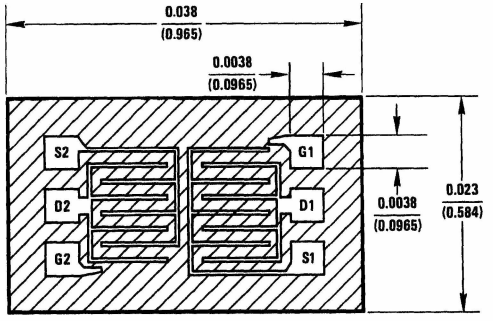
National Semiconductor

Process 95
N-Channel Monolithic Dual JFET



TL/G/10035–50

DESCRIPTION

Process 95 is a monolithic dual JFET with a diode isolated substrate. It is intended for operational amplifier input buffer applications. Processing results in low input bias current and virtually unmeasurable offset current. Low noise voltage and high CMRR for critical 1/f applications.

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	−40	−70		V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 15V, V_{GS} = 0V	0.5	3.0	8.0	mA
g_{fs}	Forward Transconductance	V_{DS} = 15V, V_{GS} = 0V	1.0	2.5	4.0	mmhos
g_{fs}	Forward Transconductance	V_{DG} = 15V, I_D = 0.2 mA	0.5	0.7		mmhos
I_{GSS}	Gate Leakage	V_{GS} = −20V, V_{DS} = 0V		−5.0	−100	pA
$V_{GS(OFF)}$	Pinch Off Voltage	V_{DS} = 15V, I_D = 1 nA	−0.5	−2.5	−4.0	V
C_{iss}	Input Capacitance	V_{DS} = 15V, V_{GS} = 0V, f = 1 MHz		10	14	pF
e_n	Noise Voltage	V_{DS} = 15V, I_D = 0.2 mA, f = 10 Hz		8.0	30	$nV/\sqrt{Hz}$
e_n	Noise Voltage	V_{DS} = 15V, I_D = 0.2 mA, f = 100 Hz		6.0	10	$nV/\sqrt{Hz}$
g_{os}	Output Conductance	V_{DG} = 15V, I_D = 0.2 mA		0.3	1.0	μmhos
C_{rss}	Feedback Capacitance	V_{DS} = 15V, V_{GS} = 0V, f = 1 MHz		3.5	5.0	pF
$\lvert V_{GS1}-V_{GS2}\rvert$	Differential Match	V_{DG} = 20V, I_D = 0.2 mA		6.0	25	mV
$\Delta V_{GS1}-V_{GS2}$	Differential Match Drift	V_{DG} = 20V, I_D = 0.2 mA		9.0	60	μV/°C
CMRR	Common-Mode Rejection	V_{DG} = 20V, I_D = 0.2 mA	86	115		dB

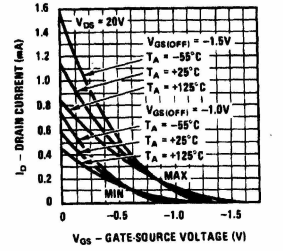
This process is available in the following device types. *Denotes preferred parts.

TO-71 (NS Package 12)

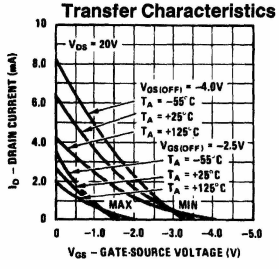
2N5515	*2N5522
2N5516	*2N5523
2N5517	*2N5524
2N5518	*2N6483
2N5519	*2N6484
*2N5520	*2N6485
*2N5521	

Process 95

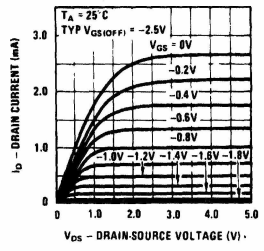
Transfer Characteristics



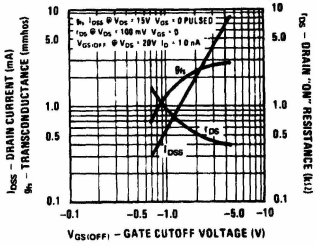
Transfer Characteristics



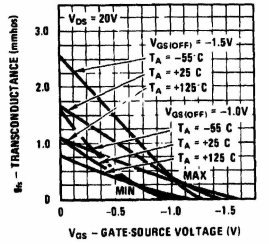
Common Drain-Source Characteristics



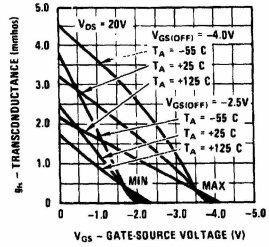
Parameter Interactions



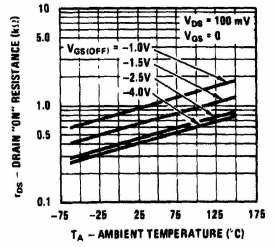
Transconductance Characteristics



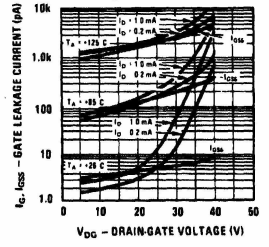
Transconductance Characteristics



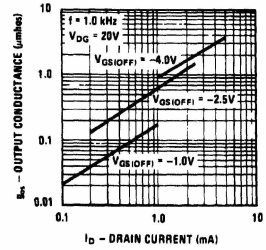
Channel Resistance vs Temperature



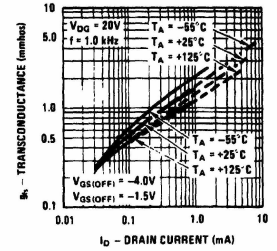
Leakage Current vs Voltage



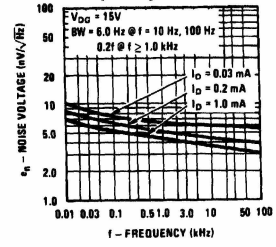
Output Conductance vs Drain Current



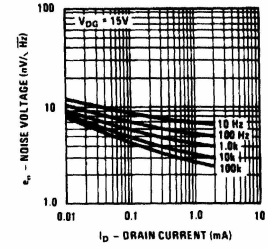
Transconductance vs Drain Current



Noise Voltage vs Frequency



Noise Voltage vs Current



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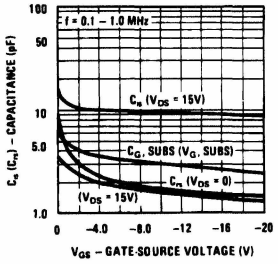
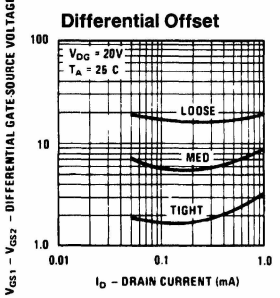
Capacitance vs Voltage



Differential Offset



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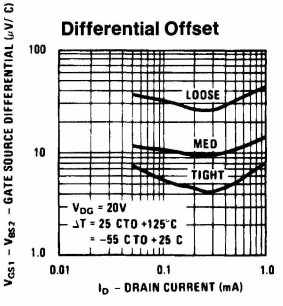
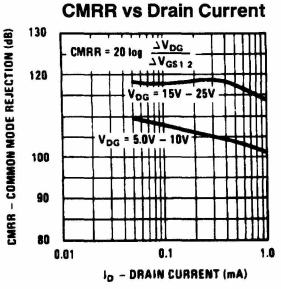


CMRR vs Drain Current



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