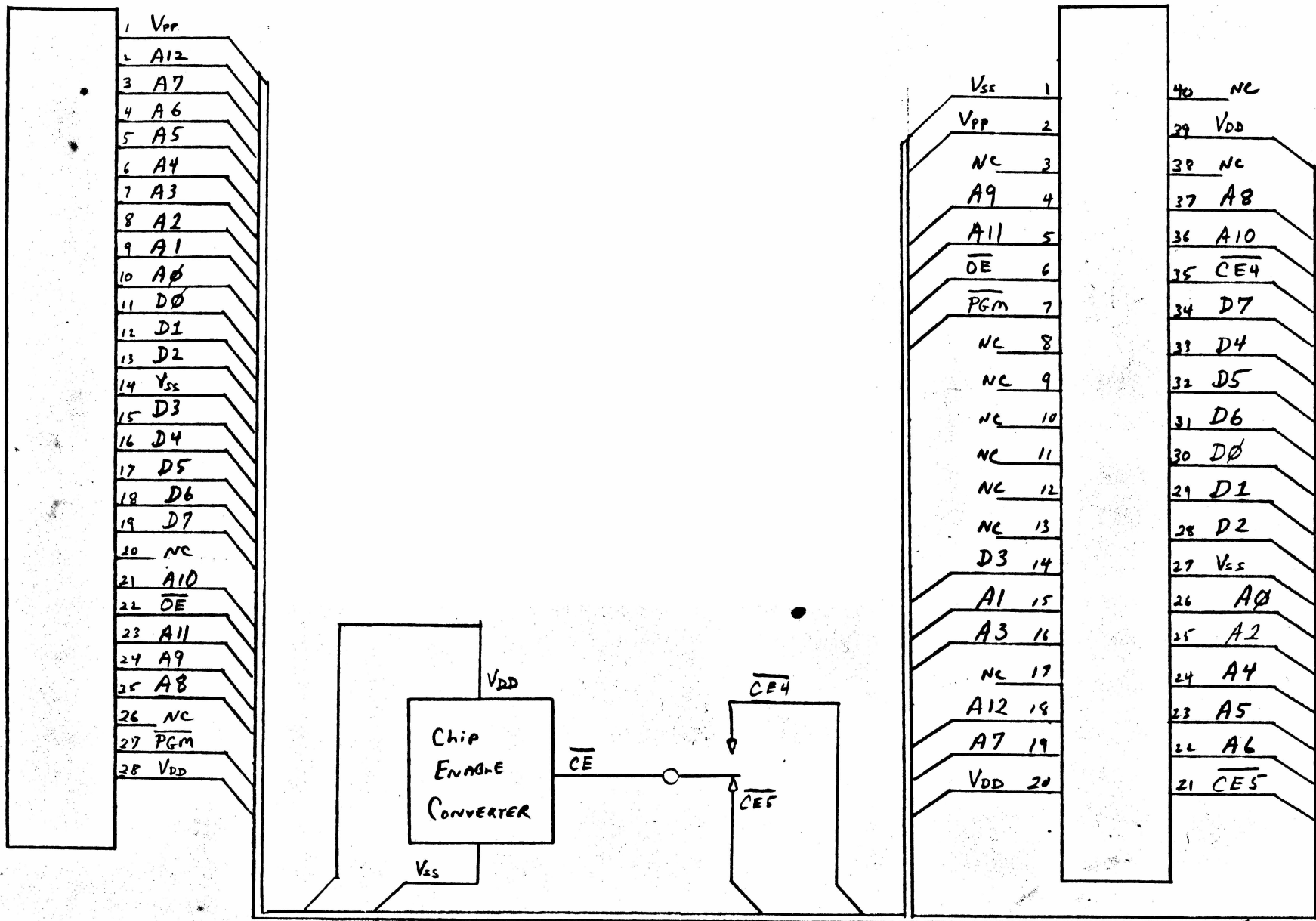


CC-40 Cartridge Adaptor

PROGRAMMER PLUG

CARTRIDGE SOCKET



TEXAS INSTRUMENTS

R. R. Ahlfinger

May 11, 1984

Rev 1.0

CHIP ENABLE CONVERTER

Theory of Operation

Circuit Purpose: To keep \overline{CE} in the inactive state until at least 200ns after V_{DD} is established.

Assumptions : If V_{DD} is less than 3.0 volts a power source in the RAM CC40 Cartridge will provide the memory retention power and will keep \overline{CE} within 0.2 volts of the retention voltage

Description : When V_{DD} is below approximately 4.0 volts $D1$ is not conducting current, therefore $Q1$ and $Q2$ are both non conducting and \overline{CE} tracks V_{DD} through $R3$.

When V_{DD} is between 4.0 volts and 4.5 volts $D1$ is conducting, but the voltage across $R1$ is not high enough to cause $Q1$ to conduct, therefore $Q1$ and $Q2$ are both non conducting and \overline{CE} still tracks V_{DD} .

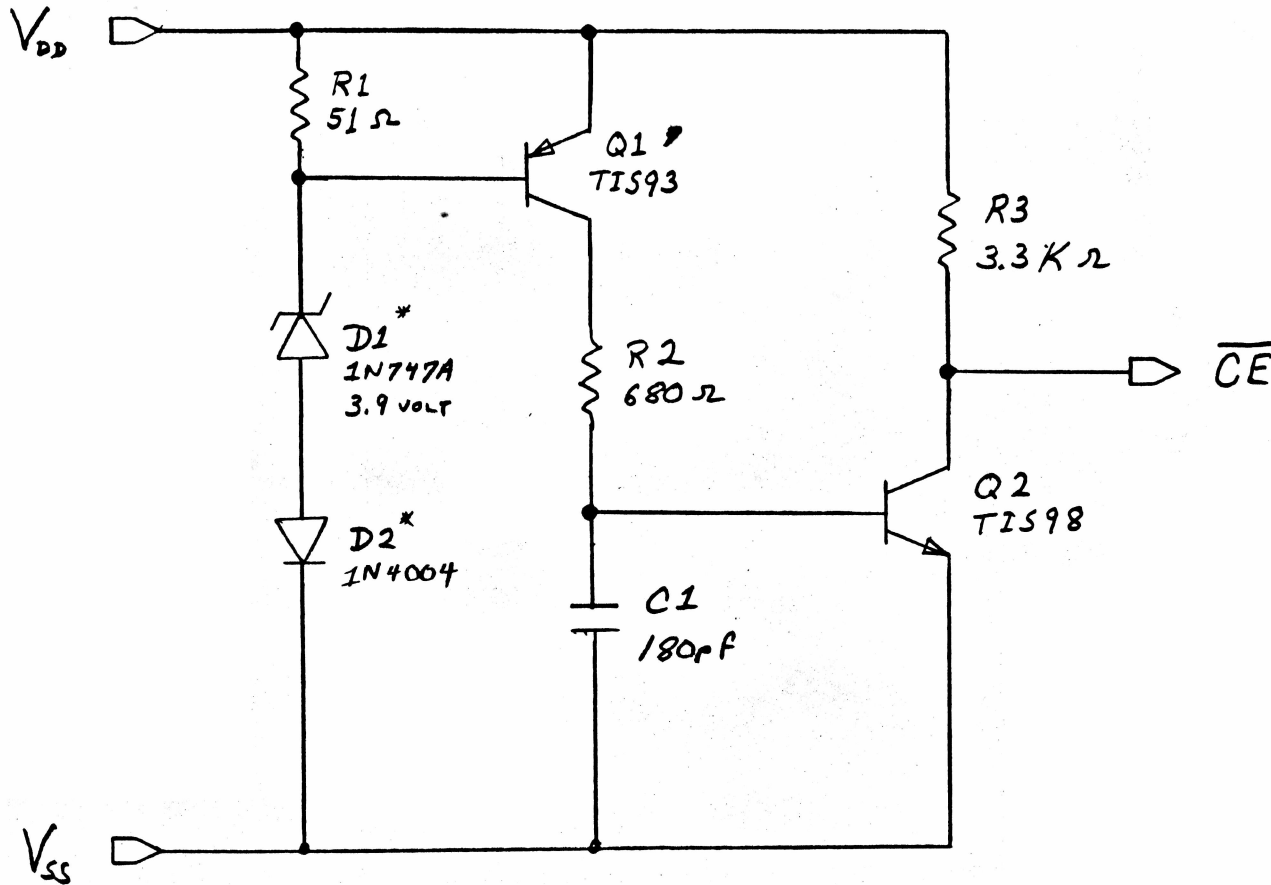
When V_{DD} is above 4.5 volts the voltage across $R1$ is sufficient to saturate $Q1$. As $Q1$ conducts the voltage at the base of $Q2$ increases according to the time constant of $R2$ and $C1$. As $Q2$ turns on \overline{CE} is pulled to ground through $Q2$.

- Requirements**
1. \overline{CE} must be 2.2 volts or higher while inactive
 2. The time between $V_{DD} > 4.5V$ and $\overline{CE} < 2.2V$ (going active) must be greater than 200ns
 3. The time between $\overline{CE} > 2.2V$ (going inactive) and $V_{DD} < 4.5V$ must be a minimum of 0ns

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Controls \overline{CE} to CC-40 RAM Cartridge so memory is maintained in Cartridge.



* Note: D1 and D2 can be replaced by a 1N749A (4.3 volt) oriented as D1.

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