

## Simple Speaker Protection Circuit for Power Amplifiers with Balanced Outputs

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### Introduction

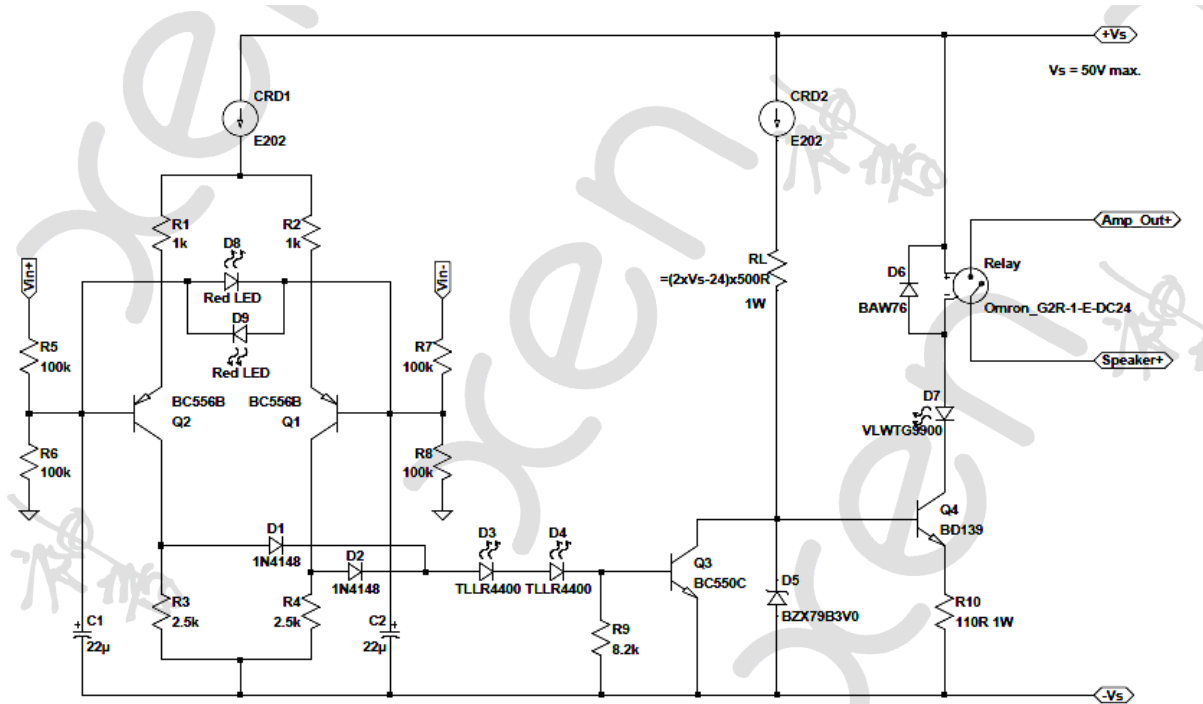
If one search on the internet, one would find tons of speaker protection circuits for single-ended power amplifiers. There are also simple-to-use ICs designed for the purpose, like uPC1237 or TA7317, but they are obsolete for a while and becomes difficult to get. None of these, however, are designed for power amplifiers with balanced output.

The circuit shown here is one that we have built and used for many years in first prototypes. It does not have the sophistication of the F5X PCB, such as faulty-status latching, built-in slow start, controlled shut-down of amplifier and power supply, etc. But it will disconnect your speaker in the presence of a DC of 2V and above for more than 1 second. It is also quite versatile in the range of supply voltage (up to +/-50V) it can cope with, which can come from the power amplifier itself (instead of the need for an auxiliary PSU). And it is simple enough to build using P2P wiring, as we did many times over. One thing to bear in mind though – if the DC drops below 1V for 1 second or more, the relay will reconnect the speaker. But then it only does so in the pre-defined “save” state.

The basic circuit is so simple that you can now add your own additional features. For example, if you add a big electrolytic capacitor (say 1000 $\mu$ F 6.3V across D6, you will have a time delay between Power-On and Speaker-On. A SPST switch or push button will allow you to manually off the speaker at any time you want.

You are free to use this circuit for your own use, and we encourage you to build P2P. But we do not particular like our circuits being offered to the public on PCB layouts that we are not necessarily happy with, so we shall consider offering a SMD version if there is sufficient interest.

As the circuit is so simple, we shall leave it as an exercise for you to figure out how it functions. And of course you can also use it for single-ended power amplifiers.



**XEN Audio Simple Speaker Protection for Balanced Power Amplifiers**  
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