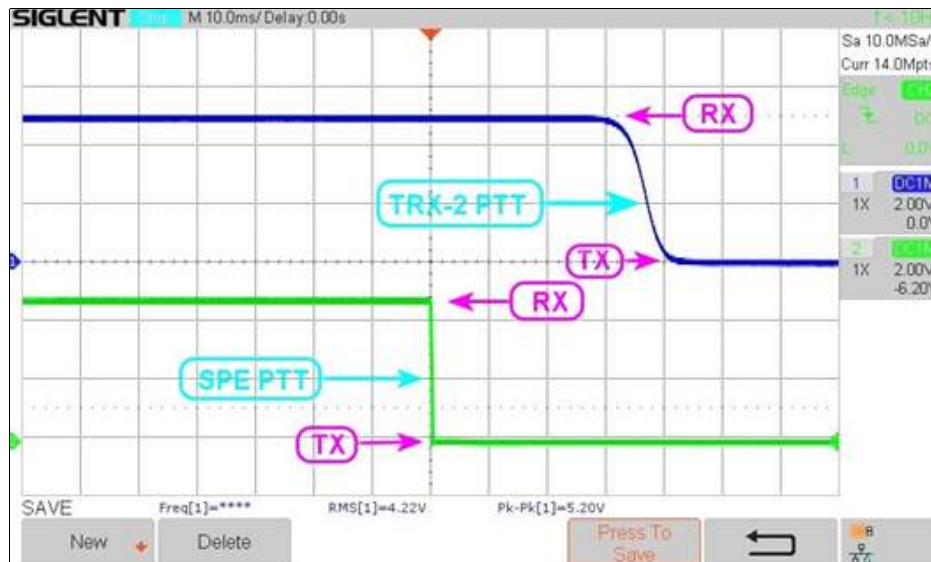
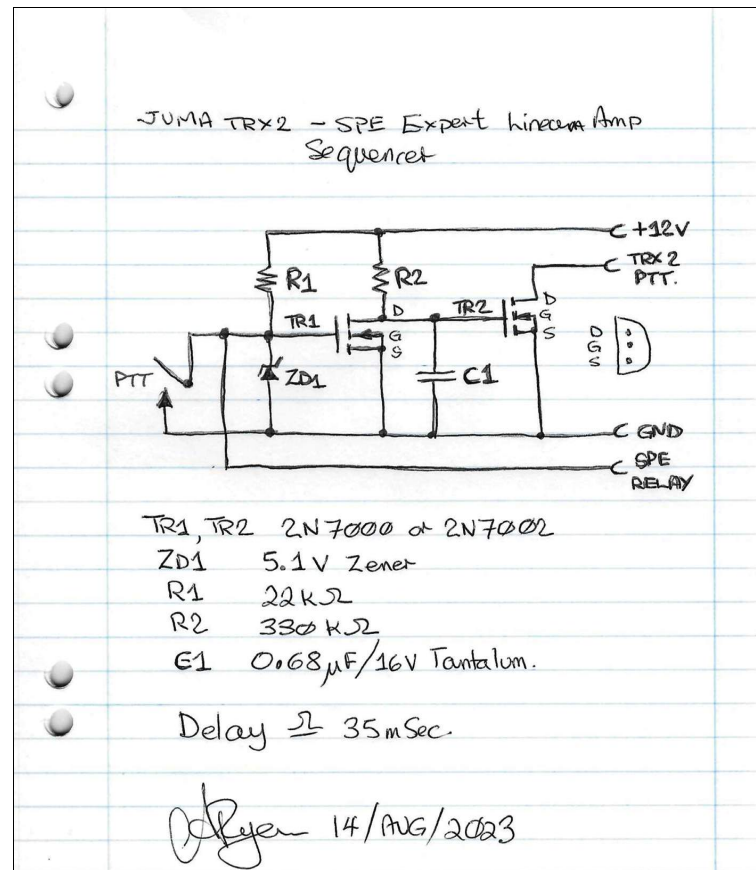


JUMA TRX2 – SPE ‘Expert’ 1K FA LINEAR AMPLIFIER SEQUENCER



Circuit Description

I have tried to make this sequencer as simple as possible. To that end I decided to use a couple of ‘N’ Channel enhancement mode FETs as the switching devices, partly because they are readily available, and partly because it makes the timing circuit so simple. You will need to use either a 2N7000 or 2N7002, in a TO-92 package unless you intend to make yourself a surface mount printed circuit board, in which case you can then use the SOT-23 package devices.

In the RX state, the PTT switch is open, TR1 is on, with its gate pulled up by R1 to +5V. TR2 is off, and C1 is discharged.

When the PTT switch is closed, the linear amplifier immediately switches to the TX state, the gate of TR1 is grounded and it turns off, and C1 commences to charge up via R2. When the voltage across C1 reached the gate threshold voltage of TR2 it turns on, grounding the TRX2 PTT line.

When the PTT switch is opened, TR1 immediately turns on, discharging C1, and switching TR2 off, releasing the PTT line of the TRX2.

With the values shown the switching delay is about 35mSec, which is more than long enough for the SPE relays to have settled. The screen-shot was from my oscilloscope. I plugged up this sequencer on my logic breadboard to make sure everything worked properly.

The best way of making this would be to assemble the components on a perfboard, and mount it in a small plastic box. With a standard stereo tip-ring-sleeve socket as the input the TRX2 microphone can be plugged straight in and the microphone signal along with the TRX2 delayed PTT signal can be wired to a standard patch lead terminated in a 3.5mm stereo tip-ring-sleeve plug. The tip is the microphone signal, the ring is the PTT signal, and the sleeve the common ground.

The input PTT signal from the ring connection of the socket should be routed via a screened cable terminated in a RCA phono plug along with the ground connection and plugged into either of the RELAY sockets on the rear panel of the SPE linear amplifier.

The unit can be powered from any supply from 5V to 12V. The current consumption is only a few hundred microamps.

R1 and ZD1 are not absolutely necessary, as the pull-up voltage from the RELAY socket of the SPE Linear is +5V, and the pull-down current is 1mA. However, be aware that if these components are omitted, then the gate of TR1 should be grounded via a 100k Ω resistor. Equally if these components are omitted, and the linear amplifier is switched off, the TRX2 will immediately switch into the transmit state if the module is powered. Therefore, I would retain them.

ZD1 is really only there to limit the positive voltage applied to the RELAY socket to 5V when the PTT switch is opened, even though the SPE documentation allows +12V. The internal logic of the amplifier is a pull-up to +5V via a 4.7K Ω resistor. There may well be an isolation diode there as well.

Finally, note that TR1/TR2 are insulated gate FETs, when handling them take suitable anti-static precautions.

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