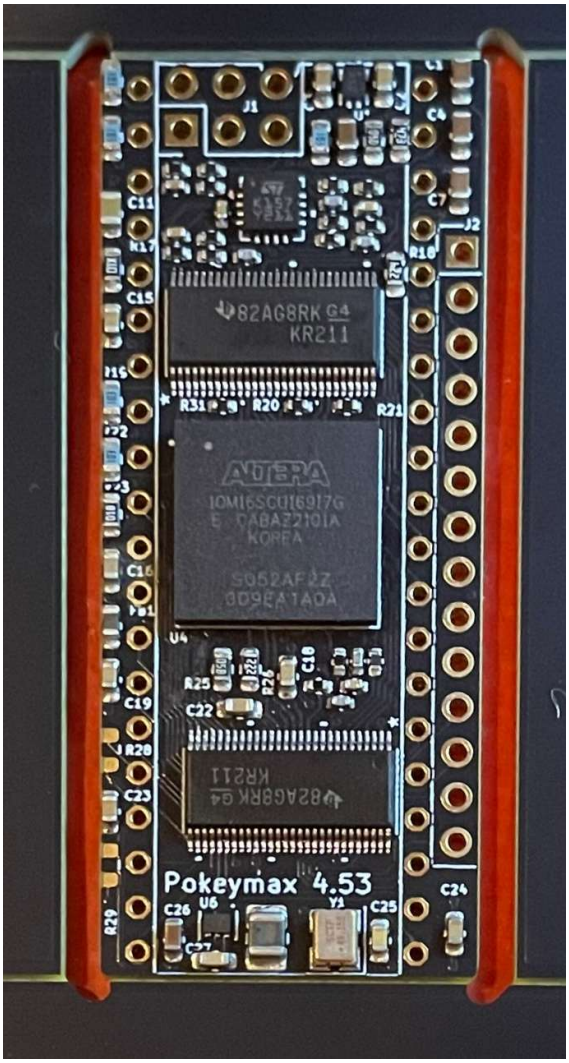
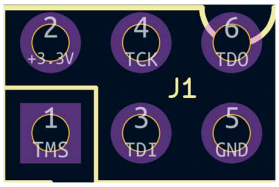
Pokeymax v4.5 installation guide (2026-05-10)

Overview



Pin 1 – top left, next J1.

The 6 pin connector (J1) in the top left is the JTAG, used for flashing



The 14 pin connector (J2) on the right is for wiring up audio out, audio in and address lines. From the top:

1 GND
2 OUT: Left audio
3 OUT: Right audio
4 IN: SIO audio input
5 IN: Full (logic 1/disconnected), Mono(logic 0)
6 IN: A4
7 IN: A5
8 IN: A6
9 IN: A7
10 OUT: PS2 CLK
11 IN: PS2 DATA
12 IN: GTIA AUDIO
13 Spare
14 OUT: SPDIF (3.3v DC, do not draw over 4mA)

Pin 2 and 3 are op-amp outputs, with range 0-5V.

Pin 4-14 on J2 are all 5V tolerant.

Core connection

Basic use

When simply put into a pokey socket with no connections it behaves as a mono pokey. Just make sure to get pin 1 in the correct position.

Full featured use

For the full memory map you should connect the address lines as follows (or to another location on the same net).

Pin 6/A4 - connect to pin 13 of 6502C CPU - C014806
Pin 7/A5- connect to pin 14 of 6502C CPU - C014806
Pin 8/A6 - connect to pin 15 of 6502C CPU - C014806
Pin 9/A7 - connect to pin 16 of 6502C CPU - C014806

Audio outputs

There is an internal audio output routed through pin37 and through the normal Atari circuitry. For stereo you should use one of the following options:

Analog audio out

Connect pins 1-3 via a shielded cable to a device with line input. Taking the GND locally from pin 1 of J2. I suggest using a 3.5mm jack socket. There are also solutions available that use existing holes if you prefer not to drill a new hole.

The level is notionally 1v pk-pk though with all devices playing it can theoretically reach 5v pk-pk. The scaling factor (post-divide) is configurable in pokeycfg.

The outputs are ac-coupled already through some caps.

Digital audio out

This is an S/PDIF output at 3.3v level driven via a 47 ohm resistor.

For using a good dac I'd advise fitting an optical transmitter and using an optical wire. Often these transmitters can directly accept the 3.3v output.

Sophia 3 supports S/PDIF and expects 1v pk-pk. I suggest connecting the pokeymax directly to Sophia then wiring a 200ohm resistor to ground.

For generic S/PDIF coax I suggest a 200 ohm and 110 ohm divider (i.e. pin – 200 ohm – X – 110 ohm – GND). Then take the output from point X, optionally with a 100nF capacitor.

If you are not using S/PDIF I suggest disabling the output in pokeycfg, for lower ADC noise.

Atari audio mixing

On the Atari motherboards they mix these into the audio:

- GTIA switch output – for buzzer sounds
- SIO/PBI audio in (wired together) then amplified ~6x
- SIO data interference (when SIO beeping is silent)

In order to not miss these on the audio outputs Pokeymax can handle them.

GTIA audio in

Pin 12 - connect to pin 15 of GTIA - C014889 chip

This is a digital output from GTIA so no need for a shield cable.

SIO/PBI audio in

There is an ADC input intended for SIO/PBI audio. It has a 6x analog amplification and a final ADC range of 0v-2.5v, so saturates at ~0.4v pk-pk. It is ac coupled.

I suggest wiring it up to the SIO port pin 11, via a shielded cable sourcing GND from J2 pin 1.

There are options in Pokeycfg to digitally amplify the SIO audio from 0x (silent) to 4x.

SIO data interference

The ADC will pick up some SIO data noise. To get the full effect you can also mix some in digitally. There is a setting in pokeycfg for this, again the level can be set from 0x (silent) to 4x.

Additional functions

There are really 3 spare IO pins on Pokeymax. Currently two of them are assigned to PS2 though we may in future offer custom cores with different functions on these pins. The PS2 is more of a demo feature than a fully developed PS2 option like TKII. That said, it does work if you want to use it.

PS2 keyboard

The PS2 keyboard support is fairly basic. It uses a fixed Atari-like mapping, with the idea being that you will fit stickers on the keys. To use it wire up to a PS2 6 pin din as follows:

Pin 1 – PS2 data – pokeymax J2 pin 11
Pin 3 - GND
Pin 4 – 5V
Pin 5 – PS2 clock – pokeymax J2 pin 10

Further tools and documentation

Configuration

I've mentioned several times the pokeycfg tool. There is a separate user guide for this tool available. Both are available on www.64kib.com.

Note that pokeycfg will only work if you have the address lines connected.

Development

There is a development guide explaining extended registers. There are also sample projects available on www.64kib.com.