

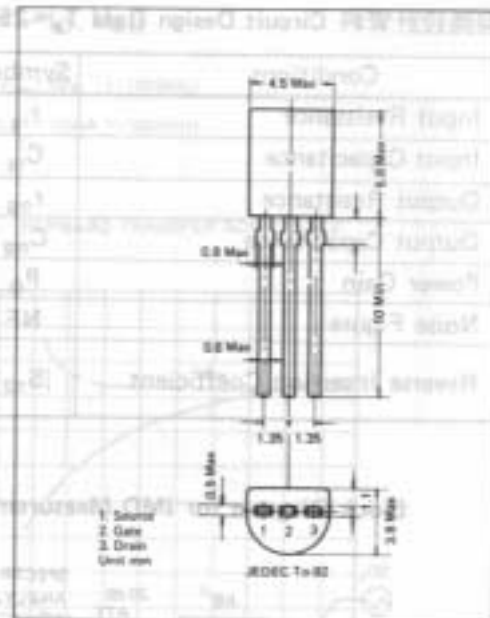
2SK125

Silicon N-Channel Junction FET

- UHF Amplifiers, Mixers (Common Gate)
- P_G : 12.5 dB Typ. ($f = 100$ MHz, Common Gate)
- NF: 1.5 dB Typ. ($f = 100$ MHz, Common Gate)
- 3rd Harmonic Distortion -52 dB Typ.
- Analogue Switchings (R_{ON} : 40 Ω Typ.)

絶対最大定格 Absolute Maximum Ratings $T_A = 25^\circ\text{C}$

| Characteristics | Symbol | 2SK125 |
|---------------------------|-----------|---------------------------|
| Drain-to-Gate Voltage | V_{DGO} | 25 V |
| Source-to-Gate Voltage | V_{SGO} | 25 V |
| Drain Current | I_D | 100 mA |
| Gate Current | I_G | 10 mA |
| Channel Power Dissipation | P_{ch} | 500 mW |
| Channel Temperature | T_{ch} | 120 $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -50~+120 $^\circ\text{C}$ |



電気的特性 Electrical Characteristics $T_A = 25^\circ\text{C}$

| Characteristics | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|--|----------------|--|------|------|------|--------------------|
| Gate Cutoff Current | I_{GSS} | $V_{GS} = -15$ V, $V_{DS} = 0$ | | | -10 | nA |
| Gate-to-Source Voltage | V_{GSS} | $I_G = -10$ μA , $V_{DS} = 0$ | -25 | | | V |
| Drain Saturation Current | I_{DSS} | $V_{DS} = 10$ V, $V_{GS} = 0$, PW = 300 μs | 30 | | 75 | mA |
| Pinch-off Voltage | V_p | $V_{DS} = 10$ V, $I_D = 100$ μA | -2 | | -6 | V |
| Forward Transfer Conductance | g_m | $V_{DS} = 10$ V, $I_D = 10$ mA, $f = 1$ kHz | 10 | 14 | | m Ω |
| Reverse Transfer Capacitance | C_{rss} | $V_{DG} = 10$ V, $I_S = 0$, $f = 1$ MHz | | 2.6 | 3 | pF |
| Power Gain | P_G | $V_{DG} = 10$ V, $I_D = 10$ mA, $f = 100$ MHz, BW = 2.8 MHz | 10 | 12.5 | | dB |
| Noise Figure | NF | $V_{DG} = 10$ V, $I_D = 10$ mA, $f = 100$ MHz, BW = 2.8 MHz 2nd Stage NF = 4.2 dB | | 1.8 | 2.5 | dB |
| Intermodulation Distortion | IMD | $V_{DG} = 10$ V, $I_D = 10$ mA, $f_1 = 100$ MHz, $f_2 = 100.1$ MHz, $e_1 = 100$ dB μ | -45 | -52 | | dB |
| Junction-to-Ambient Thermal Resistance | θ_{j-a} | | | | 190 | $^\circ\text{C/W}$ |

2SK125

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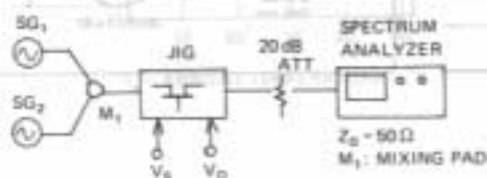
Silicon N-Channel Junction FET

回路設計資料 Circuit Design Data $T_a = 25^\circ\text{C}$

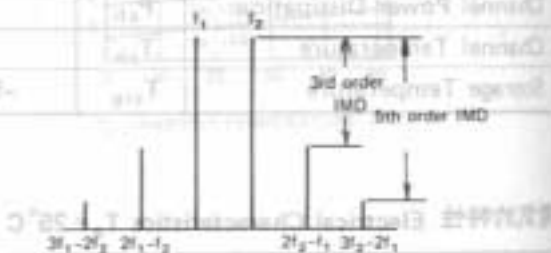
* VHF Amplifier, Mixer (Common Gate)

| Conditions | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|-------------------------------|------------|---|------|-------|------------|----------|
| Input Resistance | r_{ig} | $V_{DG} = 10\text{V}, I_D = 10\text{mA},$ $f = 100\text{MHz}$ | | 70 | | Ω |
| Input Capacitance | C_{ig} | | 3.0 | | pF | |
| Output Resistance | r_{og} | | 5 | | k Ω | |
| Output Capacitance | C_{og} | | 3.0 | | pF | |
| Power Gain | P_G | $V_{DG} = 10\text{V}, I_D = 10\text{mA},$ $f = 500\text{MHz}, BW \approx 12\text{MHz}$ | | 7.0 | | dB |
| Noise Figure | NF | | 4.0 | | dB | |
| Reverse Insertion Coefficient | $ S_{12} $ | $V_{DG} = 10\text{V}, I_D = 10\text{mA},$ $f = 500\text{MHz}$ | | 0.035 | | |

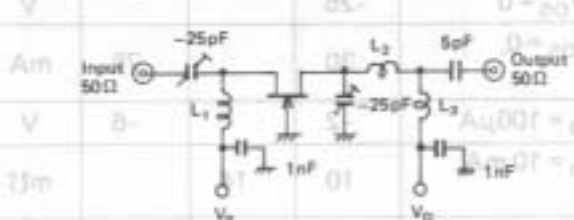
Block Diagram for IMD Measurement



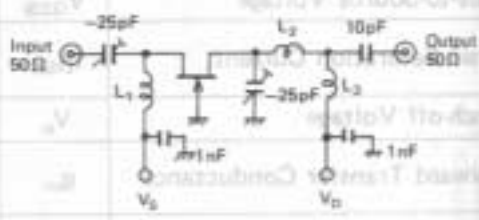
Frequency Spectrum



P_G & NF Test Circuit ($f = 100\text{MHz}$)



IMD Test Circuit ($f = 100\text{MHz}$)



$L_1: 0.45\mu\text{H} \pm 10.5\%$
 $L_2, L_3: 0.45\mu\text{H} \pm 5.5\%$

$L_1: 0.45\mu\text{H} \pm 10.5\%$
 $L_2, L_3: 0.45\mu\text{H} \pm 5.5\%$

