

**FEATURES**

- 23 dB class A preamp & 40 dB class B output stage
- 1.0 V DC to 1.7 V DC operating range
- 2.2 kΩ on chip microphone decoupling resistor
- 350 μA typical quiescent current
- 400 Hz to 20 kHz frequency response

**STANDARD PACKAGING**

- 10 pin MICROpac
- 10 pin MINIpac
- 10 pin SLT
- 10 pin PLID<sup>®</sup>
- Chip (57 x 47 mils)  
    Au Bump

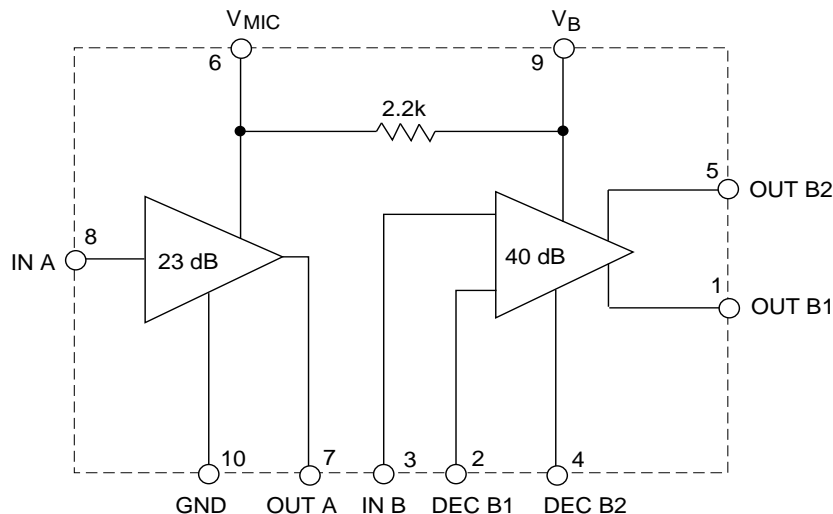
**DESCRIPTION**

The LC550 is a low voltage linear monolithic integrated circuit amplifier. It is comprised of two separate amplifiers on a single chip. The first is a 23 dB Class A preamp followed by a 40 dB Class B output stage.

Both stages incorporate negative feedback to control gain, minimize distortion and stabilize operation at very low quiescent currents.

The preamp and output stage have their inputs and outputs separately pinned out. This is an advantage as it allows access to both stages, providing the designer with flexibility and a full range volume control.

The combination of low quiescent current and a medium power push-pull output makes the LC550 suitable for medium power BTE hearing aids and for high power ITE aids where efficiency and battery life are a premium consideration.



All resistors in ohms, all capacitors in μF unless otherwise stated.  
U.S. Patent No. 4,085,382, patented in other countries.

**BLOCK DIAGRAM**

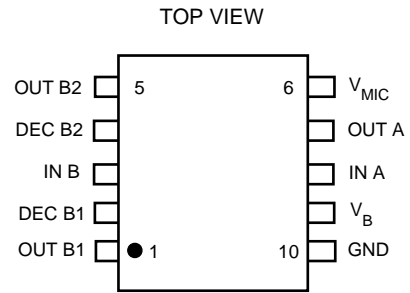
## ABSOLUTE MAXIMUM RATINGS

PARAMETER	VALUE/UNITS
Supply Voltage	3 V
Power Dissipation	60 mW
Operating Temperature Range	-10° C to 60° C
Storage Temperature Range	-20° C to 70° C

**CAUTION**  
CLASS 1 ESD SENSITIVITY



## PIN CONNECTION



## ELECTRICAL CHARACTERISTICS

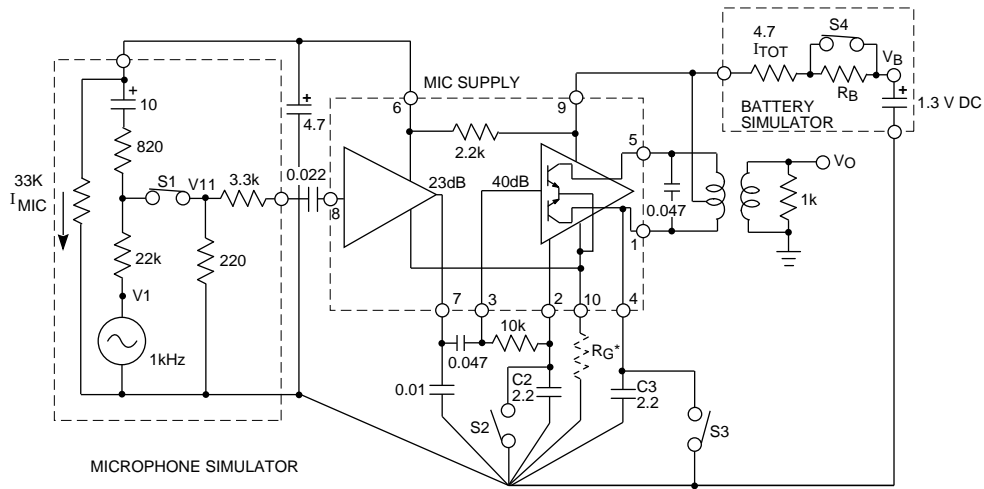
All switches remain as shown in Test Circuit

Conditions: Supply voltage  $V_B = 1.3$  V DC, Temperature ambient = 25°C, Ground line resistance 0.03  $\Omega$ max., Volume control setting max. gain

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Gain	$A_V$	Output Level 0.707 VRMS	59	63	67	dB
Total Current (including $I_{MIC}$ )	$I_{TOT}$	S1 - open	-	350	475	$\mu$ A
Input Referred Noise	IRN	NFB 0.2 to 10kHz at 12dB/Oct	-	1.5	3	$\mu$ V
Total Harmonic Distortion	THD	Output Level 0.707 VRMS	-	3.5	7.5	%
O/P Swing at 7% Distortion			-	1.4	-	VRMS
Stable with Battery Resistance to:		S4 - open	-	-	60	$\Omega$
Preamp O/P Impedance			-	1.1	-	k $\Omega$
Preamp I/P Impedance			-	30	-	k $\Omega$
O/P Stage O/P Impedance			-	110	-	$\Omega$
O/P Stage I/P Impedance			18	27	34	k $\Omega$
Start-Up Time		Refer to start up test sequence	-	-	3	sec

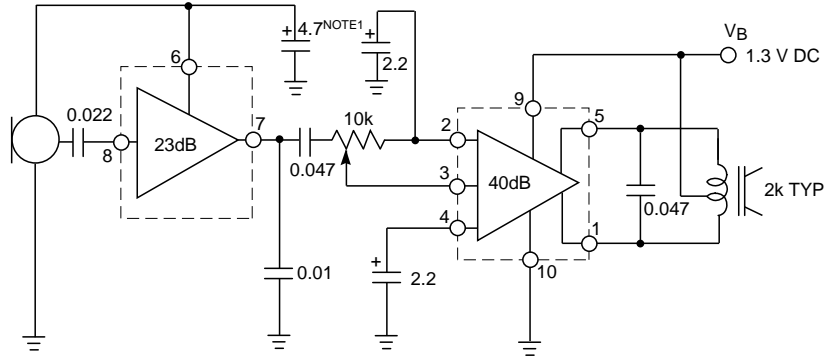
## START-UP TEST SEQUENCE

SEQUENCE	CONDITIONS	COMMENT
Power Supply	Off	
S1	Open	Removes $V_{IN}$
S2 / S3	Closed	Discharges C2 & C3
S1	Closed	Applies $V_{IN}$ ( $V_{IN}$ level is determined from Gain Test)
S2 / S3	Open	Removes Short from C2 and C3
Power Supply	On	
Gain must be within specification, within 3 seconds after Power Supply is turned on		



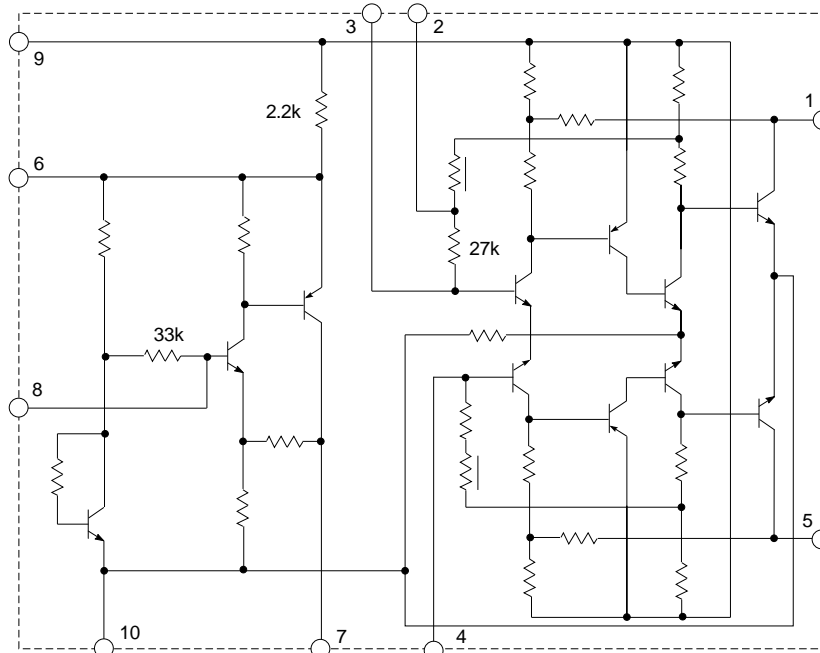
- NOTES:**
- 42.13 dB of attenuation from V1 to V11
  - \*RG (equivalent gnd resistance) should not exceed 30 mΩ (increasing RG increases distortion)
- All resistors in ohms, all capacitors in μF unless otherwise stated.

Fig. 1 Test Circuit



- NOTE:**
- 2.2 μF when receiver is ≥ 3kΩ
- All resistors in ohms, all capacitors in μF unless otherwise stated.

Fig. 2 Typical Hearing Aid Application



All resistors in ohms, all capacitors in μF unless otherwise stated.  
 U.S. Patent No. 4,085,382, patented in other countries.

Fig.3 Functional Schematic

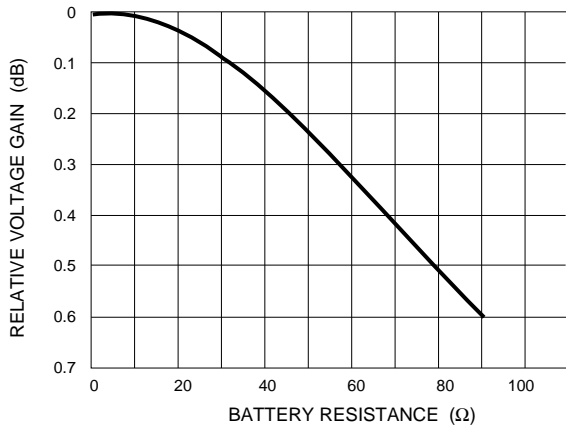


Fig. 4 Gain vs Battery Resistance

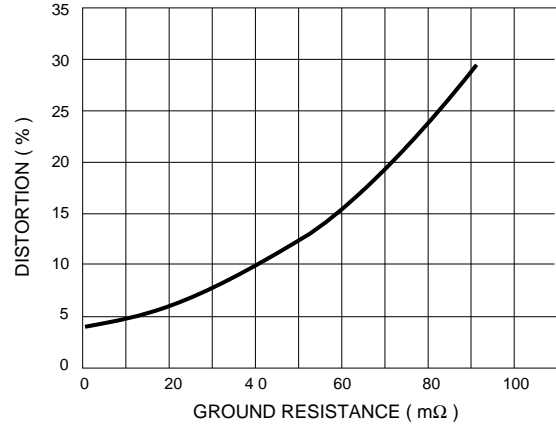


Fig. 5 Distortion vs Ground Line Resistance

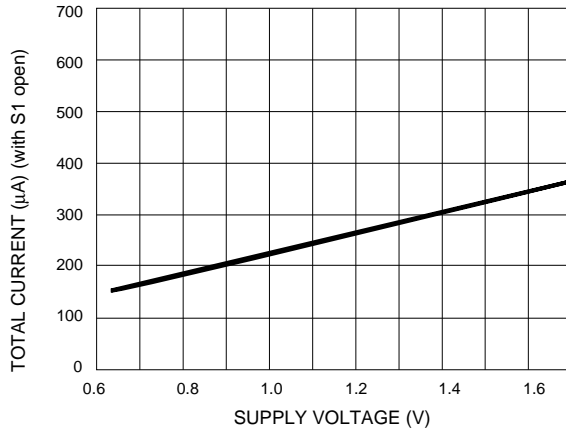


Fig. 6 Total Current vs Supply Voltage

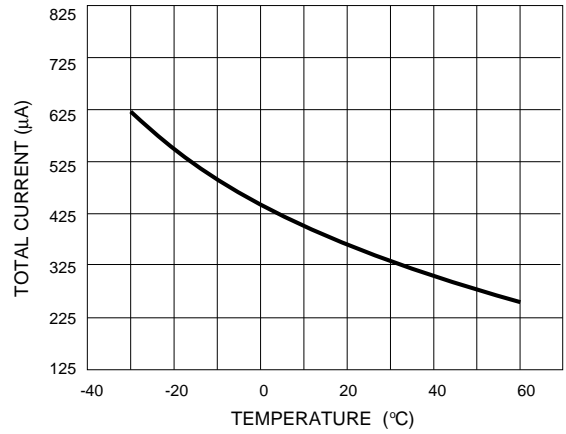


Fig. 7 Total Current vs Temperature

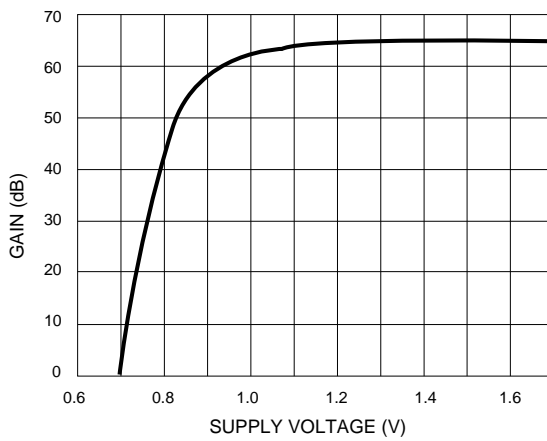


Fig. 8 Gain vs Supply Voltage

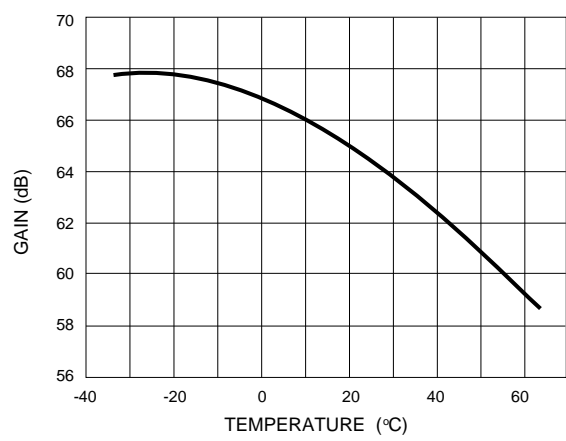


Fig. 9 Gain vs Temperature

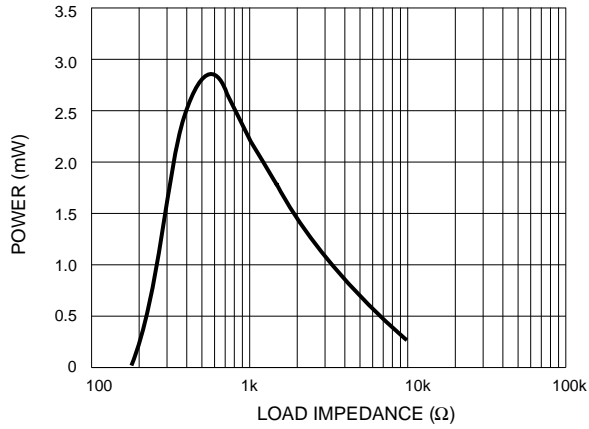


Fig. 10 Power Output vs Load Impedance at 7% Distortion

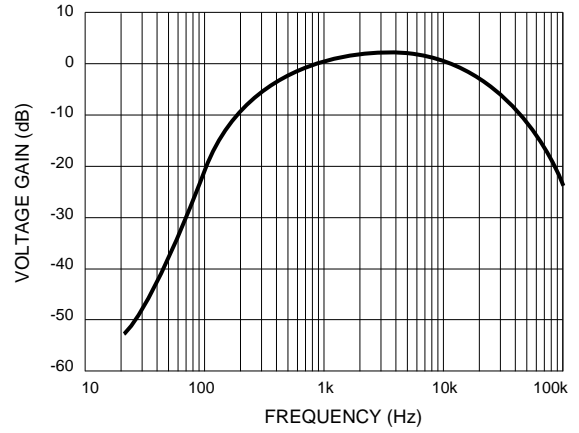


Fig. 11 Voltage Gain vs Frequency

**REVISION NOTES**  
Correction to Fig. 1 Pb/Sn Bump removed

**DOCUMENT IDENTIFICATION**

**PRODUCT PROPOSAL**  
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