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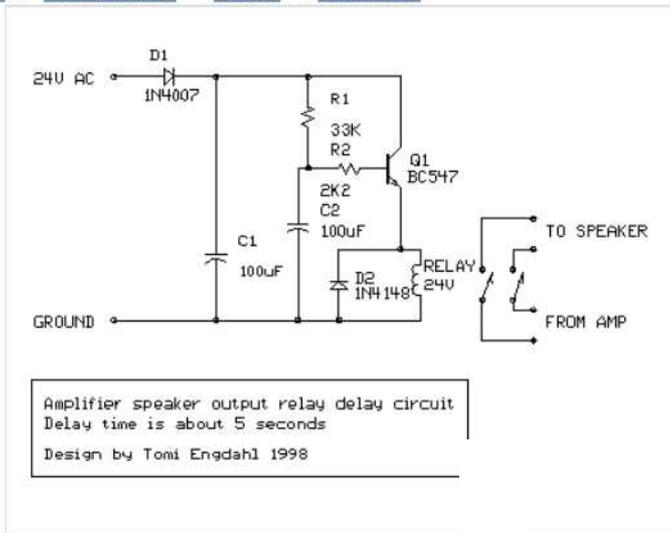
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Monday, October 17, 2011

Audio Amplifier Circuit Output Relay Delay Audio

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Amplifier Circuit Output Relay Delay

This is a simple circuit which I built to one of my audio amplifier projects to control the speaker output relay. The purpose of this circuit is to control the relay which turns on the speaker output relay in the audio amplifier. The idea of the circuit is to wait around 5 seconds after the power up until the speakers are switched to the amplifier output to avoid annoying "thump" sound from the speakers. Another feature of this circuit is that it disconnects the speaker immediately when the power in the amplifier is cut off, so avoiding sometimes nasty sounds when you turn the equipment off.

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Output Relay Delay Audio Amplifier Circuit_Component list

- C1 100 uF 40V electrolytic
- C2 100 uF 40V electrolytic
- D1 1N4007
- D2 1N4148
- Q1 BC547
- R1 33 kohm 0.25W
- R2 2.2 kohm 0.25W
- RELAY 24V DC relay, coil resistance >300 ohm

Circuit operation

Then power is applied to the power input of the circuit, the positive phase of AC voltage charges C1. Then C2 starts to charge slowly through R1. When the voltage in C2 rises, the emitter output voltage of Q1 rises together with voltage on C2. When the output voltage of Q1 is high enough (typically around 16..20V) the relay goes to on state and the relay switches connect the speakers to the amplifier output. It takes typically around 5 seconds after power up until the relay starts to conduct (at absolute time depends on the size of C2, relay voltage and circuit input voltage).

When the power is switched off, C1 will lose its energy quite quickly. Also C2 will be discharged quite quickly through R2. In less than 0.5 seconds the speakers are disconnected from the amplifier output.

Notes on the circuit

This circuit is not the most accurate and elegant design, but it has worked nicely in my small homebuilt PA amplifier. This circuit can be also used in many other applications where a turn on delay of few seconds is needed. The delay time can be increased by using bigger C2 and decreased by using a smaller C2 value. Note that the delay is not very accurate because of the simplicity of this circuit and the large tolerance of typical electrolytic capacitors (can be -20%..+50% in some capacitors).

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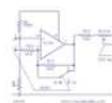
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