LM35

The **LM35** is a precision **temperature sensor** that provides an **analog voltage output** proportional to temperature in **degrees Celsius**. It operates over a typical range of **-55°C to +150°C** and has a sensitivity of **10 mV/°C**, meaning for every 1°C change in temperature, the output voltage changes by 10 mV.

Key Features:

- **High Accuracy**: ±0.5°C (typical) at 25°C
- **No External Calibration Required**
- **Low Power Consumption**
- **Linear Output**: 0°C = 0V, 100°C = 1V
- **Operates from 4V to 30V Supply**
- **Low Self-Heating**

Common Applications:

- Temperature monitoring in **electronics and industrial systems**
- HVAC (Heating, Ventilation, and Air Conditioning) systems
- Battery temperature monitoring
- Weather stations

Gas sensor

A **gas sensor** is a device that detects and measures the presence of gases in an environment. It converts the concentration of a gas into an **electrical signal**, which can be used for monitoring and safety applications.

Key Features:

- **Sensitive to Specific Gases**: Detects gases like CO_2, CO, methane, LPG, hydrogen, and more.
- **Fast Response Time**: Quickly detects gas presence and changes in concentration.
- **Analog/Digital Output**: Some sensors provide analog voltage output, while others offer digital signals.
- **Low Power Consumption**: Suitable for portable and embedded applications.

Common Types of Gas Sensors:

1. **MQ Series Sensors** (e.g., MQ-2, MQ-7) – Used for detecting gases like smoke, CO, LPG, and alcohol.
2. **Electrochemical sensors are used in industrial and medical applications to detect** toxic gases.
3. **Infrared (NDIR) Sensors** – Used for CO_2 and hydrocarbon detection.

4. **Semiconductor Sensors** – Used for detecting flammable and toxic gases.

Applications:

- Air quality monitoring
- Gas leakage detection in homes and industries
- Automotive emissions monitoring
- Industrial safety systems

Piero Buzzer

A **Piezo Buzzer** is an electronic sound-producing device that generates sound using the **piezoelectric effect**. It consists of a **piezoelectric diaphragm** that vibrates when an electrical signal is applied, producing sound waves.

Key Features:

- **Operates on DC Voltage** (Typically 3V to 12V)
- **Compact and Lightweight**
- **Low Power Consumption**
- **Produces Beeping/Tone Sounds**
- **Available in Active and Passive Types**
    - **Active Buzzer**: Generates sound when powered (built-in oscillator).
    - **Passive Buzzer**: Requires an external frequency signal to produce sound.

Common Applications:

- Alarms and warning systems
- Timers and notifications
- Toys and gadgets
- Embedded systems and microcontroller projects