J308 SERIES
N-Channel JFETs

Siliconix incorporated

The J308 Series is a popular, low-cost device which offers superb amplification characteristics. It features high-gain, low noise (typically < 6 nV√Hz) and low gate leakage (typically < 2 pA). Of special interest, however, is performance at high frequency. Even at 450 MHz the J308 Series offers high power gain and low noise. Like all TO-92 packages offered by Siliconix, tape and reel options are available to support automated assembly. (See Section 7.)

PART NUMBER	$V_{GS(OFF)}$ MAX (V)	$V_{(BR)GSS}$ MIN (V)	g_{fs} MIN (mS)	I_{DSS} MAX (mA)
J308	-6.5	-25	8	60
J309	-4.0	-25	8	30
J310	-6.5	-25	8	60

For additional design information and a closer look at high-frequency characteristics, please consult performance curves NZB.

TO-92 (TO-226AA) BOTTOM VIEW

1 DRAIN
2 SOURCE
3 GATE

SIMILAR PRODUCTS

- TO-52, See U309 Series
- SOT-23, See SST308 Series
- Dual, See U430 Series
- Chips, See NZB Series Die

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS	SYMBOL	LIMITS	UNITS
Gate-Drain Voltage	V_{GD}	-25	V
Gate-Source Voltage	V_{GS}	-25	
Gate Current	I_G	10	mA
Power Dissipation	P_D	360	mW
Power Derating		3.27	mW/°C
Operating Junction Temperature Range	T_J	-55 to 135	°C
Storage Temperature Range	T_{stg}	-55 to 150	
Lead Temperature ($^1/_{16}$" from case for 10 sec.)	T_L	300	

SPECIFICATIONS[a]				LIMITS							
				J308		J309		J310		
PARAMETER	SYMBOL	TEST CONDITIONS	TYP[b]	MIN	MAX	MIN	MAX	MIN	MAX	UNIT
STATIC										
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	I_G = -1 µA, V_{DS} = 0 V	-35	-25		-25		-25		V
Gate-Source Cutoff Voltage	$V_{GS(OFF)}$	V_{DS} = 10 V, I_D = 1 nA		-1	-6.5	-1	-4	-2	-6.5	
Saturation Drain Current[c]	I_{DSS}	V_{DS} = 10 V, V_{GS} = 0 V		12	60	12	30	24	60	mA
Gate Reverse Current	I_{GSS}	V_{GS} = -15 V, V_{DS} = 0 V	-0.002		-1		-1		-1	nA
		T_A = 125°C	-0.008		-1		-1		-1	µA
Gate Operating Current	I_G	V_{DG} = 9 V, I_D = 10 mA	-15							pA
Drain Cutoff Current	$r_{DS(ON)}$	V_{GS} = 0 V, I_D = 1 mA	35							Ω
Gate-Source Forward Voltage	$V_{GS(F)}$	I_G = 1 mA, V_{DS} = 0 V	0.7		1		1		1	V
DYNAMIC										
Common-Source Forward Transconductance	g_{fs}	V_{DS} = 10 V, I_D = 10 mA f = 1 kHz	14	8		10		8		mS
Common-Source Output Conductance	g_{os}		110		250		250		250	µS
Common-Source Input Capacitance	C_{iss}	V_{DS} = 10 V, V_{GS} = -10 V f = 1 MHz	4		5		5		5	pF
Common-Source Reverse Transfer Capacitance	C_{rss}		1.9		2.5		2.5		2.5	
Equivalent Input Noise Voltage	$\bar{e}_n$	V_{DS} = 10 V, I_D = 10 mA f = 100 Hz	6							$nV/\sqrt{Hz}$
HIGH FREQUENCY										
Common-Gate Forward Transconductance	g_{fg}	V_{DS} = 10 V, I_D = 10 mA	f = 105 MHz	15							mS
			f = 450 MHz	13							
Common-Gate Output Conductance	g_{og}		f = 105 MHz	0.16						
			f = 450 MHz	0.55						
Common-Gate Power Gain[d]	G_{pg}		f = 105 MHz	16						dB
			f = 450 MHz	11.5						
Noise Figure	NF		f = 105 MHz	1.5						
			f = 450 MHz	2.7						

NOTES:
a. T_A = 25°C unless otherwise noted.
b. For design aid only, not subject to production testing.
c. Pulse test; PW = 300 µS, duty cycle ≤ 3%.
d. Gain (G_{pg}) measured at optimum input noise match.

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