To all our customers

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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

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2SK168

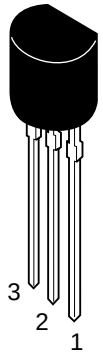
Silicon N-Channel Junction FET

Application

VHF Amplifier, Mixer, Local oscillator

Outline

TO-92 (2)



1. Gate
2. Source
3. Drain

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Gate to drain voltage	V_{GDO}	–30	V
Gate to source voltage	V_{GSS}	–1	V
Gate current	I_G	10	mA
Drain current	I_D	20	mA
Channel power dissipation	Pch	200	mW
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

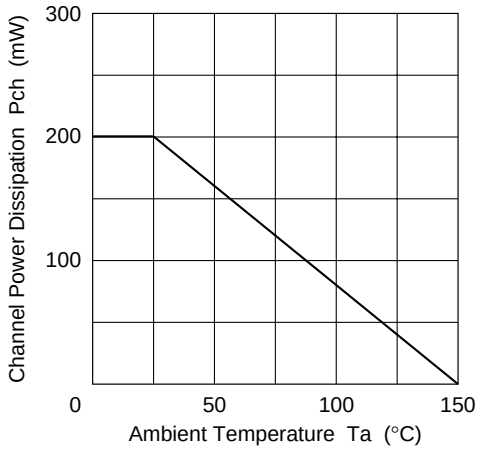
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Gate to drain breakdown voltage	$V_{(BR)GDO}$	–30	—	—	V	I_G = –100 µA, I_S = 0
Gate cutoff current	I_{GSS}	—	—	–10	nA	V_{GS} = –0.5 V, V_{DS} = 0
Drain current	I_{DSS}*[1]	4	—	20	mA	V_{DS} = 5 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	—	—	–3.0	V	V_{DS} = 5 V, I_D = 10 µA
Forward transfer admittance	$\|y_{fs}\|$	8	10	—	mS	V_{DS} = 5 V, V_{GS} = 0, f = 1 kHz
Input capacitance	Ciss	—	6.8	—	pF	V_{DS} = 5 V, V_{GS} = 0, f = 1 MHz
Reverse transfer capacitance	Crss	—	0.1	—	pF	V_{DS} = 5 V, V_{GS} = 0, f = 1 MHz
Power gain	PG	—	27	—	dB	V_{DS} = 5 V, V_{GS} = 0, f = 100 MHz
Noise figure	NF	—	1.7	—	dB	V_{DS} = 5 V, V_{GS} = 0, f = 100 MHz

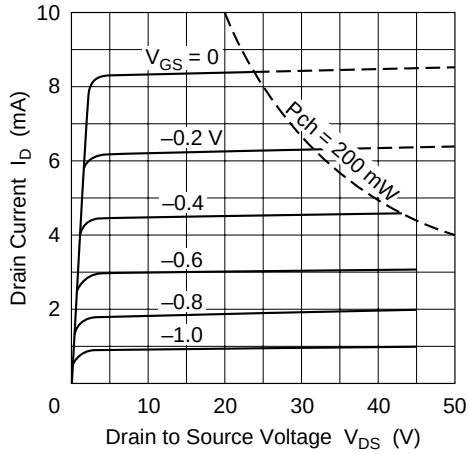
Note: 1. The 2SK168 is grouped by I_{DSS} as follows.

D	E	F
4 to 8	6 to 12	10 to 20

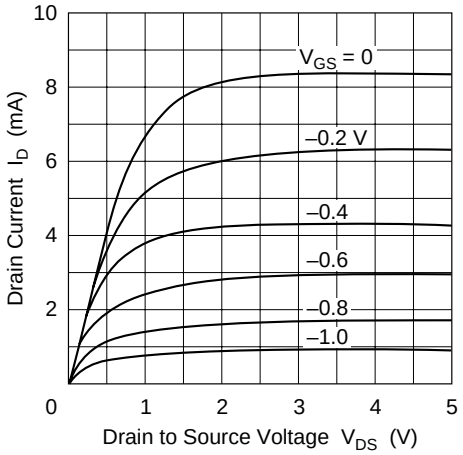
Maximum Channel Power Dissipation Curve



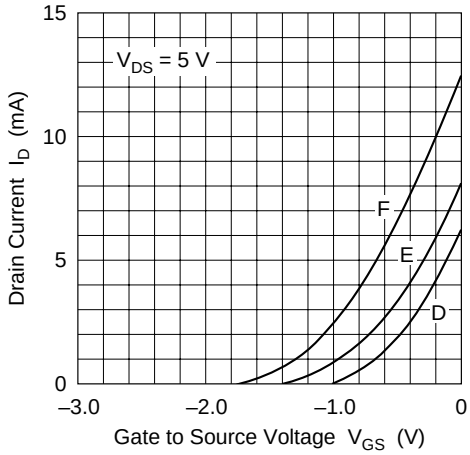
Typical Output Characteristics (1)



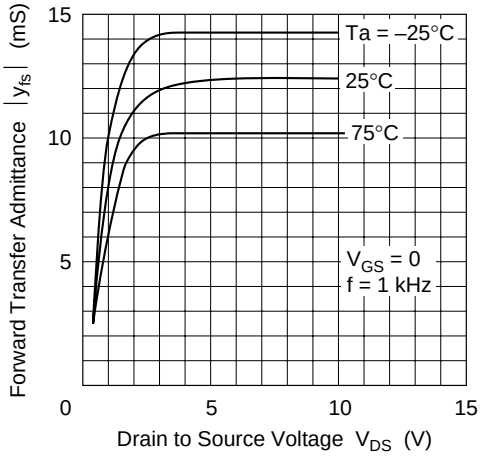
Typical Output Characteristics (2)



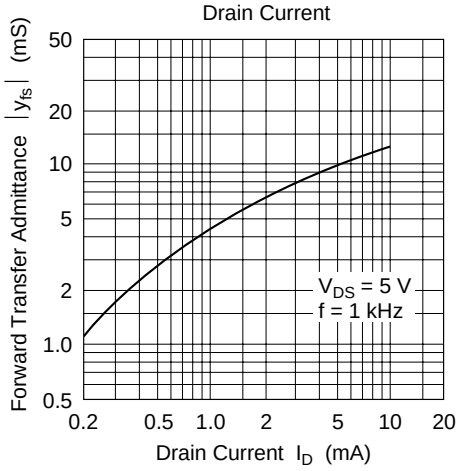
Typical Transfer Characteristics



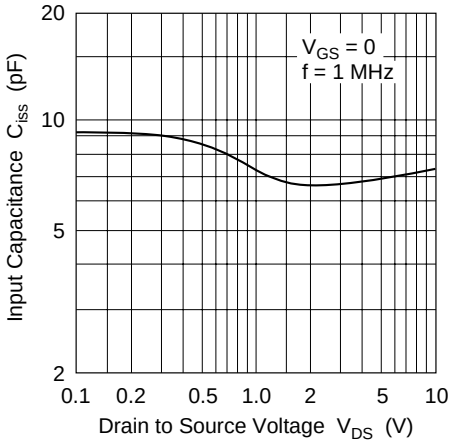
Forward Transfer Admittance vs.
Drain to Source Voltage



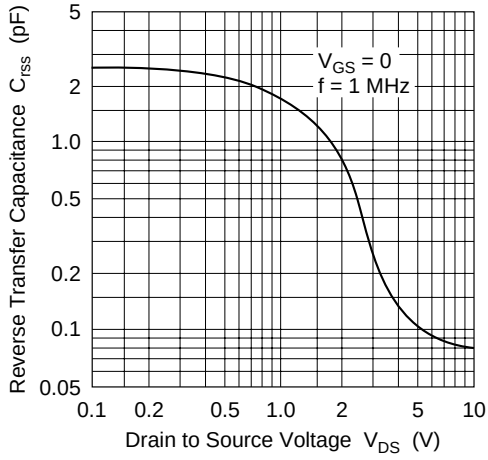
Forward Transfer Admittance vs.
Drain Current



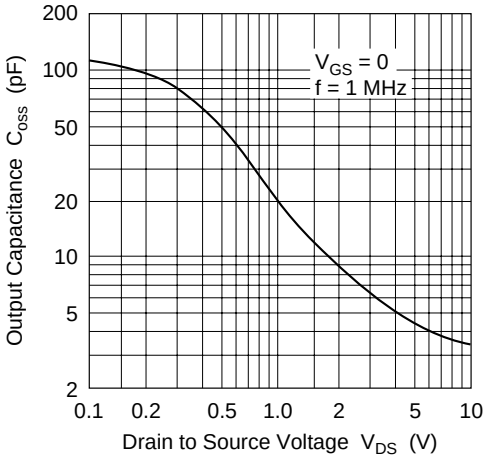
Input Capacitance vs.
Drain to Source Voltage



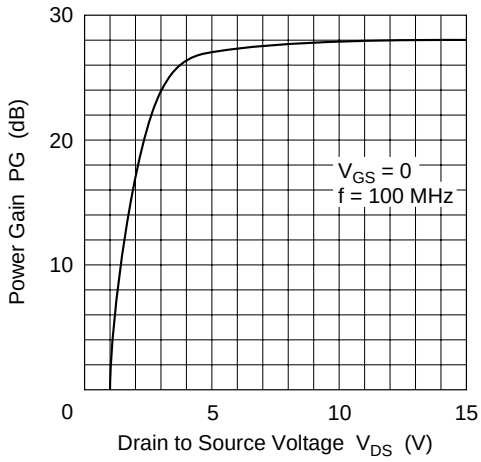
Reverse Transfer Capacitance vs.
Drain to Source Voltage



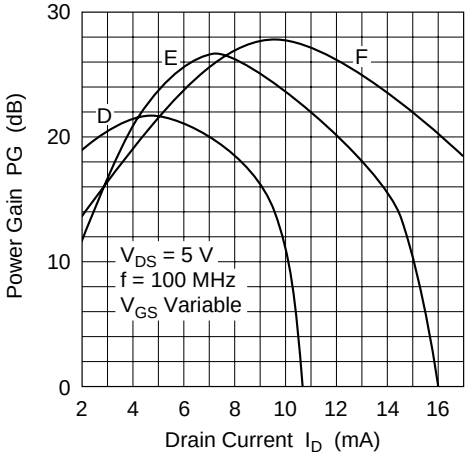
Output Capacitance vs.
Drain to Source Voltage



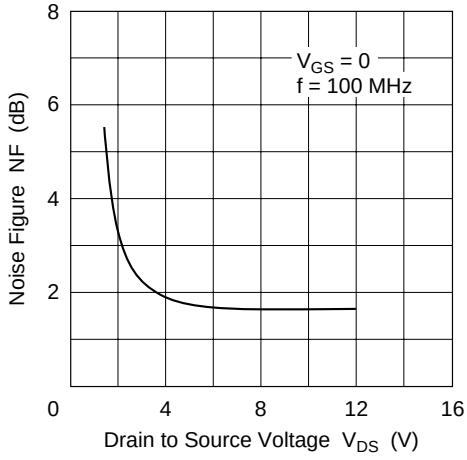
Power Gain vs.
Drain to Source Voltage



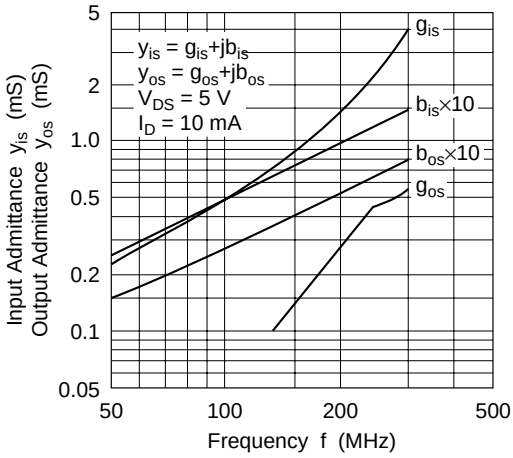
Power Gain vs. Drain Current



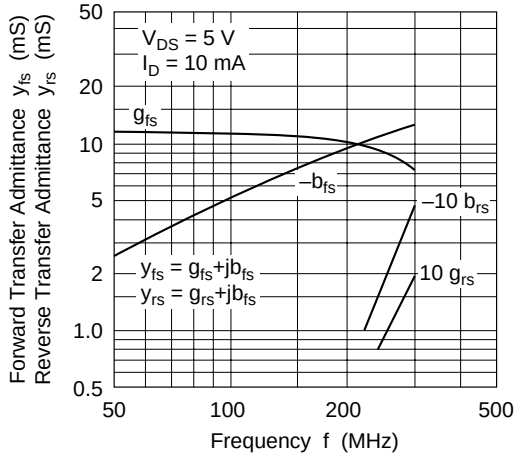
Noise Figure vs.
Drain to Source Voltage



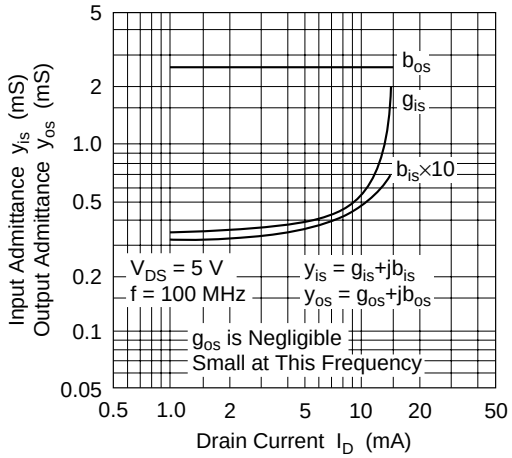
Input and Output Admittance vs. Frequency



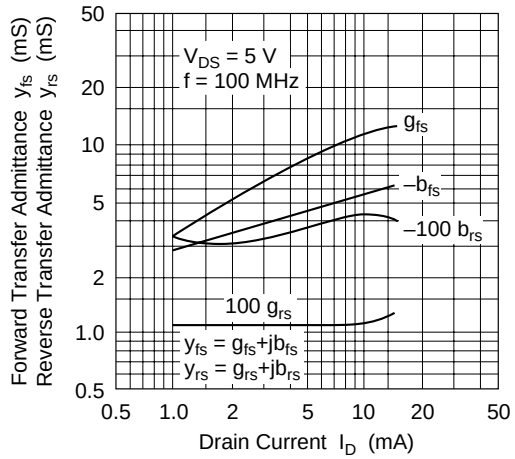
Transfer Admittance vs. Frequency



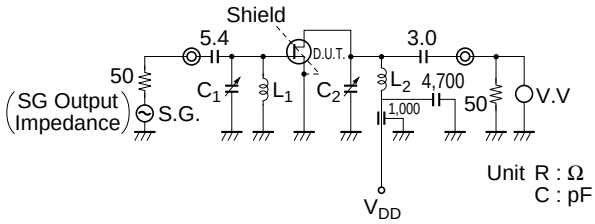
Input and Output Admittance vs. Drain Current



Transfer Admittance vs. Drain Current



Power Gain and Noise Figure
Test Circuit



C_1, C_2 : 0 to 30 pF Variable Air
L_1 : 3.5 T 1 mmϕ Copper Ribbon, Tin plated 10 mm Inside dia.
L_2 : 4.5 T 1 mmϕ Copper Ribbon, Tin plated 10 mm Inside dia.

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