

**FEATURES**

- adjustable gain to 48 dB
- capable of driving low impedance receiver (110 Ω)
- low parts count, 3 small capacitors & 1 resistor
- gain trim can be used as volume control for reduced noise
- minimal start - up transient
- frequency bandwidth of 18 kHz

**STANDARD PACKAGING**

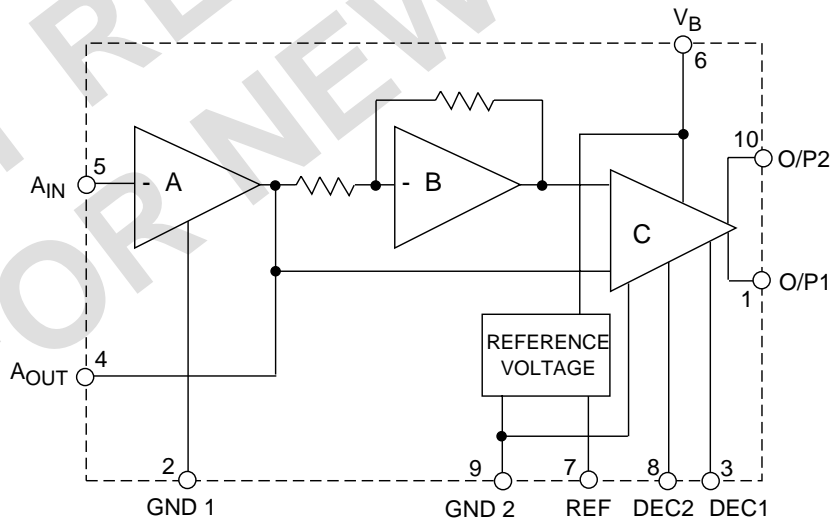
- 10 pin PLID<sup>®</sup>
- Chip (80 x 61 mils)

**DESCRIPTION**

The LC551 is a 10 pin low voltage, class B amplifier which operates over a battery voltage range of 1.1 V DC to 3 V DC.

The LC551 consists of three gain blocks. The first block is an inverting amplifier with the gain set by two external resistors. This gain trim feature can be used as a volume control in hearing aid applications. The second block is an inverting unity gain amplifier which serves as a phase splitter. The outputs from the first and second blocks drive the differential inputs of the third block. The third block has a fixed AC gain of 28 dB when driving a receiver.

This amplifier has internal compensation eliminating the need for a capacitor across the receiver. Two ground pins are available for "star" grounding to reduce any second harmonic distortion produced by ground line resistance.



U.S. Patent No. 4,719,430, other patents pending.

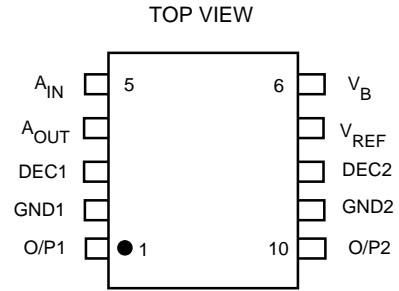
**BLOCK DIAGRAM**

## ABSOLUTE MAXIMUM RATINGS

PARAMETER	VALUE/UNITS
Supply Voltage	5 V
Operating Temperature Range	-10° C to 40° C
Storage Temperature Range	-20° C to 70° C

**CAUTION**  
CLASS 1 ESD SENSITIVITY

## PIN CONNECTION



## ELECTRICAL CHARACTERISTICS

All switches remain as shown in Test Circuit unless stated in condition column

Conditions: Supply voltage  $V_B = 1.3$  V DC, Temperature ambient = 25°C, Noise Filter Bandwidth at 12 dB/Oct (0.2 to 10 kHz)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Gain	$A_V$		46	48	50	dB
Gain Expansion		Output Level 1.3 VRMS	-	-	3	dB
Quiescent Current:	Amplifier	$I_{AMP}$	120	210	335	$\mu$ A
	Transducer	$I_{TR}$	120	220	405	$\mu$ A
	Total	$I_{TOT}$	240	430	740	
Input Referred Noise		$V_{IN} = 0$ (S1 - A)	-	1.3	2.5	$\mu$ V
Total Harmonic Distortion	THD	Output Level 0.707 VRMS	-	1.2	2.5	%
		Output Level 1.3 VRMS	-	3	5.2	%
Stable with battery resistance to			-	22	-	$\Omega$

- NOTES:** 1. Gain expansion = Gain (at 1.3 VRMS output) - Gain (at 0.707 VRMS output)  
2. Output impedance is typically 8  $\Omega$  with  $V_{OUT} = 0.5$  VRMS

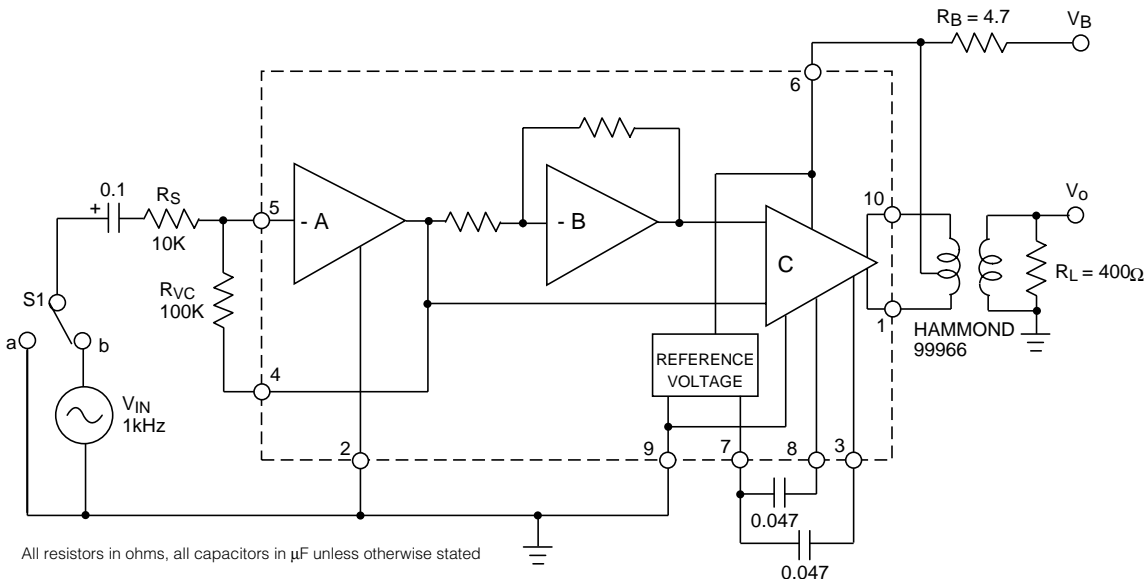


Fig. 1 Test Circuit

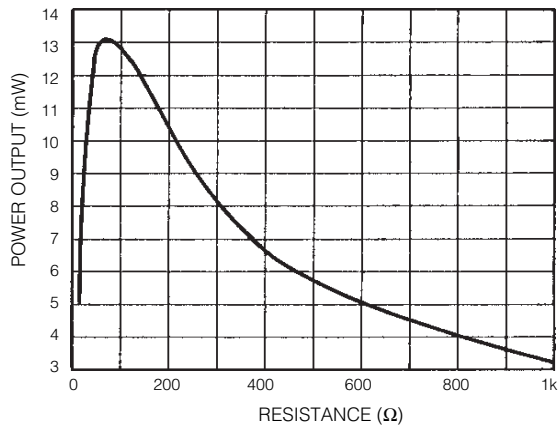


Fig. 2 Power Output vs Load Resistance  
at 7% Distortion  $R_b = 0$   $V_b = 1.35$  V

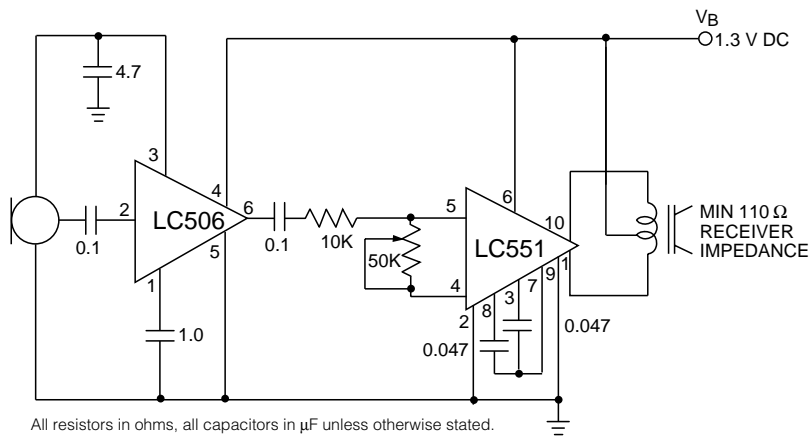


Fig. 3 Typical Hearing Aid Application

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**DOCUMENT IDENTIFICATION:**  
PRELIMINARY DATA SHEET  
The product is in a preproduction phase and specifications  
are subject to change without notice.

**REVISION NOTES:**  
Changes to standard packaging information.