
3SK228

GaAs Dual Gate MES FET

HITACHI

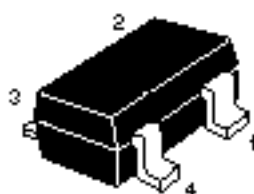
ADE-208-280
1st. Edition

Application

UHF TV tuner RF Amplifier

Outline

MPAK-4



- 1. Source
- 2. Gate1
- 3. Gate2
- 4. Drain

3SK228

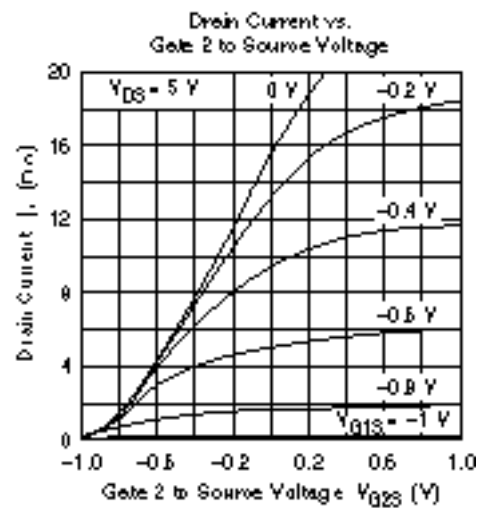
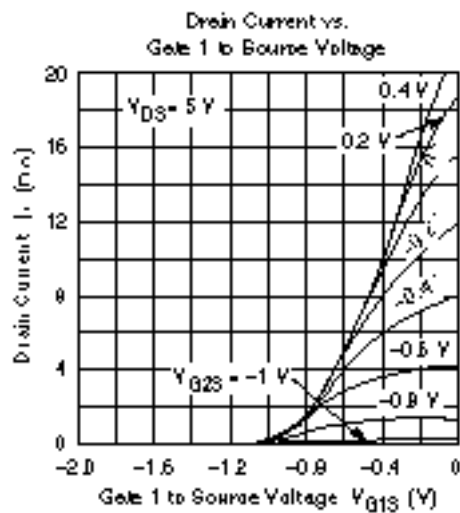
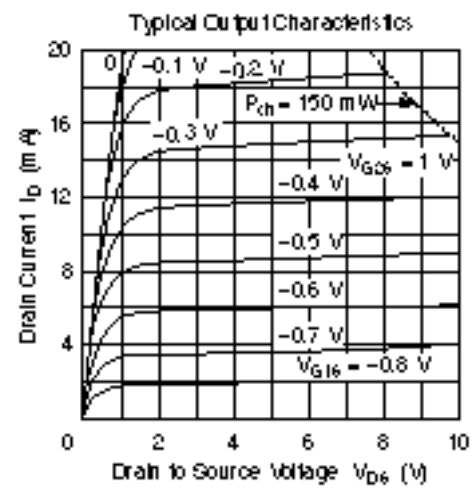
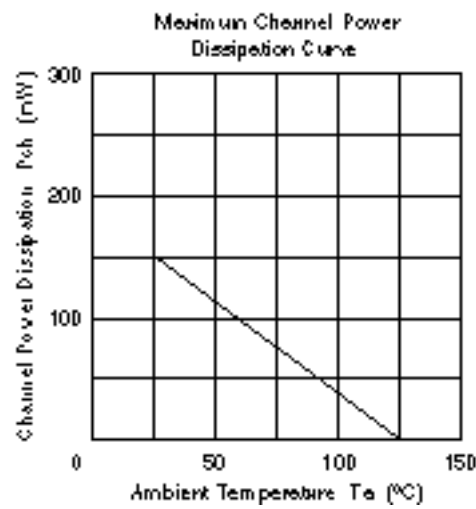
Absolute Maximum Ratings (Ta = 25°C)

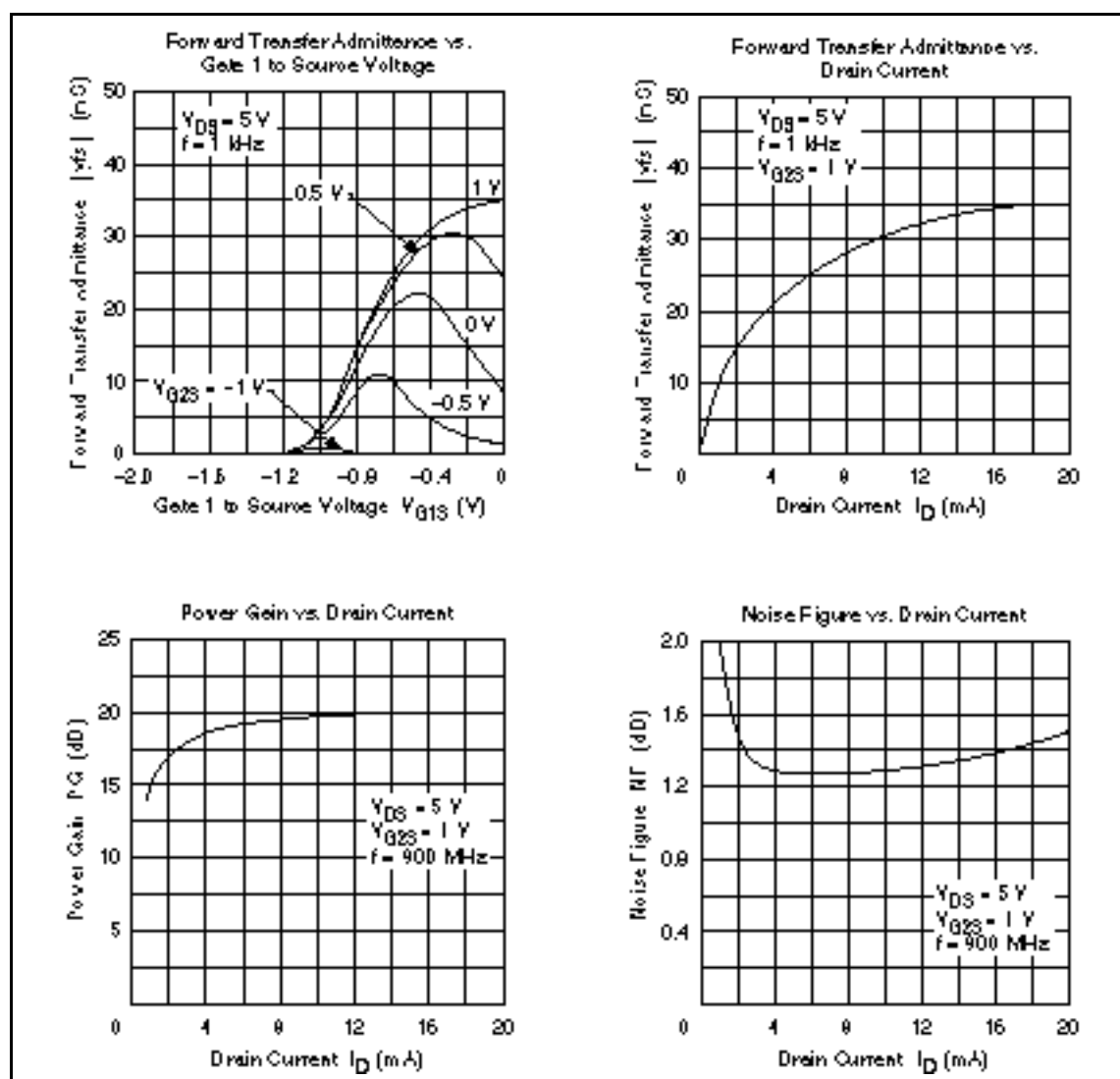
Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DS}	12	V
Gate 1 to source voltage	V_{G1S}	−6	V
Gate 2 to source voltage	V_{G2S}	−6	V
Drain current	I_D	50	mA
Channel power dissipation	Pch	150	mW
Channel temperature	Tch	125	°C
Storage temperature	Tstg	−55 to +125	°C

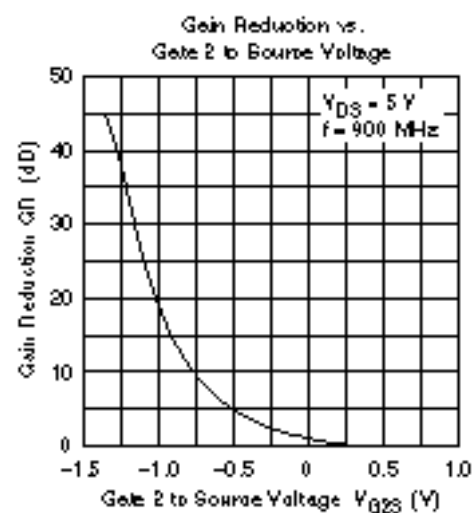
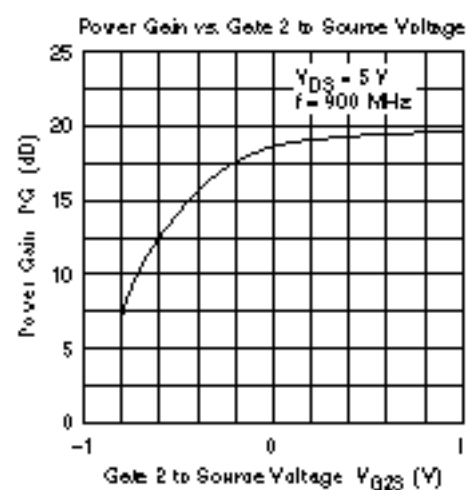
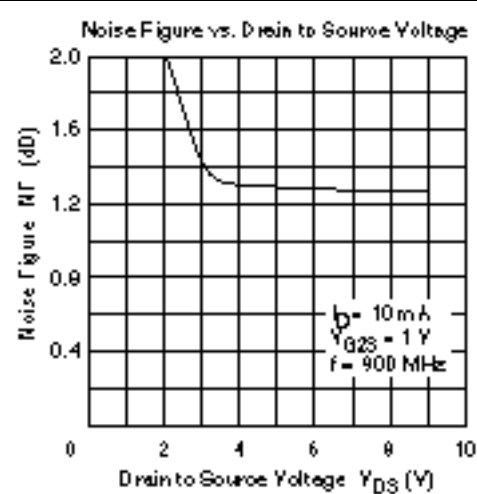
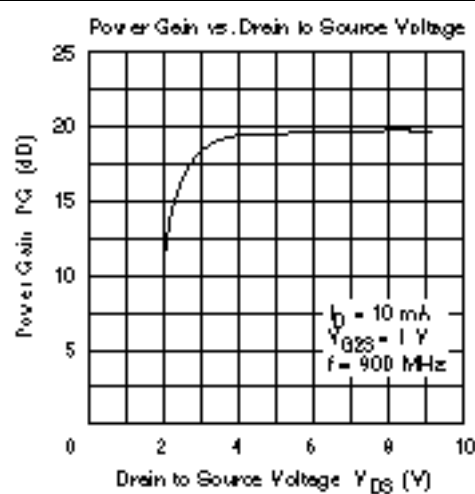
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source cutoff current	I_{DSX}	—	—	50	μA	$V_{DS} = 12\text{ V}$, $V_{G1S} = -3\text{ V}$, $V_{G2S} = 0$
Gate 1 to source breakdown voltage	$V_{(BR)G1SS}$	−6	—	—	V	$I_{G1} = -10\text{ μA}$, $V_{G2S} = V_{DS} = 0$
Gate 2 to source breakdown voltage	$V_{(BR)G2SS}$	−6	—	—	V	$I_{G2} = -10\text{ μA}$, $V_{G1S} = V_{DS} = 0$
Gate 1 cutoff current	I_{G1SS}	—	—	−5	μA	$V_{G1S} = -5\text{ V}$, $V_{G2S} = V_{DS} = 0$
Gate 2 cutoff current	I_{G2SS}	—	—	−5	μA	$V_{G2S} = -5\text{ V}$, $V_{G1S} = V_{DS} = 0$
Drain current	I_{DSS}	10	17	32	mA	$V_{DS} = 5\text{ V}$, $V_{G1S} = V_{G2S} = 0$
Gate 1 to source cutoff voltage	$V_{G1S(off)}$	—	−1.1	−1.5	V	$V_{DS} = 5\text{ V}$, $V_{G2S} = 0$, $I_D = 100\text{ μA}$
Gate 2 to source cutoff voltage	$V_{G2S(off)}$	—	−1.1	−1.5	V	$V_{DS} = 5\text{ V}$, $V_{G1S} = 0$, $I_D = 100\text{ μA}$
Forward transfer admittance	$ y_{fs} $	20	34	—	mS	$V_{DS} = 5\text{ V}$, $V_{G2S} = 1\text{ V}$, $I_D = 10\text{ mA}$, $f = 1\text{ kHz}$
Input capacitance	Ciss	—	0.58	1.0	pF	$V_{DS} = 5\text{ V}$, $V_{G1S} = V_{G2S} = -3\text{ V}$, $f = 1\text{ MHz}$
Output capacitance	Coss	—	0.36	0.6	pF	
Reverse transfer capacitance	Crss	—	0.028	0.05	pF	
Power gain	PG	17	19.6	—	dB	$V_{DS} = 5\text{ V}$, $V_{G2S} = 1\text{ V}$, $I_D = 10\text{ mA}$, $f = 900\text{ MHz}$
Noise figure	NF	—	1.3	2.0	dB	

Note: Marking is “XR−”.

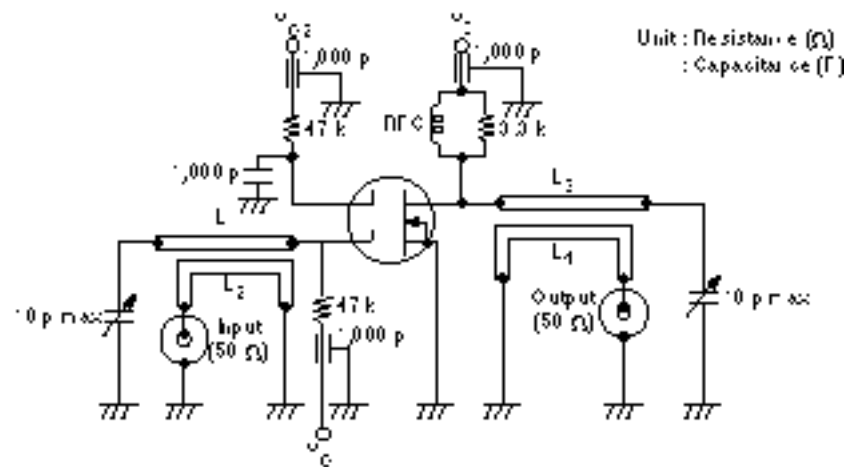




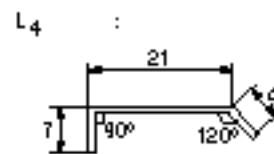
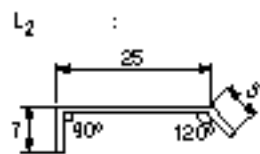
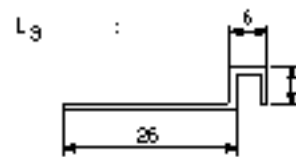
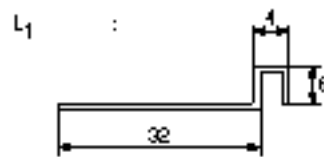


3SK228

Power Gain, Noise Figure Test Circuit



L to L₄ : ϕ mm Copper Wire



Unit : mm

RF C : 3 turn, 6 mm inside dia. ϕ 1 mm Enamelled Copper Wire

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, Ohte-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: 415-589-8000
Fax: 415-589-4207

Hitachi Europe GmbH
Electronic Components Group
Continental Europe
Dornacher Straße 3
D-85622 Feldkirchen
München
Tel: 089-9 94 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 8YA
United Kingdom
Tel: 0628-585000
Fax: 0628-778322

Hitachi Asia Pte. Ltd.
45 Collyer Quay #20-00
Hitachi Tower
Singapore 0404
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: 27306074