

**2SK1961**

High-Frequency Low-Noise Amplifier Applications

Applications

- High-frequency low-noise amplifier applications.

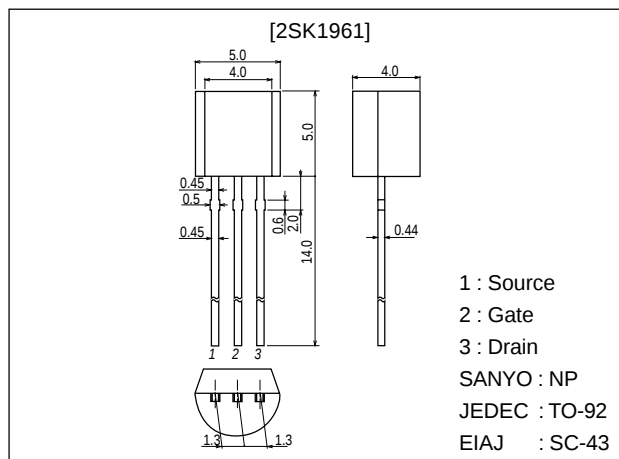
Features

- Adoption of FBET process.
- Large $|y_{fs}|$.
- Small Ciss.
- Ultralow noise figure.

Package Dimensions

unit:mm

2019B



Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSX}		15	V
Gate-to-Drain Voltage	V_{GDS}		-15	V
Gate Current	I_G		10	mA
Drain Current	I_D		100	mA
Allowable Power Dissipation	P_D		500	mW
Junction Temperature	T_J		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gate-to-Drain Breakdown Voltage	$V_{(BR)GDS}$	$I_G = -10\mu\text{A}$, $V_{DS} = 0$	-15			V
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS} = -10\text{V}$, $V_{DS} = 0$			-1.0	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 5\text{V}$, $I_D = 100\mu\text{A}$	-1.2	-2.6	-4.5	V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 5\text{V}$, $V_{GS} = 0$	40*		75*	mA
Forward Transfer Admittance	$ y_{fs} _1$	$V_{DS} = 5\text{V}$, $I_D = 10\text{mA}$, $f = 1\text{kHz}$	15	19		mS
	$ y_{fs} _2$	$V_{DS} = 5\text{V}$, $V_{GS} = 0$, $f = 1\text{kHz}$	24	32		mS
Input Capacitance	Ciss	$V_{DS} = 5\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$		5.5		pF
Reverse Transfer Capacitance	Crss	$V_{DS} = 5\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$		1.6		pF

* : The 2SK1961 is classified by I_{DSS} as follows : (unit : mA).

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40	Y3	52	48	Y4	63	57	Y5	75
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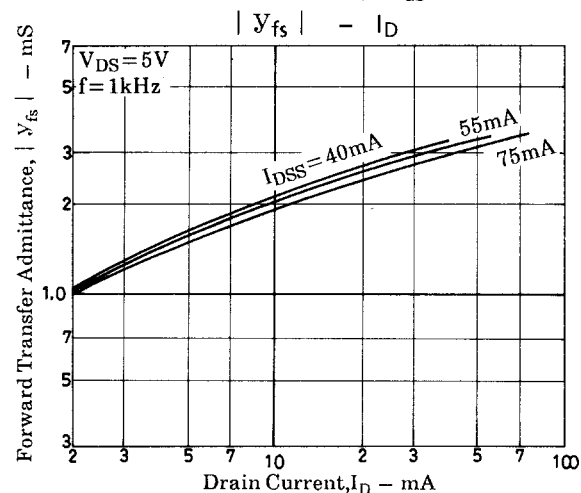
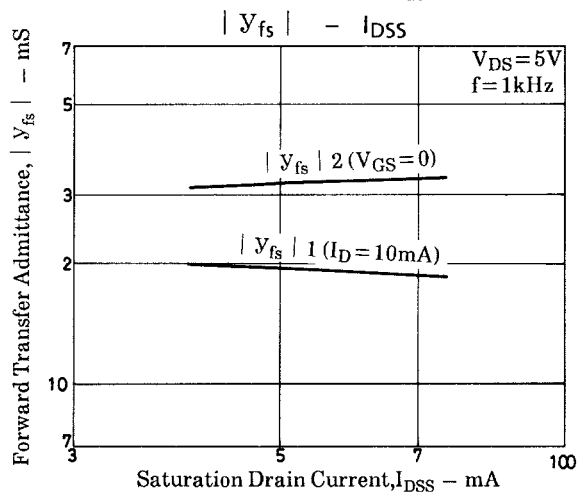
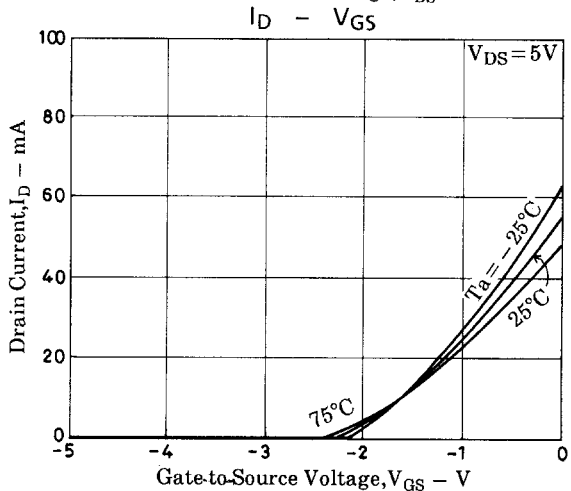
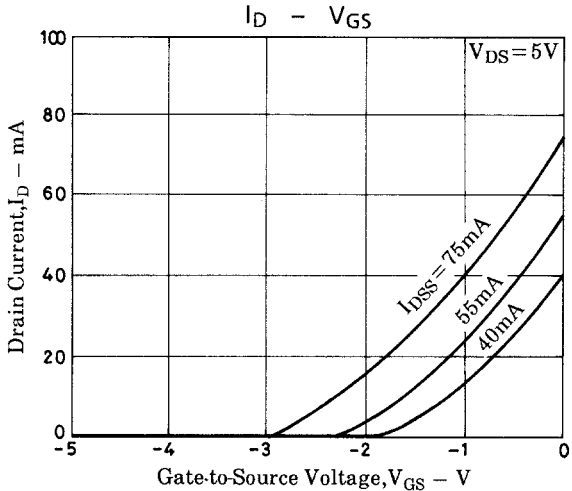
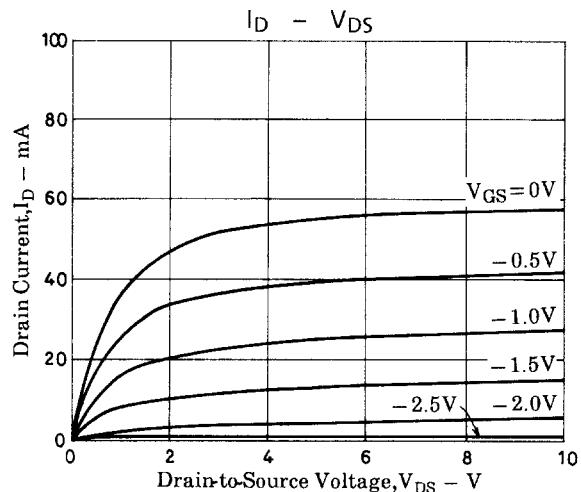
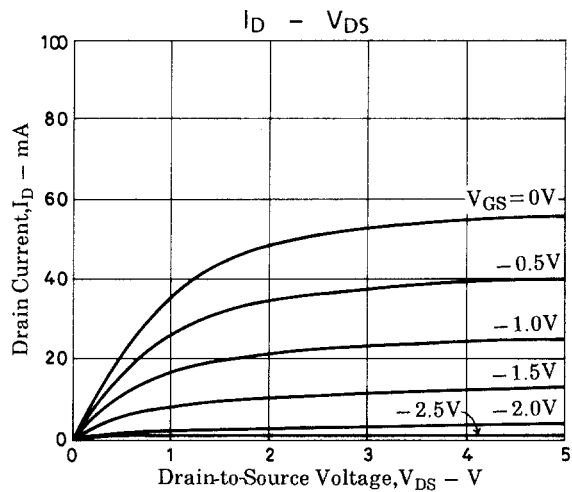
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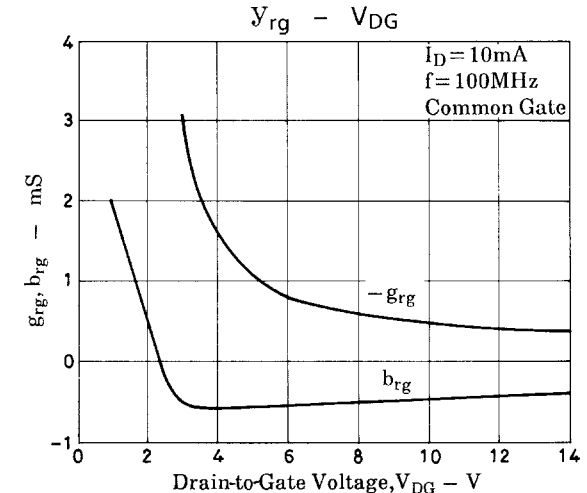
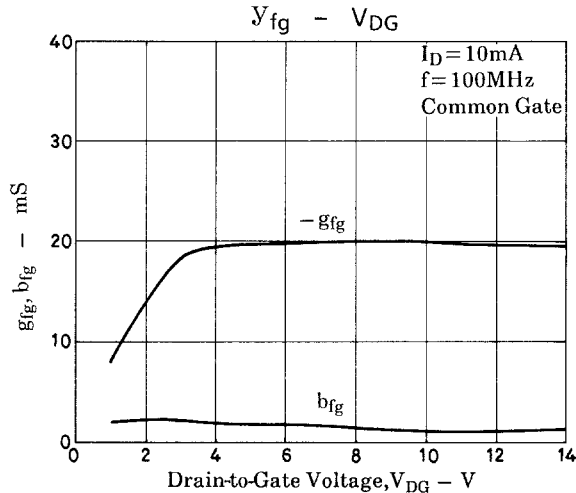
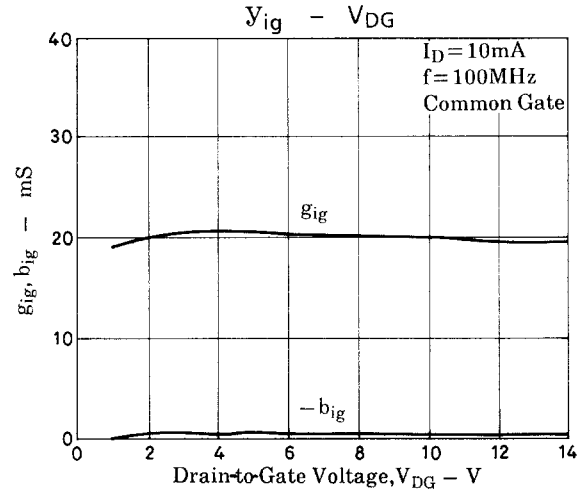
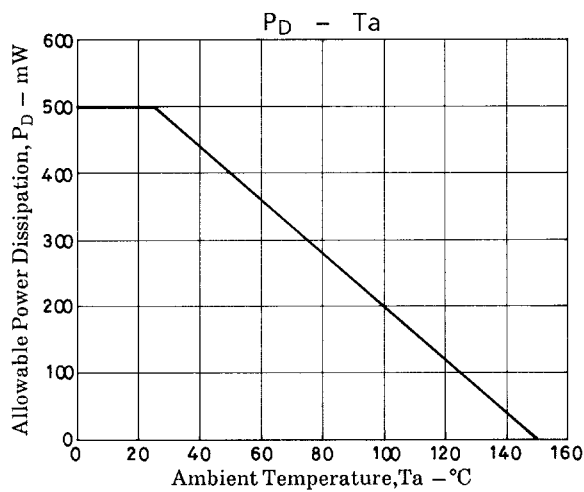
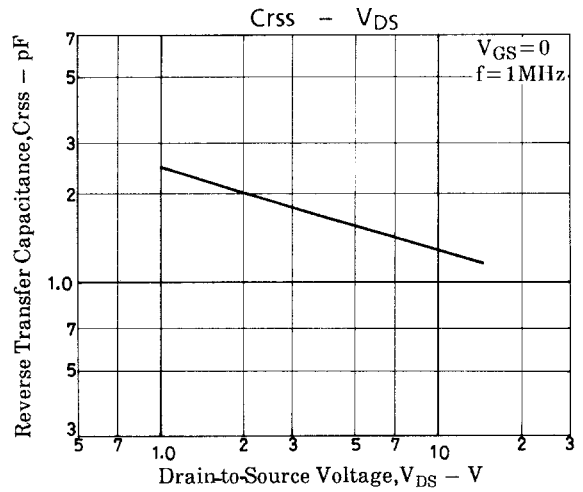
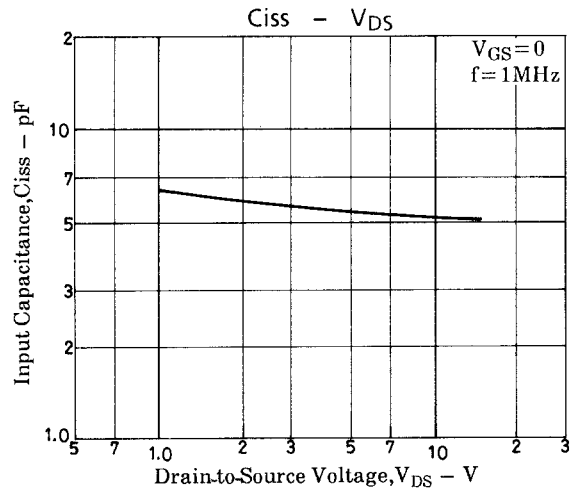
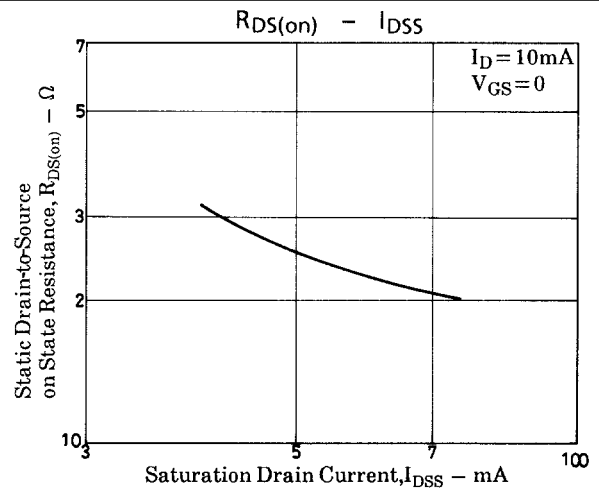
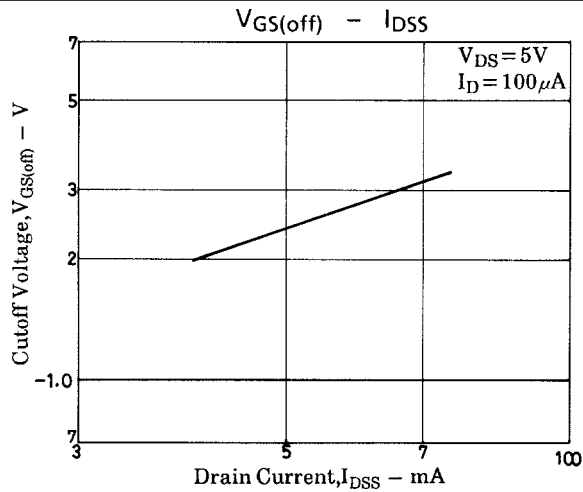
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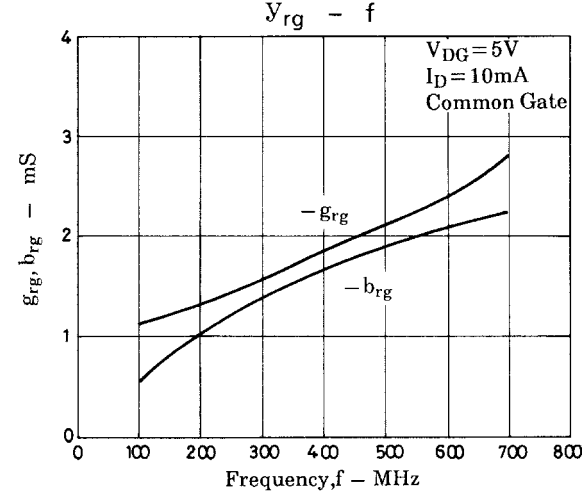
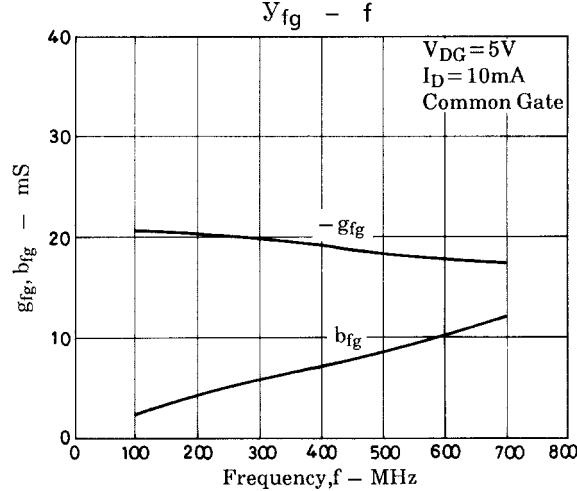
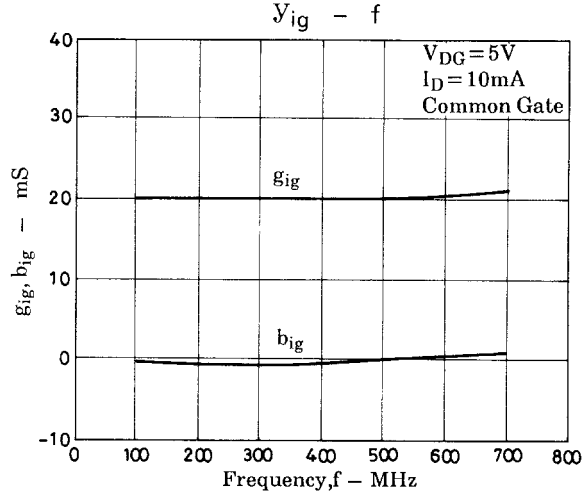
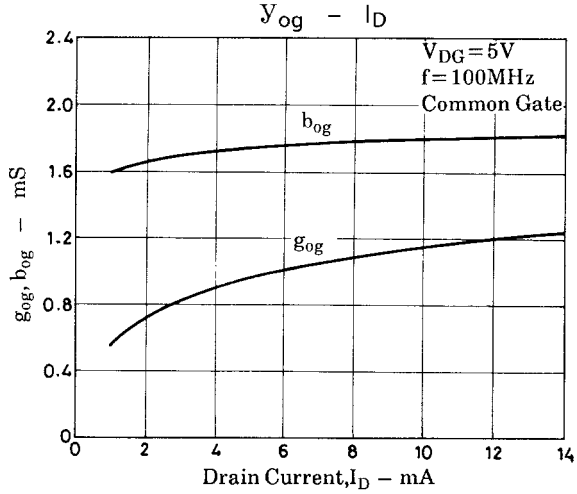
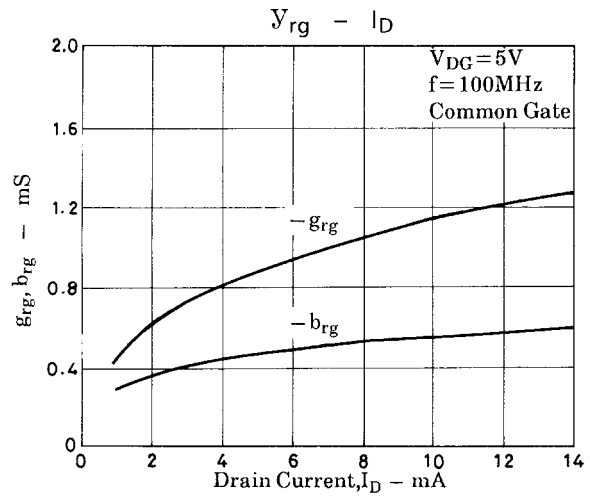
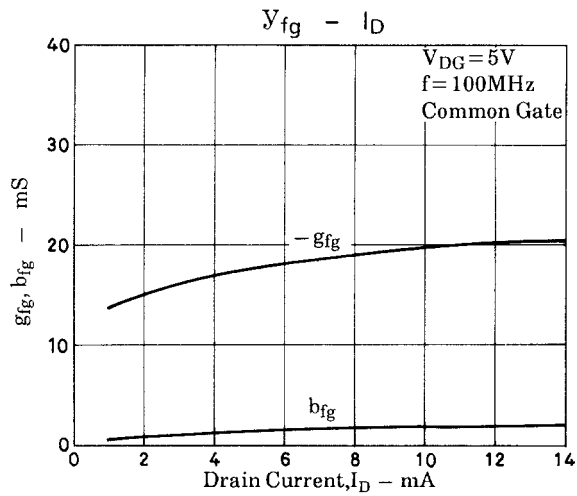
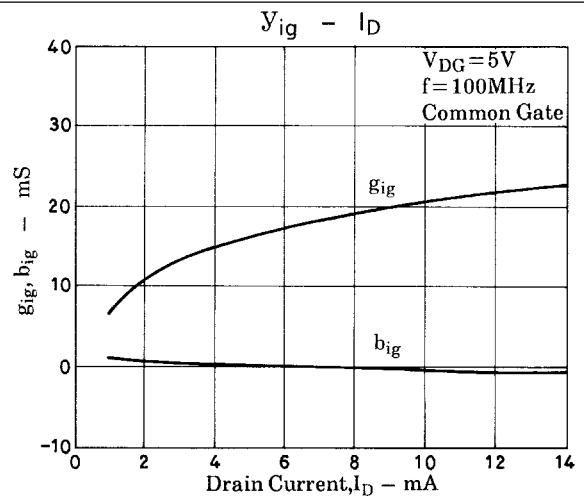
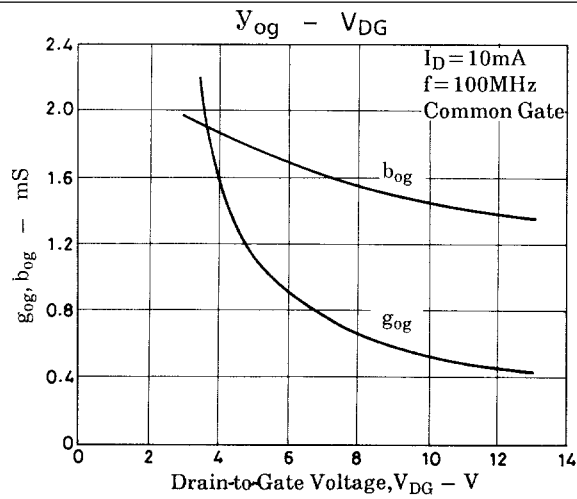
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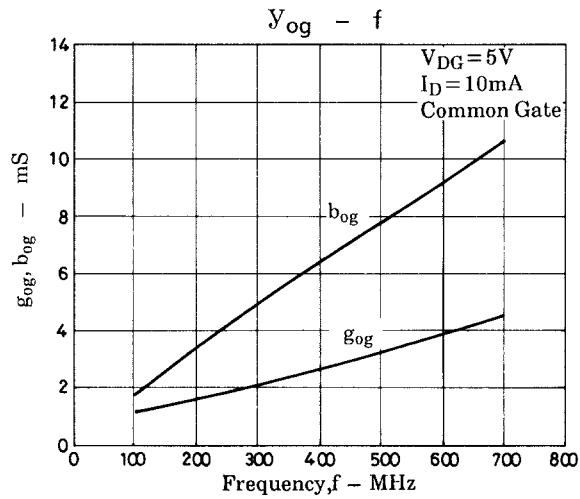
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Noise Figure	NF	$V_{DS}=5V$, $R_g=1k\Omega$, $I_D=5mA$, $f=1kHz$		1.3		dB
Static Drain-to-Source on State Resistance	$R_{DS(on)}$	$I_D=10mA$, $V_{GS}=0$		24		Ω





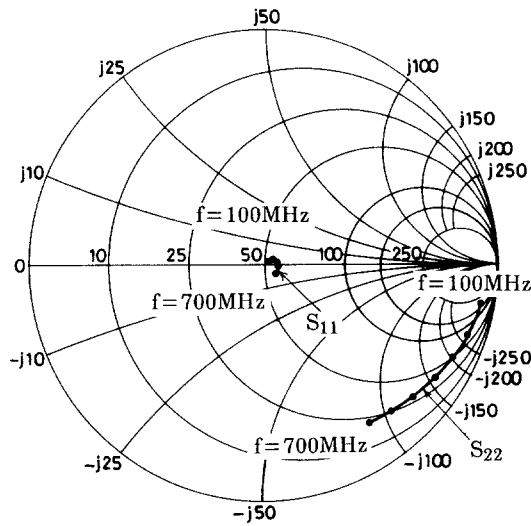
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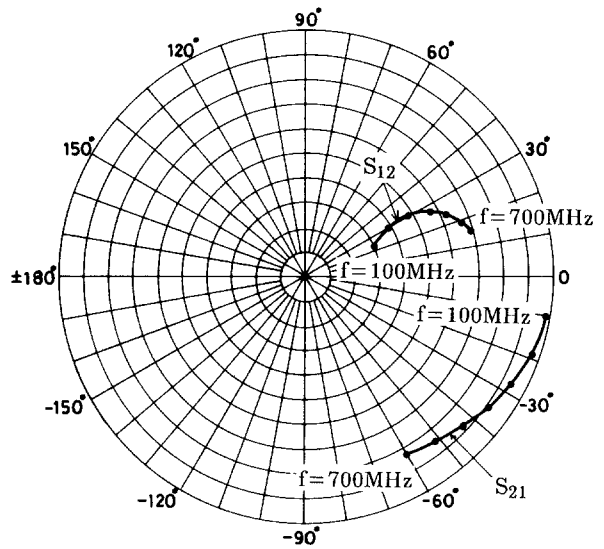


S parameter Frequency Characteristic

(Common Gate) ($V_{DG} = 5V, I_D = 10mA$)



(Common Gate) ($V_{DG} = 5V, I_D = 10mA$)



S parameter (Common Gate)

$V_{DG} = 5V, I_D = 10mA, Z_O = 50\Omega$

Freq (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.024	54.7	0.985	-9.7	0.059	21.9	0.942	-9.0
200	0.038	48.5	0.963	-18.8	0.078	30.1	0.918	-17.3
300	0.054	32.4	0.932	-27.3	0.097	30.2	0.896	-25.4
400	0.055	20.5	0.903	-35.4	0.113	27.3	0.870	-33.0
500	0.060	1.8	0.875	-43.6	0.124	23.4	0.847	-40.5
600	0.055	-19.1	0.849	-54.4	0.132	19.0	0.826	-48.2
700	0.053	-41.6	0.826	-60.1	0.137	15.0	0.811	-56.0

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