Simple Realism (Computer Chip)

Task

Recreate the Mitsubishi computer chip illustration. Retain the exterior shape and proportion (rounded rectangle), but alter the shape of the components and the arrangements of the interior parts to reflect your own particular take on a computer chip. I'm not looking for psychedelic here; I still want it to look like a genuine 2-dimensional illustration illuminated by a single light source (in this case, from UPPER LEFT), but I need it to be your own design, so you can take some license with shapes. Use either black, as in the example, or another SINGLE color; the monochromatic shading is part of the challenge! You'll be applying tints of that color dragging the slider in the color palette.

Instead of the computer chip, you may illustrate a 2-dimensional mechanical device of your own choosing, either real or imaginary. (ray gun?) You may re-use and modify buttons and other technical-looking devices created in this tutorial to produce it, if you wish—or come up with new shapes of your own.

Do not use 3-D or drop-shadow effects. This is a 2-dimensional illustration that achieves realism using simple tools and artistic observation.

Steps

1. Use the Ellipse, Rectangle, and Rounded Rectangle Tools to draw the basic elements of the device. Make it at least as complex as the example.
2. View>Show Grid & View>Show Rulers to help guide your hand.
3. For consistency in line weight, stroke and fill—click on the default Fill/Stroke icon in the Tools Palette (white fill, black stroke), then set the stroke weight to .75 pts. Unless you change it, all objects you draw from that point on will have the same fill & stroke as your first object. [If you mess up, you can always go back and reselect and change accordingly (or not use this technique at all) but this is one way of maintaining consistency of line quality.] [This is mostly valuable to cartographers and designers of information graphics who must alter large documents with many instances of objects/symbols in a hurry.]
4. Having drawn all the objects more-or-less uniformly (white fill, black stroke@ .75 pts.), select a single object and set the stroke to none and the fill to black using the Color Palette.
5. Open the Swatches Palette. Drag the black 'fill' tile from the Color Palette to the Swatches Palette. Double-click it and name it Black Global 100, making sure to enable the 'Global' option by clicking the check box!
6. Use this 'Global' swatch as a means to fill the various buttons and switches with tints of gray (or the color of your choosing) from the Color Palette and dragging these tints into the Swatches Palette creating new swatches as you go along,

leaving strokes to none. This allows for easy mass color changes. (See "Global Colors" below)
7. Use custom gradients made in your chosen color for cylindrical objects (these need not be made from global colors).
8. Use highlighting and shading techniques described below to accentuate the realism of your computer chip.
9. Don't forget to add textual components; *this is where you should put in your own words and/or names. Customize it!*

Global Colors

Time-saving technique.

Illustrator allows you to assign swatches as "global colors" making it easy to change that color's definition. From the swatches palette, double-click on the "global color" tile you wish to change in order to open Swatch Options, where you can change the color recipe. Click OK to apply the changes to all objects containing that color.

If you want to select all of the objects with the same swatch color, select that swatch in the swatches palette and Select>Same>(fill or stroke) and all objects of that color will be selected.

Option/Copy/Paste & Modify

Duplicate and modify to save time!

Once you are satisfied with a particular button (or other component) select and group it, then Option/Copy it while holding the Shift key to keep the copy in alignment with the original.

You can save time by copying an object you've drawn and then modifying the shape of the copy. After copying an object, select just part of it with the Direct Select/Lasso Tool and alter it as you wish. (i.e. extending the length/position of a switch)

Highlighting/Shadow Techniques (pasted in front and modified)

Use segmented paths copy/pasted from original object and re-colored to simulate the cast of light.

To add highlights and shadows to lines that follow the contour of an object, select all or part of the object's path with the Direct Select Tool, Edit>Copy and Edit> Paste in Front.

With the highlight's path still selected, use the Scissor tool to cut the path on upper L and the lower R. Select just the upper L segment and color it white; select the lower R

segment and color it black (or tints of black). Adjust stroke weight for a realistic look—shadow lines are thicker than highlight lines. (When placed in front of a background of significant contrast these details become readily visible.)

Some knobs and dials use small circular white highlights and inset-curved paths with a darker value to simulate depth. Also, an intermediate shade of gray is drawn offset from the object and then Pathfinder>Divided away to further enhance the cast of light. These are enhanced by paste-in-back shadow techniques described below.

Shadow Techniques (pasted in back and modified)

Use darker tints on duplicated paths pasted behind in order to create shadows.

Select a path to make into a shadow, Edit>Copy and Edit>Paste in Back to place a duplicate of the path directly behind the original. With the copy still selected, use arrow keys to offset the copy and change the fill to a darker tint using the Color Palette (or existing global swatch).