Ordering number : EN2129B

SANYO

No.2129B

3SK180

N-Channel Silicon MOS FET (Dual Gate)

High-Frequency General-Purpose Amp Applications

Applications

· FM tuners and VHF tuners.

Features

· High power gain and low noise figure.
· High forward transfer admittance.

Absolute Maximum Ratings at Ta = 25°C

			unit
Drain-to-Source Voltage	V_{DS}	15	V
Gate1-to-Source Voltage	V_{G1S}	±7	V
Gate2-to-Source Voltage	V_{G2S}	±7	V
Drain Current	I_D	30	mA
Allowable Power Dissipation	P_D	200	mW
Channel Temperature	Tch	125	°C
Storage Temperature	Tstg	−55 to +125	°C

Electrical Characteristics at Ta = 25°C

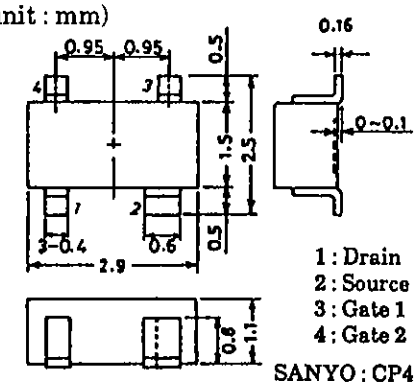
			min	typ	max	unit
Drain-to-Source Voltage	V_{DS}	$V_{G1S}=-4V, V_{G2S}=0V, I_{DS}=100\mu A$	15			V
G1-S Breakdown Voltage	$V_{(BR)G1SS}$	$I_{G1}=10\mu A, V_{DS}=0, V_{G2S}=0V$	±7			V
G2-S Breakdown Voltage	$V_{(BR)G2SS}$	$I_{G2}=10\mu A, V_{DS}=0, V_{G1S}=0V$	±7			V
Gate1-to-Source Cutoff Voltage	$V_{G1S(off)}$	$V_{DS}=10V, V_{G2S}=4V, I_D=100\mu A$			−3	V
Gate2-to-Source Cutoff Voltage	$V_{G2S(off)}$	$V_{DS}=10V, V_{G1S}=0V, I_D=100\mu A$			−2.5	V
Gate1 Cutoff Current	I_{G1SS}	$V_{G1S}=\pm5V, V_{G2S}=V_{DS}=0V$			±50	nA
Gate2 Cutoff Current	I_{G2SS}	$V_{G2S}=\pm5V, V_{G1S}=V_{DS}=0V$			±50	nA
Drain Current	I_{DSS}	$V_{DS}=10V, V_{G1S}=0, V_{G2S}=4V$	2.5※		24※	mA
Forward Transfer Admittance	$\lvert y_{fs} \rvert$	$f=1kHz, I_D=10mA, V_{DS}=10V, V_{G2S}=4V$		20		mS
Input Capacitance	Ciss	$V_{DS}=10V, f=1MHz$		3.0		pF
Reverse Transfer Capacitance	Crss	$V_{G1S}=0V, V_{G2S}=4V$		0.02	0.05	pF
Power Gain	PG	$V_{DS}=10V, I_D=10mA$	22	28		dB
Noise Figure	NF	$f=100MHz, V_{G2S}=4V$		1.8	3.0	dB

※ : The 3SK180 is classified by I_{DSS} as follows : (unit : mA)

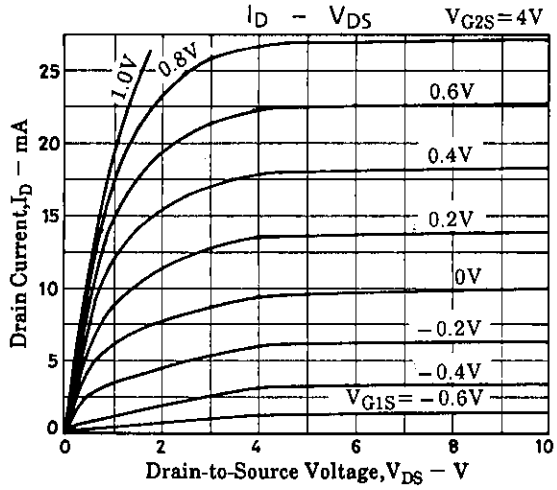
2.5 4 6.0	5.0 5 12.0	10.0 6 24.0

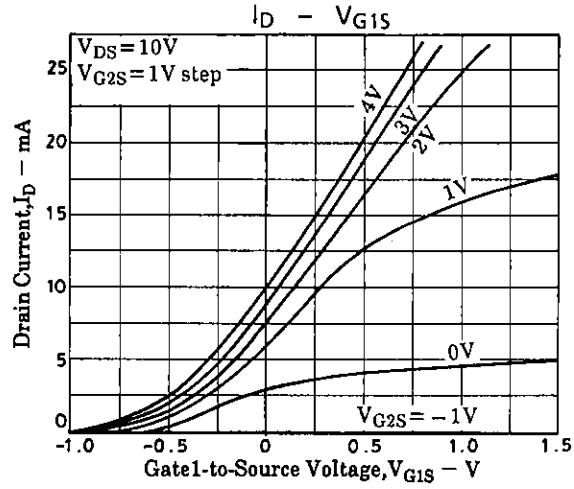
Marking : DJ
I_{DSS} rank : 4, 5, 6

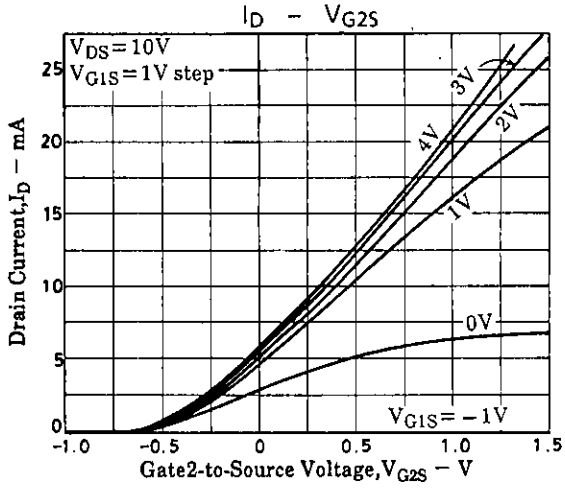
Package Dimensions 2046A
(unit : mm)

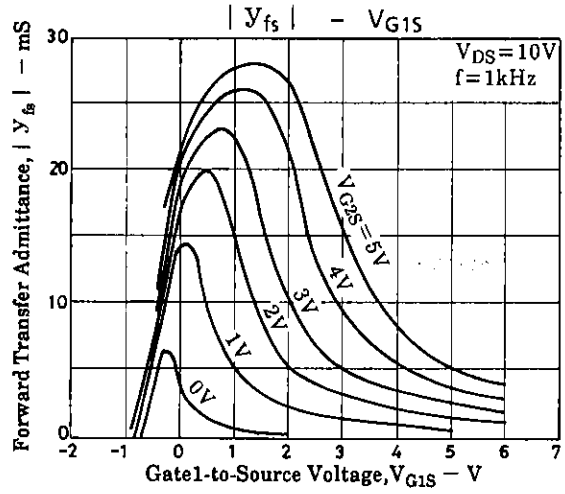


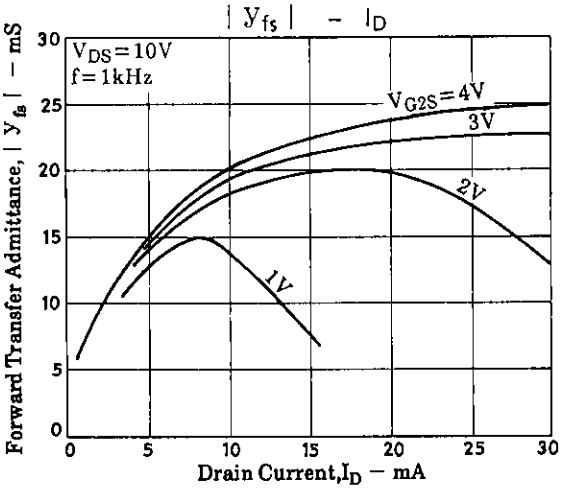
SANYO Electric Co.,Ltd. Semiconductor Business Headquarters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

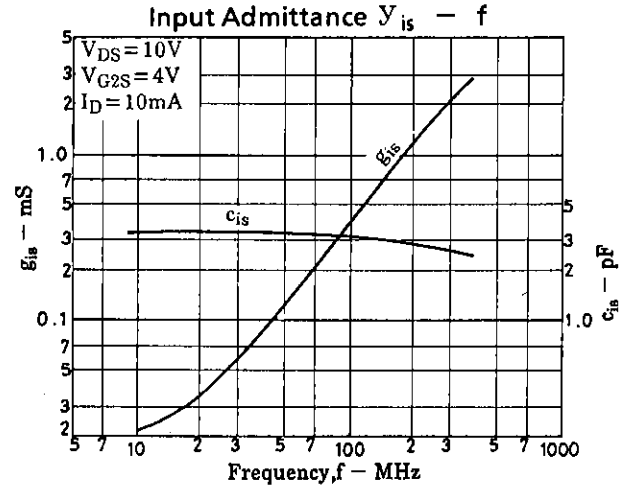

I_D – V_{DS} V_{G2S}=4V
1.0V
0.8V
0.6V
0.4V
0.2V
0V
–0.2V
–0.4V
V_{G1S}=–0.6V
Drain Current,I_D – mA
Drain-to-Source Voltage,V_{DS} – V

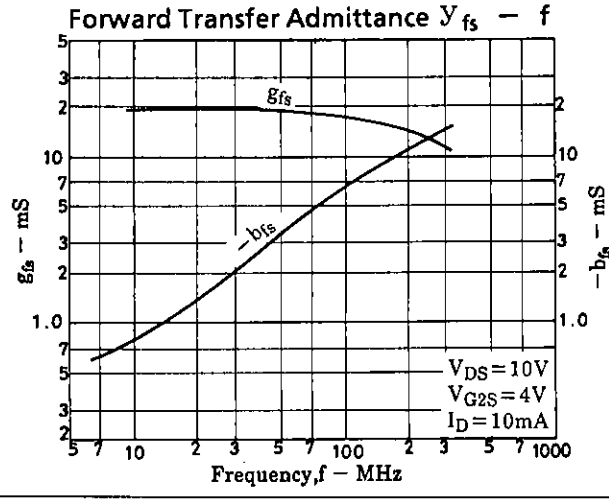

I_D – V_{G1S}
V_{DS}=10V
V_{G2S}=1V step
4V
3V
2V
1V
0V
V_{G2S}=–1V
Drain Current,I_D – mA
Gate1-to-Source Voltage,V_{G1S} – V

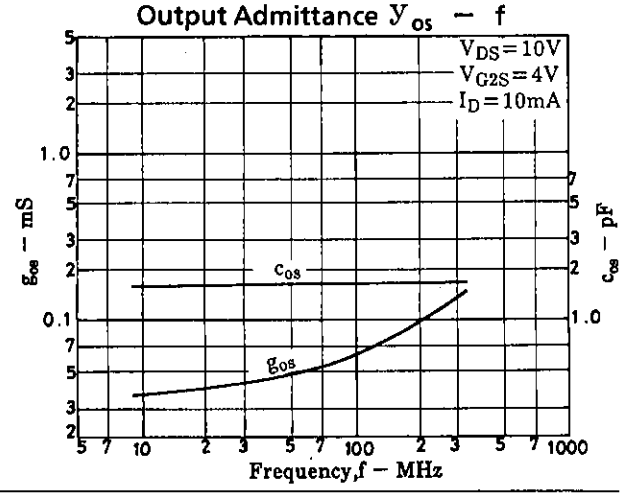

I_D – V_{G2S}
V_{DS}=10V
V_{G1S}=1V step
4V
3V
2V
1V
0V
V_{G1S}=–1V
Drain Current,I_D – mA
Gate2-to-Source Voltage,V_{G2S} – V


$|y_{fs}|$ – V_{G1S}
V_{DS}=10V
f=1kHz
V_{G2S}=5V
4V
3V
2V
1V
0V
Forward Transfer Admittance, $|y_{fs}|$ – mS
Gate1-to-Source Voltage,V_{G1S} – V

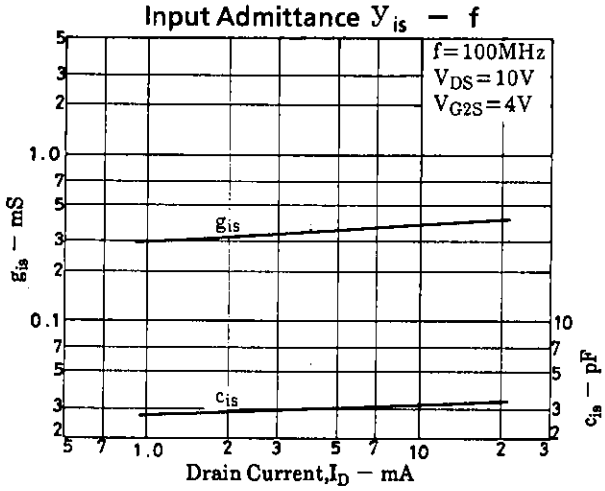

$|y_{fs}|$ – I_D
V_{DS}=10V
f=1kHz
V_{G2S}=4V
3V
2V
1V
Forward Transfer Admittance, $|y_{fs}|$ – mS
Drain Current,I_D – mA


Input Admittance y_{is} – f
V_{DS}=10V
V_{G2S}=4V
I_D=10mA
g_{is}
c_{is}
g_{is} – mS
c_{is} – pF
Frequency,f – MHz

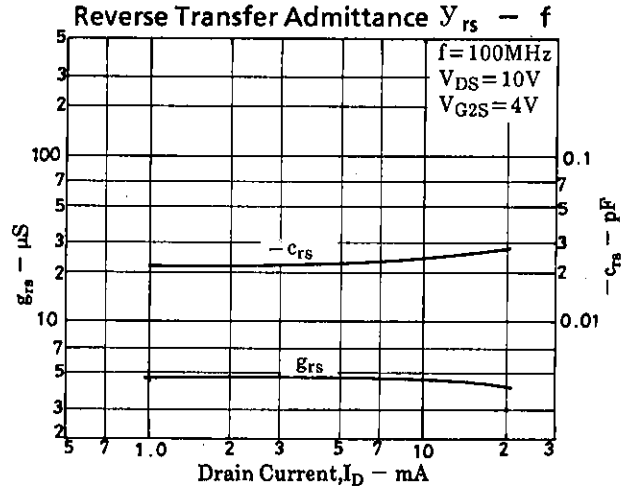

Forward Transfer Admittance y_{fs} – f
g_{fs}
$-b_{fs}$
V_{DS}=10V
V_{G2S}=4V
I_D=10mA
g_{fs} – mS
$-b_{fs}$ – mS
Frequency,f – MHz


Output Admittance y_{os} – f
V_{DS}=10V
V_{G2S}=4V
I_D=10mA
c_{os}
g_{os}
g_{os} – mS
c_{os} – pF
Frequency,f – MHz

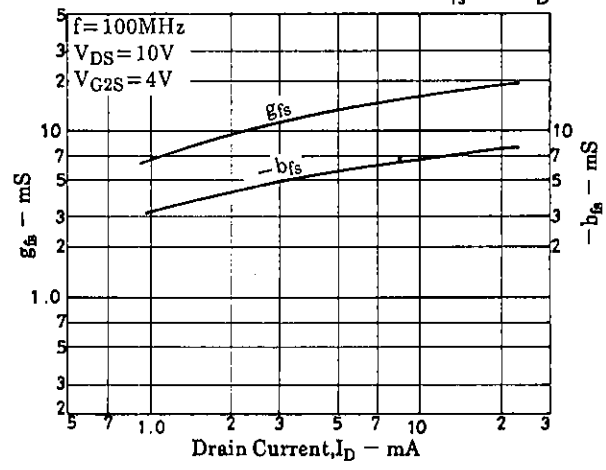
Input Admittance y_{is} — f



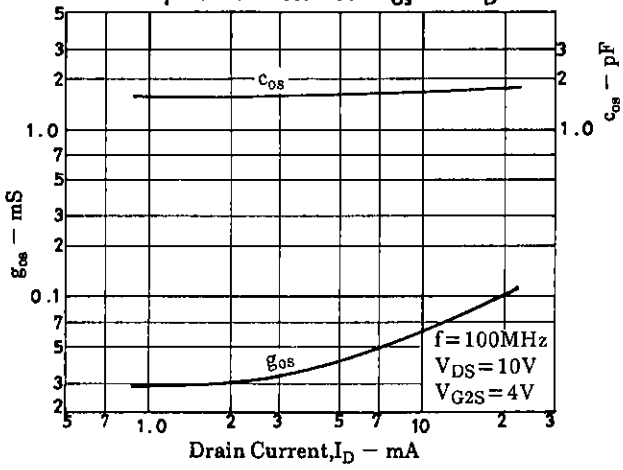
Reverse Transfer Admittance y_{rs} — f



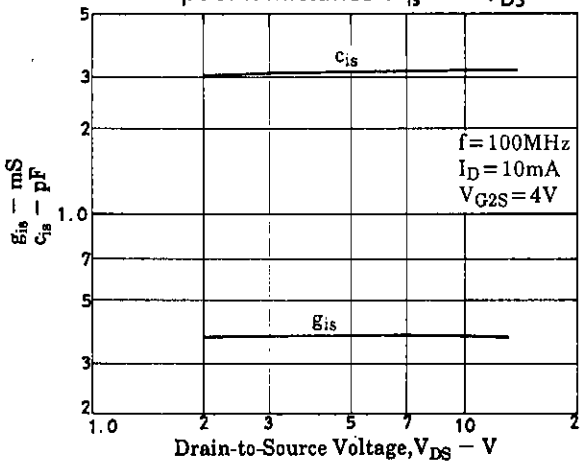
Forward Transfer Admittance y_{fs} — I_D



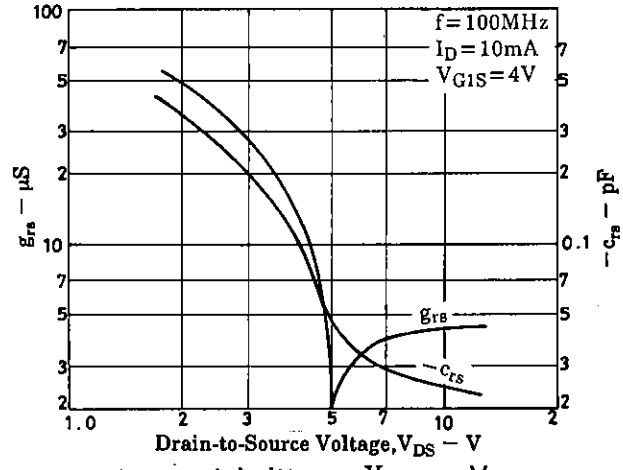
Output Admittance y_{os} — I_D



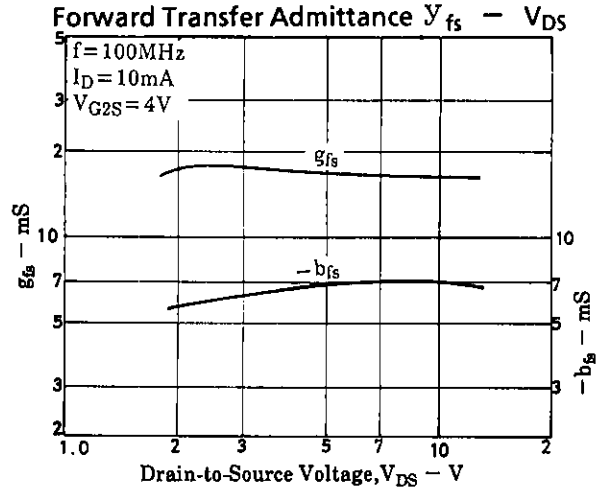
Input Admittance y_{is} — V_{DS}



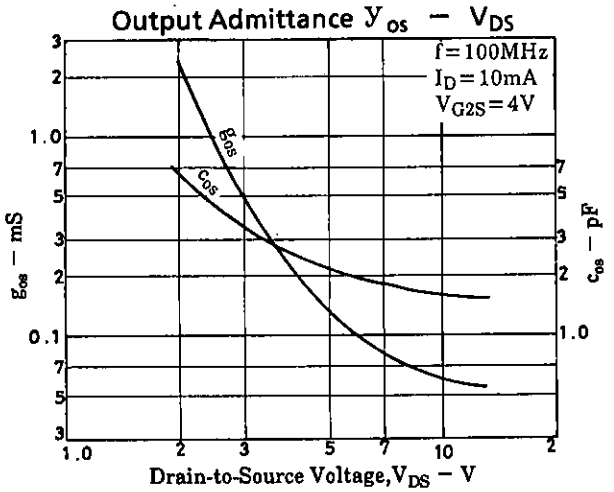
Reverse Transfer Admittance y_{rs} — V_{DS}

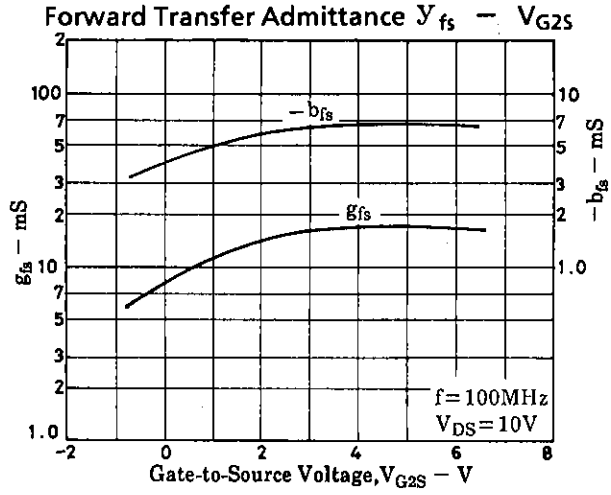


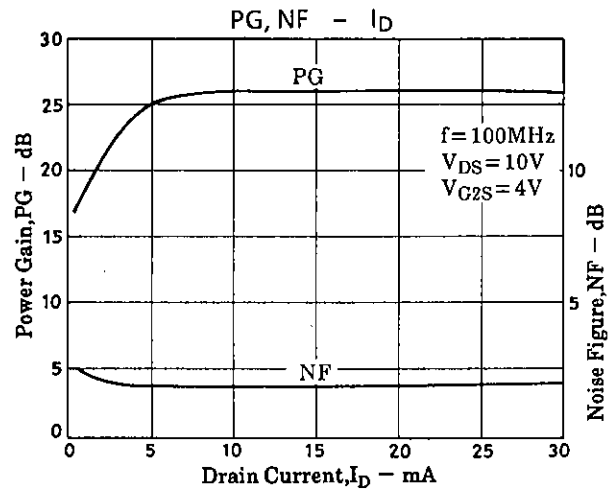
Forward Transfer Admittance y_{fs} — V_{DS}

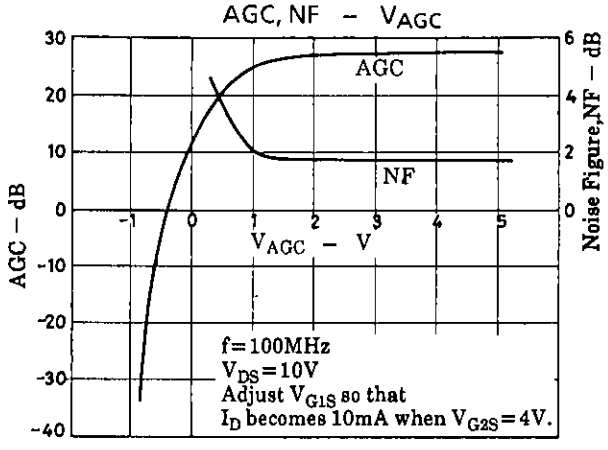


Output Admittance y_{os} — V_{DS}

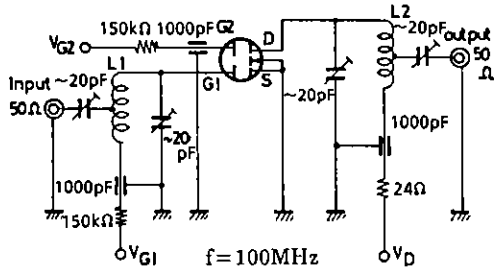








PG, NF Test Circuit



L1 : 1mmø plated wire 10mmø 4T, tap : 1T from gate side
L2 : 1mmø plated wire 10mmø 6T, tap : 1T from drain side

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