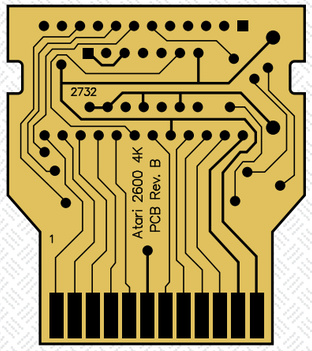
10 INCHES

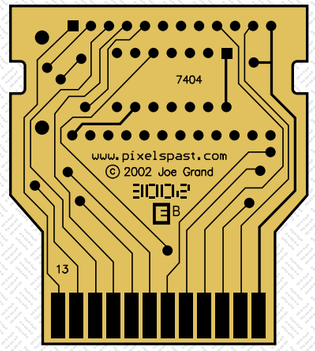
5 INCHES

NOTES:

ATARI 2600 2K/4K PCB FRONT



ATARI 2600 2K/4K PCB BACK



DISCLAIMER:

Pixels Past does not assume any liability arising out of the application or use of any product or circuit described herein. Pixels Past guarantees that the printed circuit boards are electrically tested and meet physical design and manufacturing requirements. Pixels Past warrants to replace any unmodified circuit board proven to be flawed. Pixels Past is not responsible for improper use or placement of components, incorrect soldering techniques, damage to systems, or other assembly or electronics issues. Pixels Past reserves the right to make changes without further notice to any products herein to improve reliability, function, or design.

AtariAge is the exclusive distributor of Pixels Past's PCBs and other homebrew supply products. Please contact AtariAge support (support@atariage.com) for technical assistance and customer service issues.

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DS REV 1.0

2600 2K/4K PCB ASSEMBLY

PIXELS PAST | ATARIAGE

FEATURES:

- Supports 2K and 4K game ROMs
- Uses easily available, off-the-shelf components
- Fits into standard Atari® 2600™ cartridge cases
- Build new 2600 games without modifying old cartridge circuits

DESCRIPTION:

Pixels Past's Atari 2600 2K/4K PCB (Printed Circuit Board) provides homebrew game authors with an easy method of creating their own videogame cartridges. The PCB, which fits in standard Atari 2600 cartridge cases and works on any Atari 2600 or compatible system, supports any 2KB or 4KB Atari game binary.

The required components are low-cost and available at practically any electronics store and the PCB is easily assembled by anyone with basic soldering skills. The Atari 2600 2K/4K PCB is designed for game developers who do not want to go through the hassle of modifying old cartridge circuit boards. These are brand new boards from Pixels Past (www.pixelspast.com), not recycled boards from old games.

If you'd prefer not to solder the boards yourself, AtariAge (www.atariage.com) provides homebrew services to build and assemble game cartridges. They can also design and produce full-color manuals and labels.

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10 INCHES

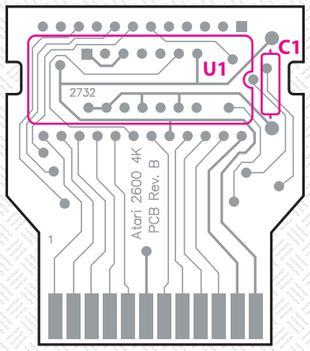
BILL OF MATERIALS:

The following parts are required to create a functional Atari 2600 game cartridge. All components are available for purchase from AtariAge. Components can also be found at most local electronics stores and large on-line distributors such as Digi-Key (www.digikey.com) or Jameco (www.jameco.com).

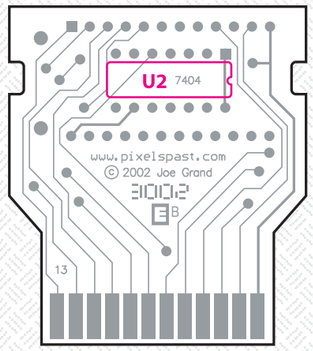
DESIGNATOR	PART NUMBER	DIGI-KEY	DESCRIPTION
U1	2716(A) / 2732(A)	N/A	EPROM (with game binary) CMOS OK, any speed
U2	74LS04	296-1629-5-ND	Hex inverter, 14-pin DIP
C1	0.1µF Ceramic	399-1880-1-ND	Bypass capacitor (104), axial leads
PCB	Atari 2600 2K/4K PCB	N/A	Pixels Past cartridge PCB

PARTS PLACEMENT:

ATARI 2600 2K/4K PCB FRONT



ATARI 2600 2K/4K PCB BACK



ASSEMBLY INSTRUCTIONS:

Assembly of the Atari 2600 2K/4K PCB is simple, but requires basic soldering skills. The order of parts placement and soldering of the devices onto the PCB is critical.

Pin 1 of the ICs (Integrated Circuits, in this case U1 and U2) is denoted by a square pad on the circuit board. Please refer to the separate Basic Assembly Techniques pamphlet for more information.

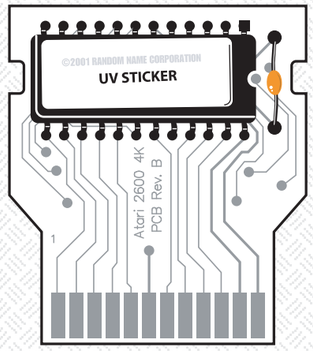
1. Insert and solder U2 to the backside of the board.

2. Insert U1 onto the opposite (front) side of the board and solder it into place. It is recommended that you place a UV-resistant sticker over the EPROM window to prevent accidental erasure of the code stored in the device.

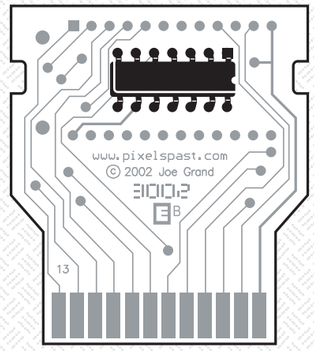
3. Insert C1 and solder it into place. C1 should be a small-footprint axial lead device in order to fit properly onto the circuit board and into the cartridge housing.

THE COMPLETED, ASSEMBLED CIRCUIT BOARD SHOULD RESEMBLE THE IMAGES BELOW:

ATARI 2600 2K/4K PCB FRONT



ATARI 2600 2K/4K PCB BACK



THEORY OF OPERATION:

The Atari 2600 was designed to use special ROM (Read-Only Memory) devices which implement an active-high Chip Enable (CE) line. Currently available memory devices, such as the commonly used EPROM (Erasable Programmable Read-Only Memory, which are erasable with UV light and reprogrammable) use an active-low CE line. Because of this, a simple inverter is needed to invert CE as it comes from the Atari 2600 before it is connected to the EPROM. A single gate inside U2 is used to invert the A12 address line, which is used by the Atari 2600 as the Chip Select.

C1 serves as a bypass/decoupling capacitor to help reduce electrical noise on the power supply line coming from the Atari 2600 system. The circuit will function without C1, but voltage spikes could cause irregularities in the cartridge operation, so it is highly recommended that it be installed.

NOTES:

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