

# n-channel JFETs designed for . . .



U320 U321 U322

Performance Curves NIP  
See Section 5

- VHF Buffer Amplifiers
- IF Amplifiers

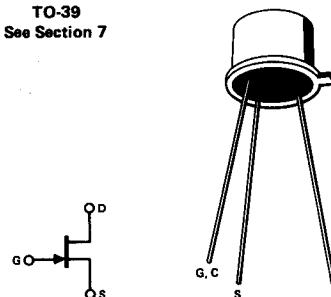
### BENEFITS

- High Gain  
     $g_{fs} = 120,000 \mu\text{mho}$  Typical
- Wide Dynamic Range
- Low Intermodulation Distortion

### ABSOLUTE MAXIMUM RATINGS (25°C)

Gate-Drain or Gate-Source Voltage	.....-25 V
Gate Current	..... 100 mA
Total Device Dissipation (25°C Case Temperature)	.....3 W
Power Derating (to 150°C)	..... 24 mW/°C
Storage Temperature Range	.....-55 to +150°C
Operating Temperature Range	.....-55 to +150°C
Lead Temperature (1/16" from case for 10 seconds)	.....300°C

TO-39  
See Section 7



### ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

Characteristic	U320			U321			U322			Unit	Test Conditions
	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max		
1   I <sub>GSS</sub>   Gate Reverse Current (Note 1)			-3			-3			-3	nA	V <sub>GS</sub> = -15 V, V <sub>DS</sub> = 0 V
2   V <sub>GS(off)</sub>   Gate-Source Cutoff Voltage	-2		-10	-1		-4	-3		-10	μA	T = 100°C
3   BV <sub>GSS</sub>   Gate-Source Breakdown Voltage	-25			-25			-25			V	V <sub>DS</sub> = 5 V, I <sub>D</sub> = 1 mA
4   I <sub>DSS</sub>   Saturation Drain Current (Note 2)	100		500	80		250	200		700	mA	I <sub>G</sub> = -1 μA, V <sub>DS</sub> = 0 V
5   V <sub>GS(f)</sub>   Gate-Source Forward Voltage			1			1			1	V	I <sub>G</sub> = 1 mA, V <sub>DS</sub> = 0 V
6   r <sub>DS(on)</sub>   Drain-Source ON Resistance			10			11			8	Ω	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 10 mA
7   g <sub>fs</sub>   Common-Source Forward Transconductance (Note 2)	75	120	200	75	120	200	75	130	200	mmhos	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0 V
8   C <sub>iss</sub>   Common-Source Input Capacitance			30			30			30	pF	V <sub>GS</sub> = -10 V, V <sub>DS</sub> = 0 V f = 1 MHz
9   C <sub>rss</sub>   Common-Source Reverse Transfer Capacitance			15			15			15	pF	
10   C <sub>gs</sub>   Gate-Source Capacitance			12			12			12	pF	
11   C <sub>gd</sub>   Gate-Drain Capacitance			12			12			12	pF	V <sub>GS</sub> = -10 V, I <sub>D</sub> = 0 V <sub>GD</sub> = -10 V, I <sub>S</sub> = 0
12   e <sub>n</sub>   Equivalent Short Circuit Input Noise Voltage			2			2			2	nV/√Hz	V <sub>DS</sub> = 5 V, I <sub>D</sub> = 10 mA
13   g <sub>fg</sub>   Common Gate Forward Transconductance			55			55			55	mmho	V <sub>DG</sub> = 20 V, I <sub>D</sub> = 25 mA
14   g <sub>ig</sub>   Common-Gate Input Conductance			56			56			56	mmho	
15   g <sub>og</sub>   Common-Gate Output Conductance			0.5			0.5			0.5	mmho	
16   G <sub>PS</sub>   Power Gain (Note 3)			9			9			9	dB	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0 V
17   F <sub>T</sub>   Gain-Bandwidth (Note 4)			400			400			400	MHz	
18   NF   Noise Figure (Note 3)			2.5			2.5			2.5	dB	V <sub>DG</sub> = 20 V, I <sub>D</sub> = 25 mA
19   NF   Noise Figure (Note 3)			2.5			2.5			2.5	dB	f = 30 MHz

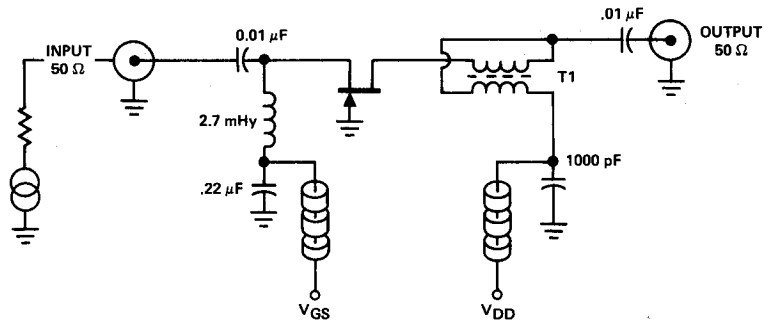
#### NOTES:

1. Approximately doubles for every 10°C increase in T<sub>A</sub>.
2. Pulse test duration = 2 ms.
3. Noise figure (SSB) and power gain measured in circuit shown in Figure 1.
4. Computed as g<sub>fs</sub>/C<sub>rss</sub>.

NIP

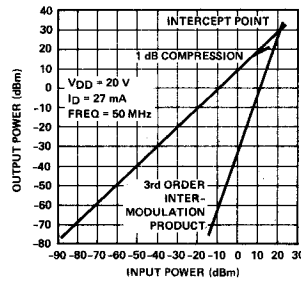
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Siliconix



T1-6 TURNS #22 AWG TWISTED PAIR WIRE ON 0.375 INCH DIAMETER INDIANA GENERAL F625-9Q2 TOROID CORE.

50 MHz Power Gain and Noise Figure Test Circuit for U320, U321 and U322  
Figure 1



Gain - Intermodulation Characteristics  
Figure 2