



QNHCHIP

2SK170

Product Specification

2SK170

Silicon N Channel Junction Type



Description

Low Noise Audio Amplifier Applications

- Recommended for first stages of EQ and M.C. head amplifiers.
- High $|Y_{fs}|$: $|Y_{fs}| = 22 \text{ mS (typ.)}$ ($V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $I_{DSS} = 3 \text{ mA}$)
- High breakdown voltage: $V_{GDS} = -40 \text{ V}$
- Low noise: $E_n = 0.95 \text{ nV/Hz}^{1/2} \text{ (typ.)}$

$$(V_{DS} = 10 \text{ V}, I_D = 1 \text{ mA}, f = 1 \text{ kHz})$$

- High input impedance: $I_{GSS} = -1 \text{ nA (max)}$ ($V_{GS} = -30 \text{ V}$)

Absolute Maximum Ratings

($T_A = 25^\circ\text{C}$)

Symbol	Characteristics	Rating	Unit
V_{GDS}	Gate-drain voltage	-40	V
I_G	Gate current	10	mA
P_D	Drain power dissipation	400	mW
T_j	Junction temperature	125	$^\circ\text{C}$
T_{stg}	Storage temperature range	-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

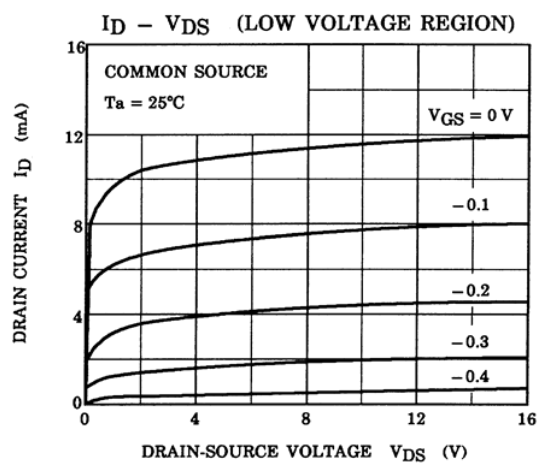
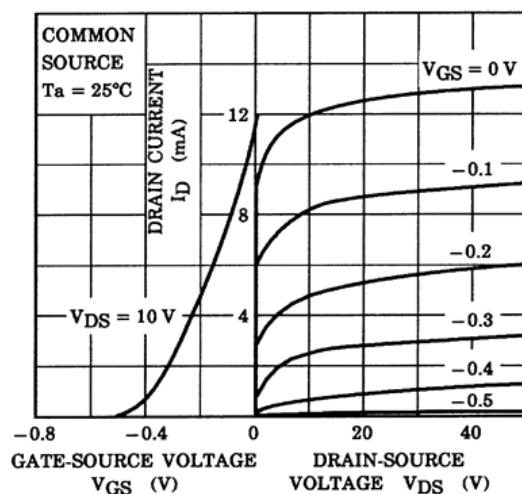
($T_A = 25^\circ\text{C}$)

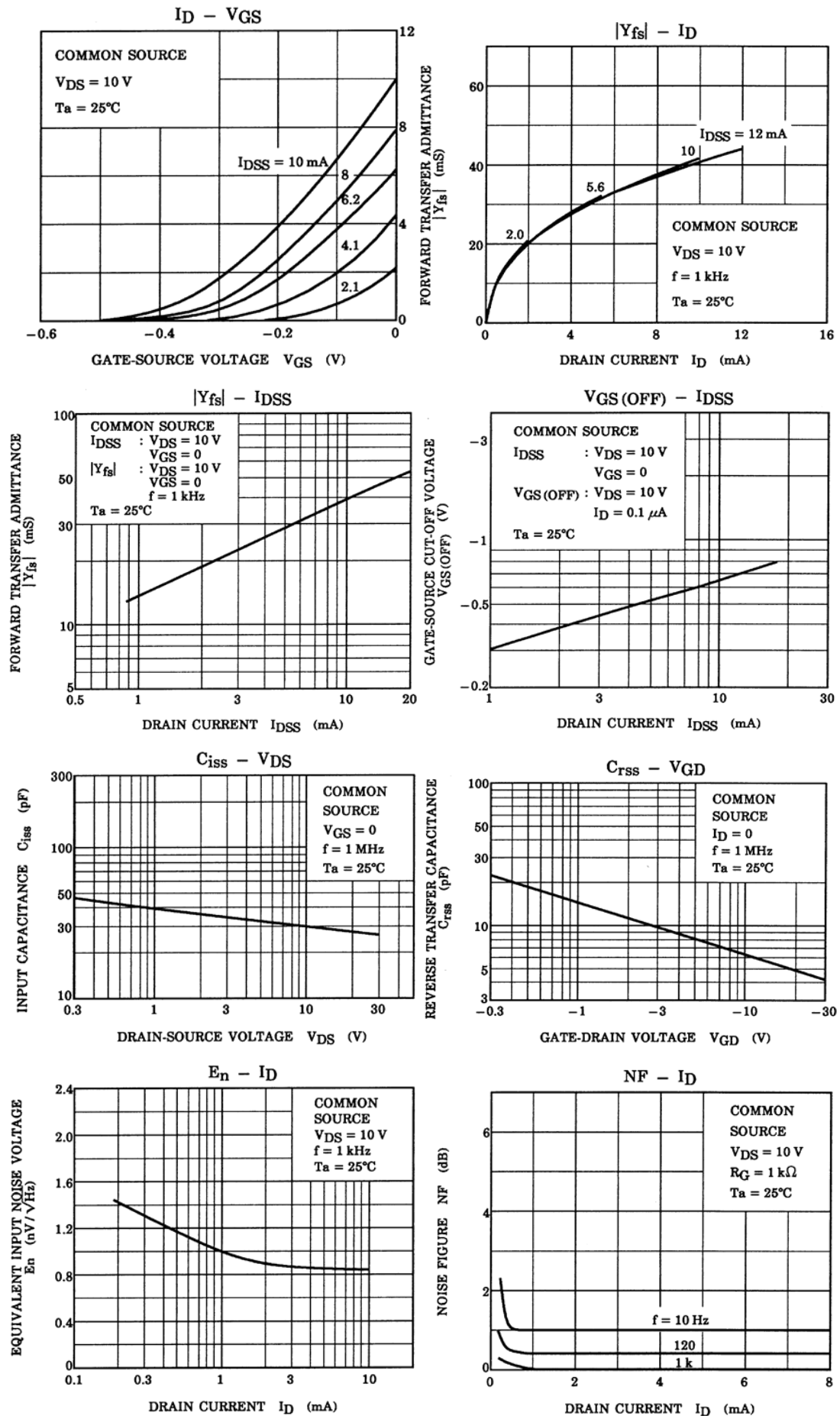
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate cut-off current	I_{GSS}	$V_{GS} = -30\text{ V}, V_{DS} = 0$			1.0	nA
Gate-drain breakdown voltage	$V_{(BR)GDS}$	$V_{DS} = 0, I_G = -100\text{ }\mu\text{A}$	40			V
Drain current	$I_{DSS}(\text{Note})$	$V_{DS} = 10\text{ V}, V_{GS} = 0$	2.6		20	mA
Gate-source cut-off voltage	$V_{GS(OFF)}$	$V_{DS} = 10\text{ V}, I_D = 0.1\text{ }\mu\text{A}$	0.2		1.5	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10\text{ V}, V_{GS} = 0, f = 1\text{ kHz}$		22		mS
Input capacitance	C_{iss}	$V_{DS} = 10\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$		30		pF
Reverse transfer capacitance	C_{rss}	$V_{DG} = 10\text{ V}, I_D = 0, f = 1\text{ MHz}$		6		pF
Noise figure	NF (1)	$V_{DS} = 10\text{ V}, I_D = 1.0\text{ mA},$ $R_G = 1\text{ k}\Omega, f = 1\text{ kHz}$		1.0	10	dB
	NF (2)	$V_{DS} = 10\text{ V}, I_D = 1.0\text{ mA},$ $R_G = 1\text{ k}\Omega, f = 1\text{ kHz}$		0.5	2	

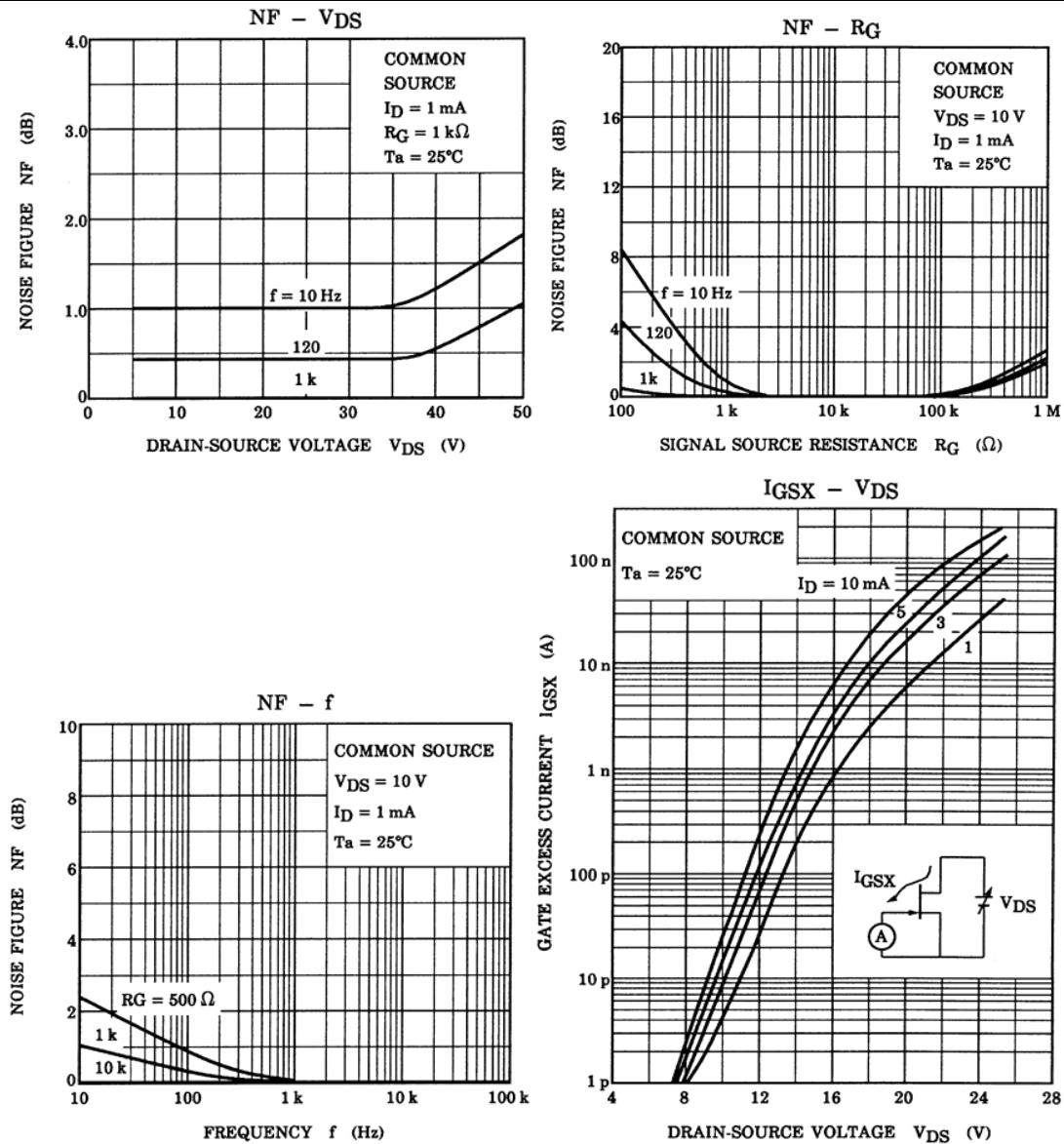
Note: I_{DSS} classification GR: 2.6~6.5 mA, BL: 6.0~12 mA, V: 10~20 mA

Typical Application Circuit

STATIC CHARACTERISTICS

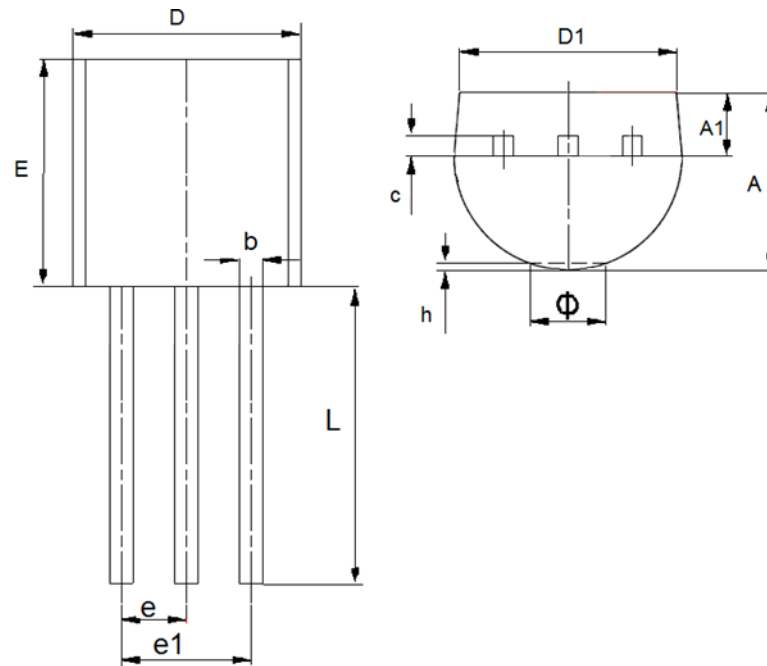








Packaging Information



参数	尺寸 (mm)		尺寸 (Inch)	
	最小值	最大值	最小值	最大值
A	3.3	3.7	0.1299	0.1457
A1	1.1	1.4	0.0433	0.0551
b	0.38	0.55	0.015	0.0217
c	0.36	0.51	0.0142	0.0201
D	4.3	4.7	0.1693	0.185
D1	3.43	—	0.135	—
E	4.3	4.7	0.1693	0.185
e	1.27		0.05	
e1	2.44	2.64	0.0961	0.1039
L	14.1	14.5	0.5551	0.5709
h	0	0.38	0	0.015
Φ	—	1.6	—	0.063

Ordering information

Order Code	I _{DSS} (mA)	Package Type	Minimum Packing QTY	Belivery Mode
2SK170-GR	2.6~6.5	TO-92	3000	Tape & Reel
2SK170-BL	6.0~12	TO-92	3000	Tape & Reel