

# 2SK125

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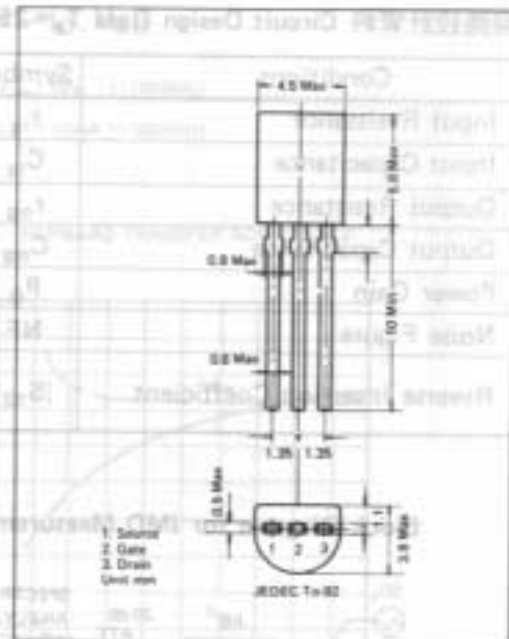
ESX2S

## 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  $\Omega$  Typ.)

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

Characteristics	Symbol	2SK125
Drain-to-Gate Voltage	$V_{DGG}$	25 V
Source-to-Gate Voltage	$V_{SGG}$	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 $T_A = 25^\circ\text{C}$

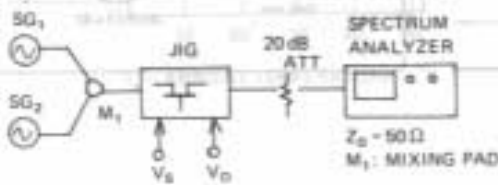
Characteristics	Symbol	Conditions	Min.	Typ.	Max.	Unit
Gate Cutoff Current	$I_{GSS}$	$V_{GS} = -15\text{V}$ , $V_{DS} = 0$			-10	nA
Gate-to-Source Voltage	$V_{GSS}$	$I_G = -10\mu\text{A}$ , $V_{DS} = 0$	-25			V
Drain Saturation Current	$I_{DSS}$	$V_{DS} = 10\text{V}$ , $V_{GS} = 0$ , $PW = 300\mu\text{s}$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

电路设计资料 Circuit Design Data  $T_a = 25^\circ\text{C}$

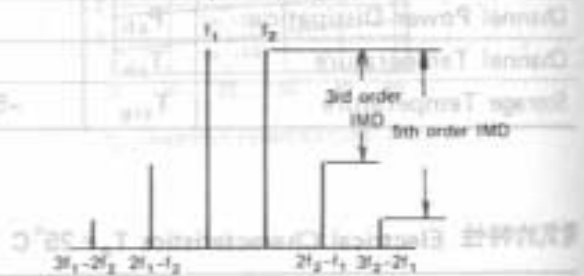
\* VHF Amplifier, Mixer (Common Gate)

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		$\Omega$
Input Capacitance	$C_{ig}$			3.0		pF
Output Resistance	$r_{og}$			5		k $\Omega$
Output Capacitance	$C_{og}$	$V_{DG} = 10\text{V}, I_D = 10\text{mA},$ $f = 500\text{MHz}, \text{BW} \approx 12\text{MHz}$		3.0		pF
Power Gain	$P_G$				7.0	
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		

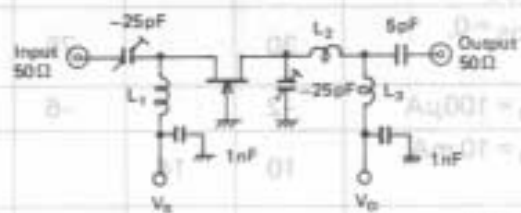
Block Diagram for IMD Measurement



Frequency Spectrum

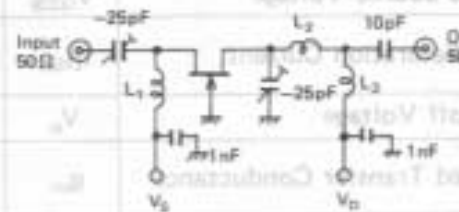


$P_G$  & NF Test Circuit ( $f = 100\text{MHz}$ )



$L_1 : 0.45\text{p} \ 3\text{p} \ 10.5\text{T}$   
 $L_2, L_2 : 0.45\text{p} \ 3\text{p} \ 5.5\text{T}$

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



$L_1, L_2 : 0.45\text{p} \ 3\text{p} \ 10.5\text{T}$   
 $L_3, L_3 : 0.45\text{p} \ 3\text{p} \ 5.5\text{T}$

