Component	Value/Part	Functional Logic
U1 (NE555P)	NE555 Timer IC	Serves as the high-frequency carrier wave generator. It is configured as an astable multivibrator to produce a stable triangle/sawtooth-like wave for PWM modulation.
U2 (LM741)	Operational Amp	Acts as a voltage comparator. It compares the 1kHz audio input signal against the NE555 carrier wave to generate the Pulse Width Modulated (PWM) output.
L1	22µH Inductor	The primary component of the output low-pass filter. It blocks high-frequency switching noise while allowing the low-frequency audio signal to pass to the speaker.
C3	1µF Capacitor	Works in conjunction with L1 to form a second-order LC filter. This pair is tuned to a cutoff frequency of ≈34kHz to recover the original audio sine wave.
R1 & R2	1kΩ & 3.3kΩ	These resistors set the duty cycle and frequency of the NE555 timer. They ensure the carrier frequency remains at ≈180kHz, well above the audible range.
C1	1nF	The timing capacitor for the NE555. Its value, combined with R1 and R2, determines the charging and discharging rates that establish the switching frequency.
J1	2-Pin Header	The Power Input connector. It provides the 12V rail required to drive both the timing circuitry and the output stage.
J2	2-Pin Header	The Audio Input connector. This is where the low-level 1kHz sine wave is introduced into the comparator stage.
J3	2-Pin Header	The Speaker Output connector. It delivers the filtered, amplified audio signal to the load.