

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

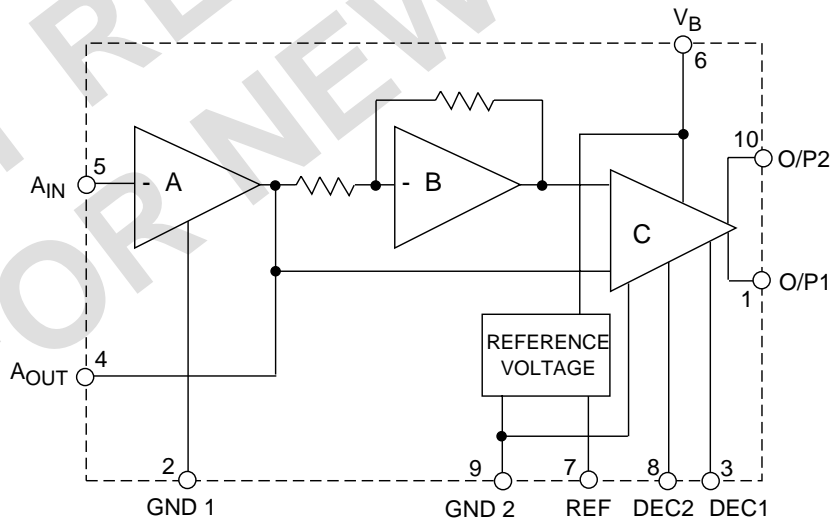
- 10 pin PLID[®]
- Chip (80 x 61 mils)

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.

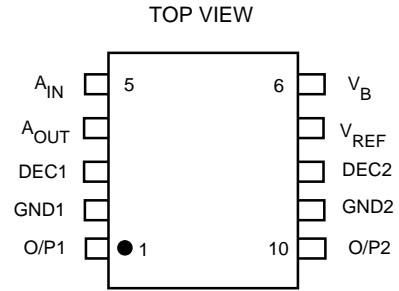
BLOCK DIAGRAM

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 |

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 | μ A |
| | Transducer | I_{TR} | 120 | 220 | 405 | μ A |
| | Total | I_{TOT} | 240 | 430 | 740 | |
| Input Referred Noise | | $V_{IN} = 0$ (S1 - A) | - | 1.3 | 2.5 | μ 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 | - | 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 $V_{OUT} = 0.5$ VRMS

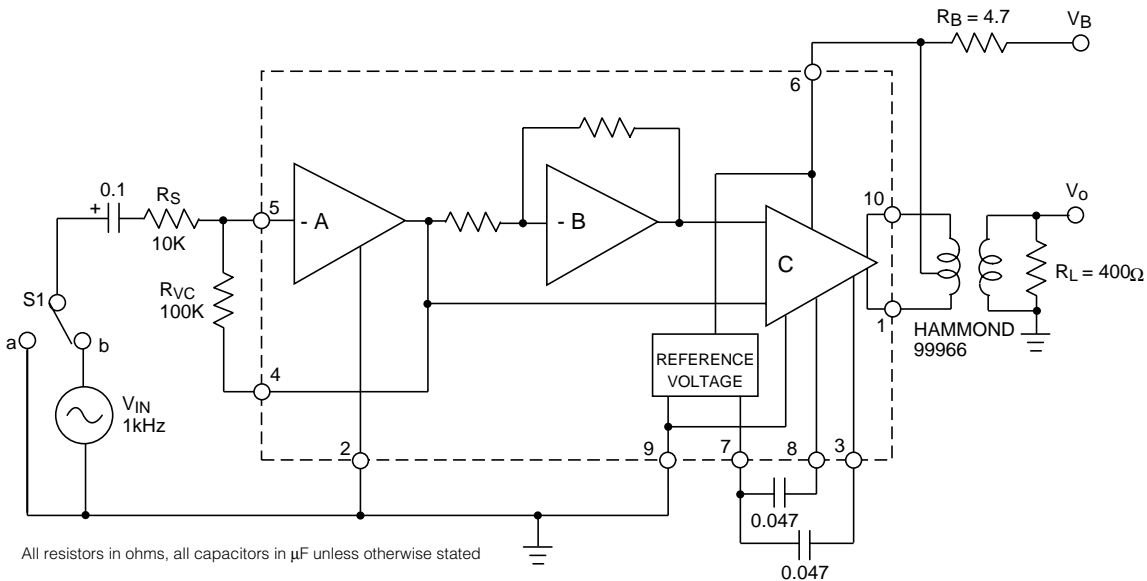


Fig. 1 Test Circuit

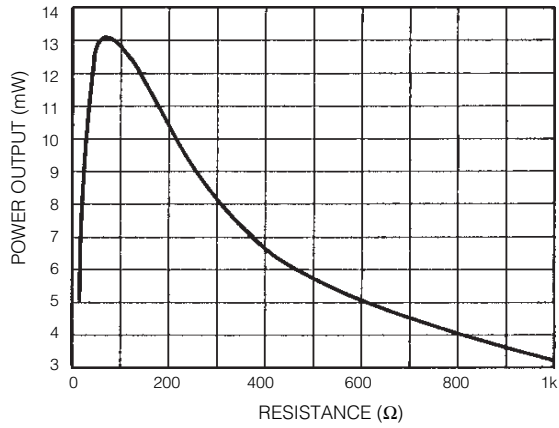


Fig. 2 Power Output vs Load Resistance
at 7% Distortion $R_b = 0$ $V_b = 1.35$ V

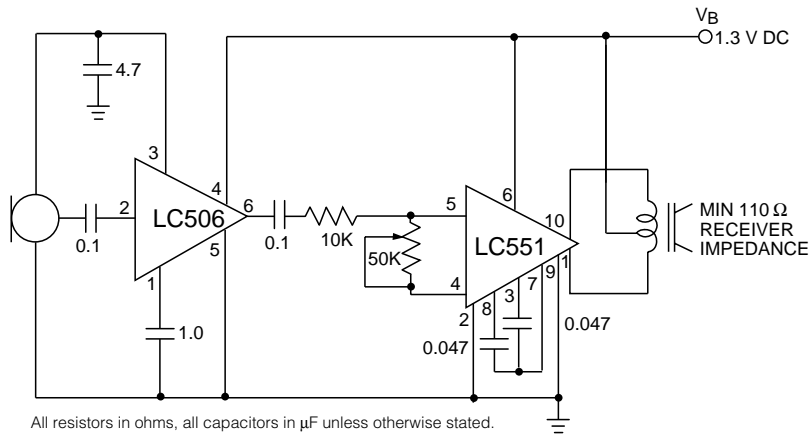


Fig. 3 Typical Hearing Aid Application

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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.