

EMG MADE EASY: Parts List

ICs:

- ① INA106 Differential OpAmp (IC1)
- ① TL084 Quad OpAmp (IC2)

Resistors

- ③ 1k Ω (R5, R6, R8)
- ① 10k Ω (R4)
- ① 12k Ω (R10)
- ① 68k Ω (R9)
- ① 100k Ω (R7)
- ② 1M Ω (R1, R2)

Capacitors

- ④ 1 μ F (C1, C2, C3) (C4 alt)
- ① 0.47 μ F (C4 Alt)
- ① 0.1 μ F (C4 Alt)

Diodes

- ② 1N4148 (D1, D2)

- ② 9V Batteries
- ③ EMG Leads, or alligator jumpers
- ③ EMG Electrodes

Notes: = INA106 is easily damaged by static.

- Never connect power to Op-Amp inputs unless op-amp is powered first.
- Since the EMG will be connected to the body, never use wall current. Only power devices with batteries.
- TL084 can be substituted for a 9V rail-to-rail quad op-amp with good results. It is used here for low cost.
- C4 can be switched out for any desired value of capacitor, higher values will act like a sustain pedal or long buffer for EMG input.
- Use an oscilloscope with horizontal range of 50ms to view muscle contraction, set to 300mV range to see pre-amplified signal.
- 60 Hz noise can be eliminated by using a battery-powered oscilloscope if your scope picks up wall-current noise, and by rearranging EMG leads carefully (experiment with best position).