

Pineapple Pi-Mite VGA

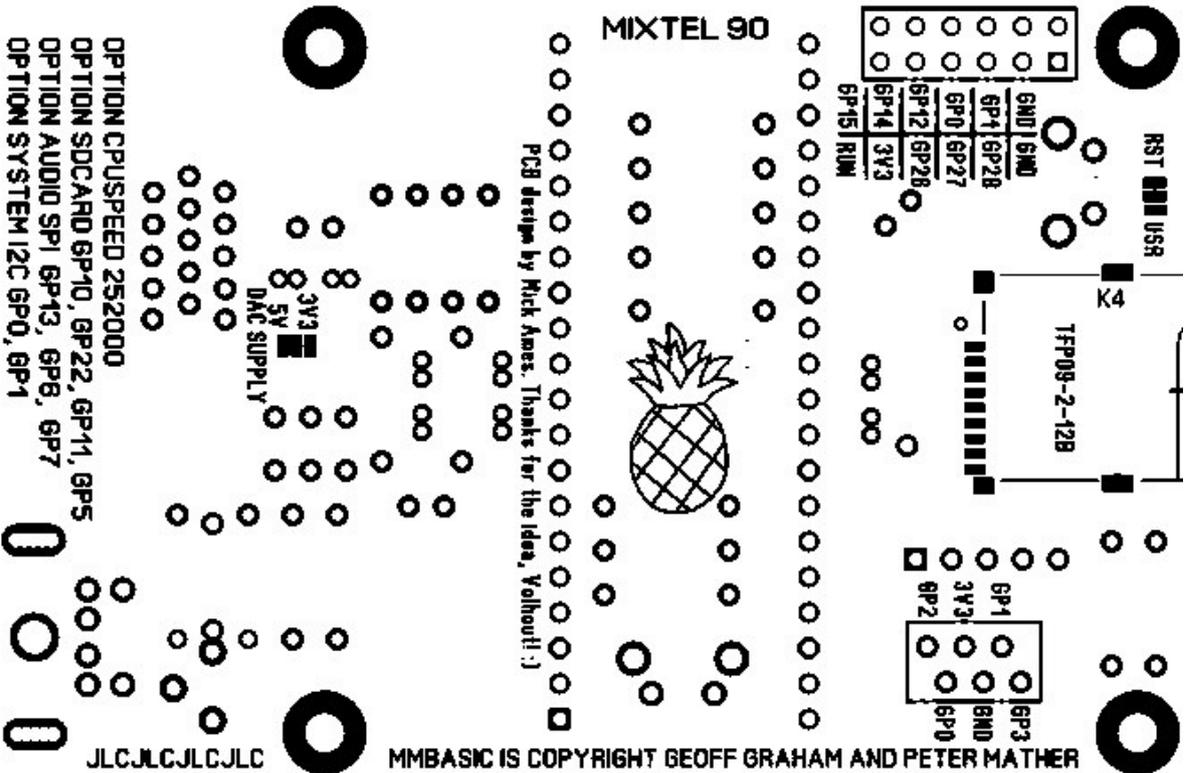
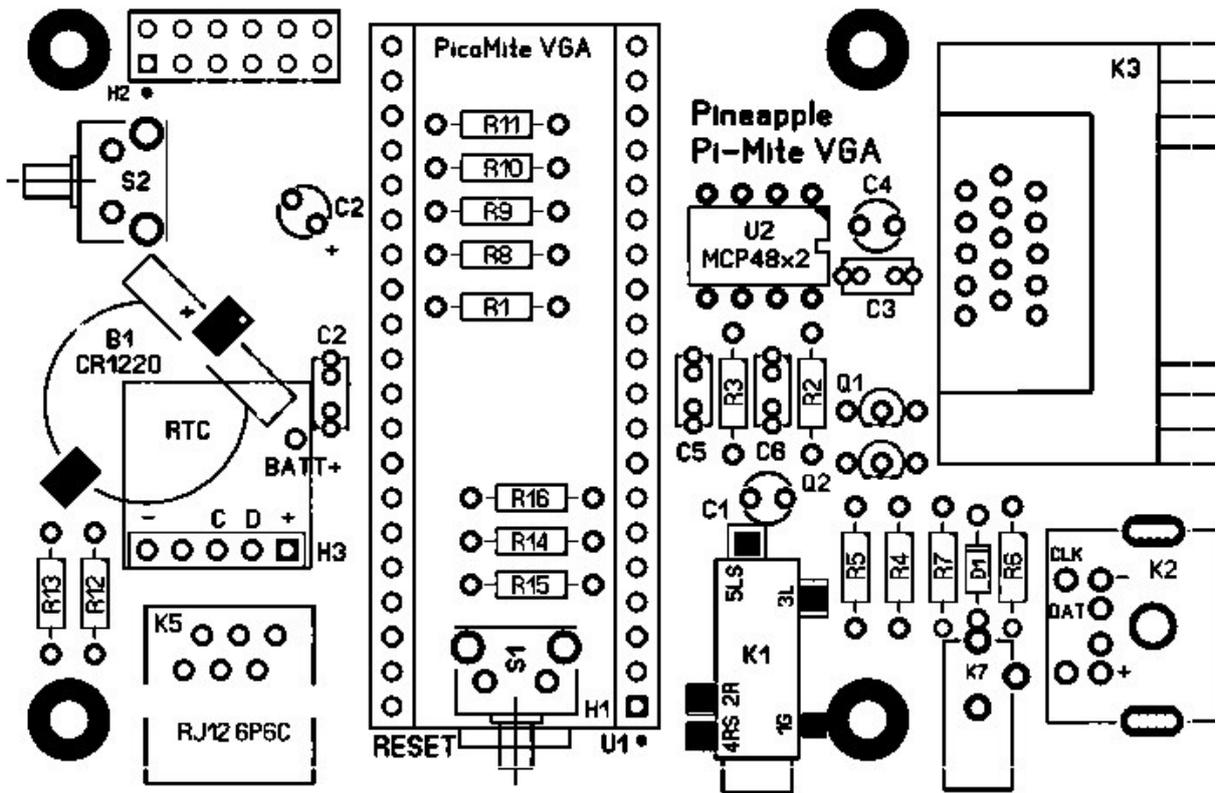
A PicoMite VGA system in a Raspberry Pi format

Intended to be able to be fitted into modified Raspberry Pi
cases

PCB design by Mixtel 90.

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Support is via thebackshed.com/forum



OPTION CPUSPEED 252000
 OPTION SDCARD GP10, GP22, GP11, GP5
 OPTION AUDIO SPI GP13, GP8, GP7
 OPTION SYSTEM I2C GP0, GP1

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This PCB has the same fixing positions and, as far as possible, the same connector positions, as a Raspberry Pi 3B. It isn't intended to be able to replace a Raspberry Pi or to be used like one, merely to be in a similar form factor.

There are a few things to note:

- The principal power supply is intended to be via the USB connector on the Pico, but there are positions for a 3.5mm barrel jack and protection diode so that the board can be powered without (or as well as) a USB lead.
- The RTC module is optional. If it is fitted and the (non-replaceable) battery goes flat then you can remove the old battery and fit a CR1220 battery and holder to power it.
- S2 is, by default, an optional alternative position for the Reset button S1. However, by changing the link beneath the PCB to USR it is connected via R16 to GP4. In this case it can be an active low user button or can be replaced with a LED.
- A link allows the DAC to be powered from either 3V3 or 5V. MMBasic doesn't support operation from 5V so don't change this, it is for experimental purposes only.
- The connections to the RJ12 connector are identical to those that can be fitted to the PicoGAME 4 PCB.
- The odd-number connections on the GPIO port, from GND to RUN, are the same as those on the PicoMite VGA BASIC board and on the internal expansion port of the PicoGAME 4.
- No pineapples were harmed during the design of this PCB.
- The DAC can be any of the MCP48x2 series. For best quality use the MCP4822 10-bit version.
- The board will also accept the YD-RP2040 clone of the Pico. Also seen as the "Black Type C" version. This is better in some ways as it has 16MB of flash memory and a USB-C connector.

Bill of materials

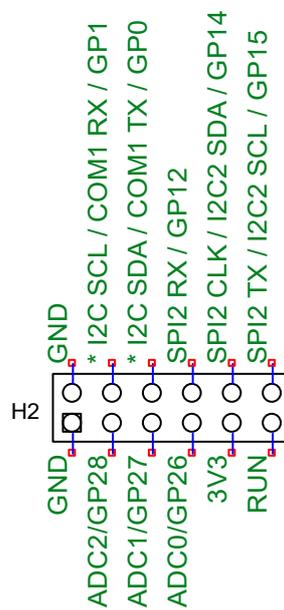
B1	CR1220	With holder. Optional
C1	100uF 10V	
C2	10uF 10V	Tantalum
C2	100nF	Ceramic
C3	100nF	Ceramic
C4	10u 10V	Tantalum
C5	100n	Ceramic
C6	100nF	Ceramic
D1	1N5818	or similar 1A Schottky - Optional
H1	20-way 2off	female header
H2	2x6	male pin header
H3	5-way	Male pin header for RTC. Optional
K1	RS 705-1490	Audio jack socket 35RASMT4BHNTRX
K2		PS2 Keyboard socket
K3		VGA connector
K4	TFP09-2-12B	push-push micro SD card socket
K5	RJ12 6P6C	RS 331-6421 RJ12 6P6C
K7	DC Jack	3.5mm x 1.3mm or 1.35mm - Optional
Q1	2N7000	or similar small MOSFET
Q2	2N7000	or similar small MOSFET
R1	2R2	
R2	120R	
R3	120R	
R4	10K	
R5	10K	
R6	10K	
R7	10K	
R8	270R	
R9	390R	
R10	820R	
R11	270R	
R12	3K3	
R13	3K3	
R14	3K3	
R15	3K3	
R16	470R	
S1	B3F	Horizontal 6x6 tactile switch
S2	B3F	Horizontal 6x6 tactile switch
U1	PicoMite VGA	
U2	MCP48x2	

IO Connections

The following connections are present:

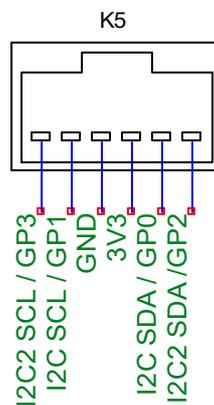
- PicoMite USB connector
- 5V DC input barrel jack (optional)
- PS2 keyboard
- VGA video
- 12-pin GPIO port
- Micro SD card socket
- RJ12 controller socket
- Audio line output 3.5mm stereo jack.

The GPIO port connections are as follows:



Note that all the pins are at 3V3 voltage level. Inputs should not exceed 3V6 at any time. Pins 4 and 6 carry I2C SCL and SDA, which are used as system I2C. They are also connected to the RTC and to the RJ12 controller socket. Connecting the RUN pin to GND momentarily will reset the PicoMite.

The RJ12 controller socket connections are as follows:



Normally an I2C controller (such as a Wii Classic via an adapter) will be connected to system I2C (GP1, GND, 3V3 and GP0). This would use a RJ12 6P4C plug, with 4-core cable and the two outer By using a RJ12 6P6C plug and 6-core wire you also make I2C2 available for other purposes.

If the RTC isn't fitted then all four GPx pins are available as digital IO, but they all normally have pullup resistors fitted.