ELECTRICAL ENGINEERING

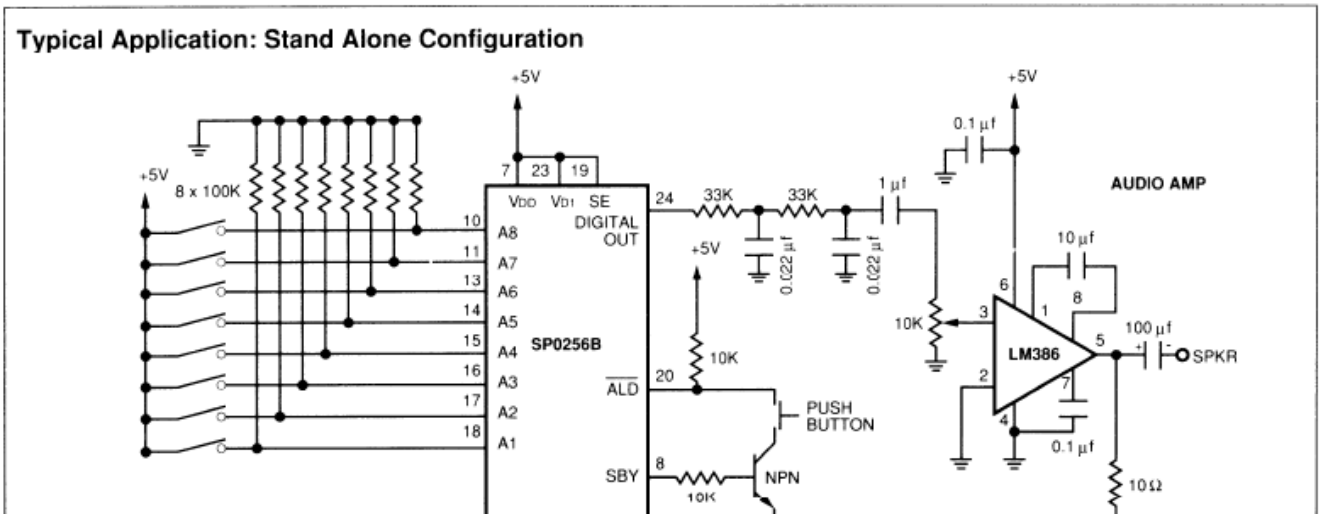
Output voltage on pin 14 (A5) address input pin of SP0256

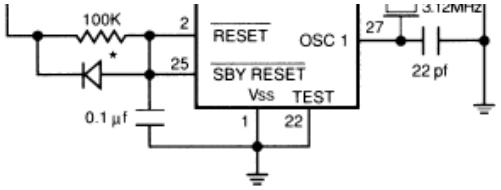
Asked 4 years, 8 months ago Active 4 years, 8 months ago Viewed 481 times

0

I'm playing with an SP0256 speech synthesizer. Ive bread boarded and am checking all my connections (as it doesn't work) and have found a very strange thing. Pin 14 of the IC being driven to ground. Pin 14 is defined as address bit A5 of input addressing. All the other address pins are of high impedance but A5 is most definitely low. I have checked, checked and re-checked my circuit. I'm posting here in the hopes that someone else may have played with an SP0256 and might have seen something similar.

Later ... it was pointed out that I hadn't previously provided enough information and I appreciate those who showed me my error. From the SP0256 datasheet, this is the diagram I am following:

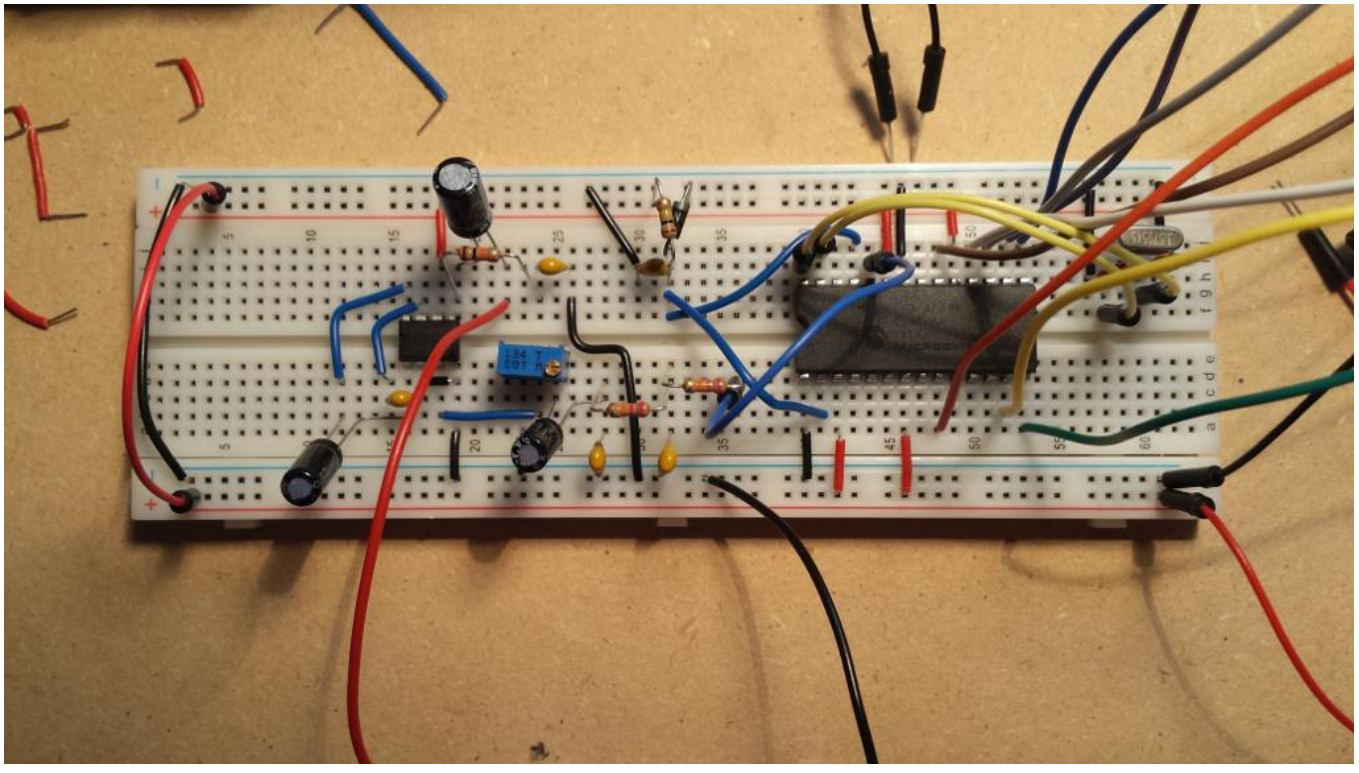




* Diode possibly necessary if power is turned off then on in less than 50 ms.

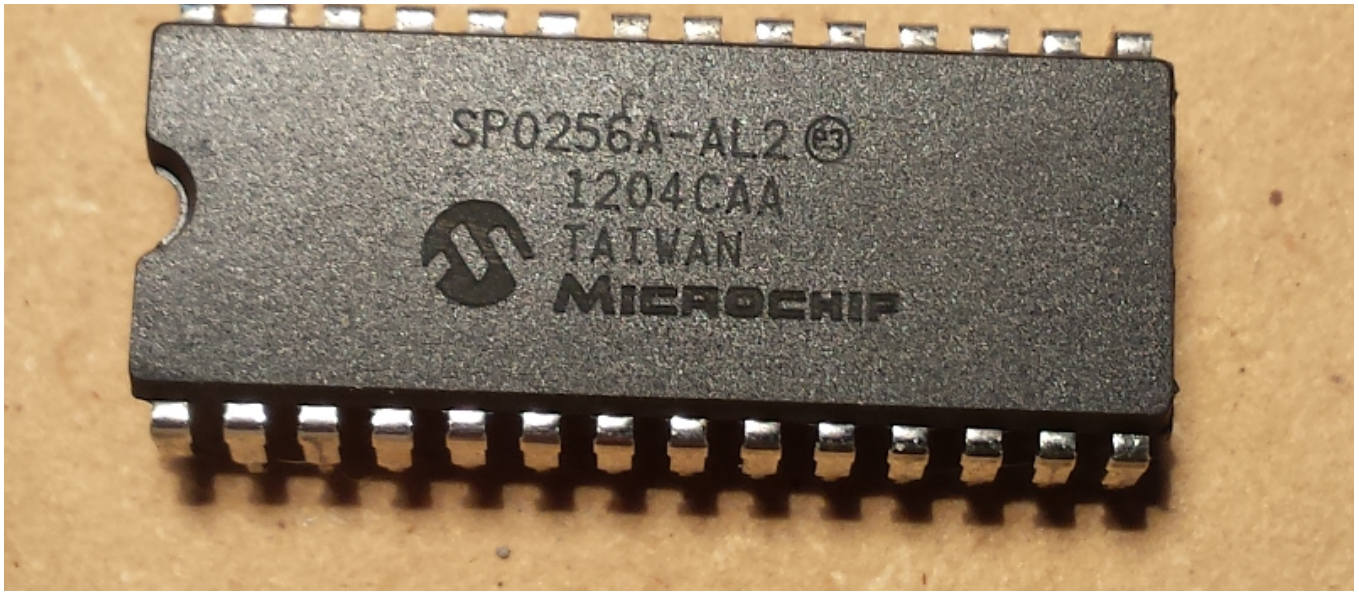
Notice A5 (Pin 14). Notice that it is an address input line.

Here is a picture of my breadboard.



Pin 14 is the bottom right of the 28 pin IC on the right. It is connected via the "green" wire to a GPIO on my Raspberry PI. The thing is ... when I pull the wire from the breadboard, the signal on Pin 14 is low (ground) while all the other address pins A1-A4 and A6 are high impedance. Something smells awfully fishy as an input line (with zero other connections) should never have an output signal. (I think).

Later ... in the discussion, it was suggested that my IC might be counterfeit. Here is a detailed picture of the IC received:



wiring

edited May 26 '15 at 12:56

asked May 24 '15 at 18:56

Kolban
299 2 10

Schematic is required. – Leon Heller May 24 '15 at 19:05

Check if you can measure a diode drop from A5 to GND using your multimeter while the IC is disconnected. Do this for A4 as a reference as well. Your IC might be damaged. – FRob May 25 '15 at 2:22

1 Answer

3

Your 'SP0256' may be a fake.

Is that a laser-etched 'Microchip' logo I can see on it? The SP0256 was manufactured by General Instrument (who later became Microchip) back in the 1980's. Nobody was using laser marking back then, so I suspect you have an old chip which has been relabeled. If so then there is no guarantee that it is actually an SP0256, and not something completely different!

Other telltale signs that it may not be what the label says are the shiny pins (plated to make them look like new?) and the orientation notch going all the way through (most GI/Microchip DIP packages only had the notch indented into the surface). This is what a *real* SP0256 should look like:-

28 pin DIP packaging was commonly used for static RAM and ROM chips which had Vss on pin 14 and Vdd on pin 28. You may be able to verify the power and signal pin allocations using a multimeter on 'diode test'. With the positive probe to the supposed 'Vss' pin you should be able to read the protection diode on each signal pin, and you should get a lower reading for the substrate diode from Vss to Vdd. I bet you will find that pin 14 is actually Vss, not an address line!

answered May 25 '15 at 7:58

Bruce Abbott
35.3k 1 31 53

Howdy Bruce, the part that I thought I was ordering can be seen here ebay.com/itm/1pcs-SP0256A-AL2-SP0256A-SP0256AAL2-DIP-28-/… The part that I have on my workbench looks very different but had you not posted those items, I would have missed it. The notch on the left is all the way through (from one side to the other). The markings on the surface are indeed etched into the material as opposed to being printed on. On the underside are two black circles with "Malaysia 66" and "RA". Front has 1204CAA under SP0256A-AL (P3) – Kolban May 26 '15 at 0:53

Many 'new' vintage chips on eBay are fake. Sometimes the part numbers are legit, sometimes they are 'up-rated', and sometimes just plain wrong. I got some '20MHz CMOS' Z80 CPU's that are actually 4MHz NMOS parts, an 'HD63C09EP' which is not the 'E' version, and a bunch of 'MCM2114P20 1kx4 static RAM's that are actually BU2114F 8 bit shift register/latch drivers! Here's an SP0256 on eBay that looks legit:- ebay.com/itm/SP0256A-AL2-Speech-Synthesizer-General-Instrument-/… – Bruce Abbott May 26 '15 at 8:54

Ive written to the supplier to see if we can track down the story. It is possible (to me) that the supplier will also be interested to know whether or not these chips are counterfeit (always the optimist). The ebay listing says that 70+ were sold so I am hoping to try and find some other users who bought from this vendor and see if their chips differ from mine or, if not, did they achieve success. – Kolban May 26 '15 at 12:55

The supplier wrote back and offered me a full refund (approx $6). I felt that was great of them. They also stated that they were going to talk to their own supplier. I don't know if the ebay seller is an individual or a company. I can eat the $6 without a problem but I kinda want to get to the bottom of this. If there are chips floating around that aren't SP0256s I want those quashed as folks (like me) will waste time and be disappointed if they simply won't do the job. If we can demonstrate the start date for etching and full notching and those being incompatible with the SP0256 ... – Kolban May 26 '15 at 18:50