2SK168

Silicon N-Channel Junction FET

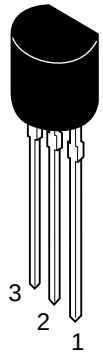
HITACHI

Application

VHF Amplifier, Mixer, Local oscillator

Outline

TO-92 (2)



1. Gate
2. Source
3. Drain

Hitachi semiconductor

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

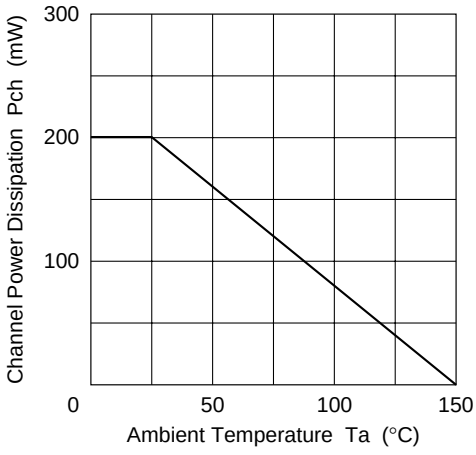
Electrical Characteristics (Ta = 25°C)

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

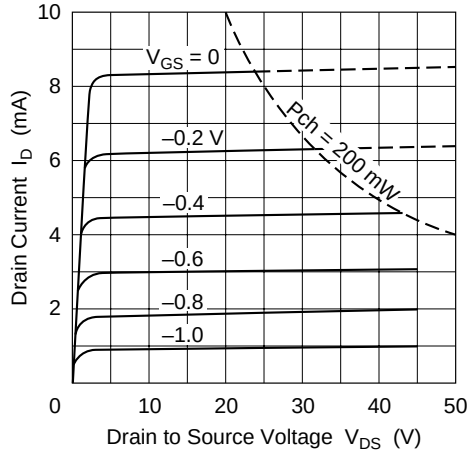
Note: 1. The 2SK168 is grouped by I_{DSS} as follows.

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

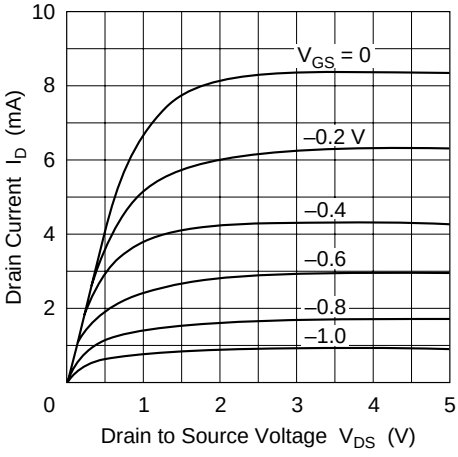
Maximum Channel Power Dissipation Curve



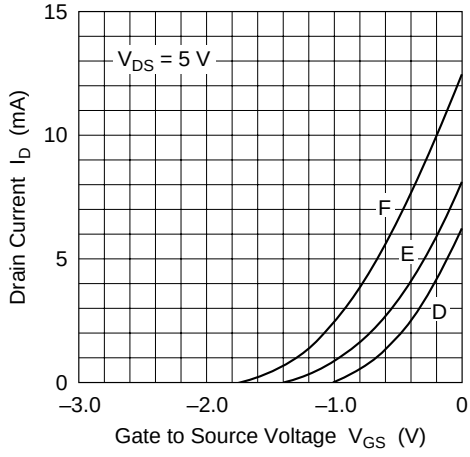
Typical Output Characteristics (1)



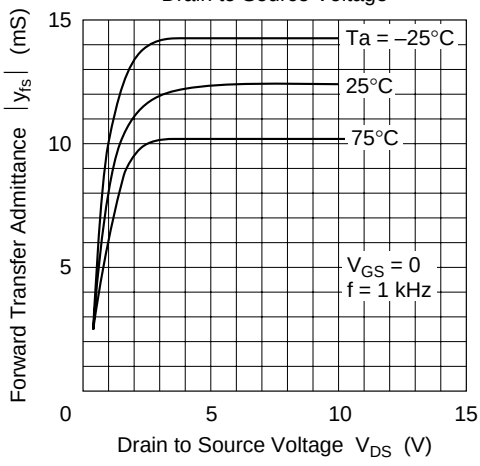
Typical Output Characteristics (2)



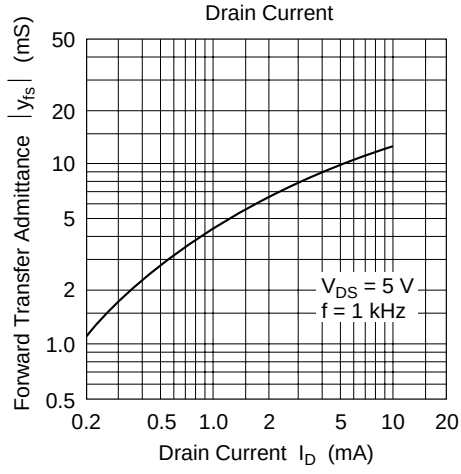
Typical Transfer Characteristics



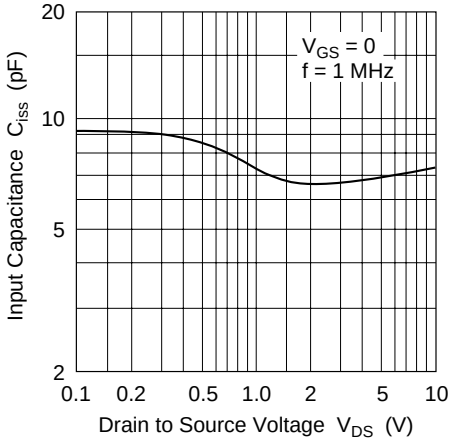
Forward Transfer Admittance vs.
Drain to Source Voltage



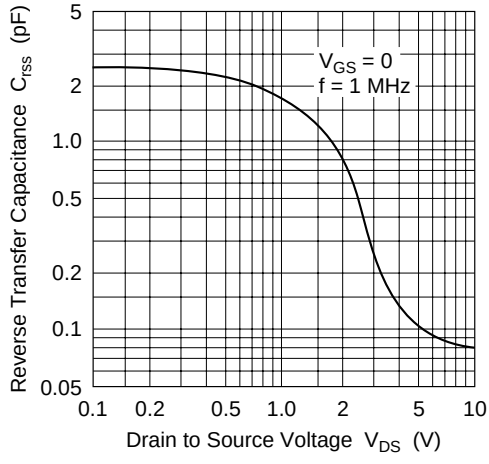
Forward Transfer Admittance vs.
Drain Current



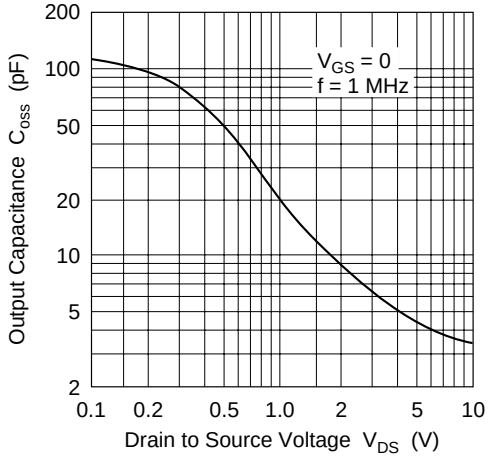
Input Capacitance vs.
Drain to Source Voltage



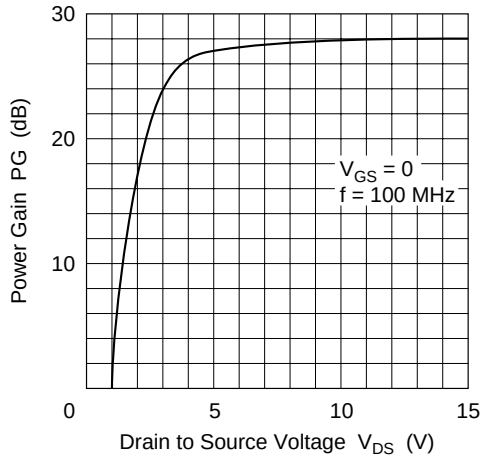
Reverse Transfer Capacitance vs.
Drain to Source Voltage



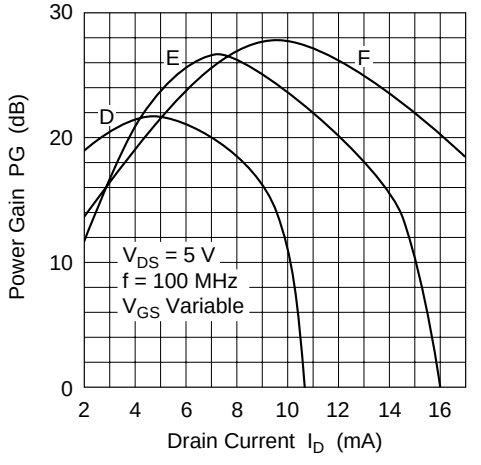
Output Capacitance vs.
Drain to Source Voltage



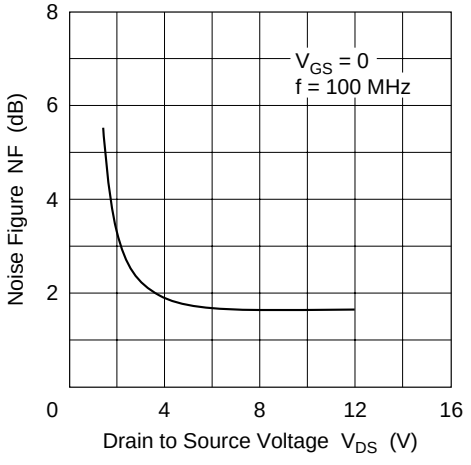
Power Gain vs.
Drain to Source Voltage



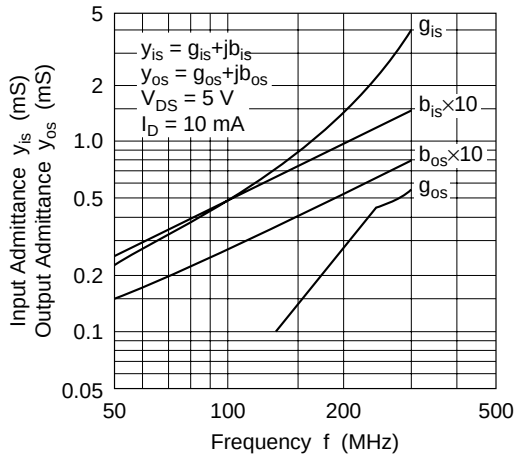
Power Gain vs. Drain Current



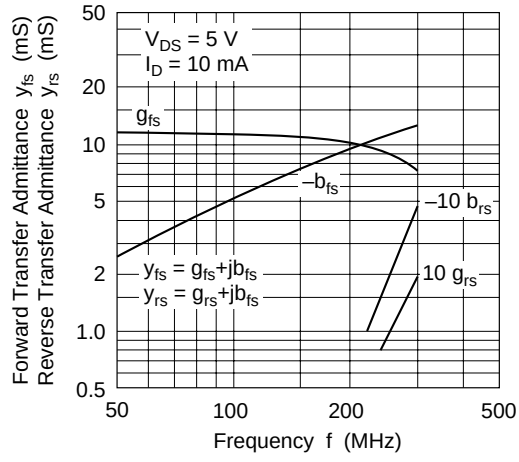
Noise Figure vs.
Drain to Source Voltage



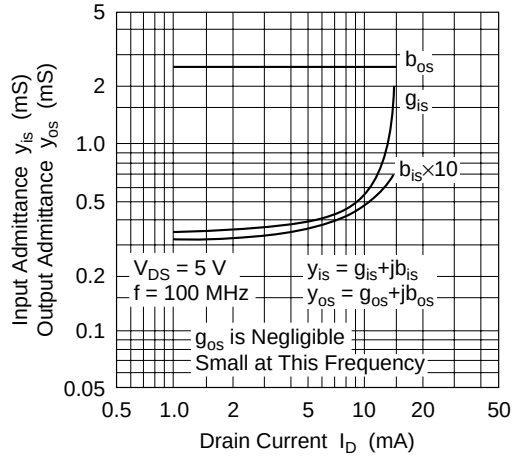
Input and Output Admittance vs. Frequency



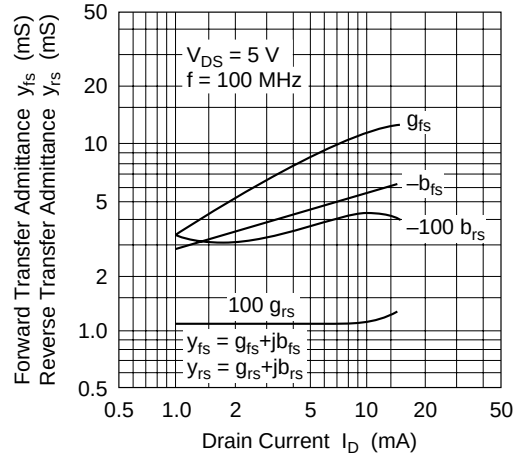
Transfer Admittance vs. Frequency



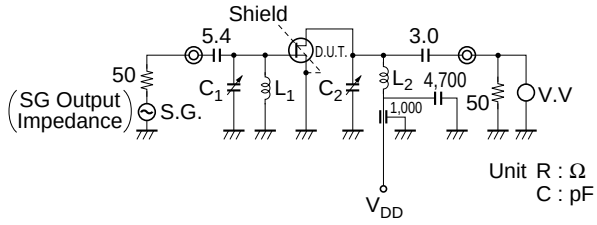
Input and Output Admittance vs. Drain Current



Transfer Admittance vs. Drain Current

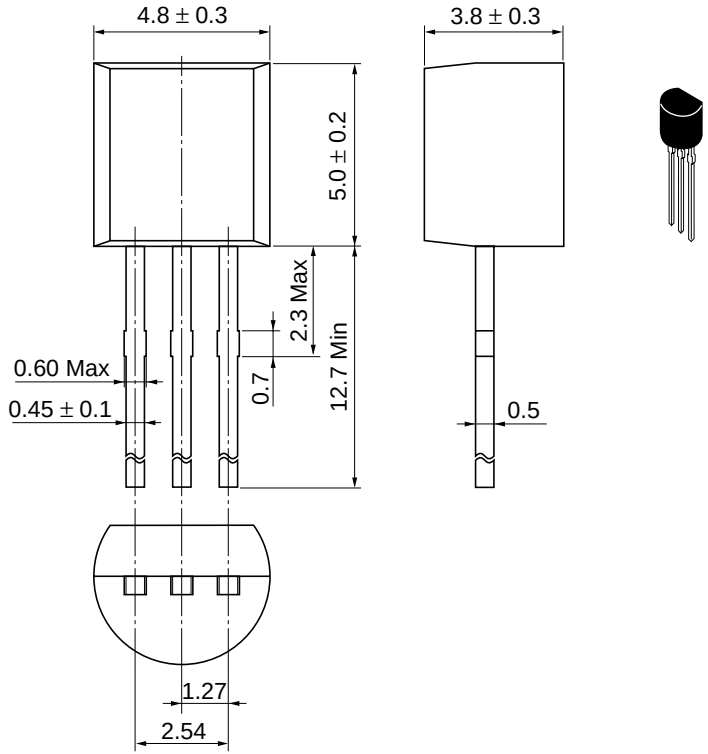


Power Gain and Noise Figure
Test Circuit



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.

Unit: mm



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
NorthAmerica : http:semiconductor.hitachi.com/
Europe : http://www.hitachi-eu.com/hel/ecg
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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