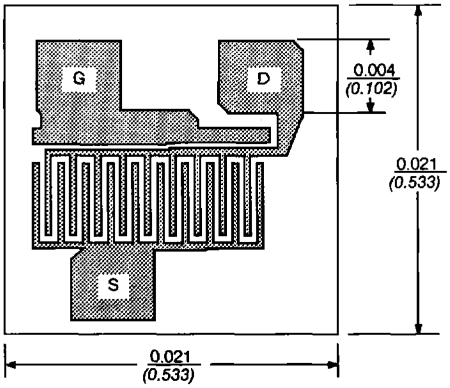
Siliconix incorporated

NZB SERIES DIE N-Channel JFETs

The NZB Series offers superb amplification characteristics. High-gain (> 10,000 μS), low noise (typically < 6 nV√Hz) and low gate leakage (typically < 2 pA) are features of this series. Of special interest, however, is performance at high frequency. Even at 450 MHz, the NZB Series offers high power gain and low noise. Die are supplied with 100% visual sort to the criteria of MIL-STD-750C, Method 2072.

NZB1CHP*	NZB2CHP*	NZB3CHP*
J308 SST308	U309 J309 SST309	U310 J310 SST310
*Meets or exceeds specification for all part numbers listed below		

For additional design information please consult the typical performance curves NZB.



Gate also backside contact

Nominal Thickness
0.009 inches
0.228 mm

DESIGNED FOR:

- VHF/UHF Amplifiers
- Front End High Sensitivity Amplifiers
- Oscillators
- Mixers

FEATURES

- 16 dB at 100 MHz, Common Gate
- 11 dB at 450 MHz, Common Gate

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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	20	mA
Operating and Storage Temperature Range	T_J, T_{stg}	–55 to 150	°C

NZB SERIES DIE

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SPECIFICATIONS[a]			LIMITS							
				NZB1CHP		NZB2CHP		NZB3CHP		
PARAMETER	SYMBOL	TEST CONDITIONS	TYP[b]	MIN	MAX	MIN	MAX	MIN	MAX	UNIT
STATIC										
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = -1\ \mu A$, $V_{DS} = 0\ V$	-35	-25		-25		-25		V
Gate-Source Cutoff Voltage	$V_{GS(OFF)}$	$V_{DS} = 10\ V$, $I_D = 1\ nA$		-1	-6	-1	-4	-2.5	-6	
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}	$V_{GS} = -15\ V$, $V_{DS} = 0\ V$	-2							nA
		$T_A = 125°C$	-0.8							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	$V_{GS(F)}$	$I_G = 10\ mA$, $V_{DS} = 0\ V$	0.7							V
DYNAMIC										
Common-Source Forward Transconductance	g_{fs}	$V_{DS} = 10\ V$, $I_D = 10\ mA$, $f = 1\ kHz$	14							mS
Common-Source Output Conductance	g_{os}		110							µS
Common-Source Input Capacitance	C_{gs}	$V_{DS} = 10\ V$, $V_{GS} = -10\ V$, $f = 1\ MHz$	4							pF
Common-Source Reverse Transfer Capacitance	C_{gd}		1.9							
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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