
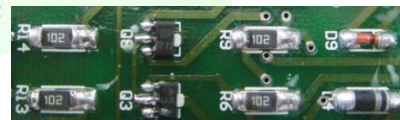
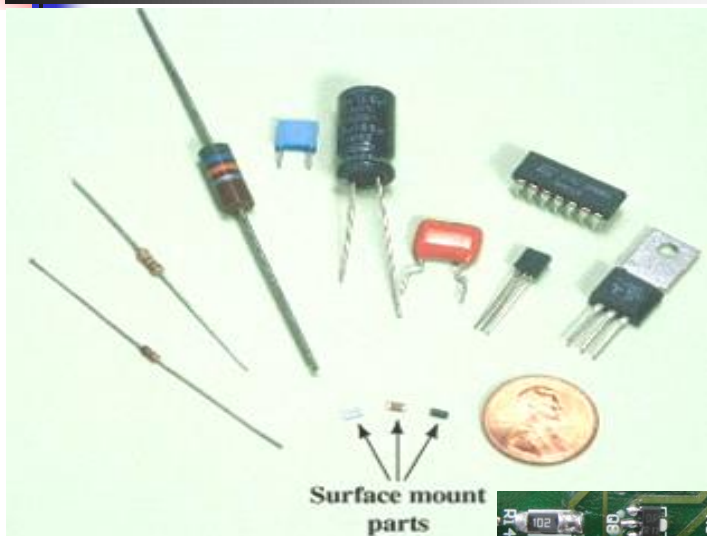


Chapter 01

Introduction

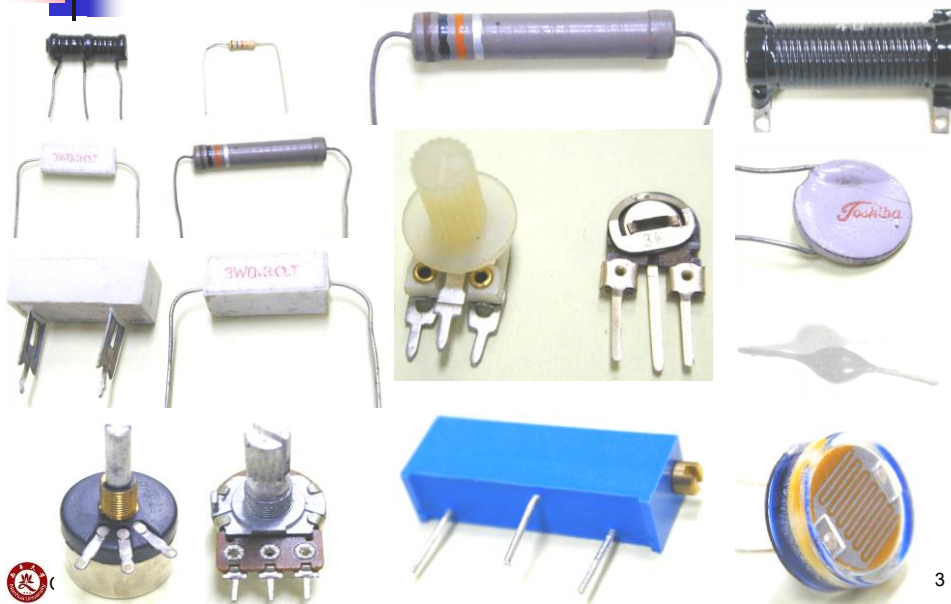
 Source: Circuit Analysis: Theory and Practice ©Delmar Cengage Learning

Typical Electronic Components



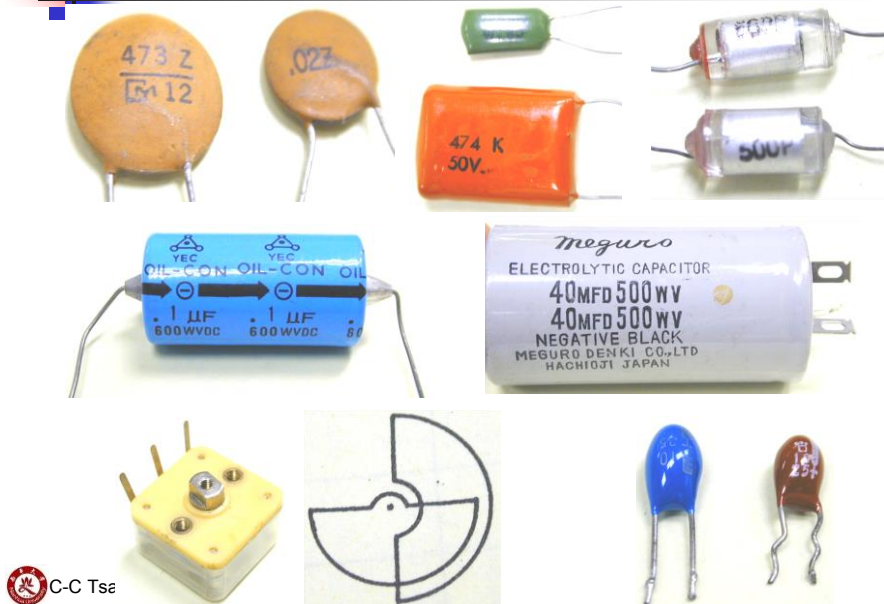
 C-C Tsai

Electronic Components - Resistors



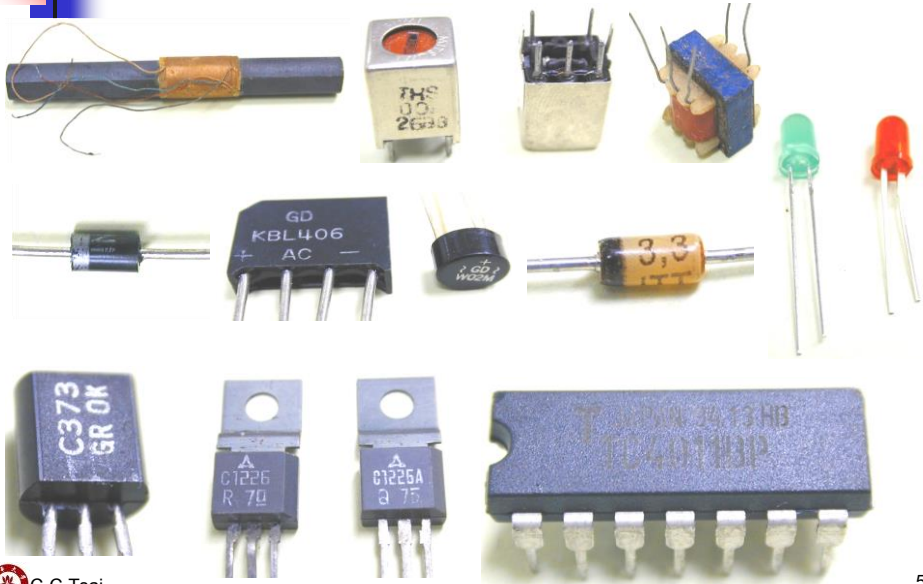
3

Electronic Components - Capacitors



4

Electronic Components



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5

Electronic Components



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6

Exercise 1

1. Please show their electronic symbols and units for voltage, current, resistor, and capacitor.
2. Please show their represented prefix (i.e., power of ten notation), $10^3 \sim 10^{12}$ and $10^{-3} \sim 10^{-12}$.
3. Answer the following questions.
 - (a) $0.24 \text{ M}\Omega = \underline{\hspace{2cm}} \text{ k}\Omega$
 - (b) $0.0024 \text{ }\mu\text{F} = \underline{\hspace{2cm}} \text{ pF}$
 - (c) $330 \text{ }\Omega + 2.7 \text{ k}\Omega = \underline{\hspace{2cm}} \text{ }\Omega$
 - (d) $0.5 \text{ mA} - 200 \text{ }\mu\text{A} = \underline{\hspace{2cm}} \text{ A}$
 - (e) $10 \text{ mA} / 40 \text{ }\mu\text{A} = \underline{\hspace{2cm}}$
 - (f) $10\text{V} / 40 \text{ k}\Omega = \underline{\hspace{2cm}} \text{ A}$
 - (g) $25 \text{ }\mu\text{A} * 6 \text{ k}\Omega = \underline{\hspace{2cm}} \text{ V}$

Circuit Simulation Software

- Most use a software engine called **SPICE** (**S**imulation **P**rogram **I**n **C**ircuit **E**mphasis)
P Spice,
H Spice,
All Spice,
Z Spice,
Multisim

Exercise 2

1. What is the mean of **SPICE**?
2. **Two switches** installed on the **up-stair and down-stair**, respectively, can control **a lamp on or off**, please show **the schematic diagram**.
3. Why the bird is not to get electric shock?



Kernel abilities

1. An animal is whether electric shock or not, Please explain why?
2. What are engineering prefixes? Please give some representative literatures for power of ten notations.
3. What are the symbol and unit of quantities? Please give some examples.
4. What are the schematic symbols of electric components? Please give some examples.
5. What are tools of computer-aided circuit analysis? Please give some representative tools.