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# 2SK168

Silicon N-Channel Junction FET

# HITACHI

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## 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

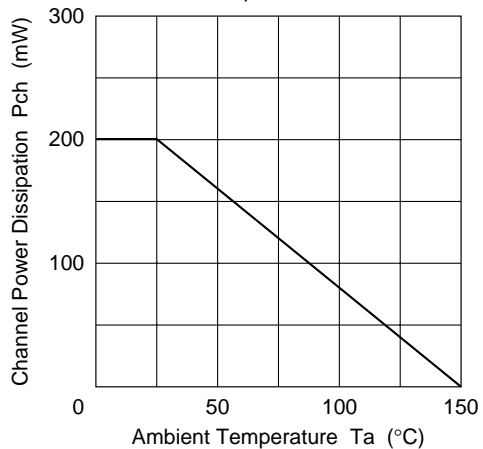
## Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Gate to drain breakdown voltage	$V_{(BR)GDO}$	-30	—	—	V	$I_G = -100 \mu A, I_S = 0$
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	$V_{DS} = 5 V, I_D = 10 \mu A$
Forward transfer admittance	$ y_{fs} $	8	10	—	mS	$V_{DS} = 5 V, V_{GS} = 0, f = 1 \text{ kHz}$
Input capacitance	Ciss	—	6.8	—	pF	$V_{DS} = 5 V, V_{GS} = 0, f = 1 \text{ MHz}$
Reverse transfer capacitance	Crss	—	0.1	—	pF	$V_{DS} = 5 V, V_{GS} = 0, f = 1 \text{ MHz}$
Power gain	PG	—	27	—	dB	$V_{DS} = 5 V, V_{GS} = 0, f = 100 \text{ MHz}$
Noise figure	NF	—	1.7	—	dB	$V_{DS} = 5 V, V_{GS} = 0, f = 100 \text{ MHz}$

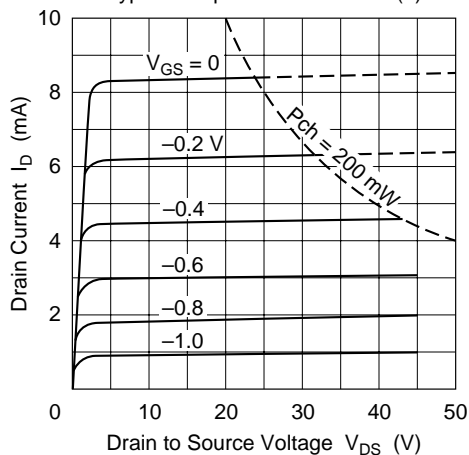
Note: 1. The 2SK168 is grouped by  $I_{DSS}$  as follows.

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

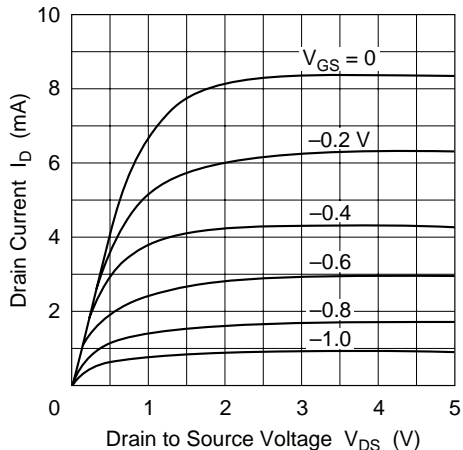
Maximum Channel Power Dissipation Curve



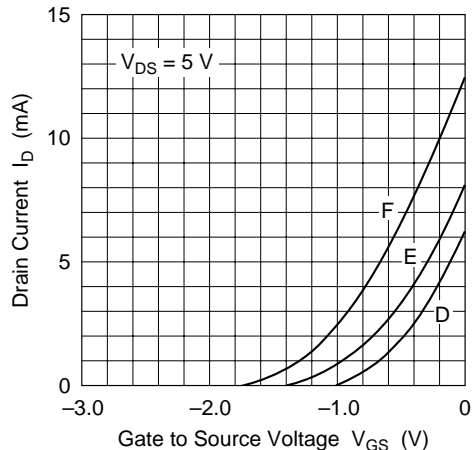
Typical Output Characteristics (1)

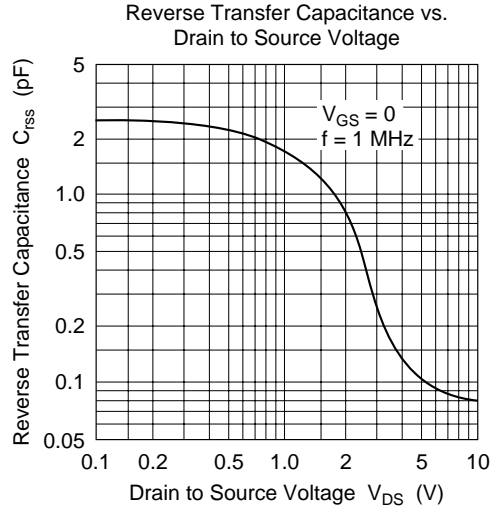
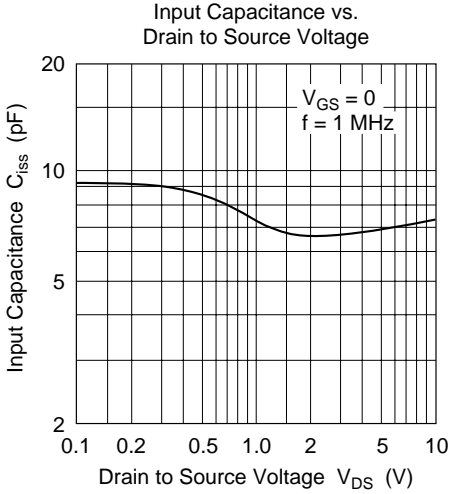
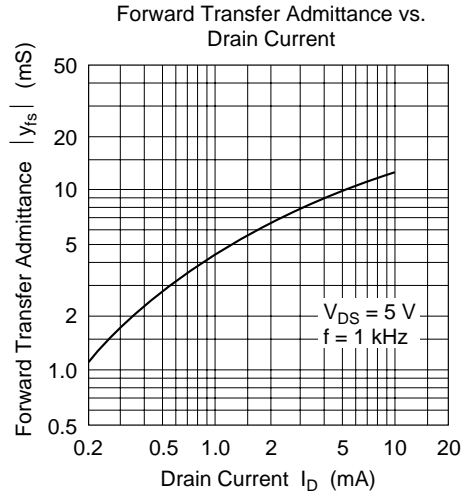
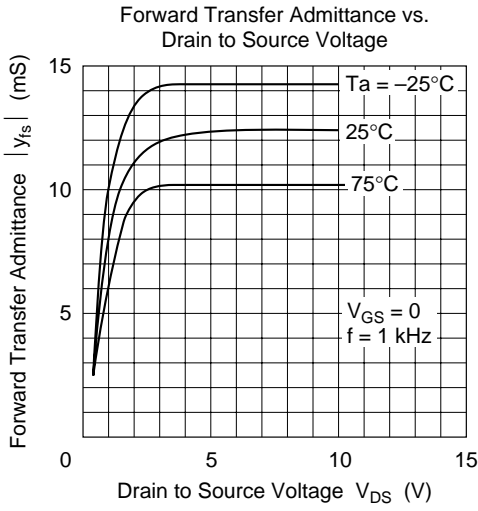


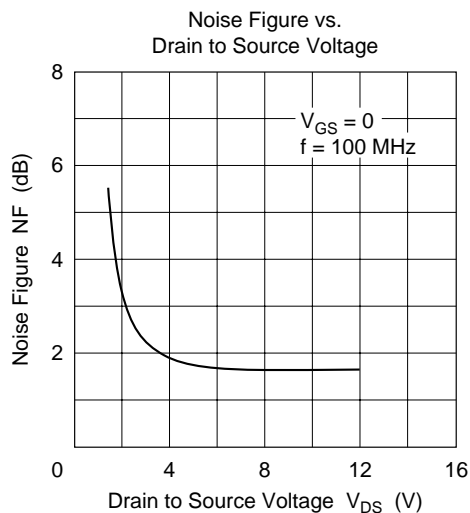
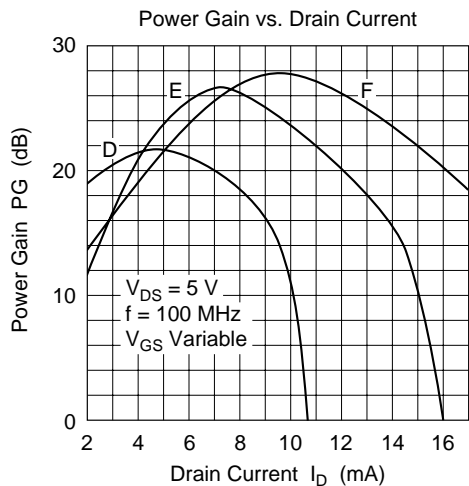
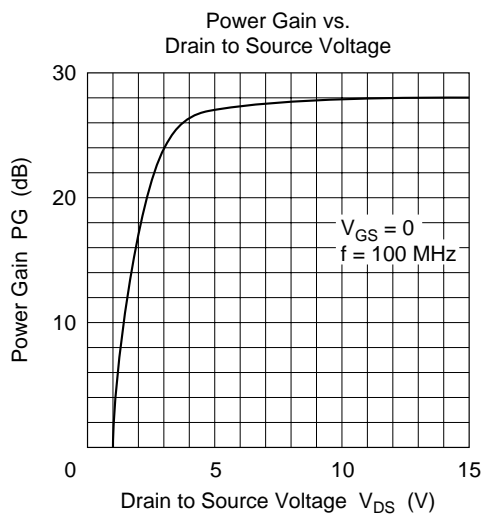
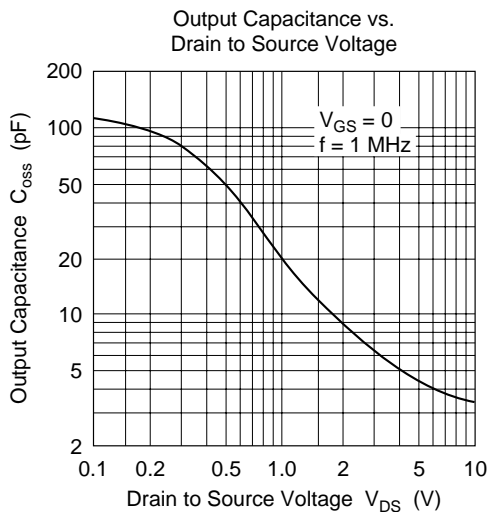
Typical Output Characteristics (2)



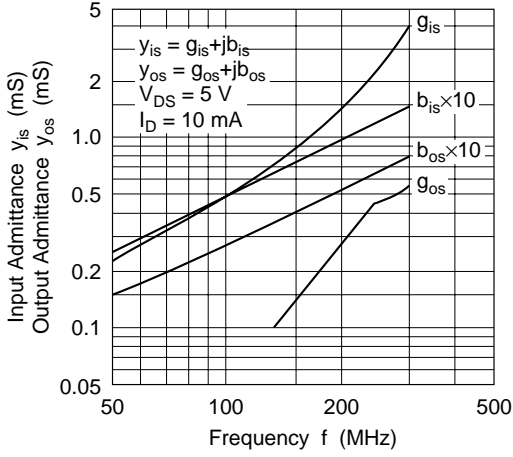
Typical Transfer Characteristics



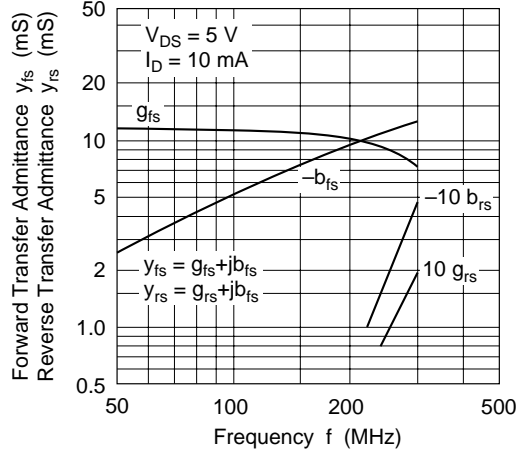




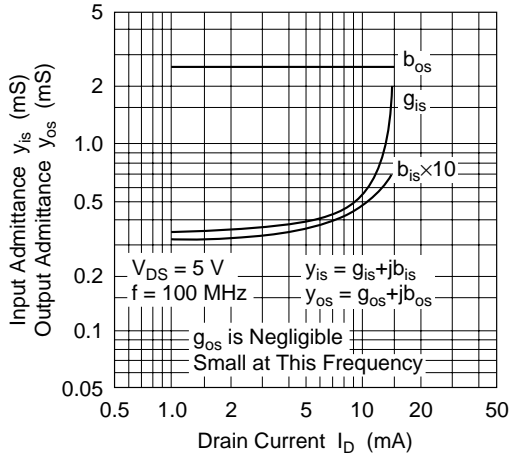
Input and Output Admittance vs. Frequency



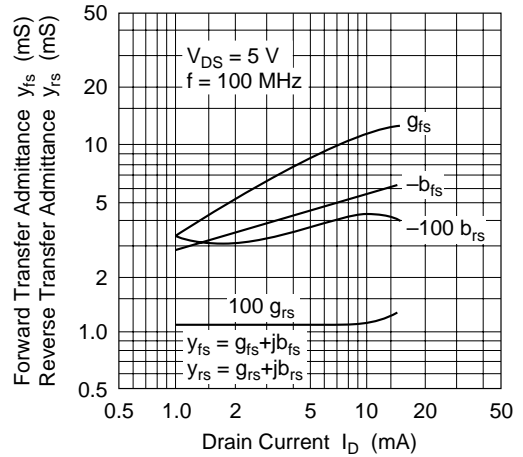
Transfer Admittance vs. Frequency



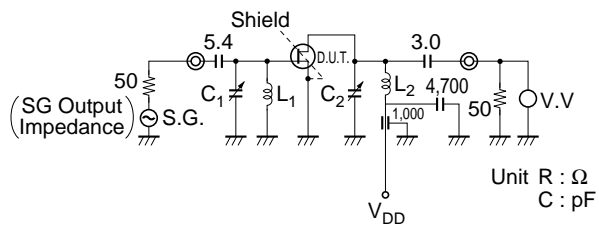
Input and Output Admittance vs. Drain Current



Transfer Admittance vs. Drain Current



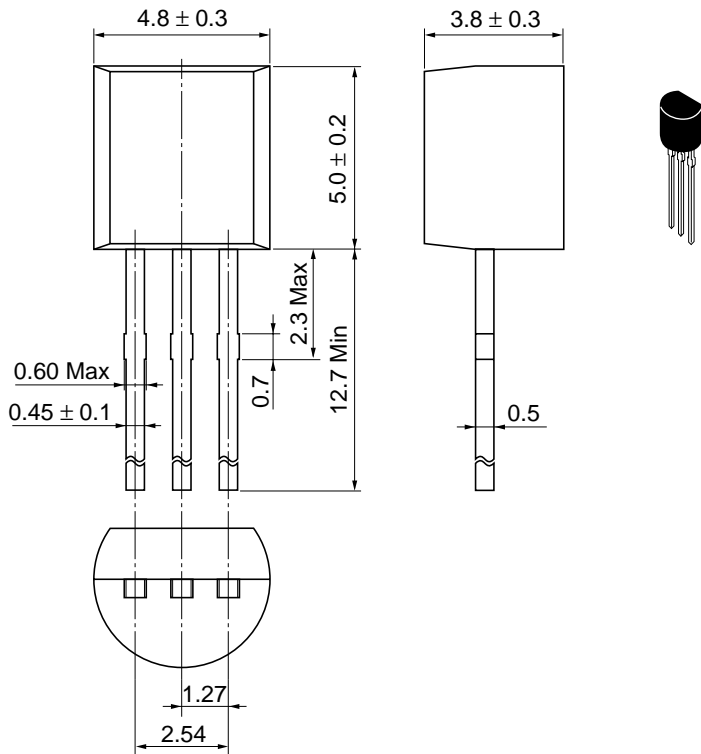
Power Gain and Noise Figure  
Test Circuit



C<sub>1</sub>, C<sub>2</sub> : 0 to 30 pF Variable Air

L<sub>1</sub> : 3.5 T 1 mmφ Copper Ribbon, Tin plated 10 mm Inside dia.

L<sub>2</sub> : 4.5 T 1 mmφ Copper Ribbon, Tin plated 10 mm Inside dia.



Hitachi Code	TO-92 (2)
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.25 g



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