

3SK237

Silicon N-Channel Dual Gate MOSFET

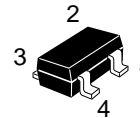
Application

UHF/VHF RF amplifier

Features

- High gain and low noise
- Capable of low voltage operation

CMPAK-4



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

Table 1 Absolute Maximum Ratings (Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---------------------------|-----------|-------------|------|
| Drain to source voltage | V_{DS} | 12 | V |
| Gate1 to source voltage | V_{G1S} | ± 10 | V |
| Gate2 to source voltage | V_{G2S} | ± 10 | V |
| Drain current | I_D | 35 | mA |
| Channel power dissipation | P_{ch} | 100 | mW |
| Channel temperature | T_{ch} | 125 | °C |
| Storage temperature | T_{stg} | -55 to +125 | °C |

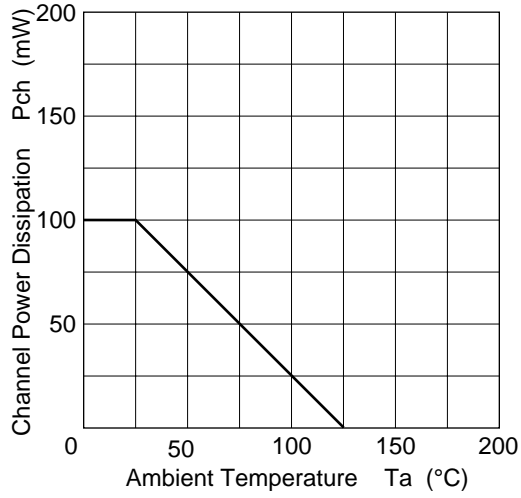
Marking is "XY".

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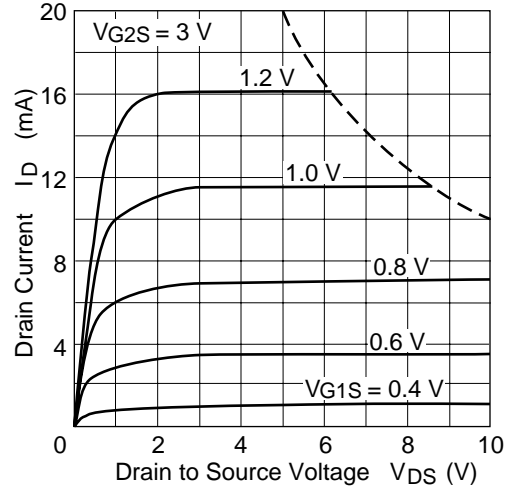
Table 2 Electrical Characteristics (Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|-----------------------------------|----------------|----------|-------|-----------|------|---|
| Drain to source breakdown voltage | $V_{(BR)DSX}$ | 12 | — | — | V | $I_D = 200 \mu A, V_{G1S} = -5 V, V_{G2S} = -5 V$ |
| Gate1 to source breakdown voltage | $V_{(BR)G1SS}$ | ± 10 | — | — | V | $I_{G1} = \pm 10 \mu A, V_{G2S} = V_{DS} = 0$ |
| Gate2 to source breakdown voltage | $V_{(BR)G2SS}$ | ± 10 | — | — | V | $I_{G2} = \pm 10 \mu A, V_{G1S} = V_{DS} = 0$ |
| Gate1 leakage current | I_{G1SS} | — | — | ± 100 | nA | $V_{G1S} = \pm 8 V, V_{G2S} = V_{DS} = 0$ |
| Gate2 leakage current | I_{G2SS} | — | — | ± 100 | nA | $V_{G2S} = \pm 8 V, V_{G1S} = V_{DS} = 0$ |
| Drain current | I_{DSS} | 0 | — | 1 | mA | $V_{DS} = 6 V, V_{G1S} = 0, V_{G2S} = 3 V$ |
| Gate1 to source cutoff voltage | $V_{G1S(off)}$ | -0.1 | — | +1.0 | V | $V_{DS} = 10 V, V_{G2S} = 3 V, I_D = 100 \mu A$ |
| Gate2 to source cutoff voltage | $V_{G2S(off)}$ | -0.1 | — | +1.0 | V | $V_{DS} = 10 V, V_{G1S} = 3 V, I_D = 100 \mu A$ |
| Forward transfer admittance | $ y_{fs} $ | 17 | 22.6 | — | mS | $V_{DS} = 6 V, V_{G2S} = 3 V, I_D = 10 mA, f = 1 kHz$ |
| Input capacitance | C_{iss} | 2.4 | 3.4 | 4.4 | pF | $V_{DS} = 6 V, V_{G2S} = 3 V, I_D = 10 mA, f = 1 MHz$ |
| Output capacitance | C_{oss} | 0.7 | 1.25 | 2.0 | pF | |
| Reverse transfer capacitance | C_{rss} | — | 0.021 | 0.05 | pF | |
| Power gain | PG | 24 | 27.2 | — | dB | $V_{DS} = 6 V, V_{G2S} = 3 V, I_D = 10 mA, f = 200 MHz$ |
| Noise figure | NF | — | 1.54 | 2.5 | dB | |
| Power gain | PG | 10 | 14.1 | — | dB | $V_{DS} = 6 V, V_{G2S} = 3 V, I_D = 10 mA, f = 900 MHz$ |
| Noise figure | NF | — | 4.15 | 6 | dB | |

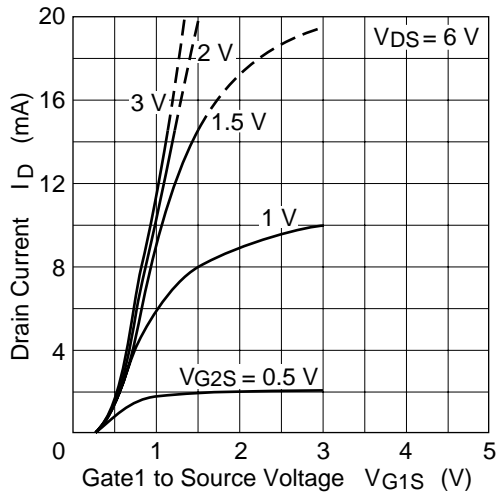
Maximum channel power dissipation curve



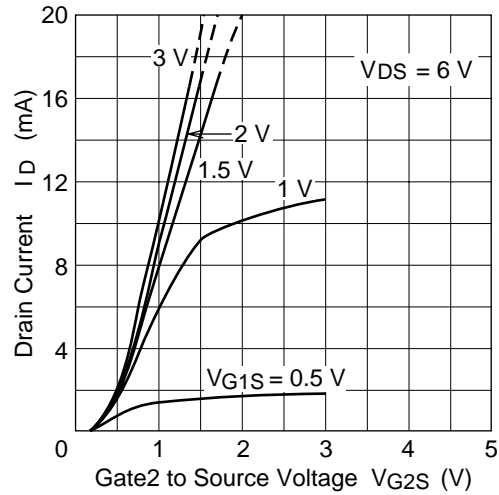
Typical output characteristics



Drain current vs. Gate1 to source voltage

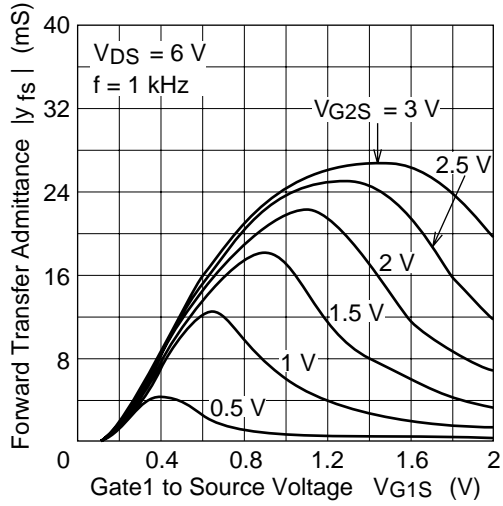


Drain current vs. Gate2 to source voltage

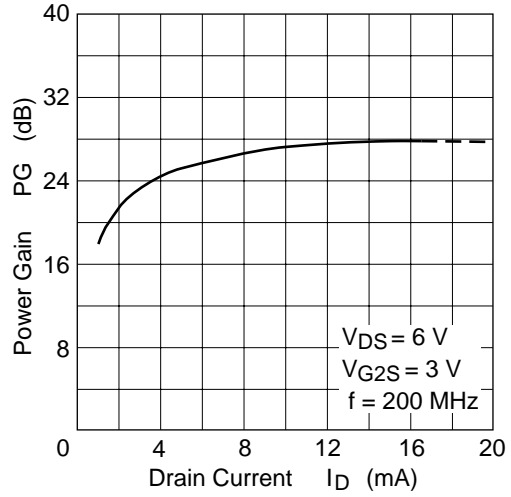


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Forward transfer admittance vs. gate1 to source voltage



Power gain vs. drain current



Noise figure vs. drain current

