

## 2SK30ATM

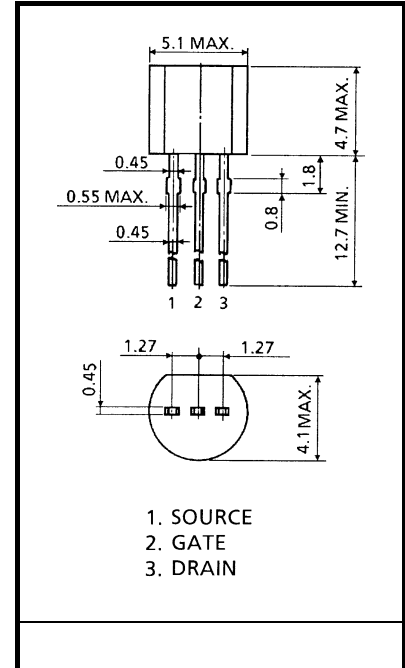
Low Noise Pre-Amplifier, Tone Control Amplifier and DC-AC High Input Impedance Amplifier Circuit Applications

Unit: mm

- High breakdown voltage:  $V_{GDS} = -50$  V
- High input impedance:  $I_{GSS} = -1$  nA (max) ( $V_{GS} = -30$  V)
- Low noise:  $NF = 0.5$ dB (typ.)  
( $V_{DS} = 15$  V,  $V_{GS} = 0$ ,  $R_G = 100$  k $\Omega$ ,  $f = 120$  Hz)

### 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	$T_{stg}$	-55~125	$^\circ\text{C}$



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).

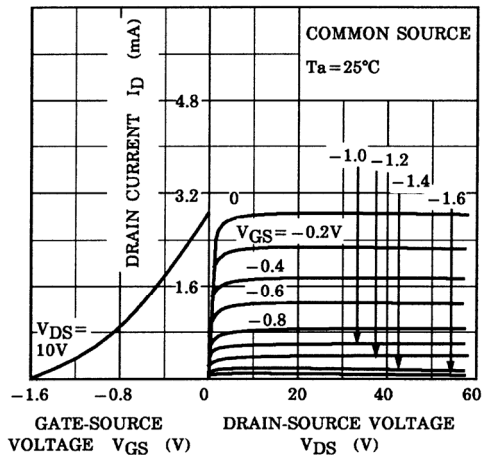
### Electrical Characteristics ( $T_a = 25^\circ\text{C}$ )

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	$C_{iss}$	$V_{GS} = 0$ , $V_{DS} = 0$ , $f = 1$ MHz	—	8.2	—	pF
Reverse transfer capacitance	$C_{rss}$	$V_{GD} = -10$ V, $V_{DS} = 0$ , $f = 1$ MHz	—	2.6	—	pF
Noise figure	NF	$V_{DS} = 15$ V, $V_{GS} = 0$ $R_G = 100$ k $\Omega$ , $f = 120$ Hz	—	0.5	5.0	dB

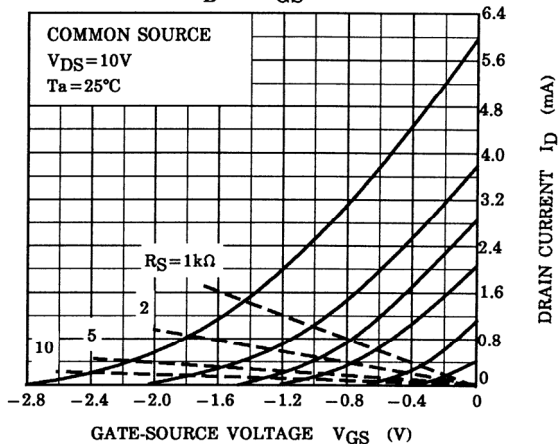
Note:  $I_{DSS}$  classification R: 0.30~0.75, O: 0.60~1.40, Y: 1.20~3.00, GR: 2.60~6.50



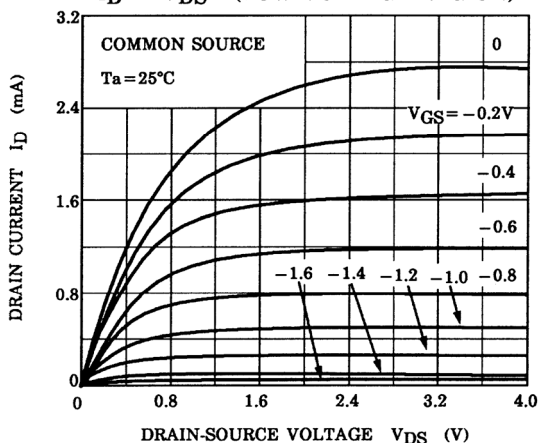
### STATIC CHARACTERISTICS



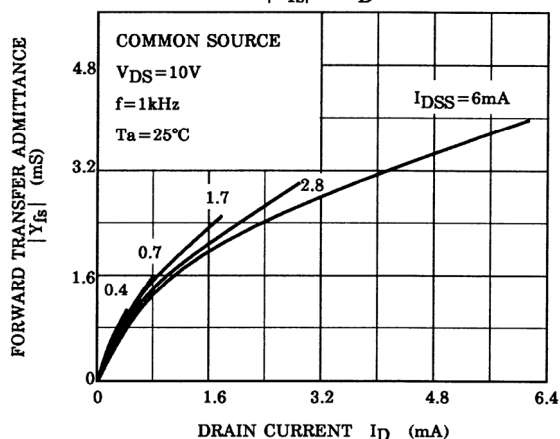
### ID - VGS



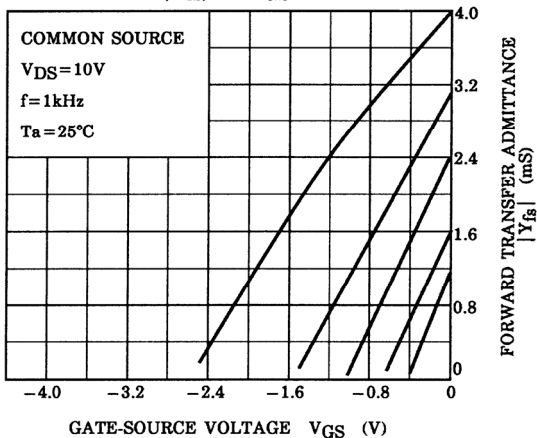
### ID - VDS (LOW VOLTAGE REGION)



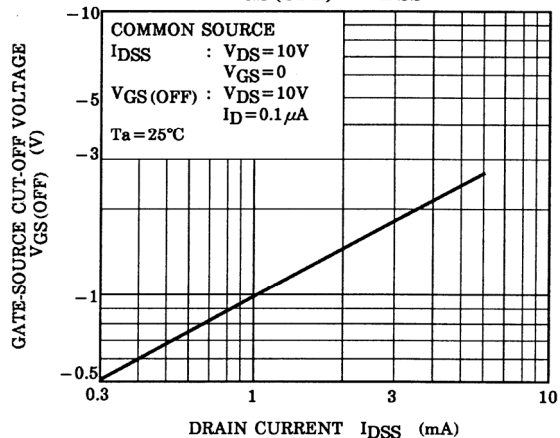
### |Yfs| - ID



### |Yfs| - VGS

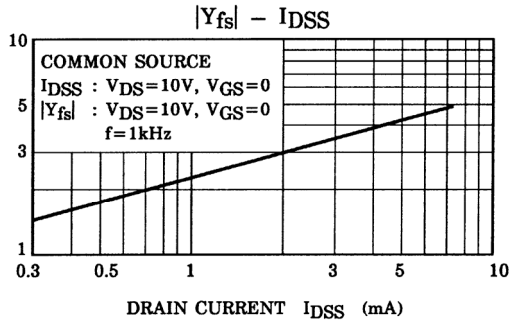


### VGS(OFF) - IDSS

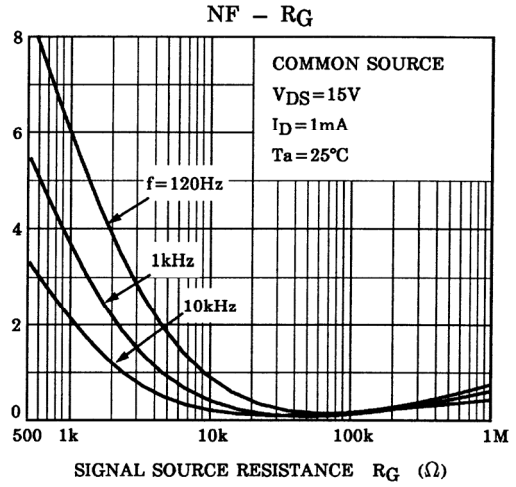




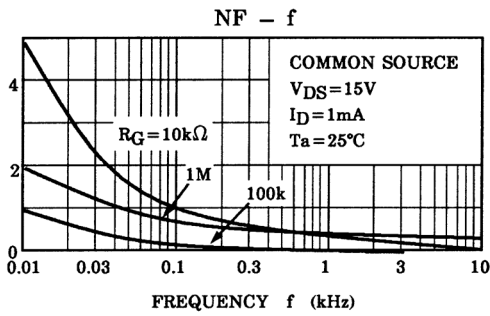
FORWARD TRANSFER ADMITTANCE



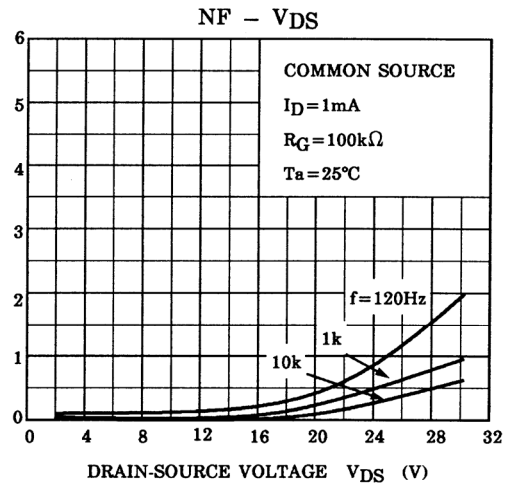
NOISE FIGURE NF (dB)



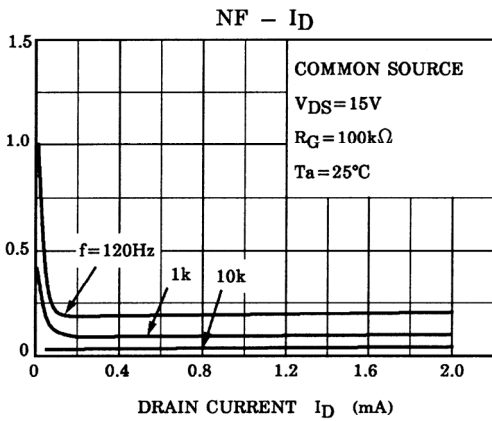
NOISE FIGURE NF (dB)



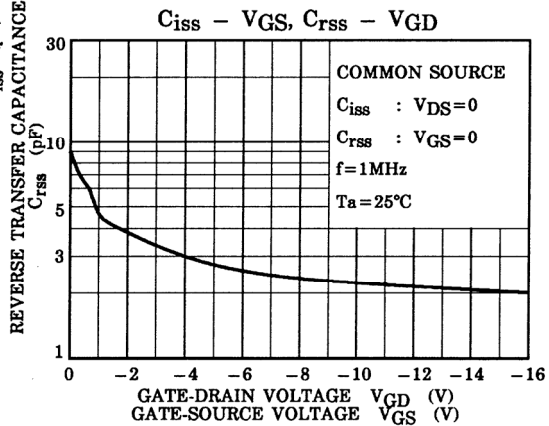
NOISE FIGURE NF (dB)



NOISE FIGURE NF (dB)



INPUT CAPACITANCE  $C_{iss}$  (pF)  
 REVERSE TRANSFER CAPACITANCE  $C_{rss}$  (pF)



DRAIN POWER DISSIPATION  $P_D$  (mW)

