HITACHI

# 3SK234

**Silicon N Channel Dual Gate MOS FET**
**VHF TV Tuner RF Amplifier**

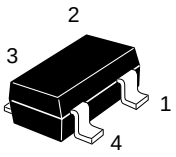
## Features

- Low voltage operation.
- Superior cross modulation characteristics.

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

| Item | Symbol | Rating | 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 |

MPAK-4



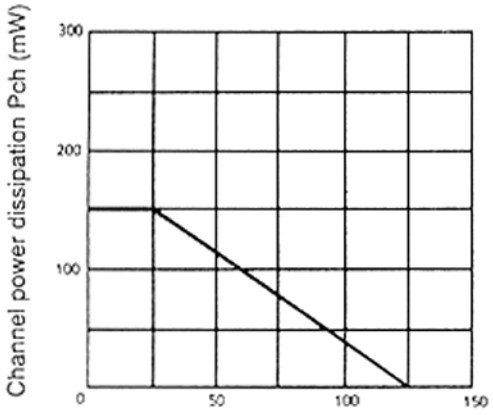

1. Source
2. Gate 1
3. Gate 2
4. Drain

# 3SK234

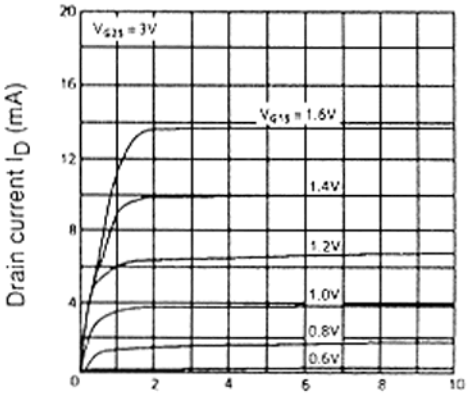
**Table 2 Electrical Characteristics** (Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test condition |
|---|---|---|---|---|---|---|
| Drain to source breakdown voltage | $V_{(BR)DSX}$ | 12 | — | — | V | $I_D$ = 200 µA, $V_{G1S}$ = –5 V, $V_{G2S}$ = –5 V |
| Gate 1 to source breakdown voltage | $V_{(BR)G1SS}$ | ±10 | — | — | V | $I_{G1}$ = ±10 µA, $V_{G2S}$ = $V_{DS}$ = 0 |
| Gate 2 to source breakdown voltage | $V_{(BR)G2SS}$ | ±10 | — | — | V | $I_{G2}$ = ±10 µA, $V_{G1S}$ = $V_{DS}$ = 0 |
| Gate 1 cutoff current | $I_{G1SS}$ | — | — | ±100 | nA | $V_{G1S}$ = ±8 V, $V_{G2S}$ = $V_{DS}$ = 0 |
| Gate 2 cutoff current | $I_{G2SS}$ | — | — | ±100 | nA | $V_{G2S}$ = ±8 V, $V_{G1S}$ = $V_{DS}$ = 0 |
| Drain current | $I_{DSS}$ | 0 | — | 1 | mA | $V_{DS}$ = 4 V, $V_{G1S}$ = 0, $V_{G2S}$ = 3 V |
| Gate 1 to source cutoff voltage | $V_{G1S(off)}$ | 0 | — | +1.0 | V | $V_{DS}$ = 6 V, $V_{G2S}$ = 3 V, $I_D$ = 100 µA |
| Gate 2 to source cutoff voltage | $V_{G2S(off)}$ | 0 | — | +1.0 | V | $V_{DS}$ = 6 V, $V_{G1S}$ = 3 V, $I_D$ = 100 µA |
| Forward transfer admittance | $\|y_{fs}\|$ | 13 | 17 | — | mS | $V_{DS}$ = 6 V, $V_{G2S}$ = 3 V, $I_D$ = 10 mA, f = 1 kHz |
| Input capacitance | Ciss | 2.5 | 3.5 | 4.5 | pF | $V_{DS}$ = 6 V, $V_{G2S}$ = 3 V, $I_D$ = 10 mA, f = 1 MHz |
| Output capacitance | Coss | 1.0 | 1.4 | 1.8 | pF | |
| Reverse transfer capacitance | Crss | — | 0.018 | 0.03 | pF | |
| Power gain | PG | 22 | 27.6 | — | dB | $V_{DS}$ = 4 V, $V_{G2S}$ = 3 V, $I_D$ = 10 mA, f = 200 MHz |
| Noise figure | NF | — | 1.77 | 2.7 | dB | |

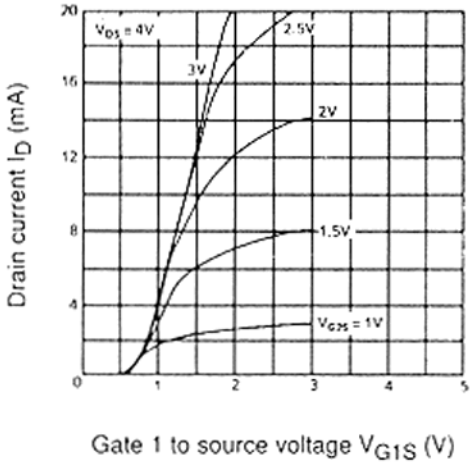
Maximum channel power dissipation curve



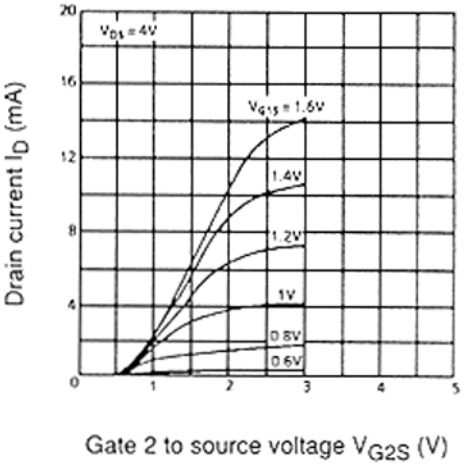

Typical output characteristics



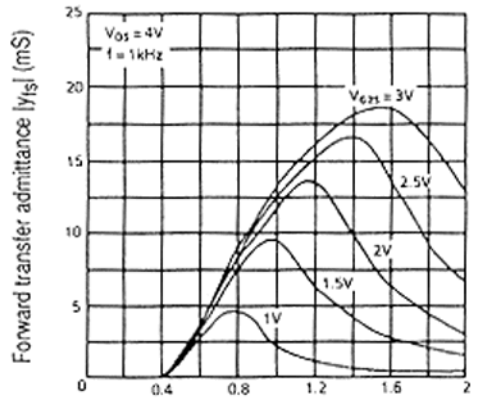

Drain current vs. gate 1 to source voltage




Drain current vs. gate 2 to source voltage

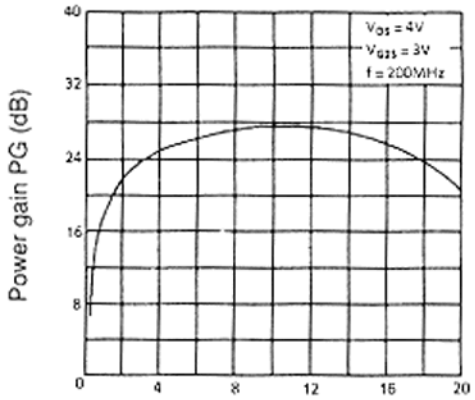


Forward transfer admittance vs. gate 1 to source voltage



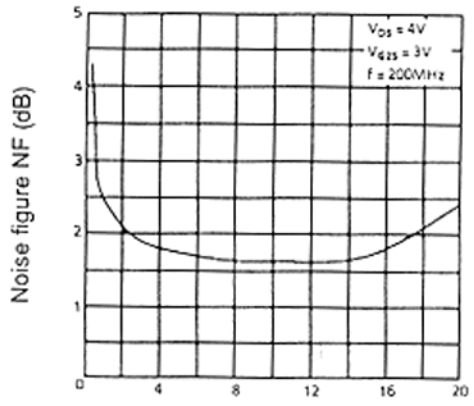

Gate 1 to source voltage $V_{G1S}$ (V)

Power gain vs. drain current




Drain current $I_D$ (mA)

Noise figure vs. drain current




Drain current $I_D$ (mA)