

# MOS FIELD EFFECT TRANSISTOR

## 3SK122

**DESCRIPTION** The 3SK122 is designed for use in RF Amplifier and MIXER for VHF TV Tuner.

- FEATURES**
- Suitable for Use as RF Amplifier & Mixer in VHF TV Tuner.
  - High  $G_{PS}$  : 25 dB TYP. } at  $V_{DS} = 10$  V,  $V_{G2} = 5.0$  V,
  - Low NF : 1.2 dB TYP. }  $I_D = 10$  mA,  $f = 200$  MHz
  - High  $G_{PS}$  : 22 dB TYP. } at  $V_{DS} = 5$  V,  $V_{G2} = 3$  V,
  - Low NF : 1.3 dB TYP. }  $I_D = 10$  mA,  $f = 200$  MHz

**ABSOLUTE MAXIMUM RATINGS**

Maximum Temperatures

Storage Temperature ..... -55 to +125 °C

Channel Temperature ..... +125 °C Maximum

Maximum Power Dissipation ( $T_a = 25$  °C)

Total Power Dissipation ..... 200 mW

Maximum Voltages and Currents ( $T_a = 25$  °C)

$V_{DSX}$  Drain to Source Voltage ..... 20 V

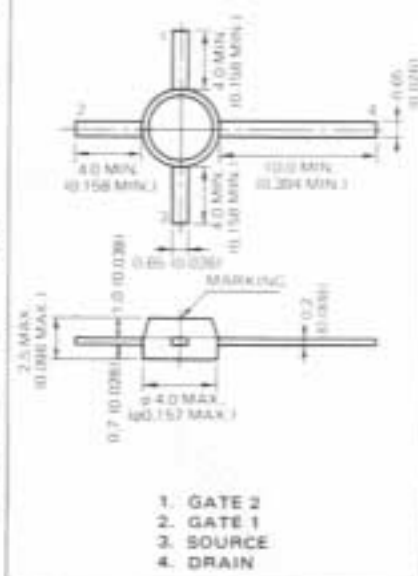
$V_{G1S}$  Gate 1 to Source Voltage ..... ±8 V

$V_{G2S}$  Gate 2 to Source Voltage ..... ±8 V

$I_D$  Drain Current ..... 25 mA

**PACKAGE DIMENSIONS**

in millimeters (inches)



**ELECTRICAL CHARACTERISTICS ( $T_a = 25$  °C)**

| SYMBOL         | CHARACTERISTIC                    | MIN. | TYP. | MAX. | UNIT    | TEST CONDITIONS                                                    |
|----------------|-----------------------------------|------|------|------|---------|--------------------------------------------------------------------|
| $BV_{DSX}$     | Drain to Source Breakdown Voltage | 20   |      |      | V       | $V_{G1S} = -2$ V, $V_{G2S} = -2$ V,<br>$I_D = 10$ $\mu$ A          |
| $I_{DSS}$      | Zero-Gate Voltage Drain Current   | 7.0  |      | 25   | mA      | $V_{DS} = 6.0$ V, $V_{G1S} = 0$ ,<br>$V_{G2S} = 3.0$ V             |
| $V_{G1S(off)}$ | Gate 1 to Source Cutoff Voltage   |      |      | -2.0 | V       | $V_{DS} = 8.0$ V, $V_{G2S} = 0$ ,<br>$I_D = 5.0$ $\mu$ A           |
| $V_{G2S(off)}$ | Gate 2 to Source Cutoff Voltage   |      |      | -1.5 | V       | $V_{DS} = 8.0$ V, $V_{G1S} = 0$ ,<br>$I_D = 5.0$ $\mu$ A           |
| $I_{G1SS}$     | Gate 1 Reverse Current            |      |      | ±20  | $\mu$ A | $V_{DS} = 0$ , $V_{G1S} = 8$ V,<br>$V_{G2S} = 0$                   |
| $I_{G2SS}$     | Gate 2 Reverse Current            |      |      | ±20  | $\mu$ A | $V_{DS} = 0$ , $V_{G1S} = 0$ ,<br>$V_{G2S} = \pm 8$ V              |
| $Y_{f1}$       | Forward Transfer Admittance       | 22   | 28   |      | mS      | $V_{DS} = 6.0$ V, $I_D = 10$ mA,<br>$V_{G2S} = 3.0$ V, $f = 1$ kHz |
| $C_{in}$       | Input Capacitance                 | 4.0  | 5.0  | 6.5  | pF      | $V_{DS} = 6.0$ V, $I_D = 10$ mA,                                   |
| $C_{out}$      | Output Capacitance                | 2.2  | 2.9  | 3.7  | pF      | $V_{G2S} = 3.0$ V, $f = 1$ MHz                                     |
| $C_{rss}$      | Reverse Transfer Capacitance      |      | 0.05 | 0.08 | pF      |                                                                    |
| $G_{PS}$       | Power Gain                        | 20   | 25   |      | dB      | $V_{DS} = 10$ V, $I_D = 10$ mA,                                    |
| NF             | Noise Figure                      |      | 1.2  | 2.5  | dB      | $f = 200$ MHz, $V_{G2} = 5.0$ V,<br>See Test Circuit               |

$I_{DSS}$  Classification M : 7.0 - 13 mA L : 11 - 19 mA K : 17 - 25 mA