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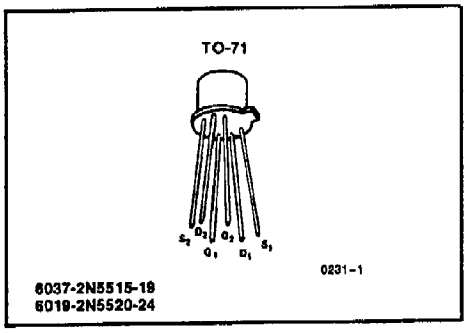
2N5515-2N5524
Dual N-Channel JFET Low Noise Amplifier

FEATURES
- **Tight Temperature Tracking**
- **Tight Matching**
- **High Common Mode Rejection**
- **Low Noise**

PIN CONFIGURATION



6037-2N5515-19
6019-2N5520-24

ABSOLUTE MAXIMUM RATINGS

(T_A = 25°C unless otherwise specified)

Gate-Source or Gate-Drain Voltage ..... −40V
Gate Current (Note 1) 50mA
Storage Temperature Range ..... −65°C to +200°C
Operating Temperature Range ..... −55°C to +150°C
Lead Temperature (Soldering, 10sec) ..... +300°C

	One Side	Both Sides
Power Dissipation (T_A = 85°C)	250mW	375mW
Derate above 25°C	2.0mW/°C	3.0mW/°C

NOTE: Per transistor.

NOTE: *Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.*

ORDERING INFORMATION

TO-72
2N5515
2N5516
2N5517
2N5518
2N5519
2N5520
2N5521
2N5522
2N5523
2N5524

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions		Min	Max	Units
I_{GSS}	Gate Reverse Current	V_{GS} = −30V, V_{DS} = 0			−250	pA
			T_A = 150°C		−250	nA
BV_{GSS}	Gate-Source Breakdown Voltage	I_G = −1μA, V_{DS} = 0		−40		V
V_P	Gate-Source Pinch-Off Voltage	V_{DS} = 20V, I_D = 1nA		−0.7	−4	
I_{DSS}	Drain Current at Zero Gate Voltage (Note 1)	V_{DS} = 20V, V_{GS} = 0		0.5	7.5	mA
g_{fs}	Common-Source Forward Transconductance (Note 1)		f = 1kHz	1000	4000	μs
g_{oss}	Common-Source Output Conductance				10	
C_{rss}	Common-Source Reverse Transfer Capacitance (Note 3)		f = 1MHz		5	pF
C_{iss}	Common-Source Input Capacitance (Note 3)				25	

ELECTRICAL CHARACTERISTICS (Continued) (T_A = 25°C unless otherwise specified)

Symbol	Parameter		Test Conditions		Min	Max	Units
$\bar{e}_n$	Equivalent Input Noise Voltage (Note 3)	2N5515-19	V_{DG} = 20V, I_D = 200μA	f = 10Hz		30	nV/√Hz
		2N5520-24				15	
		2N5515-24		f = 1kHz		10	
I_G	Gate Current					−100	pA
				T_A = 125°C		−100	nA
V_{GS}	Gate Source Voltage				−0.2	−3.6	V
g_{fs}	Common-Source Forward Transconductance (Note 1)			f = 1kHz	500	1000	μs
g_{oss}	Common-Source Output Conductance					1	μs

MATCHING CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	2N5515,20		2N5516,21		2N5517,22		2N5518,23		2N5519,24		Units
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
I_{DSS1}/I_{DSS2}	Drain Current Ratio at Zero Gate Voltage (Note 1)	V_{DS} = 20V, V_{GS} = 0	0.95	1	0.95	1	0.95	1	0.95	1	0.90	1	
$\lvert I_{G1} - I_{G2} \rvert$	Differential Gate Current (+125°C)	V_{DG} = 20V, I_D = 200μA		10		10		10		10		10	nA
g_{fs1}/g_{fs2}	Transconductance Ratio (Note 1)	V_{DG} = 20V, I_D = 200μA f = 1kHz	0.97	1	0.97	1	0.95	1	0.95	1	0.90	1	
$\lvert g_{oss1} - g_{oss2} \rvert$	Differential Output Conductance	V_{DG} = 20V, I_D = 200μA f = 1kHz		0.1		0.1		0.1		0.1		0.1	μs
$\lvert V_{GS1} - V_{GS2} \rvert$	Differential Gate-Source Voltage	V_{DG} = 20V, I_D = 200μA		5		5		10		15		15	mV
$\frac{\Delta\lvert V_{GS1} - V_{GS2} \rvert}{\Delta T}$	Gate-Source Voltage Differential Drift (T_A = −55°C to +125°C)	V_{DG} = 20V, I_D = 200μA		5		10		20		40		80	$\frac{\mu V}{°C}$
CMRR	Common Mode Rejection Ratio (Note 2, 3)	V_{DD} = 10 to 20V, I_D = 200μA	100		100		90						dB

NOTES: 1. Pulse duration of 28ms used during test.
2. CMRR = 20 $\log_{10}\Delta V_{DD}/\Delta\lvert V_{GS1} - V_{GS2}\rvert$, ($\Delta V_{DD}$ = 10V)
3. For design reference only, not 100% tested.