

# CORNERSTONE HAM RADIO FLEX CLUB

## SOLDERING PART ONE -- 9VDC POWER SUPPLY

### SECTIONS TO BE SOLDERED / CONSTRUCTED

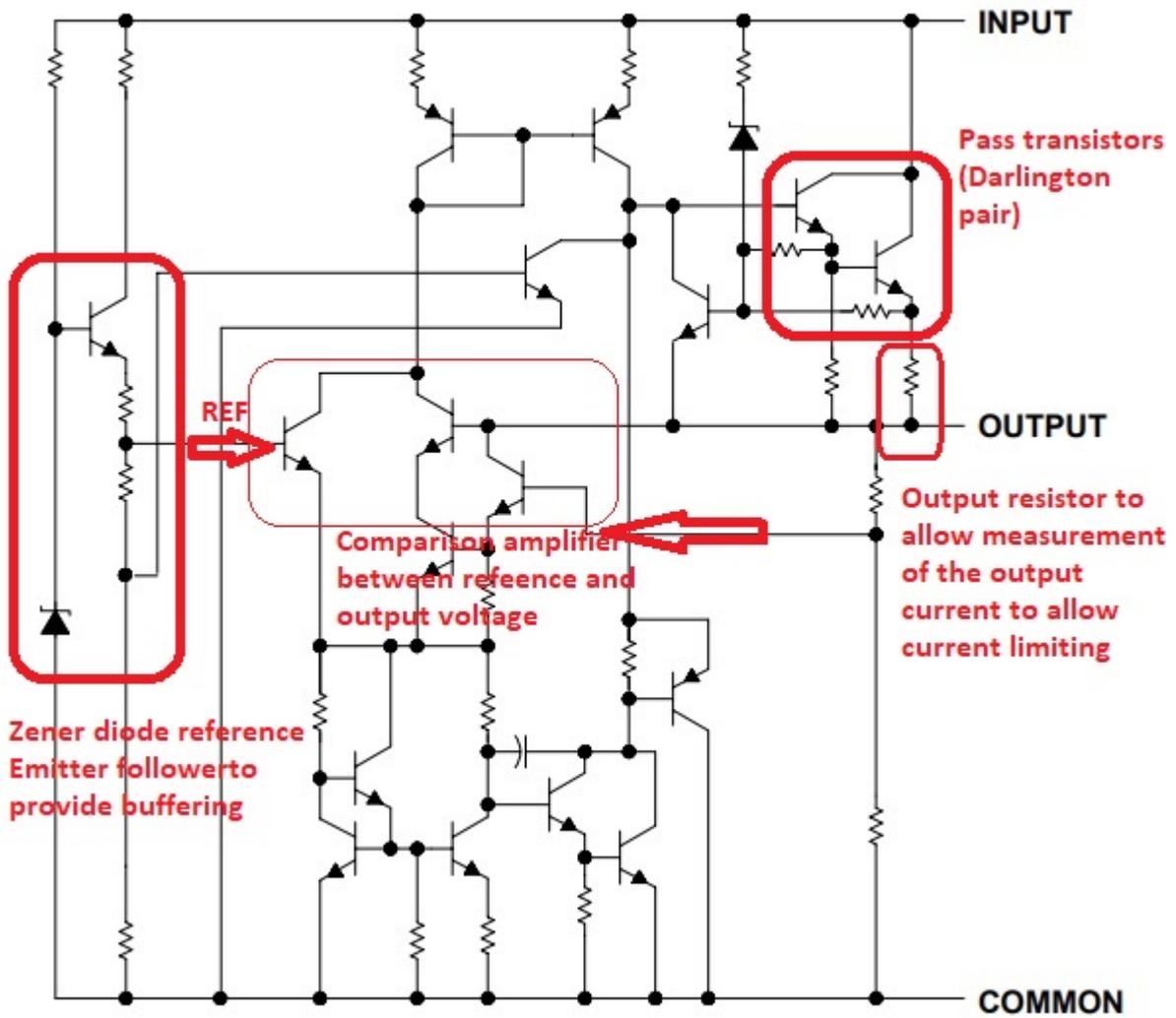
No.	Section
1	<b>9VDC Power Supply</b>
2	5VDC Power Supply
3	Audio Power Amplifier
4	Test Microphone
4	Audio Preamplifier
5	Wind trifilar transformers
6	Balanced (de)modulator
7	Arduino computer controlled variable frequency oscillator / display / controls

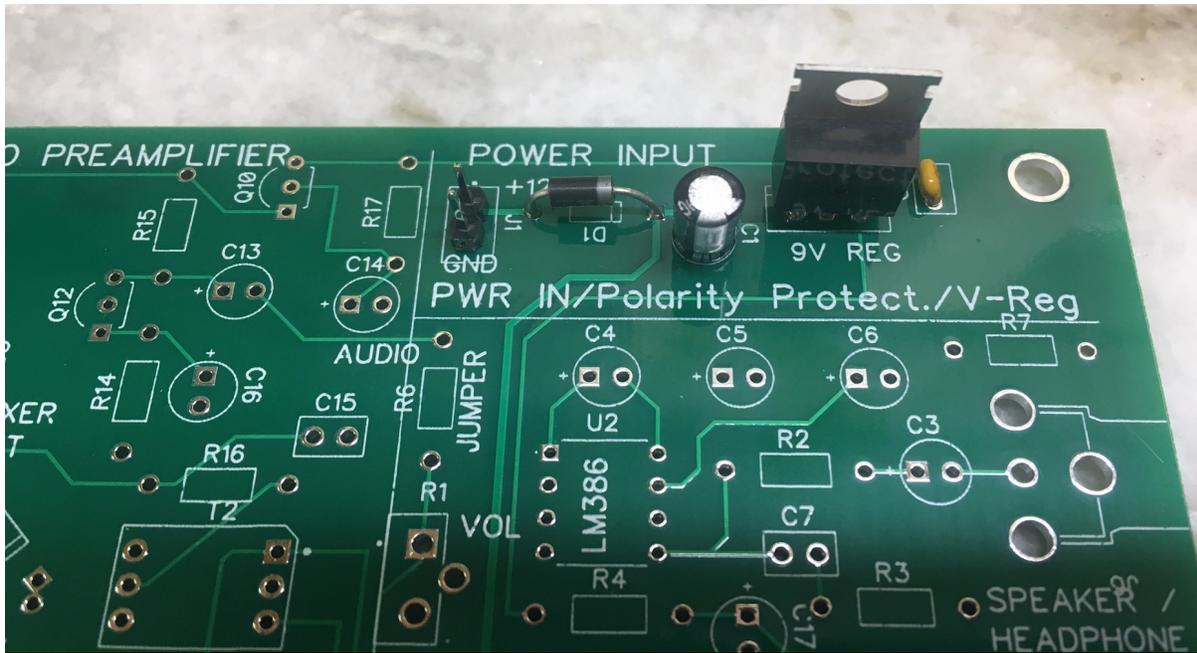
### CIRCUIT:

**9VDC Regulated power supply.** The purpose of this section of the radio circuit is to provide a stable, regulated, 9VDC for the audio preamplifier and amplifier circuits. It uses a regulated 3-terminal regulator known as a LM5809. This device has its own internal protection against an output short circuit or overheating -- a really nice device for home builders! A two-pin connector at the left of this section receives DC input voltage from 12VDC as high as 16 VDC. This connector is not polarized (you can connect to it the wrong way) -- but **Diode D1 is in series**, and will only allow current to flow to the radio when the power is applied with the positive connected the proper way.

You can read more about these 3-terminal linear regulators here:  
<https://www.sparkfun.com/datasheets/Components/LM7805.pdf>

Here is the internal schematic of a 3-terminal regulator:





❑ Soldering D1: Be certain that the CATHODE END (the banded end) is toward C1, not toward the J1 power input connector.

❑ Capacitor C1 is a filtering capacitor designed to help reduce any "ripple" on the DC input voltage and also reduce any audio feedback that might occur back through the power supply. This is an electrolytic capacitor (that's a manufacturing process type) that has a POLARITY -- one side is for positive voltage, the other for the negative and if you put it in backwards...it will generally self-destruct. Capacitors are often marked with their NEGATIVE side, but the circuit board marks the (+) positive lead side. Be certain that your NEGATIVE wire does not go into the (+) lead side!

The 3-terminal regulator is an important component that has an entire integrated circuit inside of it, and can take any input voltage from about 11 volts up to about 20V and produce a well-regulated 9VDC output. We call it a "3 terminal" because it has only 3 terminals:

1. IN
2. GROUND
3. OUT

❑ It has a built-in metal "tab" that can be connected to a HEATSINK if needed -- and this provides orientation information. The printed circuit board image shows which side the "tab" is supposed to be on. Be certain tht you install it with the "tab" toward the OUTSIDE of the board.

❑ The final capacitor in the 9VDC regulator section is a small ceramic radio-frequency-filtering (RF Filter) capacitor from 0.01 microfarads up to 0.1 microfarads. Ceramic capacitors do NOT have a polarity -- they can be inserted either way. *This capacitor will tend to short out any "RF" that tries to get onto our 9VDC regulated power voltage.*