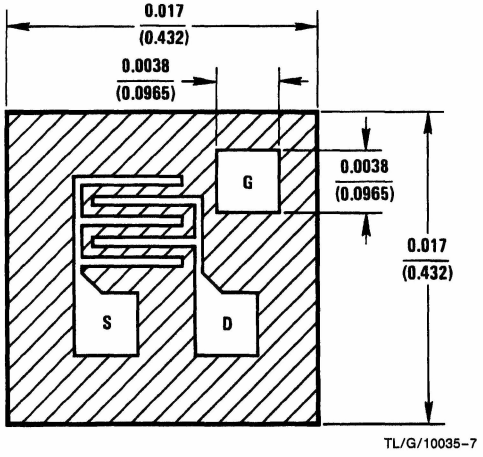
National Semiconductor

Process 52
N-Channel JFET



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Gate is also backside contact

DESCRIPTION

Process 52 is designed primarily for low level audio and general purpose applications. These devices provide excellent performance as input stages for piezoelectric transducers or other high impedance signal sources. Their high output impedance and high voltage breakdown lend them to high gain audio and video amplifier applications. Source and drain are interchangeable.

Electrical Characteristics (T_A = 25°C)

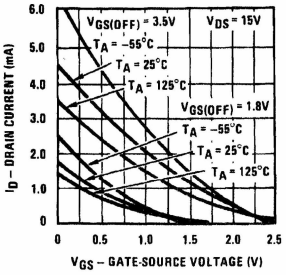
Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV_{GSS}	Gate-Source Breakdown Voltage	V_{DS} = 0V, I_G = −1 μA	−40	−70		V
I_{DSS}	Drain Saturation Current	V_{DS} = 20V, V_{GS} = 0V	0.2	1.5	12	mA
g_{fs}	Forward Transconductance	V_{DS} = 20V, V_{GS} = 0V	0.5	2.5	5.0	mmho
g_{fs}	Forward Transconductance	V_{DS} = 20V, I_D = 200 μA		700		μmho
I_{GSS}	Reverse Gate Leakage Current	V_{GS} = −30V, V_{DS} = 0V		−10	−100	pA
$r_{DS(ON)}$	Drain ON Resistance	V_{DS} = 100 mV, V_{GS} = 0V	250	400	2000	Ω
$V_{GS(OFF)}$	Gate Cutoff Voltage	V_{DS} = 15V, I_D = 1 nA	−0.3	1.0	−8.0	V
g_{os}	Output Conductance	V_{DG} = 15V, I_D = 200 μA		2.0		μmho
C_{rss}	Feedback Capacitance	V_{DG} = 15V, V_{GS} = 0V, f = 1 MHz		1.3	1.8	pF
C_{iss}	Input Capacitance	V_{DG} = 15V, V_{GS} = 0V, f = 1 MHz		5	6	pF
e_n	Noise Voltage	V_{DG} = 15V, I_D = 200 μA, f = 100 Hz		10		$nV/\sqrt{Hz}$

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

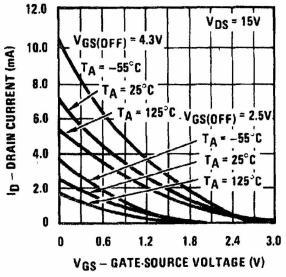
TO-18 (NS Package 02)	TO-72 (NS Package 25)	TO-92 (NS Package 92)
2N3070	*2N3684	*J201
2N3071	*2N3685	*J202
2N3368	*2N3686	*J203
2N3369	*2N3687	PN4338
2N3370		PN4339
2N3458		*PN3684
2N3459		*PN3685
2N3460		*PN3686
*2N4338		*PN3687
*2N4339	Source and drain interchangeable.	*PN4302
*2N4340		*PN4303
*2N4341		*PN4304

Process 52

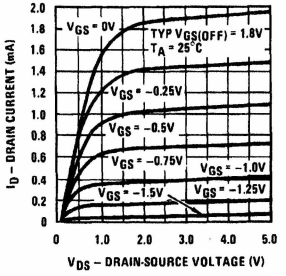
Transfer Characteristics



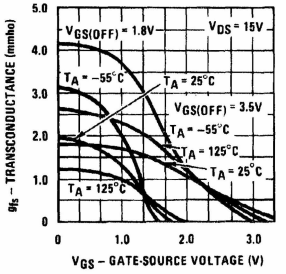
Transfer Characteristics



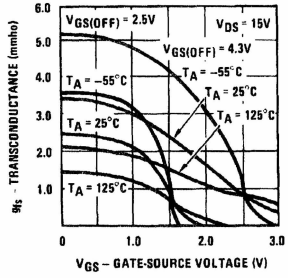
Common Drain-Source Characteristics



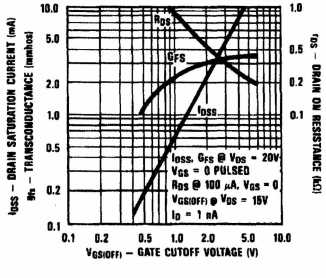
Transfer Characteristics



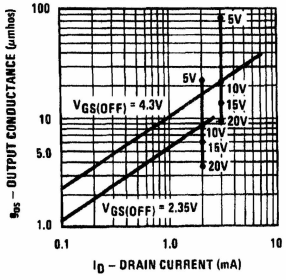
Transfer Characteristics



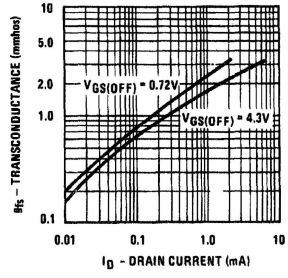
Parameter Interactions



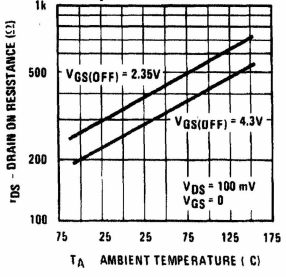
Output Conductance vs Drain Current



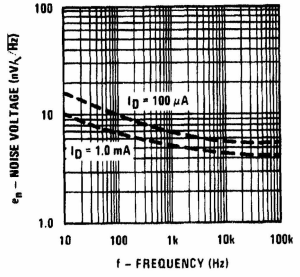
Transconductance vs Drain Current



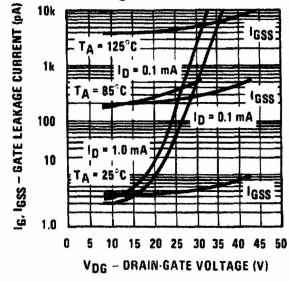
Channel Resistance vs Temperature



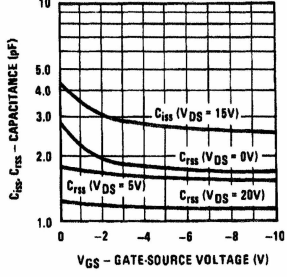
Noise Voltage vs Frequency



Leakage Current vs Voltage



Capacitance vs Voltage



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