INTERSIL

U308-U310
N-Channel JFET

FEATURES

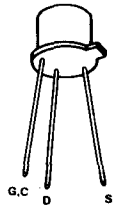
- High Power Gain
  - 15dB Typical at 100MHz, Common Gate
  - 10dB Typical at 450MHz, Common Gate
- Low Single Sideband Noise Figure
  - 1.5dB Typical at 100MHz, Common Gate
  - 3.2dB Typical at 450MHz, Common Gate
- Wide Dynamic Range – Greater than 100dB
- Offered in Wide Variety of Packages for Most Any Circuit Configuration.

GENERAL DESCRIPTION

This family of N-channel Junction FETs are designed and characterized for VHF and UHF applications requiring high gain and low noise figure. The forward transconductance is relatively flat out to 1000MHz. Applications for these devices in military, commercial and consumer communications equipment include low noise, high gain RF amplifiers, low noise mixers with conversion gain, and low noise, ultra stable RF oscillators.

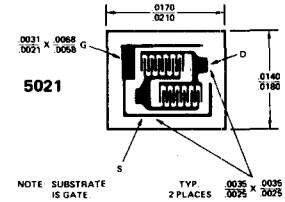
PIN CONFIGURATIONS

TO 52



TO-92

CHIP TOPOGRAPHY



ORDERING INFORMATION

TO-52	TO-92*	WAFER	DICE
U308		U308/W	U308/D
U309		U309/W	U309/D
U310		U310/W	U310/D

*See J308-310 data sheet for TO-92 package.

ABSOLUTE MAXIMUM RATINGS (25°C)

	TO-52	TO-92
Gate-Drain or Gate-Source Voltage	–25V	–25V
Gate Current	20mA	10mA
Total Power Dissipation	500mW	300mW
Power Derating (to maximum operating temperature)	4.0mW/°C	3.0mW/°C
Operating Temperature Range	–65 to 150°C	–55 to +125°C
Storage Temperature Range	–65 to 200°C	–55 to +125°C
Lead Temperature (1/16" from case for 10 sec)	300°C	300°C

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

CHARACTERISTIC		U308			U309			U310			UNIT	TEST CONDITIONS	
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX			
I_{GSS}	Gate Reverse Current			-150			-150			-150	pA	V_{GS} = -15 V	
				-150			-150			-150	nA	V_{GS} = 0	T = 125°C
BV_{GSS}	Gate-Source Breakdown Voltage	-25			-25			-25			V	I_G = -1 μA, V_{DS} = 0	
$V_{GS(off)}$	Gate-Source Cutoff Voltage	-1.0		-6.0	-1.0		-4.0	-2.5		-6.0		V_{DS} = 10 V, I_D = 1 nA	
I_{DSS}	Saturation Drain Current (Note 1)	12		60	12		30	24		60	mA	V_{DS} = 10 V, V_{GS} = 0	
$V_{GS(f)}$	Gate-Source Forward Voltage			1.0			1.0			1.0	V	I_G = 10 mA, V_{DS} = 0	
g_{fg}	Common-Gate Forward Transconductance (Note 1)	10		20	10		20	10		18	mmho	V_{DS} = 10 V, I_D = 10 mA	f = 1 kHz
g_{ogs}	Common-Gate Output Conductance			150			150			150	μmho		
C_{gd}	Drain-Gate Capacitance			2.5			2.5			2.5	pF	V_{GS} = -10 V, V_{DS} = 10 V	f = 1 MHz
C_{gs}	Gate-Source Capacitance			5.0			5.0			5.0			
$\bar{e}_n$	Equivalent Short Circuit Input Noise Voltage		10			10			10		$\frac{nV}{\sqrt{Hz}}$	V_{DS} = 10 V, I_D = 10 mA	f = 100 Hz
g_{fg}	Common-Gate Forward Transconductance		12			12			12		mmho	V_{DS} = 10 V, I_D = 10 mA	f = 100 MHz
			11			11			11				f = 450 MHz
g_{ogs}	Common-Gate Output Conductance		0.18			0.18			0.18				f = 100 MHz
			0.7			0.7			0.7				f = 450 MHz
G_{pg}	Common-Gate Power Gain		15			15			15		dB		f = 100 MHz
			10			10			10				f = 450 MHz
NF	Noise Figure		1.5			1.5			1.5				f = 100 MHz
			3.2			3.2			3.2				f = 450 MHz

NOTE: Pulse test duration = 2 ms.