
3SK239A

GaAs Dual Gate MES FET

HITACHI

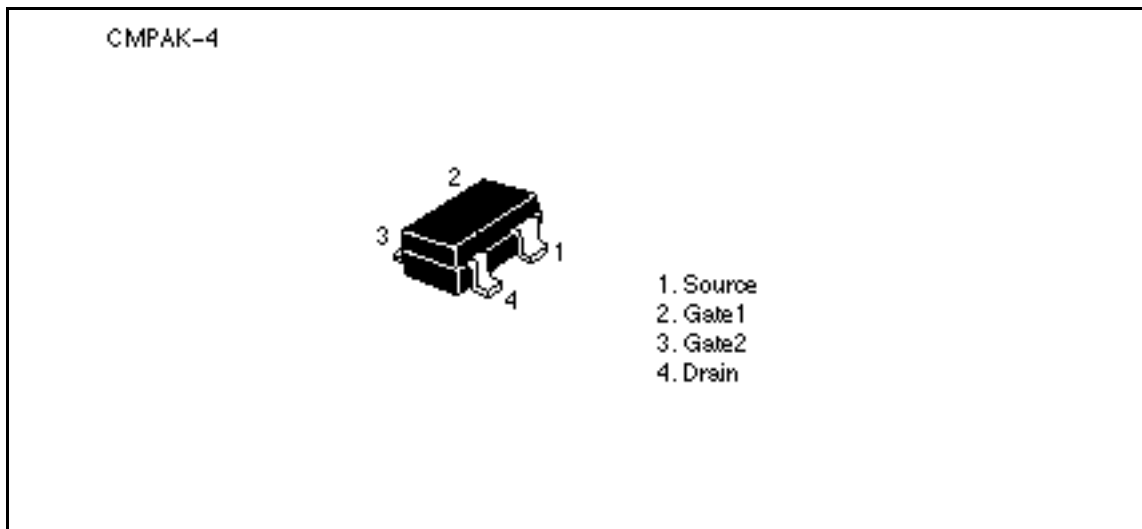
Application

UHF RF amplifier

Features

- Excellent low noise characteristics
(NF = 1.3 dB Typ at f = 900 MHz)
- Capable of low voltage operation

Outline



3SK239A

Absolute Maximum Ratings (Ta = 25°C)

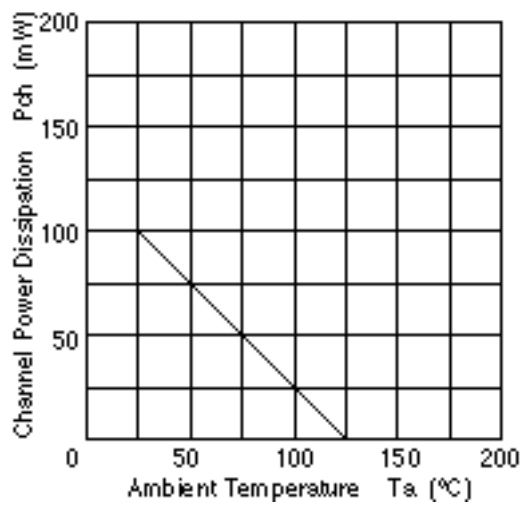
Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DS}	12	V
Gate 1 to source voltage	V_{G1S}	-6	V
Gate 2 to source voltage	V_{G2S}	-6	V
Drain current	I_D	50	mA
Channel power dissipation	Pch	100	mW
Channel temperature	Tch	125	°C
Storage temperature	Tstg	-55 to +125	°C

Electrical Characteristics (Ta = 25°C)

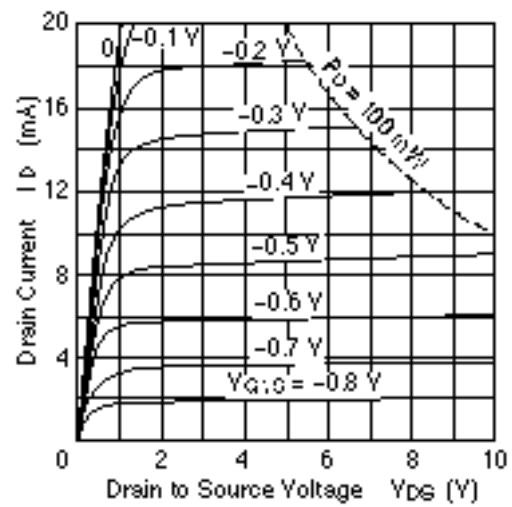
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source leakage current	I_{DSX}	—	—	50	μ A	$V_{DS} = 12$ V, $V_{G1S} = -3$ V, $V_{G2S} = 0$
Gate 1 to source breakdown voltage	$V_{(BR)G1SS}$	-6	—	—	V	$I_{G1} = -10$ μ A, $V_{G2S} = V_{DS} = 0$
Gate 2 to source breakdown voltage	$V_{(BR)G2SS}$	-6	—	—	V	$I_{G2} = -10$ μ A, $V_{G1S} = V_{DS} = 0$
Gate 1 leakage current	I_{G1SS}	—	—	-5	μ A	$V_{G1S} = -5$ V, $V_{G2S} = V_{DS} = 0$
Gate 2 leakage current	I_{G2SS}	—	—	-5	μ A	$V_{G2S} = -5$ V, $V_{G1S} = V_{DS} = 0$
Drain current	I_{DSS}	14	19	28	mA	$V_{DS} = 5$ V, $V_{G1S} = V_{G2S} = 0$
Gate 1 to source cutoff voltage	$V_{G1S(off)}$	—	-1.2	-1.6	V	$V_{DS} = 5$ V, $V_{G2S} = 0$, $I_D = 100$ μ A
Gate 2 to source cutoff voltage	$V_{G2S(off)}$	—	-1.2	-1.6	V	$V_{DS} = 5$ V, $V_{G1S} = 0$, $I_D = 100$ μ A
Forward transfer admittance	$ y_{fs} $	20	31	—	mS	$V_{DS} = 5$ V, $V_{G2S} = 1$ V, $I_D = 10$ mA, $f = 1$ kHz
Input capacitance	Ciss	—	0.58	1.0	pF	$V_{DS} = 5$ V, $V_{G1S} = V_{G2S} = -3$ V, $f = 1$ MHz
Output capacitance	Coss	—	0.36	0.6	pF	
Reverse transfer capacitance	Crss	—	0.028	0.05	pF	
Power gain	PG	17	19	—	dB	$V_{DS} = 5$ V, $V_{G2S} = 1$ V, $I_D = 10$ mA, $f = 900$ MHz
Noise figure	NF	—	1.3	2.0	dB	

Note: Marking is "XR-".

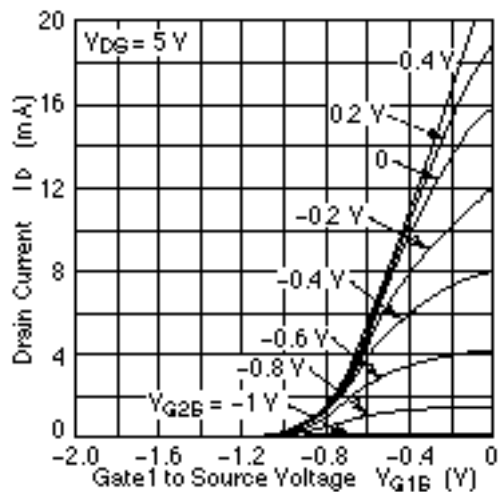
Maximum Channel Power Dissipation Curve



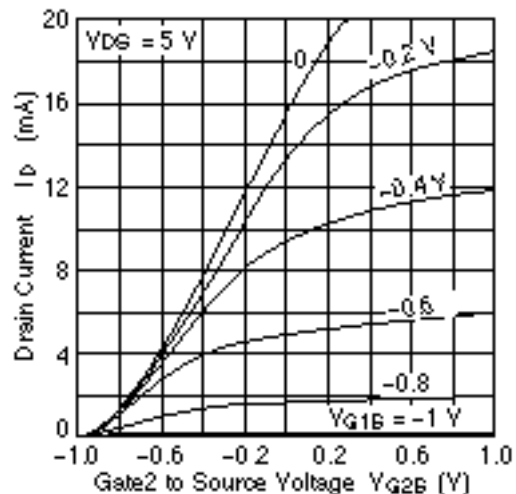
Typical Output Characteristics

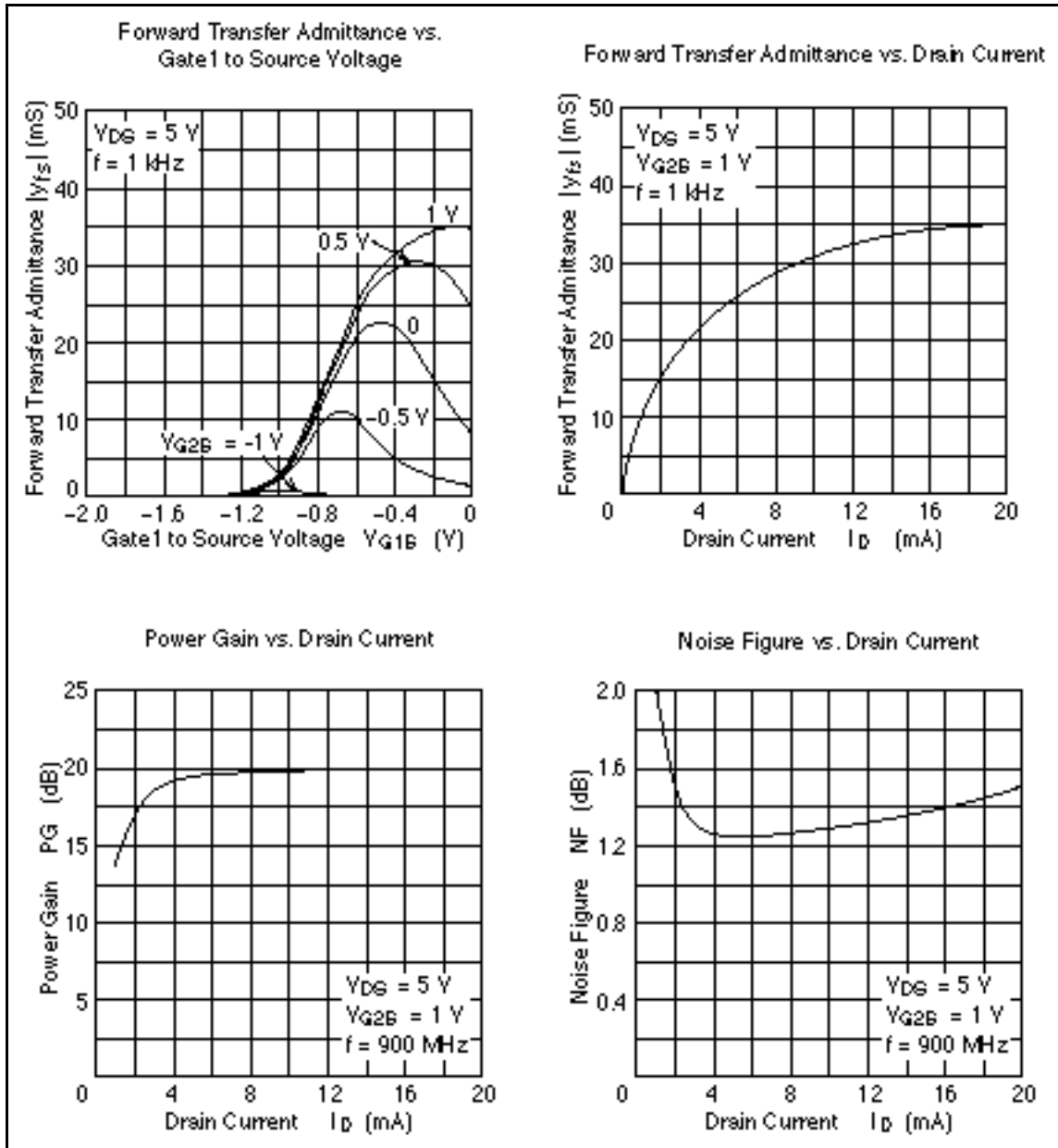


Drain Current vs. Gate1 to Source Voltage

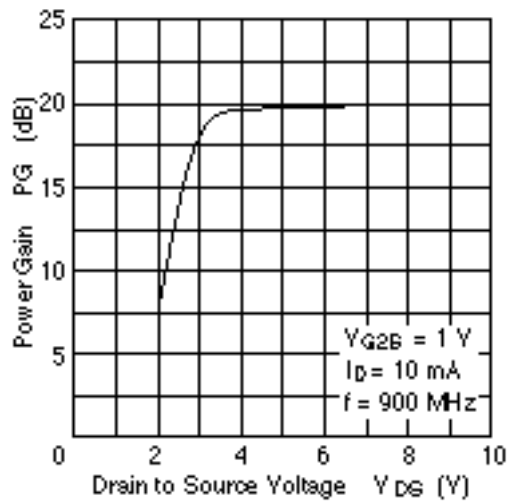


Drain Current vs. Gate2 Source Voltage

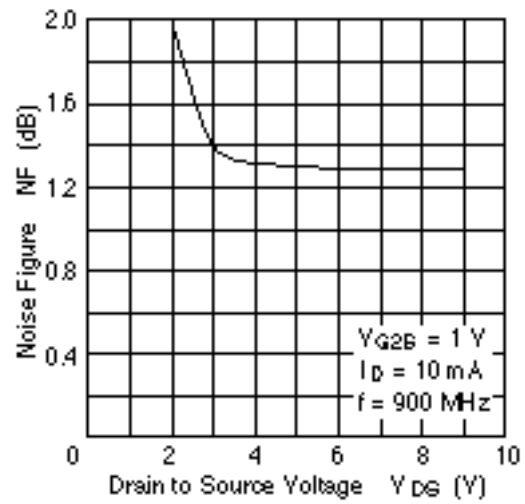




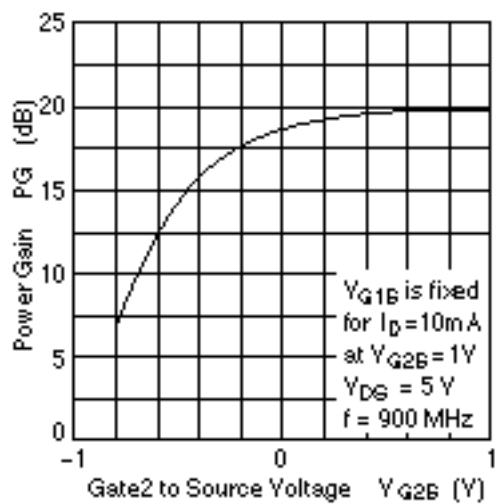
Power Gain vs. Drain to Source Voltage



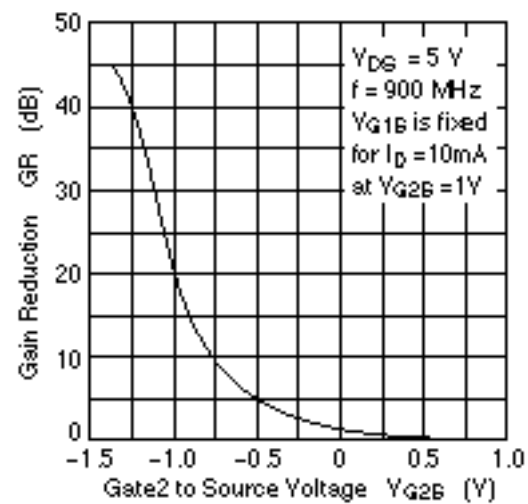
Noise Figure vs. Drain to Source Voltage



Power Gain vs. Gate2 to Source Voltage



Gain Reduction vs. Gate2 to Source Voltage



When using this document, keep the following in mind:

1. This document may, wholly or partially, be subject to change without notice.
2. All rights are reserved: No one is permitted to reproduce or duplicate, in any form, the whole or part of this document without Hitachi's permission.
3. Hitachi will not be held responsible for any damage to the user that may result from accidents or any other reasons during operation of the user's unit according to this document.
4. Circuitry and other examples described herein are meant merely to indicate the characteristics and performance of Hitachi's semiconductor products. Hitachi assumes no responsibility for any intellectual property claims or other problems that may result from applications based on the examples described herein.
5. No license is granted by implication or otherwise under any patents or other rights of any third party or Hitachi, Ltd.
6. **MEDICAL APPLICATIONS:** Hitachi's products are not authorized for use in **MEDICAL APPLICATIONS** without the written consent of the appropriate officer of Hitachi's sales company. Such use includes, but is not limited to, use in life support systems. Buyers of Hitachi's products are requested to notify the relevant Hitachi sales offices when planning to use the products in **MEDICAL APPLICATIONS**.

HITACHI

Hitachi, Ltd.

Semiconductor & IC Div.
Nippon Bldg., 2-5-2, Ohite-machi, Chiyoda-ku, Tokyo 100, Japan
Tel: Tokyo (03) 3270-2111
Fax: (03) 3270-5109

For further information write to:

Hitachi America, Ltd.
Semiconductor & IC Div.
2000 Sierra Point Parkway
Brisbane, CA 94005-4835
U.S.A.
Tel: 415-589-8300
Fax: 415-589-4207

Hitachi Europe GmbH
Electronic Components Group
Continental Europe
Dornacher StraÙe 3
D-85622 Feldkirchen
München
Tel: 089-9 91 80-0
Fax: 089-9 29 30 00

Hitachi Europe Ltd.
Electronic Components Div.
Northern Europe Headquarters
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 6YA
United Kingdom
Tel: 0628-885000
Fax: 0628-778322

Hitachi Asia Pte. Ltd.
45 Collyer Quay #20-00
Hitachi Tower
Singapore 0104
Tel: 535-2100
Fax: 535-1533

Hitachi Asia (Hong Kong) Ltd.
Unit 705, North Tower,
World Finance Centre
Harbour City, Canton Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel: 27359218
Fax: 27308074

This datasheet has been downloaded from:

www.DatasheetCatalog.com

Datasheets for electronic components.



LittleDiode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

LittleDiode.com

Looking forward to providing you with the best possible service.