

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

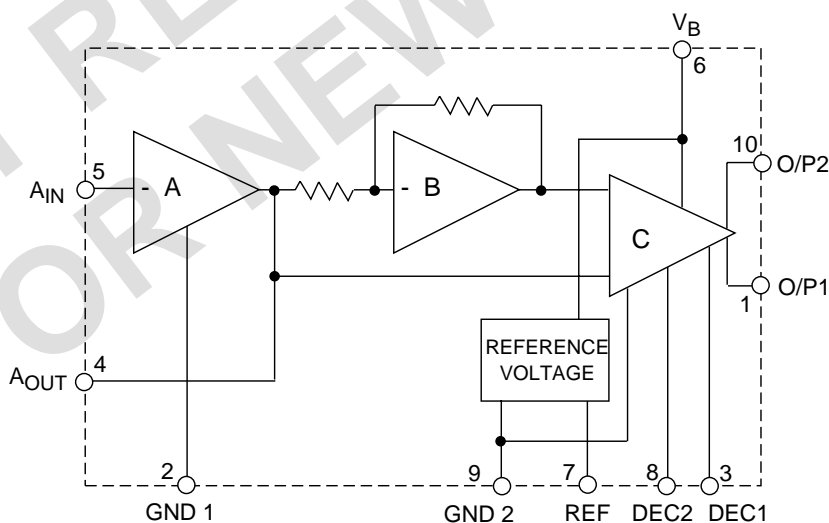
- 10 pin PLID[®]
- Chip (80 x 61 mils)

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.



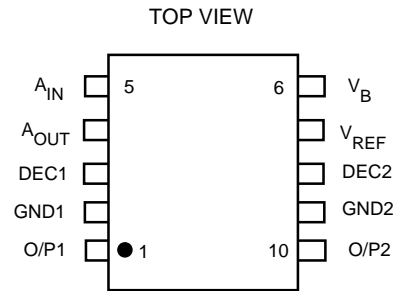
U.S. Patent No. 4,719,430, other patents pending.

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
<div>CAUTION</div> <div>CLASS 1 ESD SENSITIVITY</div> <div></div>	

PIN CONNECTION



ELECTRICAL CHARACTERISTICS

All switches remain as shown in Test Circuit unless stated in condition column
Conditions: Supply voltage $V_B = 1.3\text{ V DC}$, 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		Ouput Level 1.3 VRMS	-	-	3	dB
Quiescent Current:	Amplifier	I_{AMP}	120	210	335	μA
	Transducer	I_{TR}	120	220	405	μA
	Total	I_{TOT}	240	430	740	
Input Referred Noise		$V_{IN} = 0\text{ (S1 - A)}$	-	1.3	2.5	μV
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	-	Ω

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

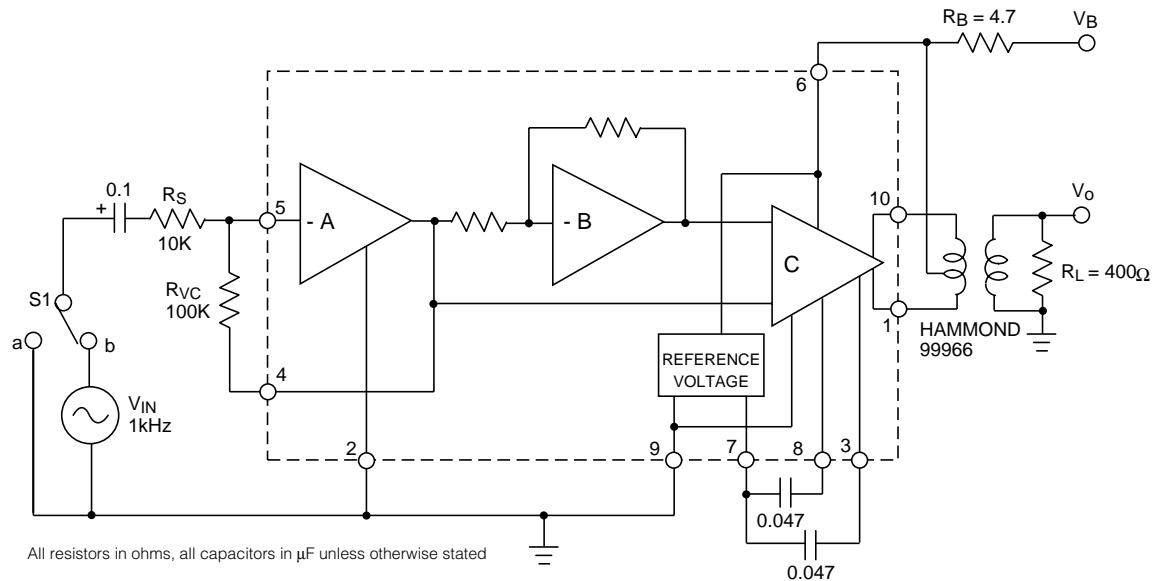


Fig. 1 Test Circuit

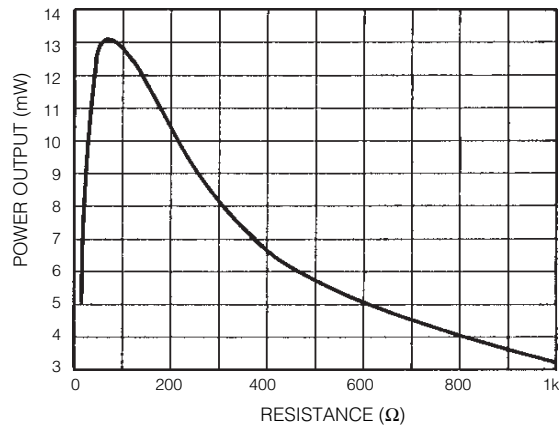


Fig. 2 Power Output vs Load Resistance
at 7% Distortion $R_B = 0$ $V_B = 1.35$ V

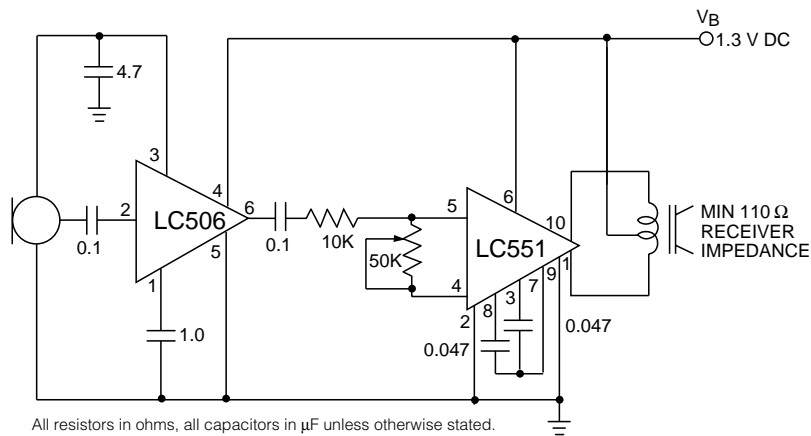


Fig. 3 Typical Hearing Aid Application

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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.