

# ZX81 Video Conditioning

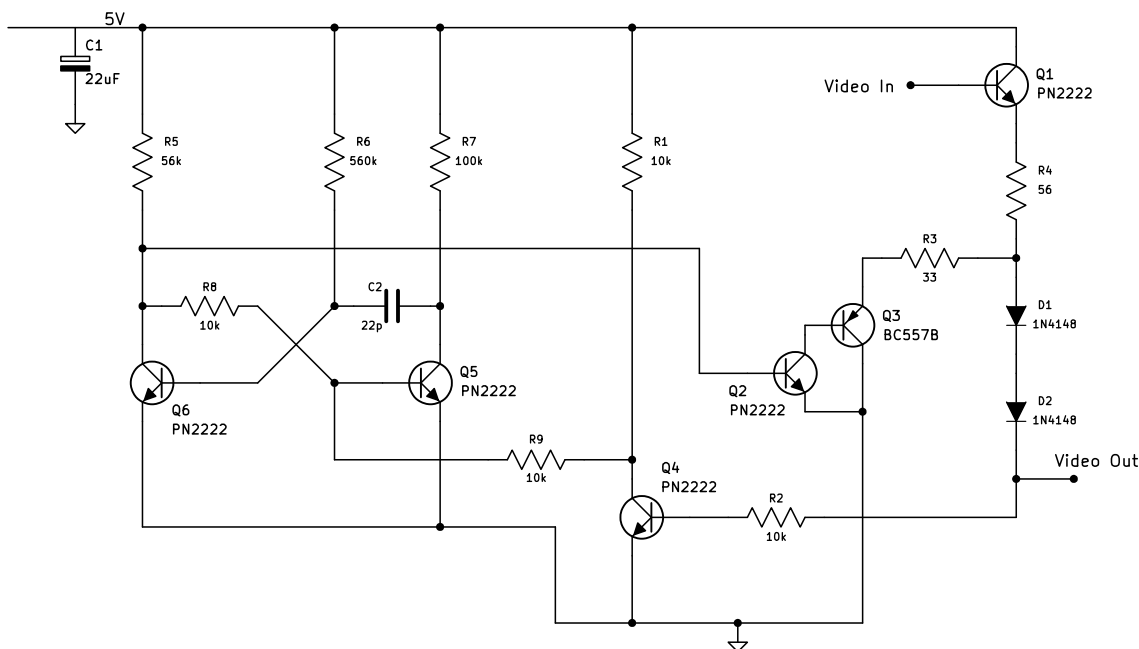
## 1. Introduction

Presented below are two electronic circuits that can be used to improve the video output of the ZX81 ULA, in particular those that do not generate a period of black level voltage (the *back porch*) following each line synchronisation pulse.

This document complements a video presentation, in which the operation of each circuit is described. A link to this video can be found at <http://zx.zigg.net>.

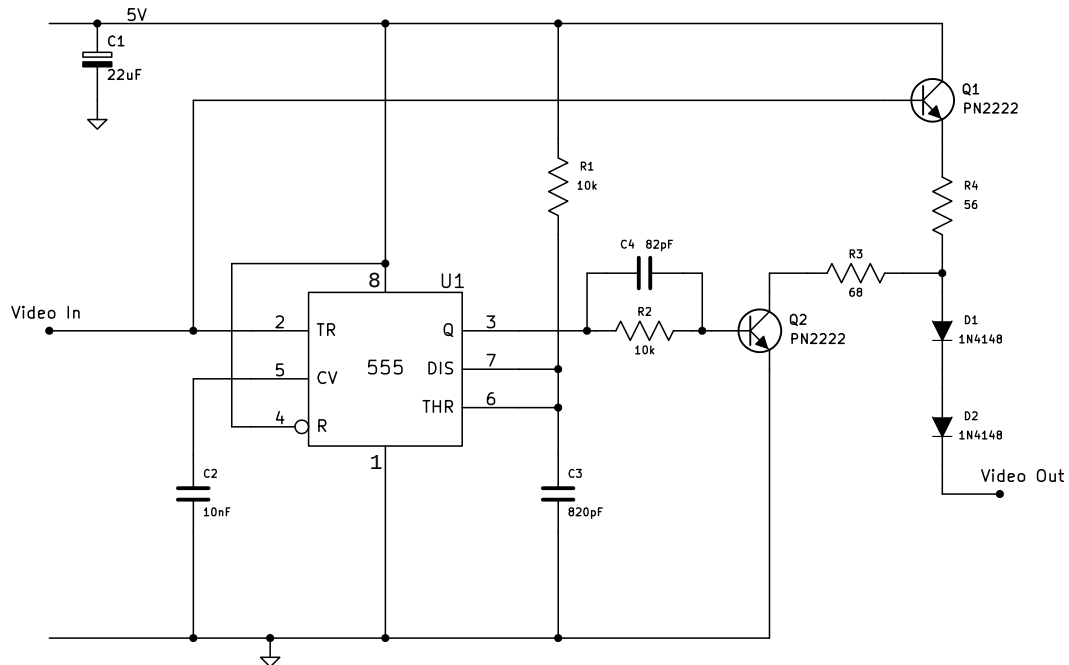
## 2. All Discrete Transistor Circuit

### 2.1. Circuit Diagram



## 3. 555-Based Circuit

### 3.1. Circuit Diagram



### 3.2. Parts List

#### Resistors

R1, R2	10 k $\Omega$
R3	68 $\Omega$
R4	56 $\Omega$

All 0.25 W, 1 % metal film.

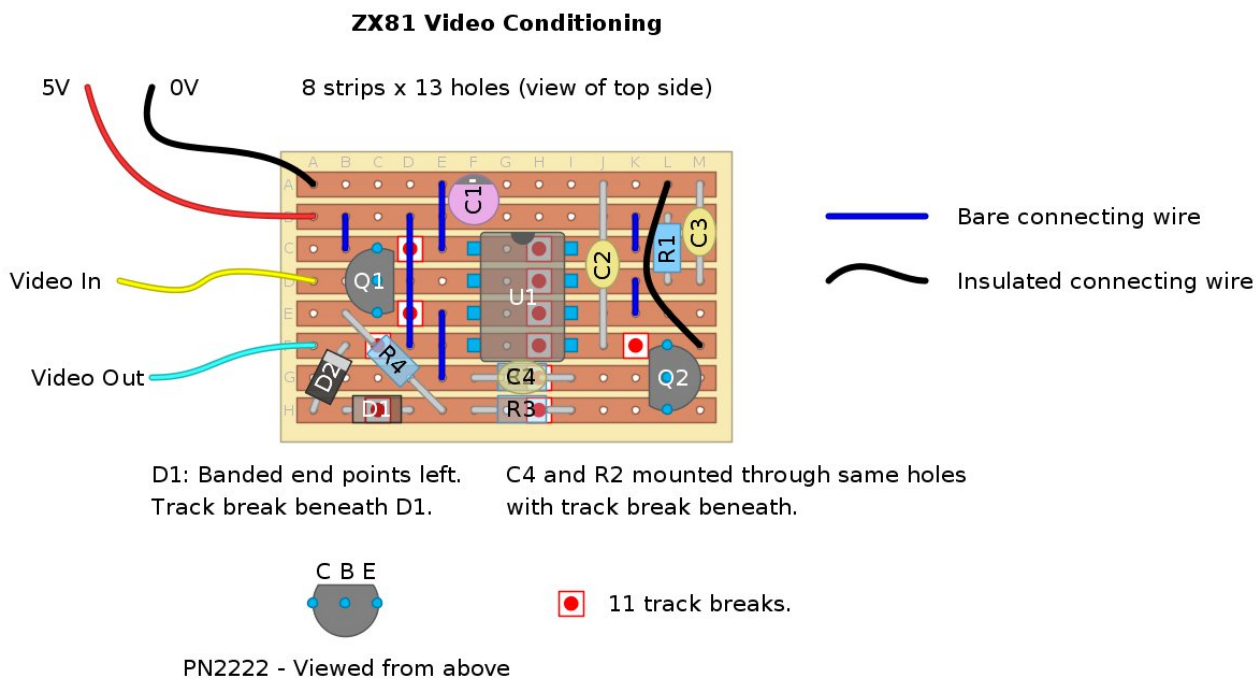
#### Capacitors

C1	22 $\mu$ F radial electrolytic, 16 V (or higher rating).
C2	10 nF ceramic disc.
C3	820 pF ceramic disc.
C4	82 pF ceramic disc.

#### Semiconductors

D1, D2	1N4148
Q1, Q2	PN2222
U1	555 timer. (Only TI part SE555P has been tested in this circuit. Other types should work.)

### 3.3. Stripboard Layout



**CAUTION:** The pin-out of most PN2222 transistors is as shown above. However, some have the positions of their collector and emitter swapped.

---

The stripboard layout graphic was created using DIY Layout Creator (DIYLC).

---

This document © Copyright 2015 Ziggurat Communications Ltd. This document may be freely copied, distributed and modified provided this copyright notice is not removed. Modified versions must clearly indicate they have been modified. Portions of this document may be used in other works provided the portions are clearly attributed to Ziggurat Communications Ltd or/and <http://zx.zigg.net>. This notice does not apply to any elements of this document not created by Ziggurat Communications Ltd.