



PyroElectro.com - PyroEDU

Introduction To Analog Electronics – Lesson 10: Audio Amplifier

FORMULAS

The following formulas and information are meant to go with the online lesson found here:
http://www.pyroelectro.com/edu/analog/audio_amplifier/

AUDIO AMPLIFIER DATASHEET

In this lesson we looked at the LM386 opamp in depth to see what it could do and how to use it as an audio amplifier. The datasheet is where we went to find all this information. If you have not already, go to national semiconductor or texas instrument's website and get the LM386 datasheet. Take a look through it and see what it is, how the manufacturer describes it and what it can do!

August 2000

LM386

Low Voltage Audio Power Amplifier

General Description

The LM386 is a power amplifier designed for use in low voltage consumer applications. The gain is internally set to 20 to keep external part count low, but the addition of an external resistor and capacitor between pins 1 and 8 will increase the gain to any value from 20 to 200.

The inputs are ground referenced while the output automatically biases to one-half the supply voltage. The quiescent power drain is only 24 milliwatts when operating from a 6 volt supply, making the LM386 ideal for battery operation.

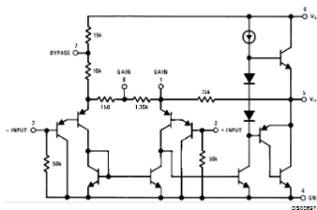
Features

- Battery operation
- Minimum external parts
- Wide supply voltage range: 4V–12V or 5V–18V
- Low quiescent current drain: 4mA
- Voltage gains from 20 to 200
- Ground referenced input
- Self-centering output quiescent voltage
- Low distortion: 0.2% ($A_v = 20$, $V_s = 6V$, $R_L = 8\Omega$, $P_o = 125mW$, $f = 1kHz$)
- Available in 8 pin MSOP package

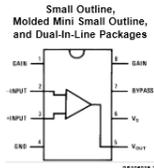
Applications

- AM-FM radio amplifiers
- Portable tape player amplifiers
- Intercoms
- TV sound systems
- Line drivers
- Ultrasonic drivers
- Small servo drivers
- Power converters

Equivalent Schematic and Connection Diagrams



Small Outline, Molded Mini Small Outline, and Dual-In-Line Packages



Top View
Order Number LM386M-1,
LM386MM-1, LM386N-1,
LM386N-3 or LM386N-4
See NS Package Number
M08A, MUA08A or N08E

LM386 Low Voltage Audio Power Amplifier

ADDITIONAL INFORMATION

If you have any questions about the formulas or information found in this document, please feel free to head on over to the forums and ask us some questions!

<http://www.pyroelectro.com/forums/>