

3SK139

Silicon N Channel 4-pole MOS Type

For UHF/VHF high-gain low-noise amplification

■ Features

- Low noise figure NF
- Large power gain PG
- A MINI type package that allows downsizing of equipment and automatic insertion by taping and magazine packaging

■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	15	V
Gate 1-Source Voltage	V_{G1S}	± 8	V
Gate 2-Source Voltage	V_{G2S}	± 8	V
Drain Current	I_D	30	mA
Power Dissipation	P_D	150	mW
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	-55 ~ +150	°C

■ Electrical Characteristics (Ta=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Drain Current	I_{DSS}^{*1}	$V_{DS}=10\text{ V}, V_{G1S}=0, V_{G2S}=4\text{ V}$	1.0		11.0	mA
Gate 1 Cutoff Current	I_{G1SS}	$V_{DS}=0, V_{G2S}=0, V_{G1S}=\pm 8\text{ V}$			± 20	nA
Gate 2 Cutoff Current	I_{G2SS}	$V_{DS}=0, V_{G1S}=0, V_{G2S}=\pm 8\text{ V}$			± 20	nA
Drain-Source Voltage	V_{DSX}	$I_D=50\text{ }\mu\text{A}, V_{G1S}=-5\text{ V}, V_{G2S}=0$	15			V
Gate 1 Source Cutoff Current	V_{G1SC}	$V_{DS}=10\text{ V}, V_{G2S}=4\text{ V}, I_D=100\text{ }\mu\text{A}$	-3.0		+0.5	V
Gate 2 Source Cutoff Current	V_{G2SC}	$V_{DS}=10\text{ V}, V_{G1S}=0, I_D=100\text{ }\mu\text{A}$	-1.5		+1.5	V
Forward Transfer Admittance (Common Source)	$ Y_{fs} $	$V_{DS}=10\text{ V}, I_D=10\text{ mA}, V_{G2S}=4\text{ V}, f=1\text{ kHz}$	12	20	28	mS
Input Capacitance	C_{iss}	$V_{DS}=10\text{ V}, V_{G1S}=V_{G2S}=-5\text{ V}, f=1\text{ MHz}$	1.8	2.3	2.8	pF
Δ Input Capacitance	ΔC_{iss}	$V_{DS}=8\text{ V}, V_{G1S}=-5\text{ V}, V_{G2S}=-1\text{ V},$ $V_{DS}=8\text{ V}, V_{G1S}=-1.4\text{ V}, V_{G2S}=-1.6\text{ V}$			+0.2 -0.05	pF
Output Capacitance	C_{oss}	$V_{DS}=10\text{ V}, V_{G1S}=V_{G2S}=-5\text{ V}, f=1\text{ MHz}$	0.6	1.0	1.4	pF
Small-Signal Reverse Transfer Capacitance	C_{rss}	$V_{DS}=10\text{ V}, V_{G1S}=V_{G2S}=-5\text{ V}, f=1\text{ MHz}$		0.02		pF
Power Gain	PG_1^{*2}	$V_{DS}=8\text{ V}, I_D=8\text{ mA}, V_{G2S}=3\text{ V}$	20	22	24	dB
Noise Figure	NF_1^{*2}	$f=50\sim 60\text{ MHz (Sweep)}$		2.0	3.2	dB
Power Gain	PG_2^{*2}	$V_{DS}=8\text{ V}, I_D=8\text{ mA}, V_{G2S}=3\text{ V}$	22	24	26	dB
Noise Figure	NF_2^{*2}	$f=190\sim 210\text{ MHz (Sweep)}$		1.2	2.0	dB
Power Gain	PG_3^{*2}	$V_{DS}=8\text{ V}, I_D=8\text{ mA}, V_{G2S}=3\text{ V}$	13	15	17	dB
Noise Figure	NF_3^{*2}	$f=490\sim 510\text{ MHz (Sweep)}$		2.8	4.5	dB
Gain Reduction	G_R^{*2}	$V_{DS}=8\text{ V}, V_{G2S}=-1.4\text{ V}, f=500\text{ MHz}$ $V_{G1S}=-1.6\text{ V}, \text{Gain max.}$	45			dB

*1 I_{DSS} Ranking

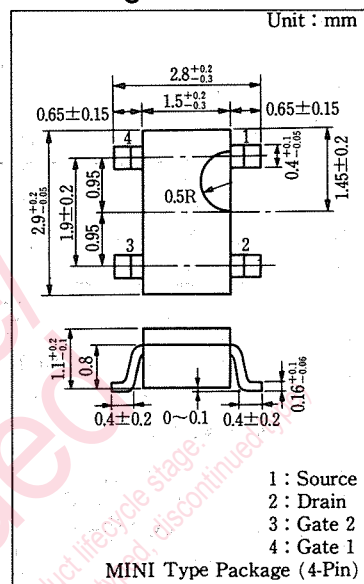
Rank	P	Q
$I_{DSS}(\text{mA})$	1~10	5~11
Marking	3 BP	3 BQ

■ Type Name Marking (Example)

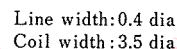
Type No. I_{DSS} Ranking



■ Package Dimensions

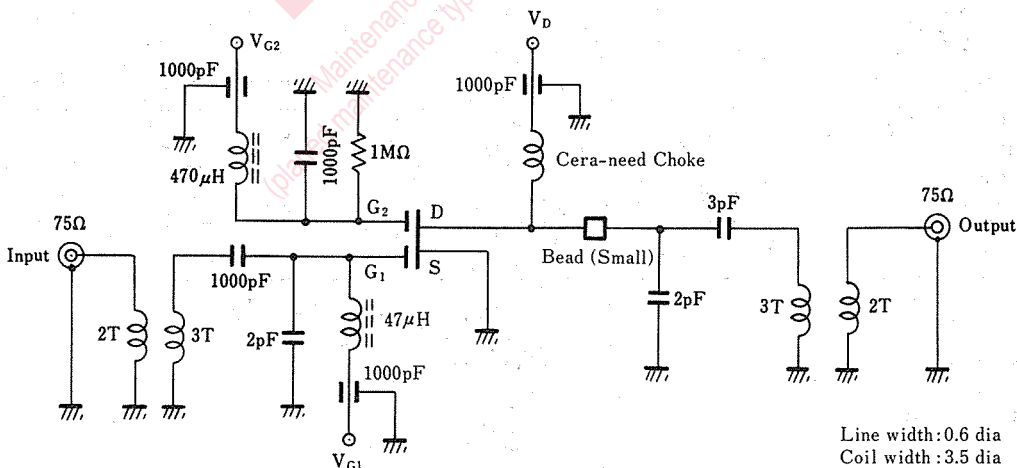


1) $f = 55 \text{ MHz}$ (PG_1, NF_1)

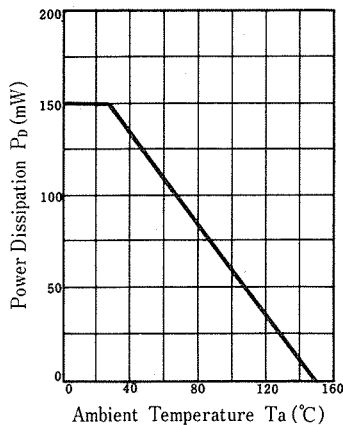
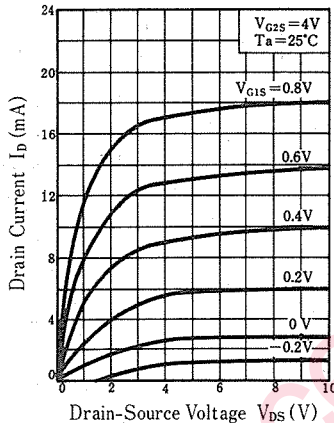
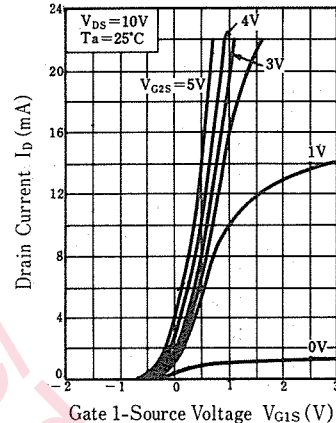
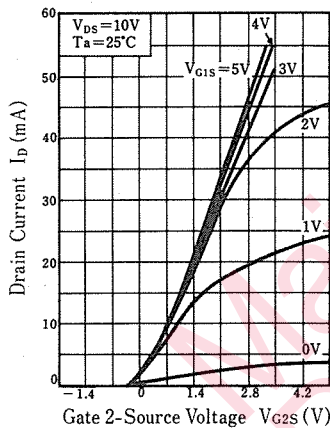
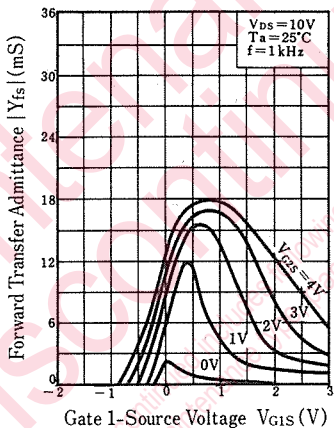
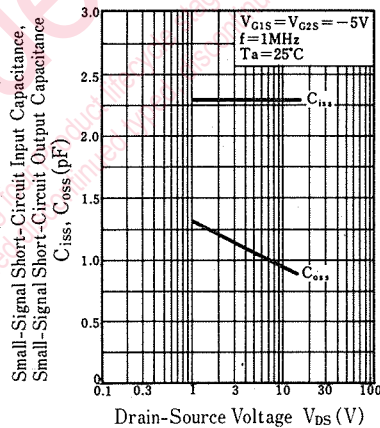
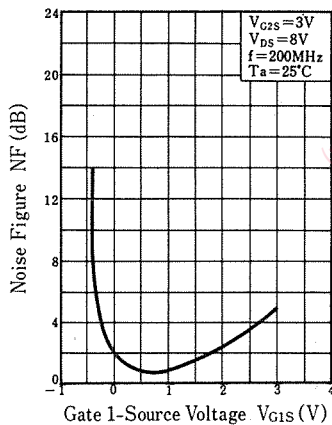
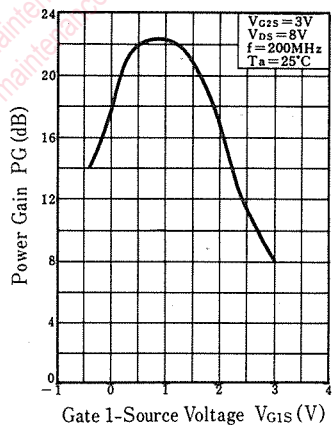
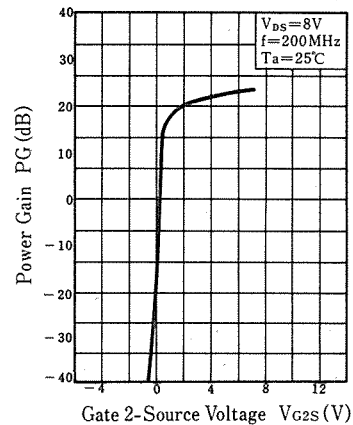


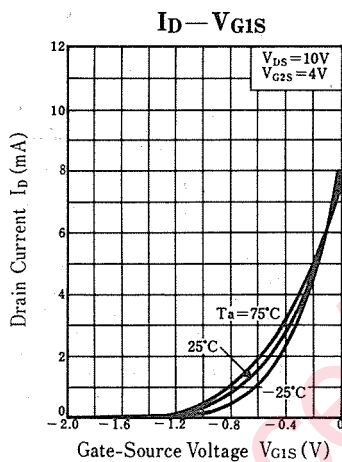
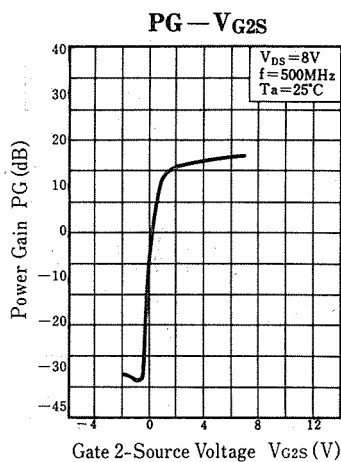
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Coil width : 3.5 dia

$P_D - T_a$  $I_D - V_{DS}$  $I_D - V_{G1S}$  $I_D - V_{G2S}$  $|Y_{fs}| - V_{G1S}$  $C_{iss}, C_{oss} - V_{DS}$ NF - V_{G1S} PG - V_{G1S} PG - V_{G2S} 



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