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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

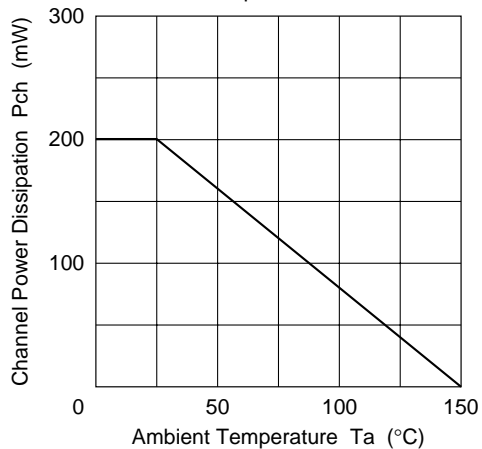
## Electrical Characteristics (Ta = 25°C)

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	$V_{DS} = 5 V, V_{GS} = 0, f = 100 \text{ MHz}$

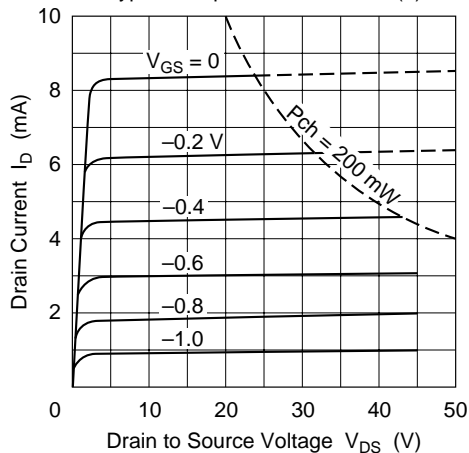
Note: 1. The 2SK168 is grouped by  $I_{DSS}$  as follows.

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

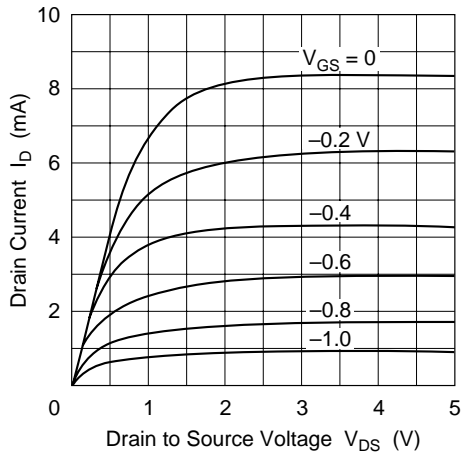
Maximum Channel Power Dissipation Curve



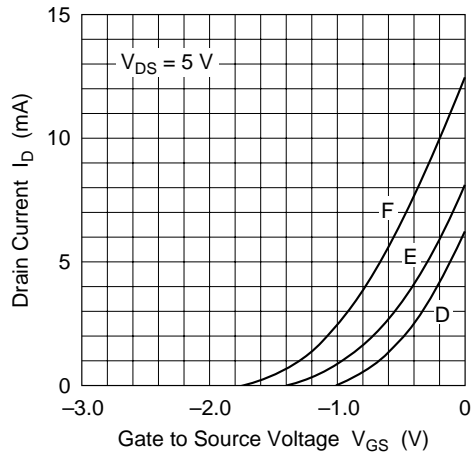
Typical Output Characteristics (1)

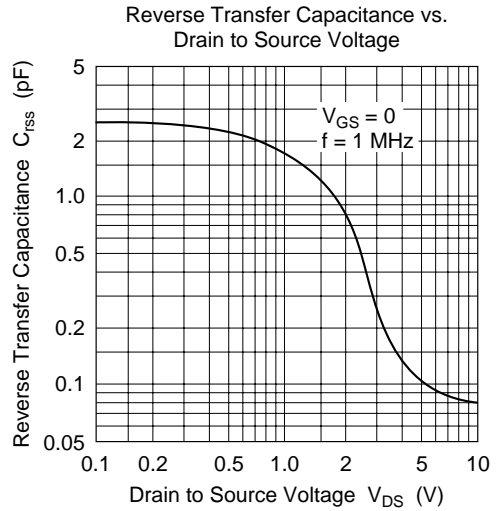
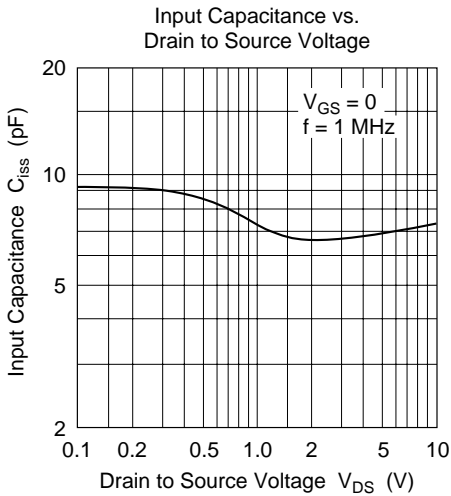
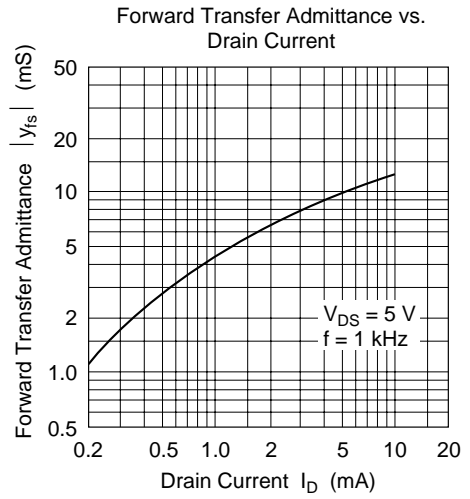
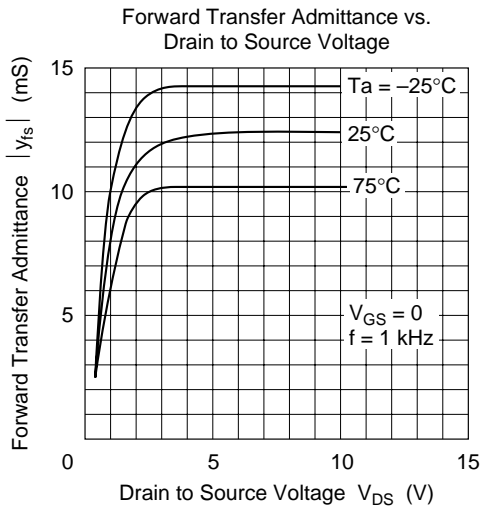


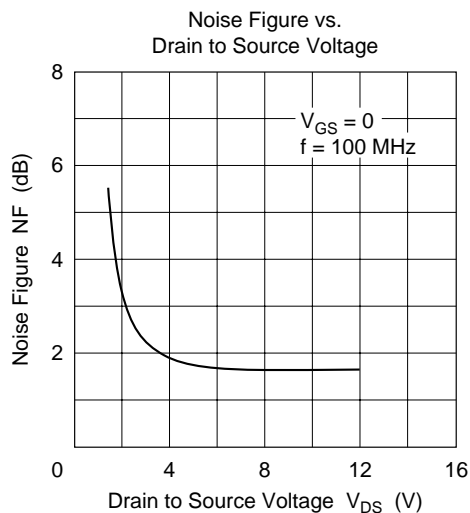
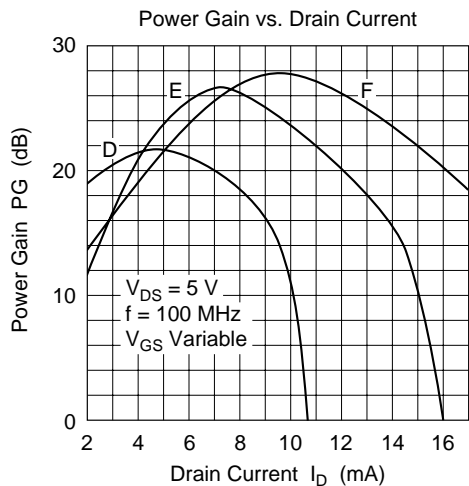
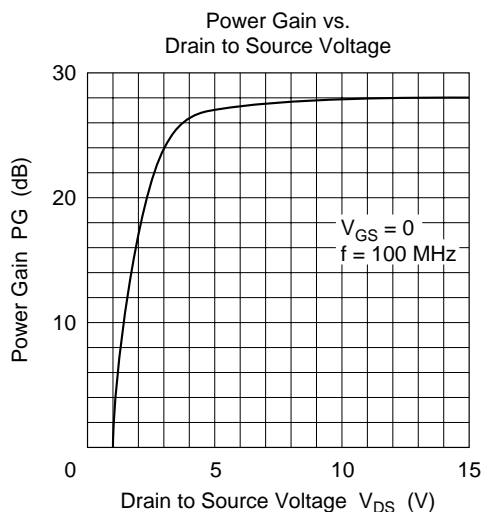
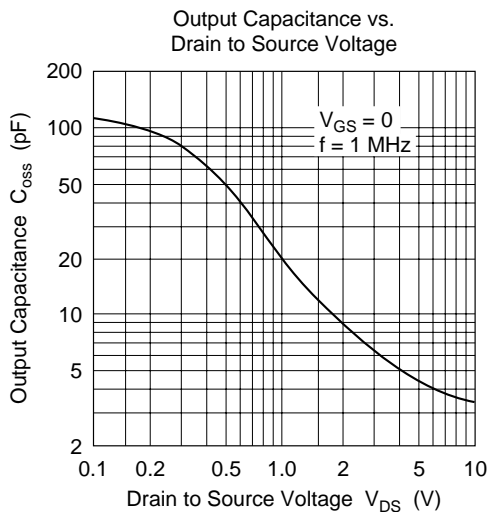
Typical Output Characteristics (2)



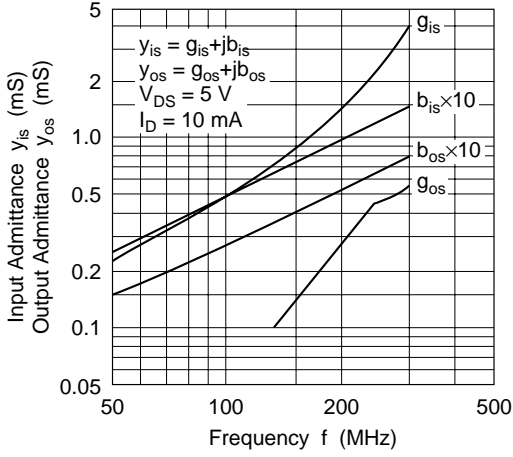
Typical Transfer Characteristics



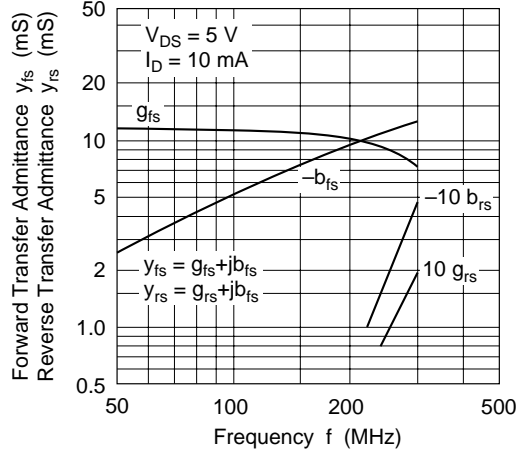




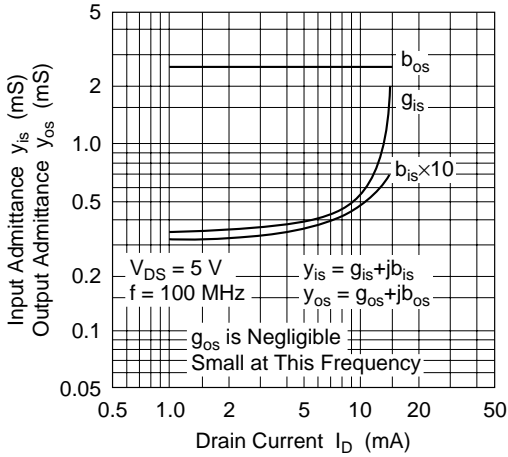
Input and Output Admittance vs. Frequency



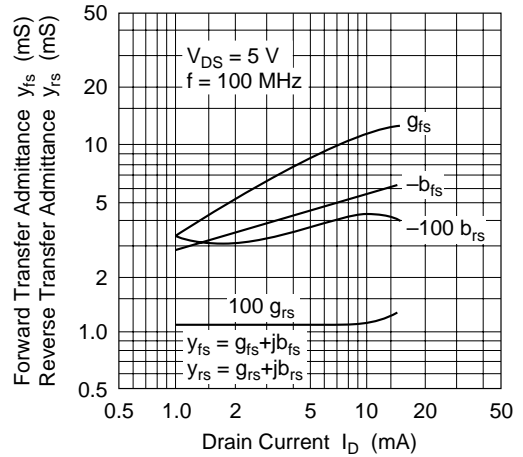
Transfer Admittance vs. Frequency



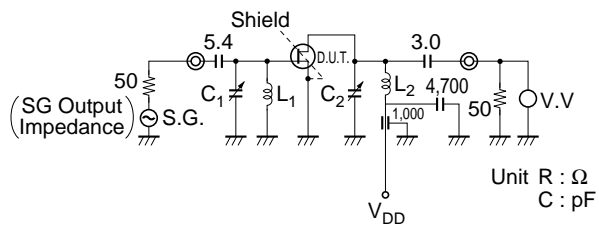
Input and Output Admittance vs. Drain Current



Transfer Admittance vs. Drain Current



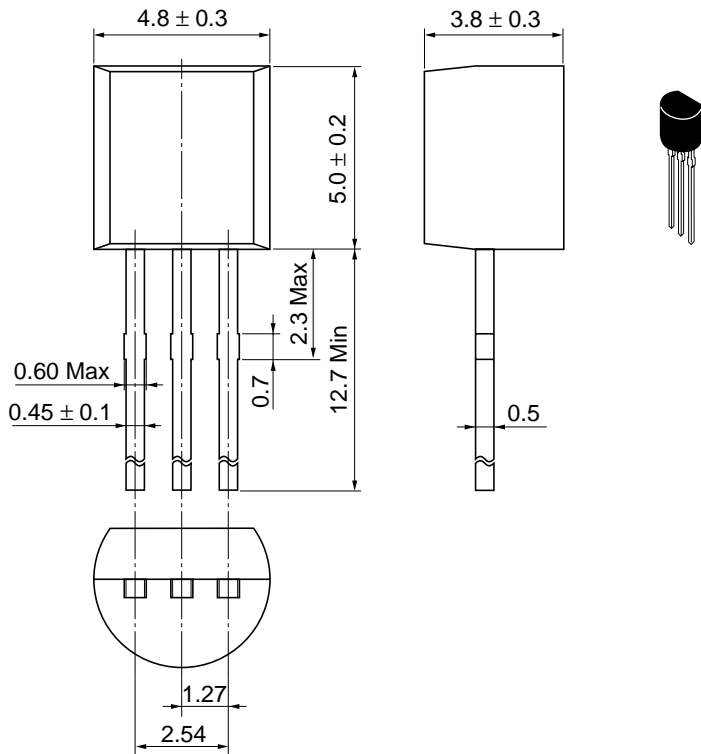
Power Gain and Noise Figure  
Test Circuit



$C_1, C_2$  : 0 to 30 pF Variable Air

$L_1$  : 3.5 T 1 mm $\phi$  Copper Ribbon, Tin plated 10 mm Inside dia.

$L_2$  : 4.5 T 1 mm $\phi$  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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# HITACHI

## Hitachi, Ltd.

Semiconductor & Integrated Circuits.  
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan  
Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

URL      North America      : <http://semiconductor.hitachi.com/>  
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## For further information write to:

Hitachi Semiconductor  
(America) Inc.  
179 East Tasman Drive,  
San Jose, CA 95134  
Tel: <1> (408) 433-1990  
Fax: <1> (408) 433-0223

Hitachi Europe GmbH  
Electronic components Group  
Dornacher Straße 3  
D-85622 Feldkirchen, Munich  
Germany  
Tel: <49> (89) 9 9180-0  
Fax: <49> (89) 9 29 30 00

Hitachi Europe Ltd.  
Electronic Components Group.  
Whitebrook Park  
Lower Cookham Road  
Maidenhead  
Berkshire SL6 8YA, United Kingdom  
Tel: <44> (1628) 585000  
Fax: <44> (1628) 778322

Hitachi Asia Pte. Ltd.  
16 Collyer Quay #20-00  
Hitachi Tower  
Singapore 049318  
Tel: 535-2100  
Fax: 535-1533

Hitachi Asia Ltd.  
Taipei Branch Office  
3F, Hung Kuo Building, No.167,  
Tun-Hwa North Road, Taipei (105)  
Tel: <886> (2) 2718-3666  
Fax: <886> (2) 2718-8180

Hitachi Asia (Hong Kong) Ltd.  
Group III (Electronic Components)  
7/F., North Tower, World Finance Centre,  
Harbour City, Canton Road, Tsim Sha Tsui,  
Kowloon, Hong Kong  
Tel: <852> (2) 735 9218  
Fax: <852> (2) 730 0281  
Telex: 40815 HITEC HX

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