# SYSTEM BUS

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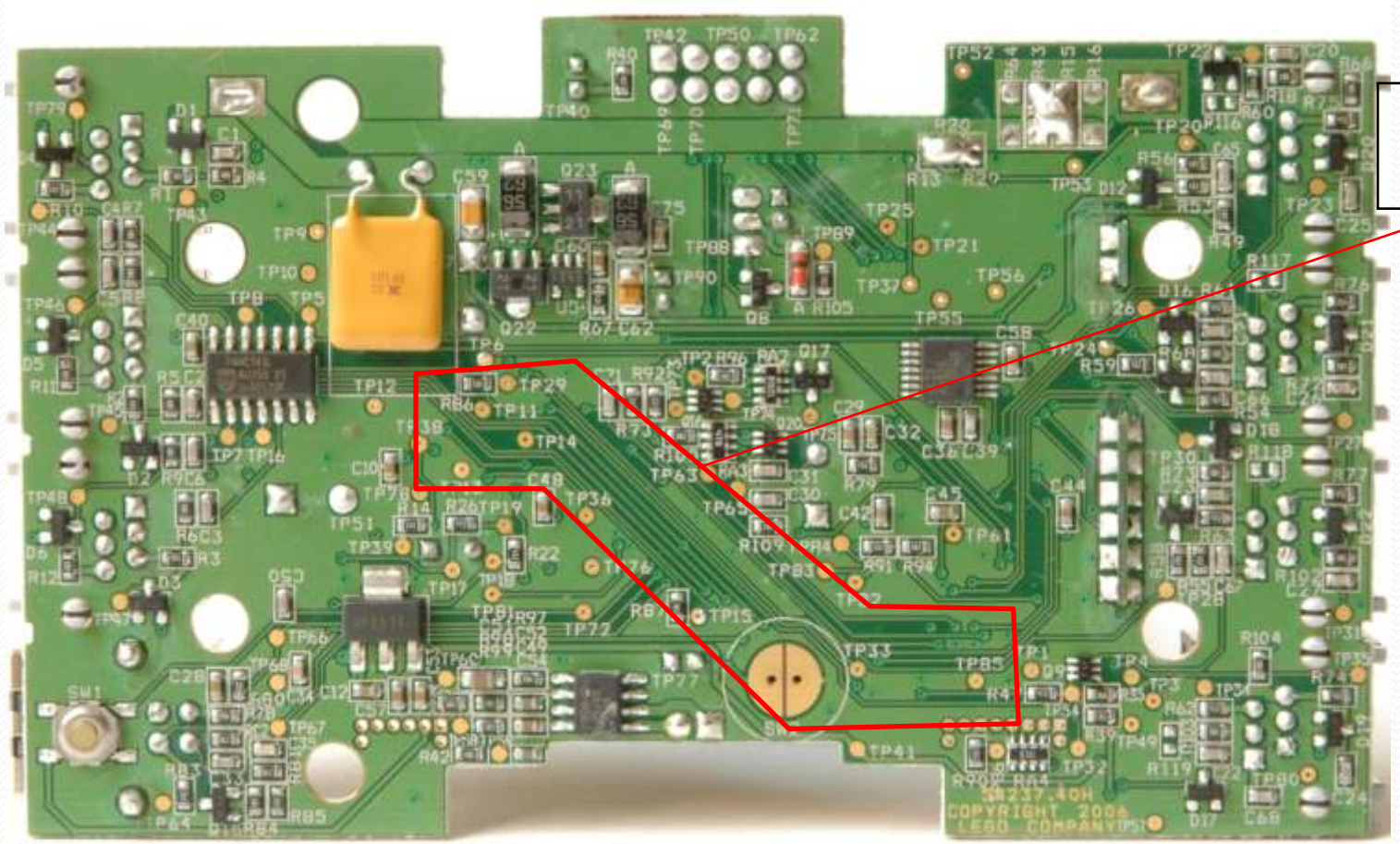
# System Bus

- The CPU sends various data values, instructions and information to all the devices and components inside the computer.
- If you look at the bottom of a motherboard you'll see a whole network of lines or electronic pathways that join the different components together.
- This network of wires or electronic pathways is called the '**Bus**'.

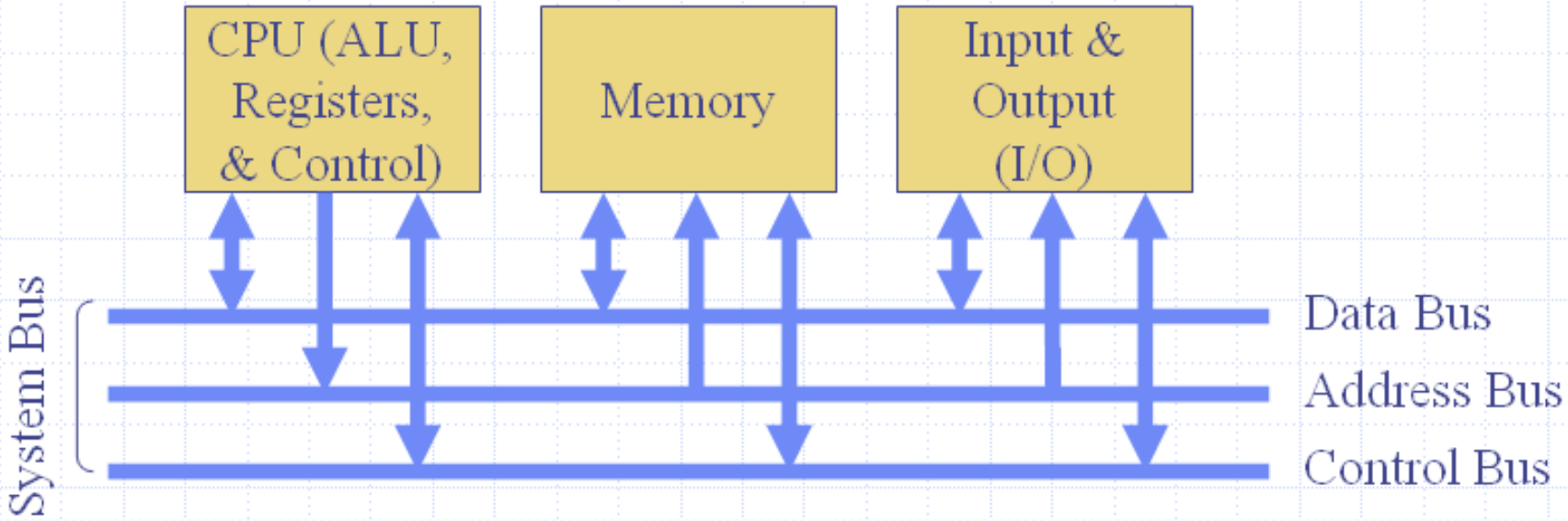
# Bottom of Motherboard



# Types of System Buses

- Data Bus
- Address Bus
- Control Bus

# System Bus Model



# Data Bus

- A collection of wires through which data is transmitted from one part of a computer to another is called **Data Bus**.
- Data Bus can be thought of as a highway on which data travels within a computer.
- This bus connects all the computer components to the CPU and main memory.

# Data Bus

- The size (width) of bus determines how much data can be transmitted at one time.
- E.g.:
  - A 16-bit bus can transmit 16 bits of data at a time.
  - 32-bit bus can transmit 32 bits at a time.

# Address Bus

- A collection of wires used to identify particular location in main memory is called **Address Bus**.
- Or in other words, the information used to describe the memory locations travels along the address bus.

# Address Bus

- The size of address bus determines how many unique memory locations can be addressed.
- E.g.:
  - A system with 4-bit address bus can address $2^4 = 16$ Bytes of memory.
  - A system with 16-bit address bus can address $2^{16} = 64$ KB of memory.
  - A system with 20-bit address bus can address $2^{20} = 1$ MB of memory.

# Control Bus

- The connections that carry control information between the CPU and other devices within the computer is called **Control Bus**.
- The control bus carries signals that report the status of various devices.
- E.g.:
  - This bus is used to indicate whether the CPU is reading from memory or writing to memory.

# Thank You

# Have a Nice Day