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# 3SK186

Silicon N-Channel Dual Gate MOS FET

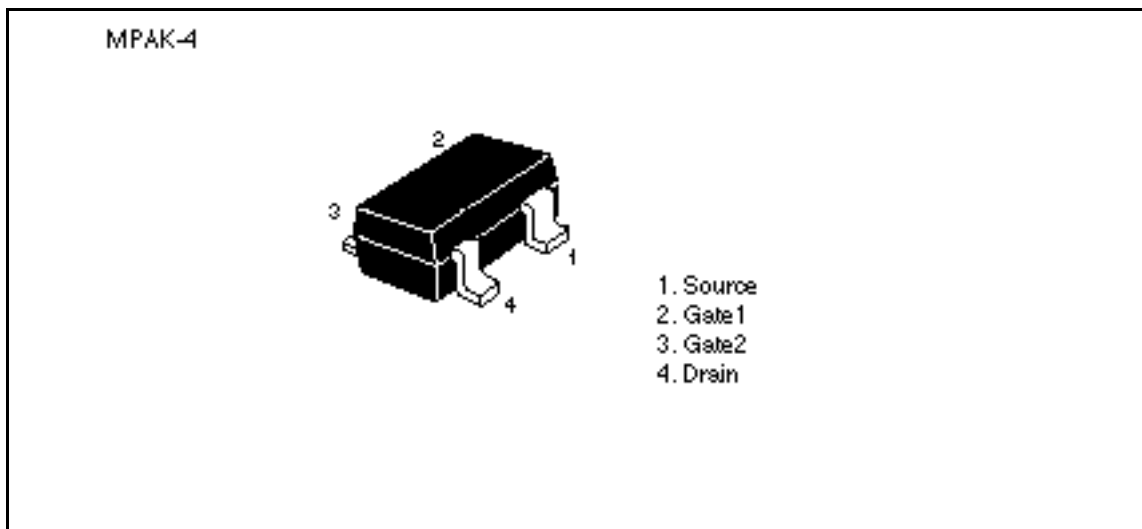
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## Application

UHF TV tuner RF amplifier

## Outline



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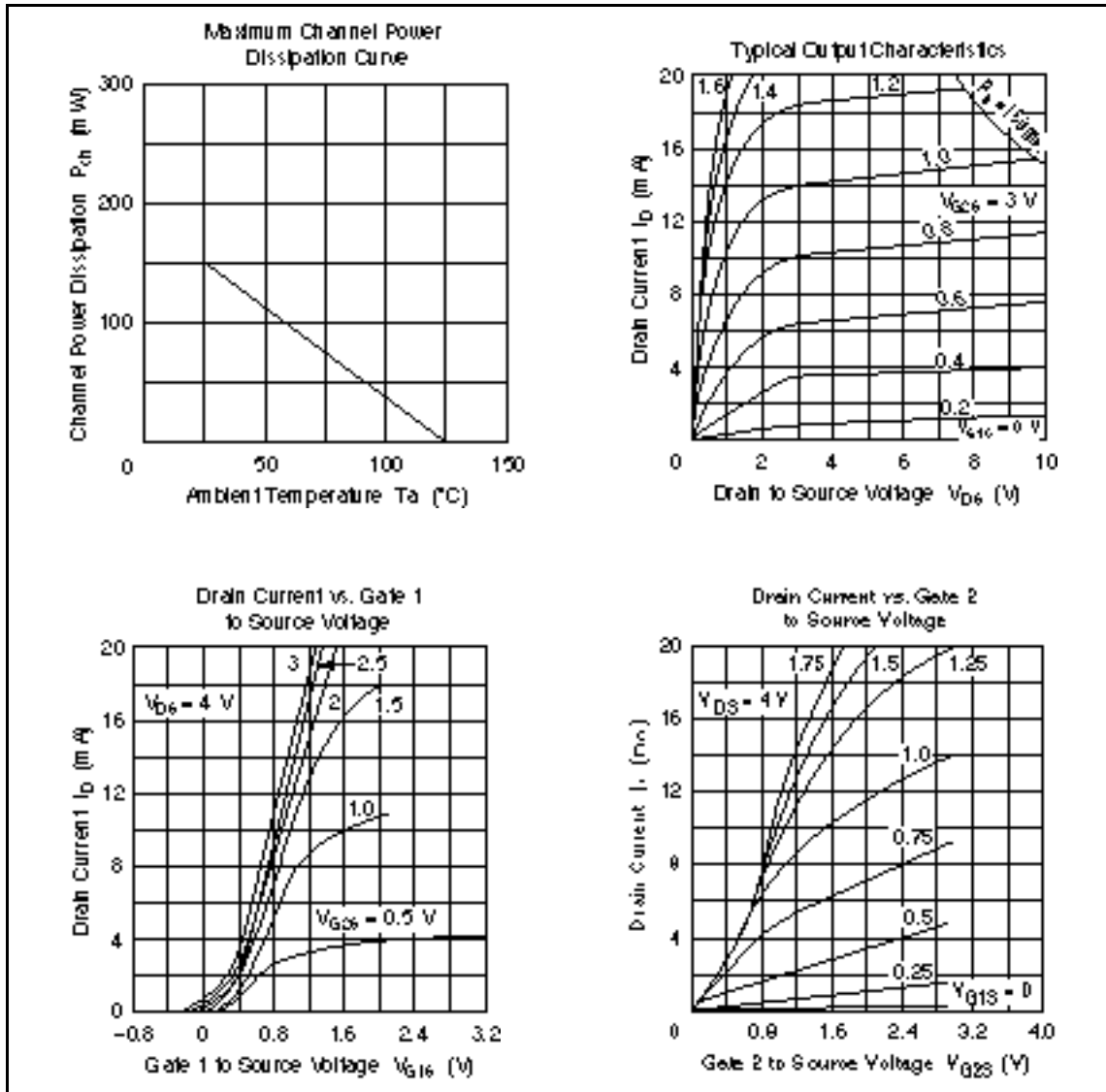
### Absolute Maximum Ratings (Ta = 25°C)

| Item                      | Symbol    | Ratings     | Unit |
|---------------------------|-----------|-------------|------|
| Drain to source voltage   | $V_{DS}$  | 12          | V    |
| Gate 1 to source voltage  | $V_{G1S}$ | ±10         | V    |
| Gate 2 to source voltage  | $V_{G2S}$ | ±10         | V    |
| Drain current             | $I_D$     | 35          | mA   |
| Channel power dissipation | Pch       | 150         | mW   |
| Channel temperature       | Tch       | 125         | °C   |
| Storage temperature       | Tstg      | -55 to +125 | °C   |

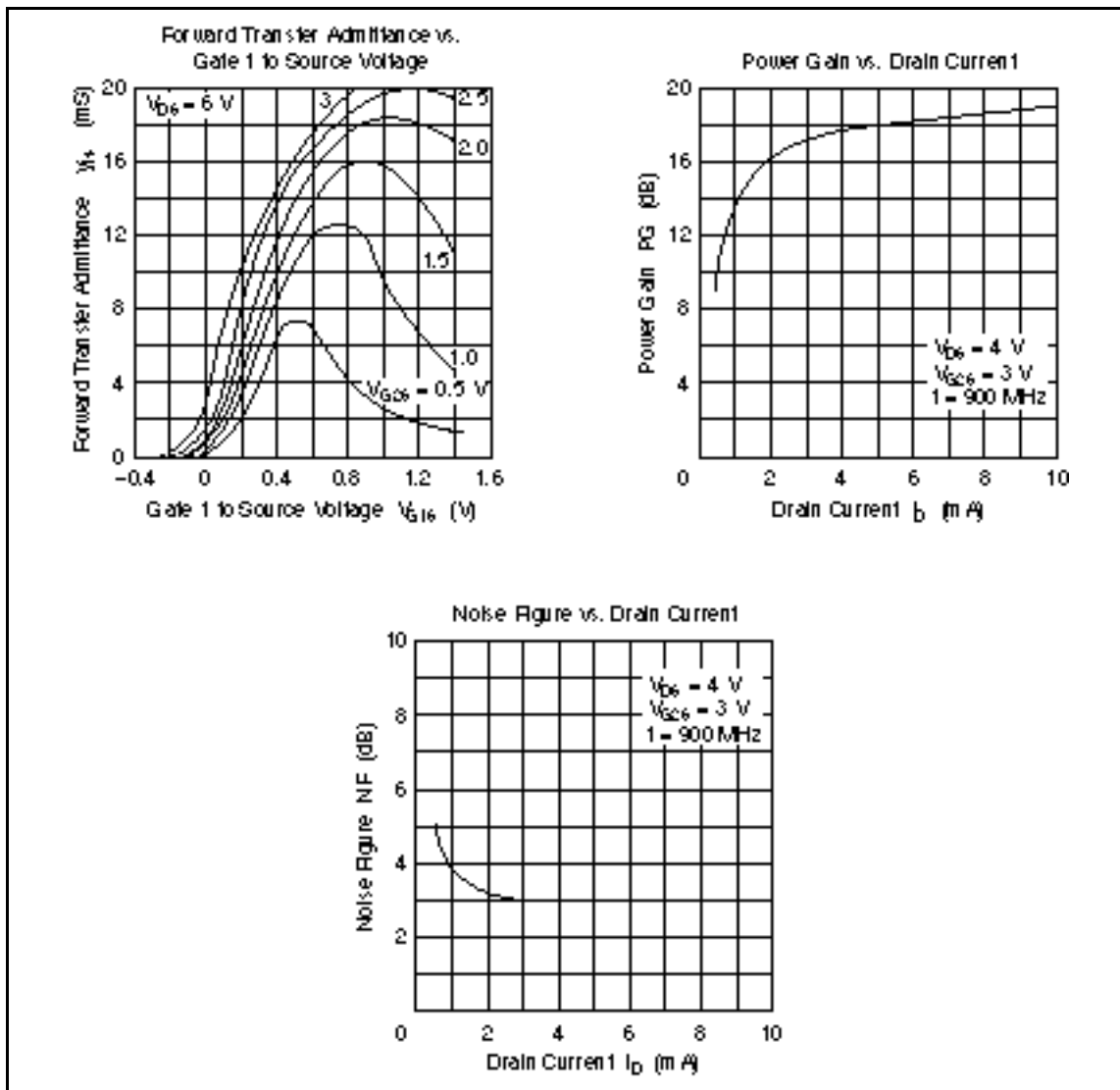
### Electrical Characteristics (Ta = 25°C)

| Item                               | Symbol         | Min  | Typ   | Max  | Unit | Test conditions  |
|------------------------------------|----------------|------|-------|------|------|--|
| Drain to source breakdown voltage  | $V_{(BR)DSX}$  | 12   | —     | —    | V    | $V_{G1S} = V_{G2S} = -5$ V,<br>$I_D = 200$ $\mu$ A               |
| Gate 1 to source breakdown voltage | $V_{(BR)G1SS}$ | ±10  | —     | —    | V    | $I_{G1} = \pm 10$ $\mu$ A, $V_{G2S} = V_{DS} = 0$                |
| Gate 2 to source breakdown voltage | $V_{(BR)G2SS}$ | ±10  | —     | —    | V    | $I_{G2} = \pm 10$ $\mu$ A, $V_{G1S} = V_{DS} = 0$                |
| Gate 1 cutoff current              | $I_{G1SS}$     | —    | —     | ±100 | nA   | $V_{G1S} = \pm 8$ V, $V_{G2S} = V_{DS} = 0$                      |
| Gate 2 cutoff current              | $I_{G2SS}$     | —    | —     | ±100 | nA   | $V_{G2S} = \pm 8$ V, $V_{G1S} = V_{DS} = 0$                      |
| Gate 1 to source cutoff voltage    | $V_{G1S(off)}$ | +0.5 | —     | -0.8 | V    | $V_{DS} = 6$ V, $V_{G2S} = 3$ V,<br>$I_D = 100$ $\mu$ A          |
| Gate 2 to source cutoff voltage    | $V_{G2S(off)}$ | +0.5 | —     | -0.8 | V    | $V_{DS} = 6$ V, $V_{G1S} = 3$ V,<br>$I_D = 100$ $\mu$ A          |
| Drain current                      | $I_{DSS}$      | 0    | —     | 4    | mA   | $V_{DS} = 6$ V, $V_{G2S} = 3$ V, $V_{G1S} = 0$                   |
| Forward transfer admittance        | $ y_{fs} $     | 15   | —     | —    | mS   | $V_{DS} = 6$ V, $V_{G2S} = 3$ V,<br>$I_D = 10$ mA, $f = 1$ kHz   |
| Input capacitance                  | Ciss           | —    | 1.7   | 2.2  | pF   | $V_{DS} = 6$ V, $V_{G2S} = 3$ V,<br>$I_D = 10$ mA, $f = 1$ MHz   |
| Output capacitance                 | Coss           | —    | 1.0   | 1.4  | pF   |  |
| Reverse transfer capacitance       | Crss           | —    | 0.017 | 0.03 | pF   |  |
| Power gain                         | PG             | 16   | 19    | —    | dB   | $V_{DS} = 4$ V, $V_{G2S} = 3$ V,<br>$I_D = 10$ mA, $f = 900$ MHz |
| Noise figure                       | NF             | —    | 3.0   | 4.5  | dB   |  |

Note: Marking is "FI-".



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## Hitachi, Ltd.

Semiconductor & IC Div.

Nippon Bldg., 2-5-2, Ohta-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 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