



FEATURES

- operating supply voltage 1.1 to 1.55 VDC
- 40 dB feedback stabilized gain
- 38 dB gain trim
- 0.95 regulated voltage LC506
- 0.90 regulated voltage LV506

STANDARD PACKAGING

- 8 pin MICROpac (LC506)
- 8 pin MINIpac (LC506)
- 8 pin PLID® (LC506)
- 6 pin MINIpac (LV506)

DESCRIPTION

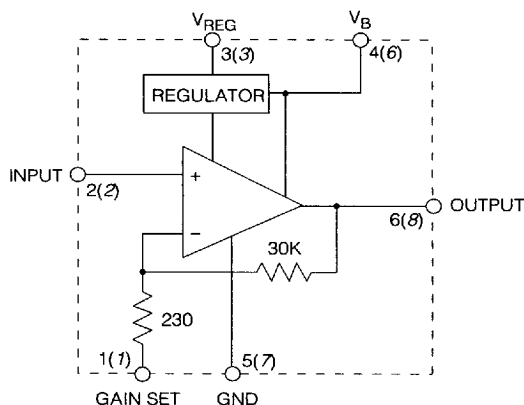
The LC506 and LV506 are class A non-inverting preamplifiers with 40 dB feedback controlled, stabilized gain.

Gain trim is provided at pin 1, which simultaneously affects both gain and output noise, independent of the main volume control.

A voltage regulator is built on-chip to supply the amplifier and electret microphone with precision reference voltage. A typical regulator voltage for the LC506 is 0.95V, while it is 0.90V for the LV506. This regulator feature of the LC506 allows it to be used with the high power LD549 to provide increased supply rejection during transient drops in supply voltage, caused by high current peaks in the LD549.

Both LC506 and LV506 devices are capable of operating from a supply voltage of 1.55 VDC while continuously providing 80 dB of regulator supply rejection.

BLOCK DIAGRAM

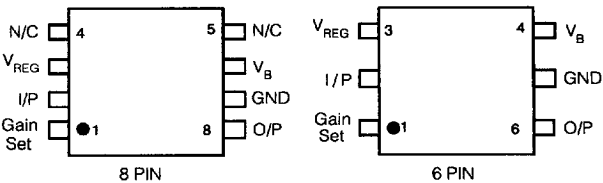


Bracketed pin-out for LC506

ABSOLUTE MAXIMUM RATINGS

PARAMETER	VALUE / UNITS
Supply Voltage	3 VDC
Power Dissipation	60 mW
Storage Temperature	-20 to + 70°C
Operating Temperature	-10 to + 60°C
CAUTION CLASS 1 ESD SENSITIVITY	

PIN CONNECTION

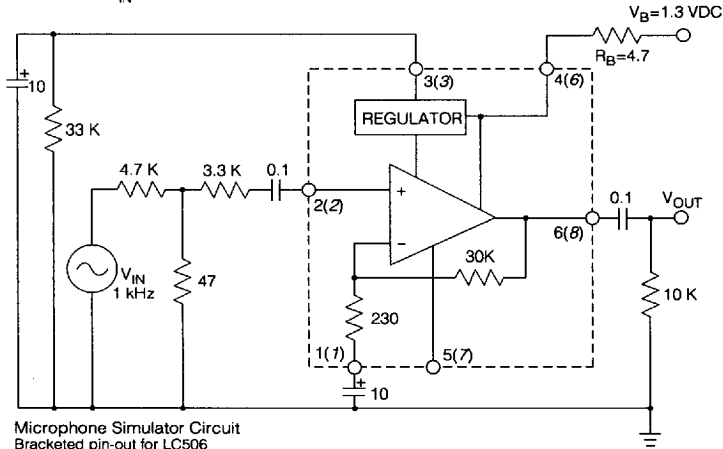


ELECTRICAL CHARACTERISTICS Conditions : $V_B = 1.30 \text{ VDC}$, temperature 25°C

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Gain	A_V	$V_{OUT} = 0.25 \text{ VRMS}$ (Note 1)	38	41	44	dB
Temperature Coefficient of Gain			-	0.03	-	dB/°C
Quiescent Current (incl. microphone simulator circuit)			182	300	362	μA
Temperature Coefficient of Current			-	-2.0	-	$\mu\text{A}/^\circ\text{C}$
Microphone Supply Voltage		LC506	0.90	0.95	1.00	V
		LV506	0.85	0.90	0.95	V
Input Referred Noise			-	1.2	2.0	μV
Total Harmonic Distortion and Noise		$V_{OUT} = 0.25 \text{ VRMS}$	-	1.5	3.8	%
Maximum Output at 7% THD			-	350	-	mVRMS
Input Impedance			-	30	-	$\text{k}\Omega$
Output Impedance			-	2.5	-	$\text{k}\Omega$
Frequency Response	High (-3dB)		-	5	-	kHz
	Low (-3dB)		-	0.2	-	kHz

All parameters and switches remain as shown in test circuit unless stated in conditions column.

Note 1: $A_V = 20 \log (V_{OUT} / V_{IN}) + 40 \text{ dB}$ where 40 dB is input attenuator



Microphone Simulator Circuit
Bracketed pin-out for LC506

All external resistors in ohms, all capacitors in μF unless otherwise stated

Fig. 1 Test Circuit

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DEVICE CHARACTERISTICS

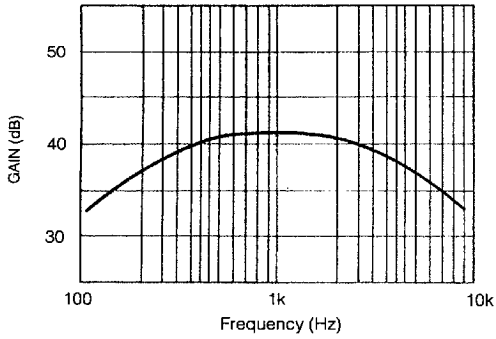


Fig. 2 Frequency Response

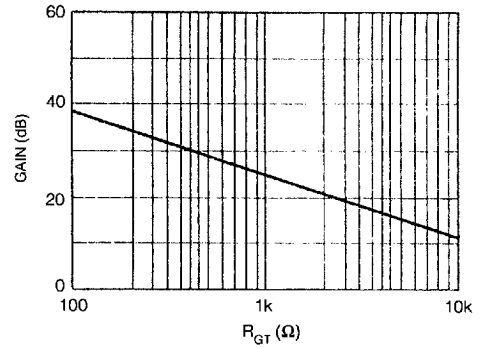


Fig. 3 Gain vs Gain Trim Resistor

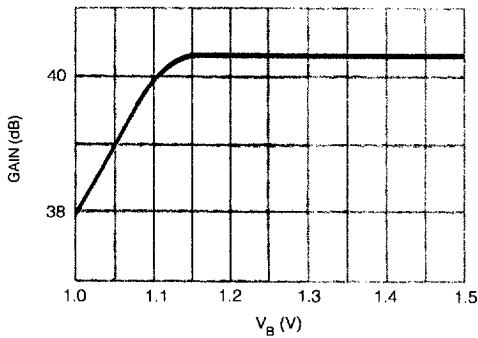


Fig. 4 Voltage Gain vs Battery Voltage

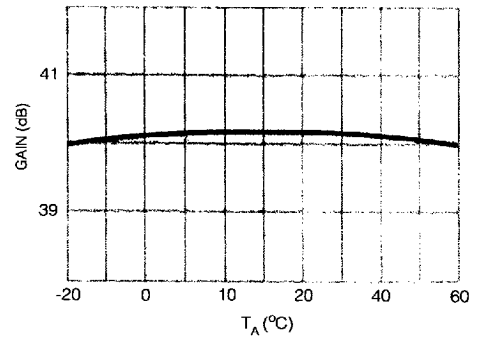


Fig. 5 Gain vs Temperature

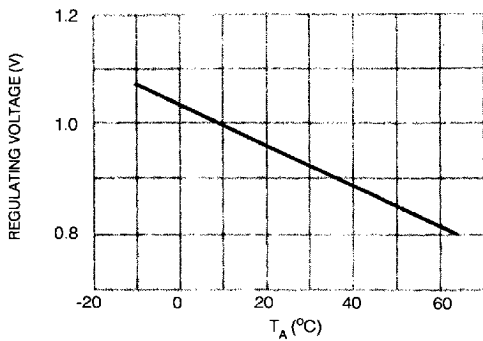


Fig. 6 Regulating Voltage vs Temperature

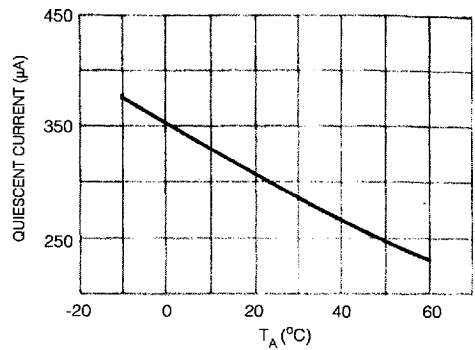


Fig. 7 Quiescent Current vs Temperature

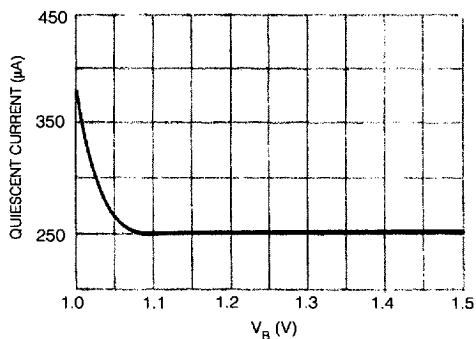


Fig. 8 Quiescent Current vs Battery Voltage

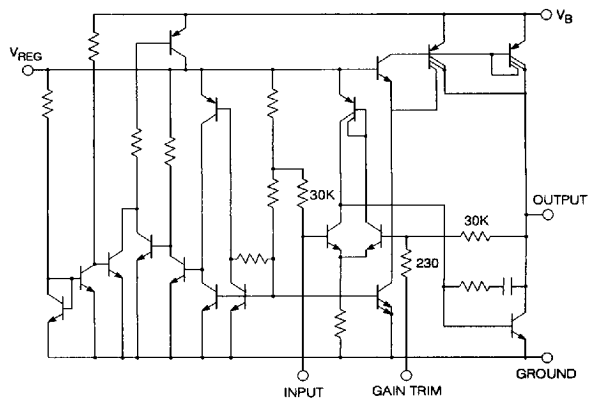
All resistors in ohms, all capacitors in μF unless otherwise stated

Fig. 9 Equivalent Circuit

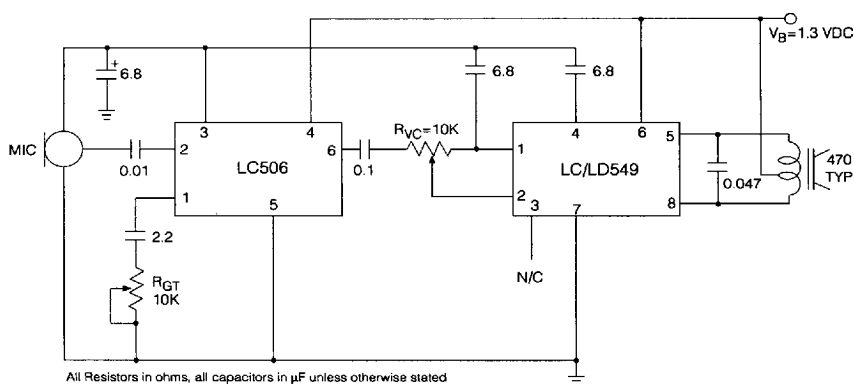
All Resistors in ohms, all capacitors in μF unless otherwise stated**Note :** Use LD549 with LV506

Fig. 10 Typical Application Circuit

REVISION NOTES

Chip information removed.

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