T-31-25

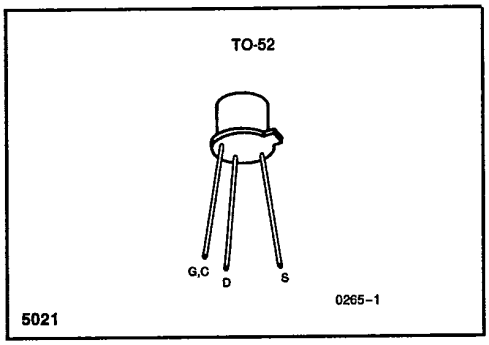
INTERSIL

U308-U310

U308-U310
N-Channel JFET High Frequency Amplifier

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

PIN CONFIGURATIONS



ABSOLUTE MAXIMUM RATINGS
(T_A = 25°C unless otherwise noted)

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

TO-52
U308
U309
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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions		U308			U309			U310			Units
				Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
I_{GSS}	Gate Reverse Current	V_{GS} = −15V				−150			−150			−150	pA
		V_{GS} = 0	T_A = 125°C			−150			−150			−150	nA
BV_{GSS}	Gate-Source Breakdown Voltage	I_G = −1μA, V_{DS} = 0		−25			−25			−25			V
$V_{GS(off)}$	Gate-Source Cutoff Voltage	V_{DS} = 10V, I_D = 1nA		−1.0		−6.0	−1.0		−4.0	−2.5		−6.0	
I_{DSS}	Saturation Drain Current (Note 1)	V_{DS} = 10V, V_{GS} = 0		12		60	12		30	24		60	mA
$V_{GS(f)}$	Gate-Source Forward Voltage	I_G = 10mA, V_{DS} = 0				1.0			1.0			1.0	V
g_{fg}	Common-Gate Forward Transconductance (Note 1)	V_{DS} = 10V, I_D = 10mA	f = 1kHz	10	17		10	17		10	17		μs
g_{ogs}	Common Gate Output Conductance					250			250			250	μs
C_{gd}	Drain-Gate Capacitance	V_{GS} = −10V, V_{DS} = 10V	f = 1MHz (Note 2)			2.5			2.5			2.5	pF
C_{gs}	Gate-Source Capacitance					5.0			5.0			5.0	
$\bar{e}_n$	Equivalent Short Circuit Input Noise Voltage	V_{DS} = 10V, I_D = 10mA	f = 100Hz (Note 2)		10			10			10		$\frac{nV}{\sqrt{Hz}}$

NOTE: All typical values have been characterized but are not tested.

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

Symbol	Parameter	Test Conditions		U308			U309			U310			Units
				Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
g_{fg}	Common-Gate Forward Transconductance	V_{DS} = 10V, I_D = 10mA	f = 100MHz		15			15			15		µS
			f = 450MHz		14			14			14		
g_{ogs}	Common-Gate Output Conductance		f = 100MHz		0.18			0.18			0.18		
			f = 450MHz		0.32			0.32			0.32		
G_{pg}	Common-Gate Power Gain		f = 100MHz	14	16		14	16		14	16		dB
			f = 450MHz	10	11		10	11		10	11		
NF	Noise Figure	(Note 2)	f = 100MHz		1.5	2.0		1.5	2.0		1.5	2.0	
			f = 450MHz		2.7	3.5		2.7	3.5		2.7	3.5	

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

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NOTE: All typical values have been characterized but are not tested.