

## LINEAR INTEGRATED CIRCUITS

### DESCRIPTION

The 511 is a monolithic dual high frequency differential amplifier with associated constant current source transistors and biasing diode. It is useful from DC to 100 MHz. The circuit arrangement provides for connection as two completely independent emitter coupled (differential) or cascode amplifiers. The bias diode allows stabilization of the current source currents over a large temperature range.

### FEATURES

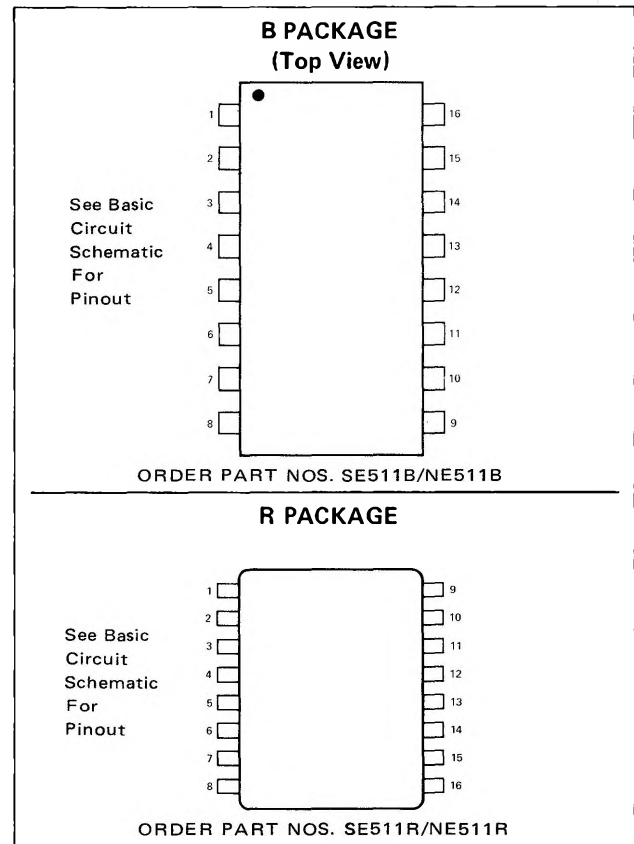
- LOW INPUT OFFSET VOLTAGE =  $\pm 2\text{mV}$
- LOW INPUT OFFSET CURRENT =  $\pm 3\mu\text{A}$
- AGC CAPABILITY
- HIGH FORWARD TRANSADMITTANCE
- LOW FEEDBACK CAPACITANCE
- SINGLE POWER SUPPLY

### ABSOLUTE MAXIMUM RATINGS

Applied Voltage (V+)	20V
Output Collector Voltage	25V
Current (All Pins)	$\pm 15\text{mA}$
Storage Temperature	$-65^\circ\text{C}$ to $+150^\circ\text{C}$
Operating Temperature	
SE511R, SE511B	$-55^\circ\text{C}$ to $+125^\circ\text{C}$
NE511B, NE511R	$0^\circ\text{C}$ to $+75^\circ\text{C}$
Junction Temperature	$150^\circ\text{C}$

Maximum ratings are limiting values above which serviceability may be impaired.

### PIN CONFIGURATIONS

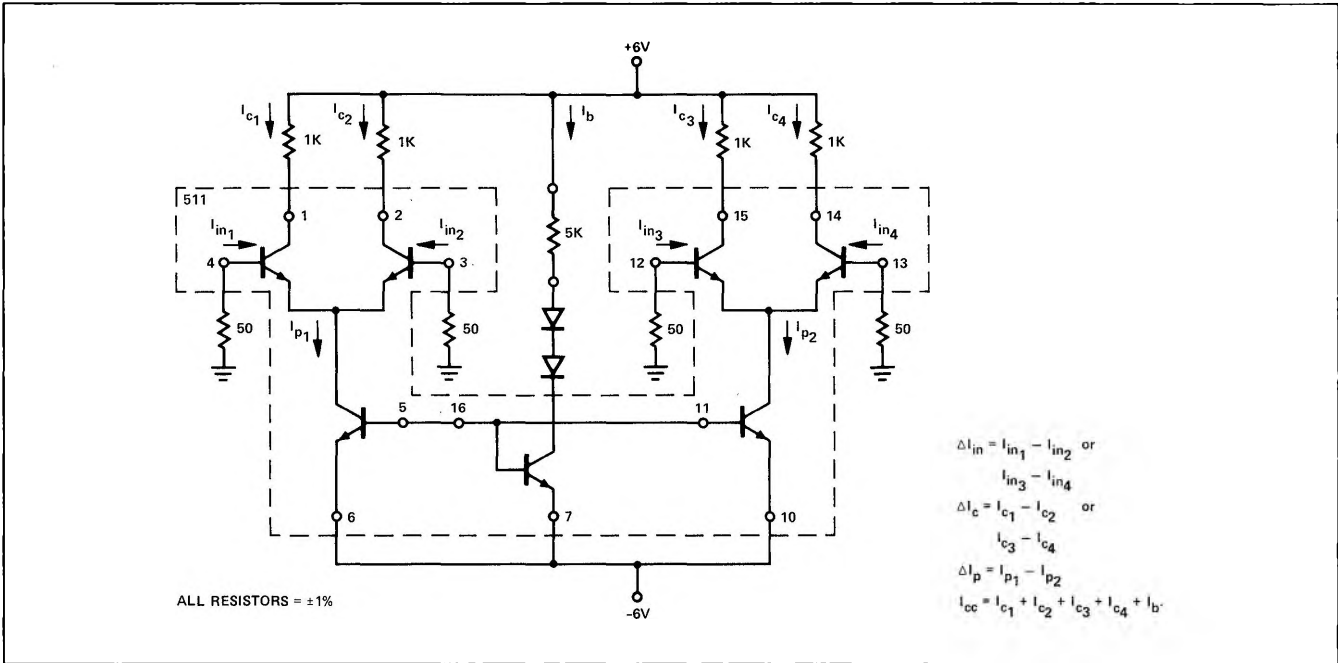


### ELECTRICAL CHARACTERISTICS (Standard Test Circuit)

ACCEPTANCE TEST SUBGROUP	PARAMETERS	SYMBOL	LIMITS						UNITS	TEMPERATURE	TEST CONDITIONS
			MIN		TYP		MAX				
			SE511	NE511	SE511	NE511	SE511	NE511			
A-3	Input Offset Voltage	$\Delta V_{in}$			0.5	0.5	2	3	mV	$+25^\circ\text{C}$	$V_{in} = 0;$ $I_p = 2\text{mA}$
A-4		$\Delta V_{in}$				1.0	4.0		$0^\circ\text{C}$ to $+75^\circ\text{C}$		
A-5		$\Delta V_{in}$			1.5		3.5		$-55^\circ\text{C}$ to $+125^\circ\text{C}$		
A-3	Input Offset Current	$\Delta I_{in}$			2.0	2.0	3.5	6	$\mu\text{A}$	$+25^\circ\text{C}$	
A-4		$\Delta I_{in}$				2.5		9		$0^\circ\text{C}$ to $+75^\circ\text{C}$	
A-5		$\Delta I_{in}$			2.5		7.5		$-55^\circ\text{C}$ to $+125^\circ\text{C}$		
A-3	Input Bias Current	$I_{in}$			8.0	8.0	20	25	$\mu\text{A}$	$+25^\circ\text{C}$	
A-4		$I_{in}$				10.0		40		$0^\circ\text{C}$ to $+75^\circ\text{C}$	
A-5		$I_{in}$			16.0		40		$-55^\circ\text{C}$ to $+125^\circ\text{C}$		
A-3	Differential Collector Current	$\Delta I_c$			45	45	62.5	75	$\mu\text{A}$	$+25^\circ\text{C}$	
A-4	per differential pair	$\Delta I_c$				50		100		$0^\circ\text{C}$ to $+75^\circ\text{C}$	
A-5		$\Delta I_c$			50		100		$-55^\circ\text{C}$ to $+125^\circ\text{C}$		
A-3	Differential Current in the	$\Delta I_p$			30	30	62.5	75	$\mu\text{A}$	$+25^\circ\text{C}$	
A-4	Current Sources	$\Delta I_p$				35		100		$0^\circ\text{C}$ to $+75^\circ\text{C}$	
A-5		$\Delta I_p$			35		100		$-55^\circ\text{C}$ to $+125^\circ\text{C}$		
A-2	Total Current	$I_{cc}$			11.0	11.0	15.0	15.0	mA	$+25^\circ\text{C}$	
A-3	Common Mode Rejection Ratio	CMRR	60	60	80	80			dB	$+25^\circ\text{C}$	
A-3	Output Conductance	$G_{22}$			0.01	0.01			mmho	$+25^\circ\text{C}$	
C-2	Output Capacitance	$C_{ob}$			2.5	2.5			pF	$+25^\circ\text{C}$	
C-2	Input Capacitance	$C_{ib}$			10	10			pF	$+25^\circ\text{C}$	

**SIGNETICS ■ 511 – DUAL DIFFERENTIAL AMPLIFIER**

**STANDARD TEST CIRCUIT**



**BASIC CIRCUIT SCHEMATIC**

