

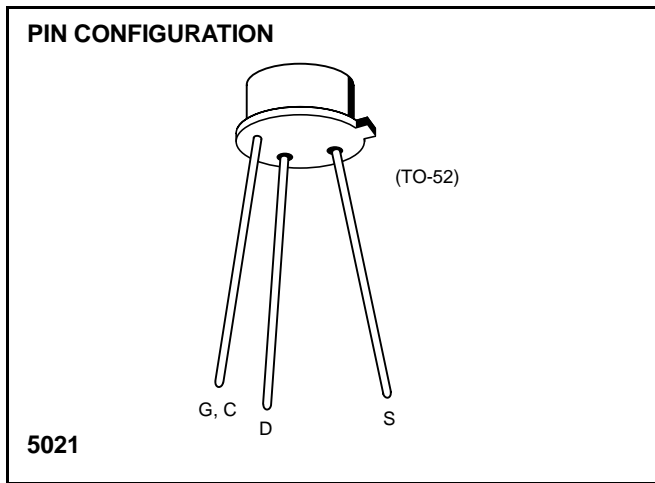
# N-Channel JFET High Frequency Amplifier



## U308 – U310

### FEATURES

- High Power Gain
- Low Noise
- Dynamic Range Greater Than 100dB
- Easily Matched to 75Ω Input



### ABSOLUTE MAXIMUM RATINGS

( $T_A = 25^\circ\text{C}$  unless otherwise specified)

Gate-Drain or Gate-Source Voltage	-25V
Gate Current	20mA
Storage Temperature	-65°C to +200°C
Operating Temperature Range	-55°C to +150°C
Lead Temperature (Soldering, 10sec)	+300°C
Power Dissipation	500mW
Derate above 25°C	4mW/°C

**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

Part	Package	Temperature Range
U308-10	Hermetic TO-52	-55°C to +150°C
XU308-10	Sorted Chips in Carriers	-55°C to +150°C

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise specified)

SYMBOL	PARAMETER	U308			U309			U310			UNITS	TEST CONDITIONS	
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX			
$I_{GSS}$	Gate Reverse Current			-150			-150			-150	pA	$V_{GS} = -15V$	$T_A = 125^\circ\text{C}$
				-150			-150			-150		$V_{GS} = 0$	
$BV_{GSS}$	Gate-Source Breakdown Voltage	-25			-25			-25			V	$I_G = -1\mu\text{A}, V_{DS} = 0$	
$V_{GS(off)}$	Gate-Source Cutoff Voltage	-1.0		-6.0	-1.0		-4.0	-2.5		-6.0		$V_{DS} = 10V, I_D = 1\text{nA}$	
$I_{DSS}$	Saturation Drain Current (Note 1)	12		60	12		30	24		60	mA	$V_{DS} = 10V, V_{GS} = 0$	
$V_{GS(f)}$	Gate-Source Forward Voltage			1.0			1.0			1.0		V	$I_G = 10\text{mA}, V_{DS} = 0$
$g_{fg}$	Common-Gate Forward Transconductance (Note 1)	10	17		10	17		10	17		mS	$V_{DS} = 10V, I_D = 10\text{mA}$	$f = 1\text{kHz}$
$g_{ogs}$	Common Gate Output Conductance			250			250			250			
$C_{gd}$	Drain-Gate Capacitance			2.5			2.5			2.5	pF	$V_{GS} = -10V, V_{DS} = 10V$	$f = 1\text{MHz}$ (Note 2)
$C_{gs}$	Gate-Source Capacitance			5.0			5.0			5.0			
$e_n$	Equivalent Short Circuit Input Noise Voltage		10			10			10		$\frac{\text{nV}}{\sqrt{\text{Hz}}}$	$V_{DS} = 10V, I_D = 10\text{mA}$	$f = 100\text{Hz}$ (Note 2)

**ELECTRICAL CHARACTERISTICS** (Continued) ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

SYMBOL	PARAMETER	U308			U309			U310			UNITS	TEST CONDITIONS		
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX				
g <sub>fg</sub>	Common-Gate Forward Transconductance		15			15			15		μS	V <sub>DS</sub> = 10V, I <sub>D</sub> = 10mA (Note 2)	f = 100MHz	
			14			14			14				f = 450MHz	
g <sub>ogs</sub>	Common-Gate Output Conductance		0.18			0.18			0.18				f = 100MHz	
			0.32			0.32			0.32				f = 450MHz	
G <sub>pg</sub>	Common-Gate Power Gain	14	16		14	16		14	16				dB	f = 100MHz
		10	11		10	11		10	11					f = 450MHz
NF	Noise Figure		1.5	2.0		1.5	2.0		1.5	2.0	f = 100MHz			
			2.7	3.5		2.7	3.5		2.7	3.5	f = 450MHz			

- NOTES:** 1. Pulse test duration = 2ms.  
 2. For design reference only, not 100% tested.