

Ten-minute timer

Curiously, this one was sent in by Roger Harrison many years ago and has only just surfaced!

The circuit is a hybrid Schmitt trigger, using a FET and a bipolar transistor. Initially, Q1 will be on and Q2 will be off. The output will be high (+12V). The timer is initiated by pressing S1. C1 will rapidly charge to -12V and Q1 will be cut off. Q2 will then turn on.

When S1 is released, C1 discharges through R1 until the voltage across C1 equals V_p of Q1. The circuit will now change state and Q2 will turn off rapidly, providing a suitable output step which can be used to operate a relay driver or any external circuit.

A delay of approximately 10 to 12 minutes can be obtained with the values shown if the V_p of Q1 is around 1.5 volts. Longer delays can be obtained by using a FET with a lower V_p and increasing the value of C1.

