

TL/G/10035-59

Gate is also backside contact

DESCRIPTION

Process 90 is designed for VHF/UHF mixer/amplifier and applications where Process 50 is not adequate. Has sufficient gain and low noise, common gate configuration at 450 MHz, for sensitive receivers. The high transconductance and square law characteristics insures low crossmodulation and intermodulation distortions. Common-gate operation simplifies circuitry. Consider Process 92 for even higher performance.

Electrical Characteristics (T_A = 25°C)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV _{GSS}	Gate-Source Breakdown Voltage	V _{DS} = 0V, I _G = -1 μA	-20	-30		V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 10V, V _{GS} = 0V	3	18	40	mA
g _{fs}	Forward Transconductance	V _{DS} = 10V, V _{GS} = 0V	5.5	8.0	10	mmhos
g _{fs}	Forward Transconductance	V _{DS} = 10V, I _D = 5 mA	4.5	5.8		mmhos
I _{GSS}	Reverse Gate Current	V _{GS} = -15V, V _{DS} = 0V		-5.0	-100	pA
r _{DS(ON)}	ON Resistance	V _{DS} = 100 mV, V _{GS} = 0V		90		Ω
V _{GS(OFF)}	Pinch Off Voltage	V _{DS} = 10V, I _D = 1 nA	-1.5	-3.5	-6.0	V
g _{os}	Output Conductance	V _{DG} = 10V, I _D = 5 mA		45	100	μmhos
C _{rs}	Feedback Capacitance	V _{DG} = 10V, I _D = 5 mA		1.0	1.2	pF
C _{is}	Input Capacitance	V _{DG} = 10V, I _D = 5 mA		4.0	5.0	pF
e _n	Noise Voltage	V _{DG} = 10V, I _D = 5 mA, f = 100 Hz		13		nV/√Hz
NF	Noise Figure	V _{DG} = 10V, I _D = 5 mA, f = 450 MHz		3.0		dB
G _{pg (CG)}	Power Gain	V _{DG} = 10V, I _D = 5 mA, f = 450 MHz		11		dB

This process is available in the following device types. *Denotes preferred parts.

TO-72 (NS Package 29)

*2N5397

*2N5398

TO-92 (NS Package 92)

J114

*J210

*J211

*J212

*J300

MPF256

TO-92 (NS Package 97)

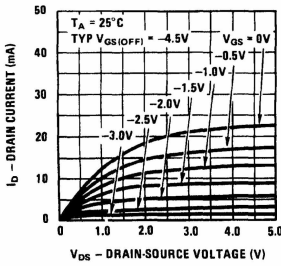
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*2N5246

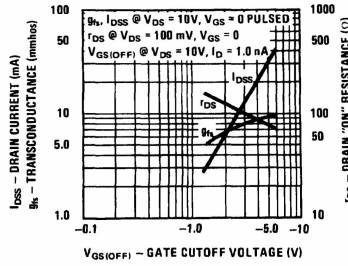
*2N5247

Process 90

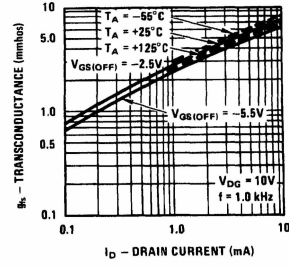
Common Drain-Source Characteristics



Parameter Interactions

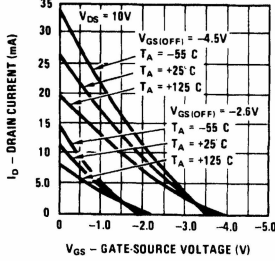


Transconductance vs Drain Current

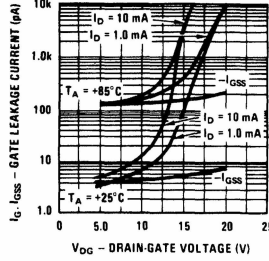


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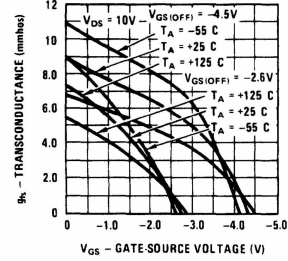
Transfer Characteristics



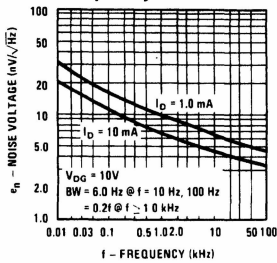
Leakage Current vs Voltage



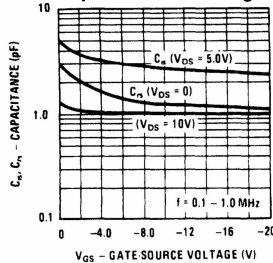
Transfer Characteristics



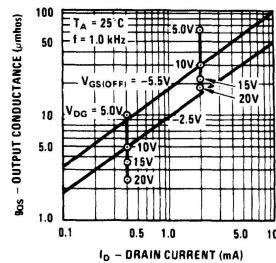
Noise Voltage vs Frequency



Capacitance vs Voltage



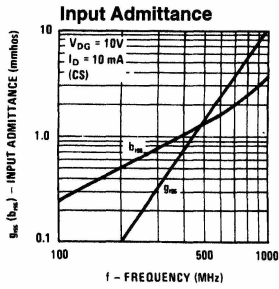
Output Conductance vs Drain Current



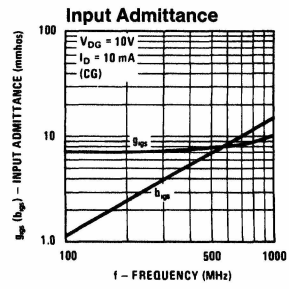
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COMMON SOURCE

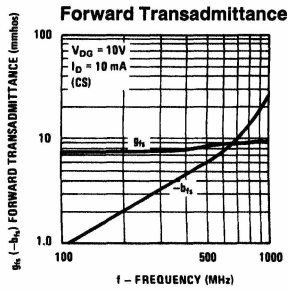
COMMON GATE



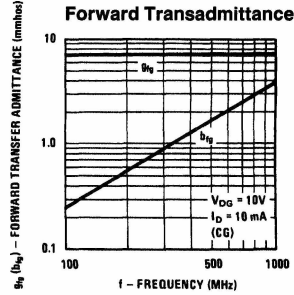
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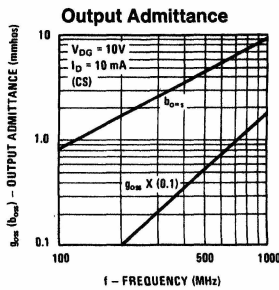
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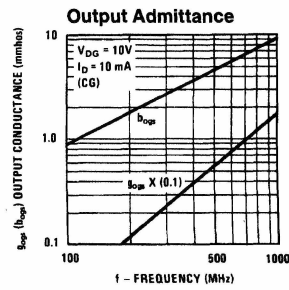
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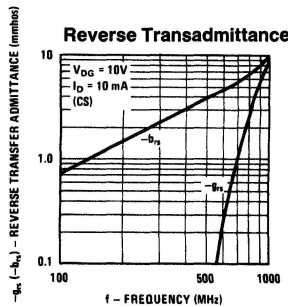
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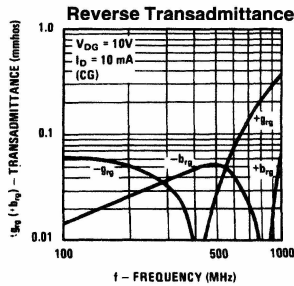
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