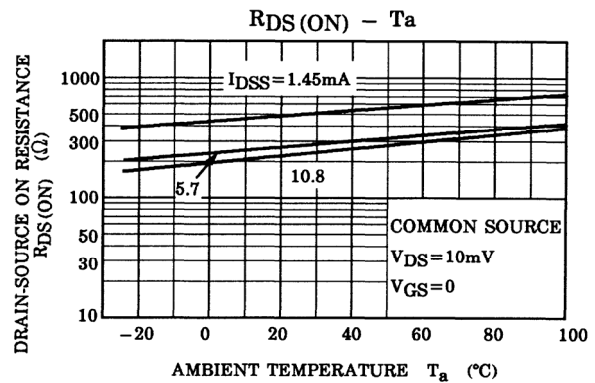
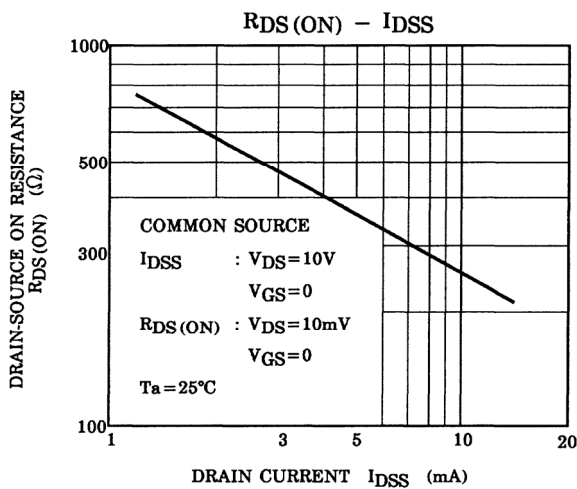
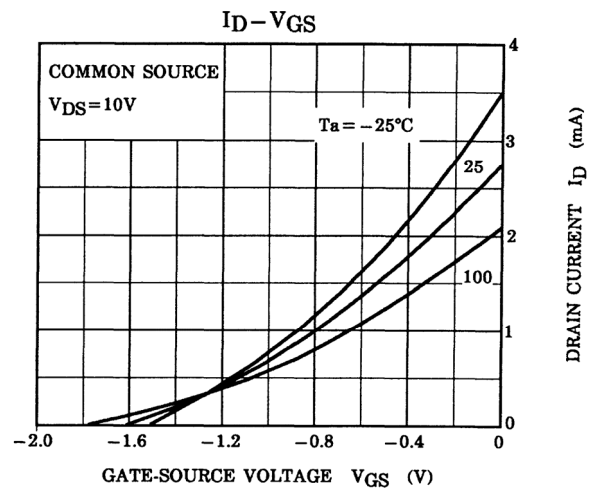
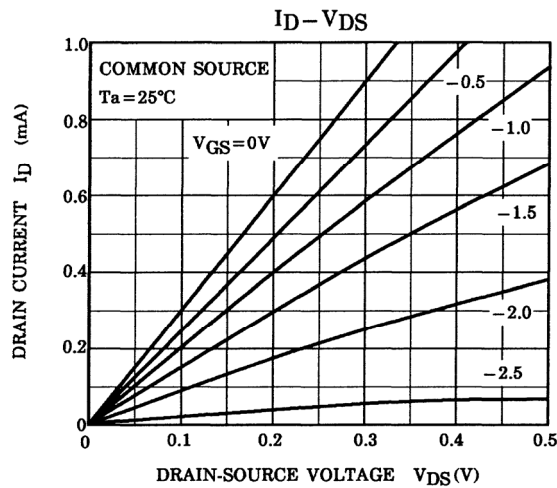


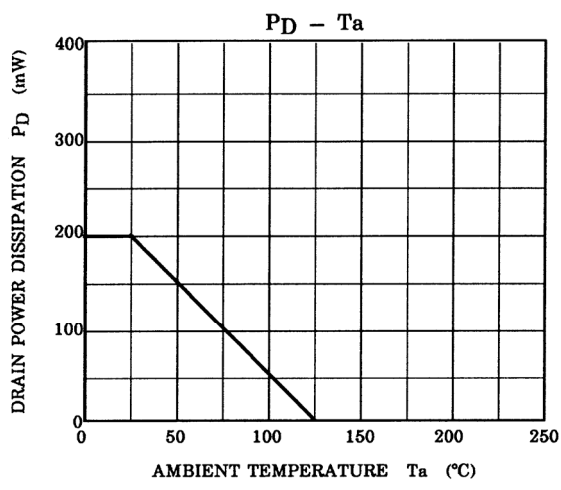
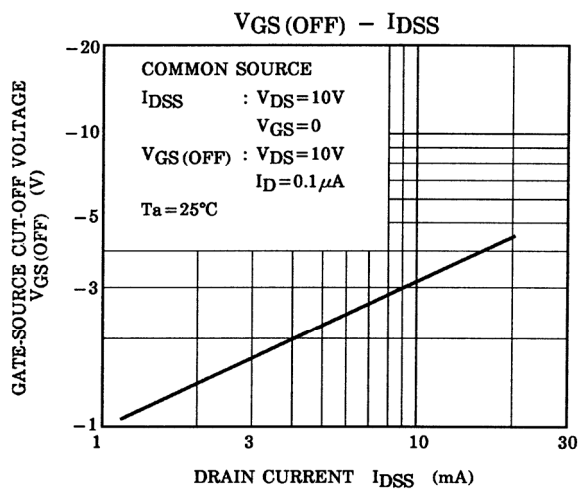
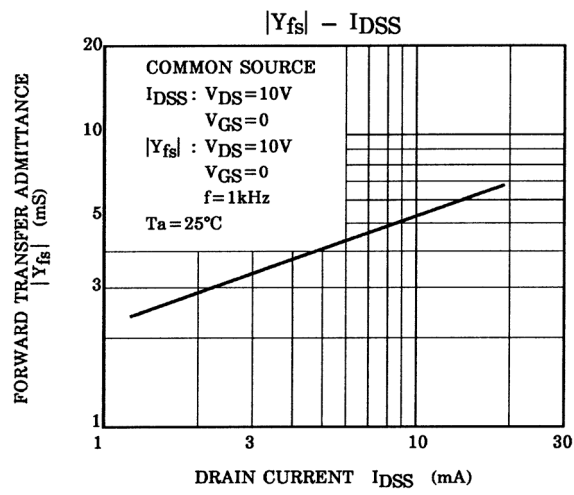
$C_{iss} - V_{DS}$



$C_{rss} - V_{GD}$







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20070701-EN GENERAL

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