Subject: Tiny040
Posted by plasmo on Sun, 31 Mar 2024 03:05:49 GMT
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Tiny040 is an exploratory 3.3V 68040 SBC on 100x100mm pc board. Two events motivated its development; first is the discovery of a batch of 3.3V MC68040RC33V which I previously had thought were SMT parts but are in fact PGA parts; and second is the success of IP940 68040 hosted by IP940base which provides the software base for Tiny040.

Tiny040 will first serve as a test bed to make sure the batch of MC68040RC33V are working parts. The board is sufficiently working right now that I believe at least one chip from that batch of 68040 is good. The second goal of Tiny040 is a software development platform for monitor, diagnostics, utilities and small operating system like EmuTOS and CP/M68K. It is a pathfinder to a full-feature 68040 SBC with 64 meg of memory and video/keyboard capabilities.

One notable feature of Tiny040 is the obvious lack of flash memories. The EPM570 CPLD is located at the solder side of pc board under 68040. It has 1KB of embedded flash on board that's sufficient to bootstrap 68040 and load system files from compact flash. However, the embedded flash is rather tricky to use, so currently I have a 64-byte ROM look-up table using CPLD's logic fabric. This small ROM can load and run program from serial port. This is sufficient to develop application software for Tiny040. Because there are no flash memory, Tiny04 is realized in a 100x100mm 4-layer pc board.

Homepage for Tiny040 is here:https://www.retrobrewcomputers.org/doku.php?id=builderpages:plasmo:68040:tiny040
Bill

File Attachments

1) Tiny040_annotated.jpg, downloaded 447 times

Subject: Re: Tiny040
Posted by marcopolo on Sat, 06 Apr 2024 20:23:37 GMT
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Great job!

Subject: Re: Tiny040
Posted by marcopolo on Sun, 12 May 2024 15:50:41 GMT
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Hi Bill,

Have you chosen an 3V3 040 in anticipation of upgrading to a 060? :)

Subject: Re: Tiny040
Posted by plasmo on Sun, 12 May 2024 16:02:54 GMT
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It actually dawned on me just few days ago that 68040 PGA pin assignments are very similar to 68060 PGA. There was an adapter that plug 68060 into 68040 and most of the translation were in 5V to 3.3v. But when I looked closer, I realized 68040 is 18x18 179-pin PGA whereas 68060 is 18x18 223-pin PGA. Had I designed Tiny040 for 68060, it probably can accommodate 3V 68040. I may revise Tiny040 like that because there may be a good supply of 68060 that's fairly inexpensive; that 68060-based Euro card (100x160mm) SBC maybe realistic.
Bill

Subject: Re: Tiny040
Posted by mikemac on Sun, 12 May 2024 17:02:07 GMT
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I picked up a couple of the QFP 68060s a few years ago to have a go at a board. I liked that they were 3.3V so they'd work with more modern peripherals. But it seems like all of the designs on the net were aimed at turning it into a 68000 for Amigas.

Oh well, someday!