A04.01 Identifying Electronic Components

Summary:

This activity is designed to familiarize students with the physical appearance of a variety of electronic circuit components and to acquaint them with the precautions that must be observed to prevent static electricity from damaging sensitive components.

Expected Outcomes:

Students will learn to relate circuit symbols and part designations to actual components, read the value coding on components and become comfortable with anti-static handling procedures.

Materials

Each student should have the following materials and tools:
(*) indicates provided by LaACES

1. *A *SkeeterSat* kit
2. *Printed copies of the *SkeeterSat* circuit diagram, parts list, and circuit board layout
3. Paper, pens & pencils, highlighter pen, tape
4. Plastic "shoebox" or other container to store materials and supplies
5. Small hand magnifier (optional, but very useful for small parts)

The laboratory should also be equipped with the following:

1. Flat work tables sufficient to seat all students with plenty of work space
2. Anti-static mats and grounding straps (recommended, but not absolutely required)
3. Computer(s) with internet access.

Procedure:

Students may get together in groups, but each student should perform the inventory activity individually. We emphasize anti-static measures by either occasional "touch grounding" or use of mats and straps. Also, keep devices on the anti-static foam as required. The color code for resistors ought to be committed to memory, but check if any student is color blind before starting this activity.

1. Students should visit https://electronicsclub.info and investigate types and properties of electronic components. Other links can be found as well.

2. Distribute the ***SkeeterSat*** kits and printed documentation. The complete ***SkeeterSat*** manual may be distributed at this time, or optionally, just the diagrams and parts list. Students should be instructed not to open the antistatic parts envelopes yet.

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3. If used, students should put on anti static straps and connect them and the mats to a grounded conductor. If mats and straps are not used, students should touch a grounded metal object (such as the metal case of a computer or other AC line operated apparatus)
4. Students may now open the parts envelopes and empty the parts onto the work surface. If anti static mats are not used, a paper plate is a good option to keep parts corralled. Any parts that are supplied on pieces of anti static foam should **NOT** be removed from the foam.
5. Using the parts list as a guide, students should locate each component and (except for any parts on antistatic foam) fasten each one with tape onto paper, writing down the circuit designator, type of component, and value, *i.e*. **C3**, **ceramic disk capacitor, 0.001 µF**.
6. Upon completion, parts may be stored still taped to their paper sheet in the project box in preparation for *SkeeterSat* schematic study and assembly in subsequent activities.