Make a 3D Computer Chip Model

<u>Supplies</u>: template printed onto cardstock, colored pencils or crayons, scissors, foam dots or masking tape, glue

<u>Instructions:</u>

1. <u>Color</u> the pieces

   Silicon – gray   Metal 1 – any color

    Transistors – color both the same color   Metal 2 - any color

   Bond Pads – color both the same color   Metal 3 – any color

2. Carefully <u>cut</u> out the pieces.

3. You'll be stacking the pieces and attaching them with <u>foam dots or small pieces of rolled up masking tape</u>. Each time you add a new layer, try not to flatten it too much - you want your model to remain '3D'.

4. Attach <u>foam dots or tape</u> on the transistors, lay Metal 1 on top.

5. Attach <u>foam dots or tape</u> on Metal 1, lay Metal 2 on top (rotate the layers 90°).

6. Attach <u>foam dots or tape</u> on Metal 2, lay Metal 3 on top (rotate the layers 90°).

7. Place <u>foam dots or tape</u> on 2 corners of Metal 3.   Attach Bond Pads.

8. Cut out and glue <u>How it Works</u> underneath your model.

Transistor

Transistor
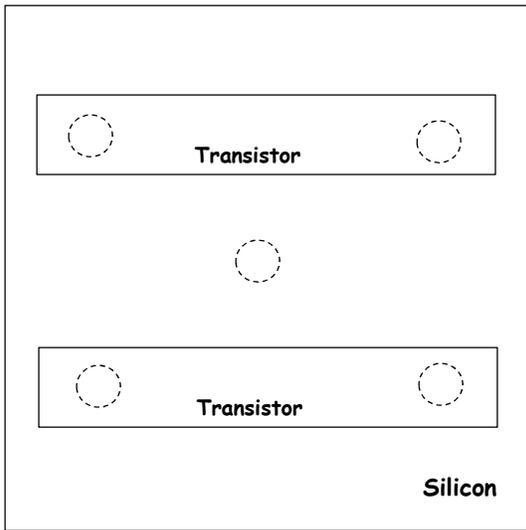
Silicon

Additional Instructions:

The circles show where you will attach the foam dots or masking tape. You can color over these circles.

You do not need to cut out the 'Transistors', you just need to cut out the outer 'Silicon' square.

Metal 1

Metal 2

Metal 3
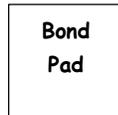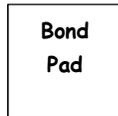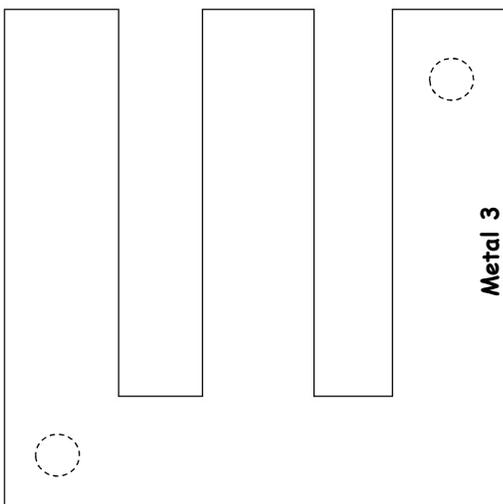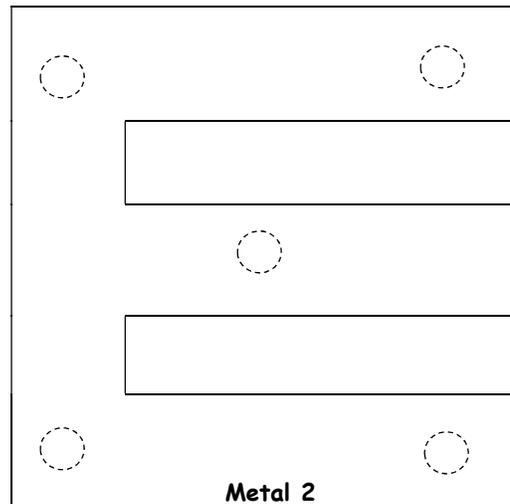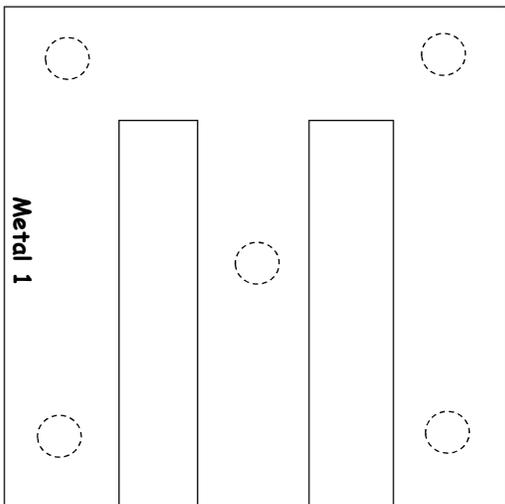
Bond Pad

Bond Pad

How it Works. Bond pads connect to the outside world. Electrons flow through bond pads, through 'contacts' (foam dots), through each metal layer, and finally to the transistors.

Transistors act as switches, and turn on or off, ('1' or '0'). Transistors are designed in different logic combinations ('and', 'or', 'nor'.) Calculations are made and are sent back out through the bond pads.