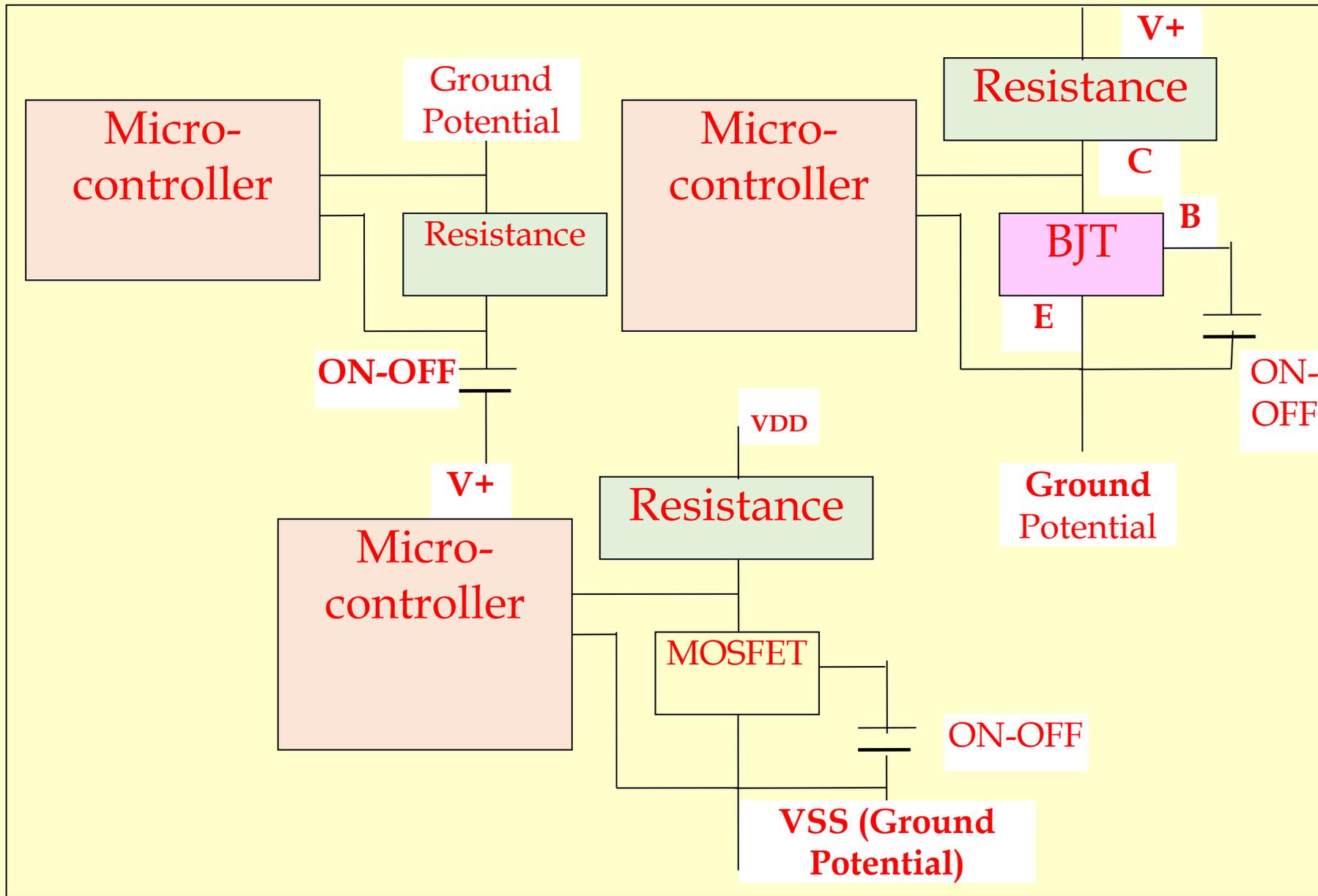


# Lesson 3

## Digital Sensors

# Digital Sensor

- Senses On-OFF states
- Gives output as 1s or 0s
- 1 corresponds to certain range of Voltage, current, frequency, phase or other electronic parameter
- 0 corresponds to another range of Voltage, current, frequency, phase or other electronic parameter
- For example, 1 correspond to 12 to 8 V output and 0 corresponds to 0 to 4 V.



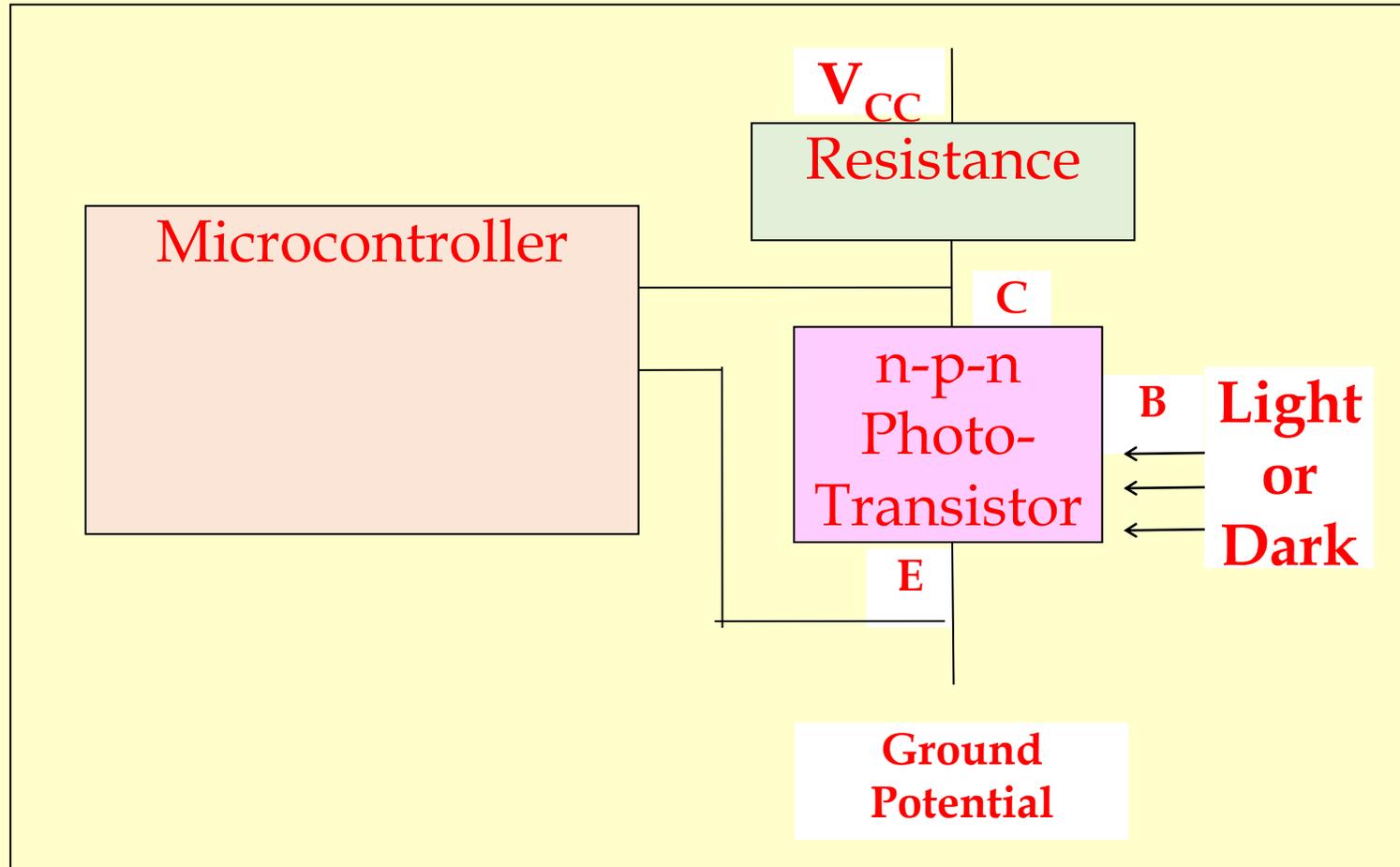
**Fig. 7.3** Circuits for sensing ON and OFF key states; Generation of 1 and 0 for the port pin

# Digital Sensor

- Number of applications
- Sensing of presence of traffic on a street
- Sensing the filling of a waste container up to certain preset level that sends an alert on Internet to a City Waste Management Service

# Digital Sensor

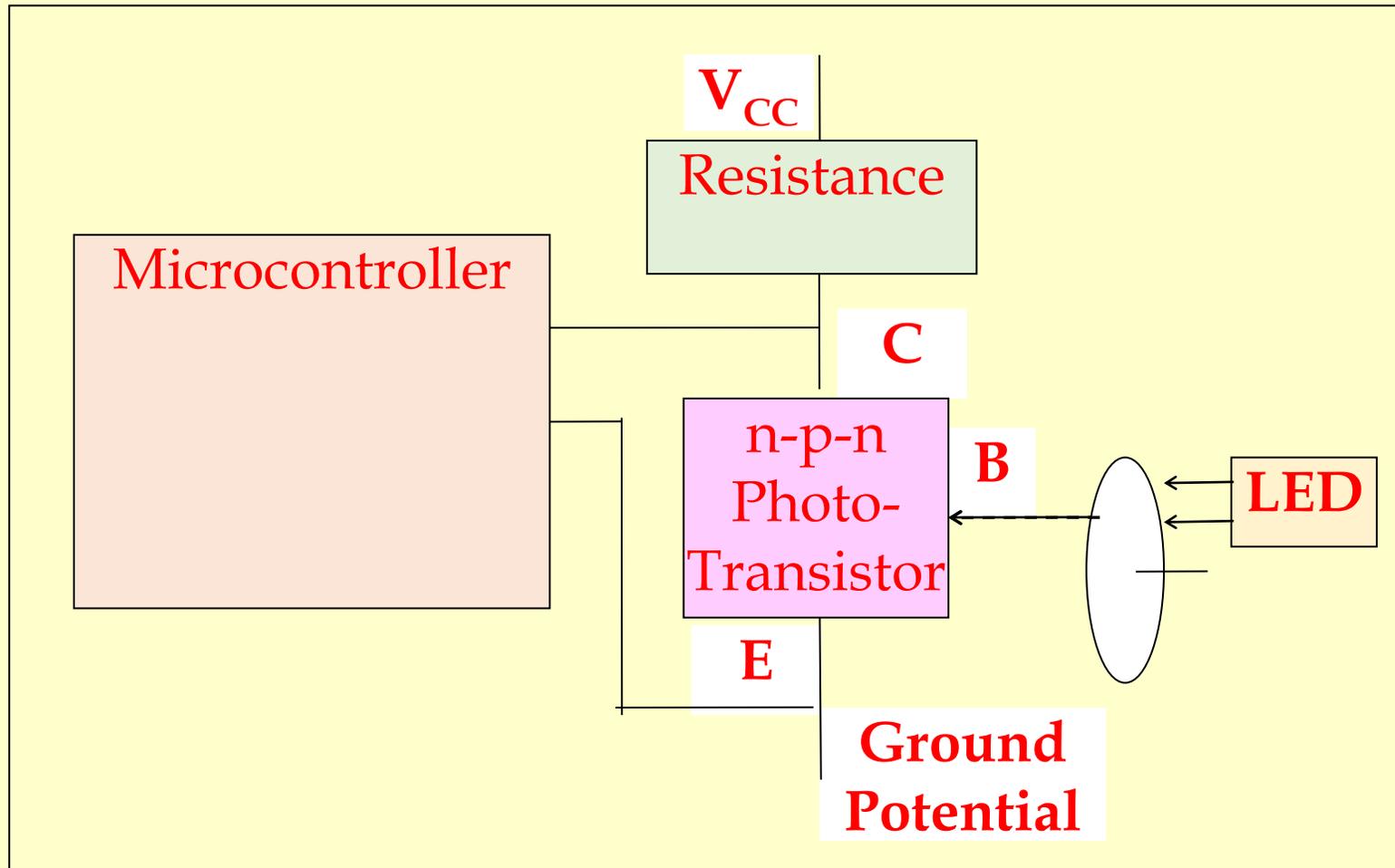
- Sensing of organic vapours presence on sensing gas leakage
- Sensing fire for generating emergency alert by sudden rise of temperature in vicinity or detecting the smoke
- Sensing ambient light condition



**Fig. 7.4** Microcontroller electronic circuit for a streetlight environment ambient condition sensor which senses two states and generates two outputs 1 or 0 for the port pin

# Digital Sensor

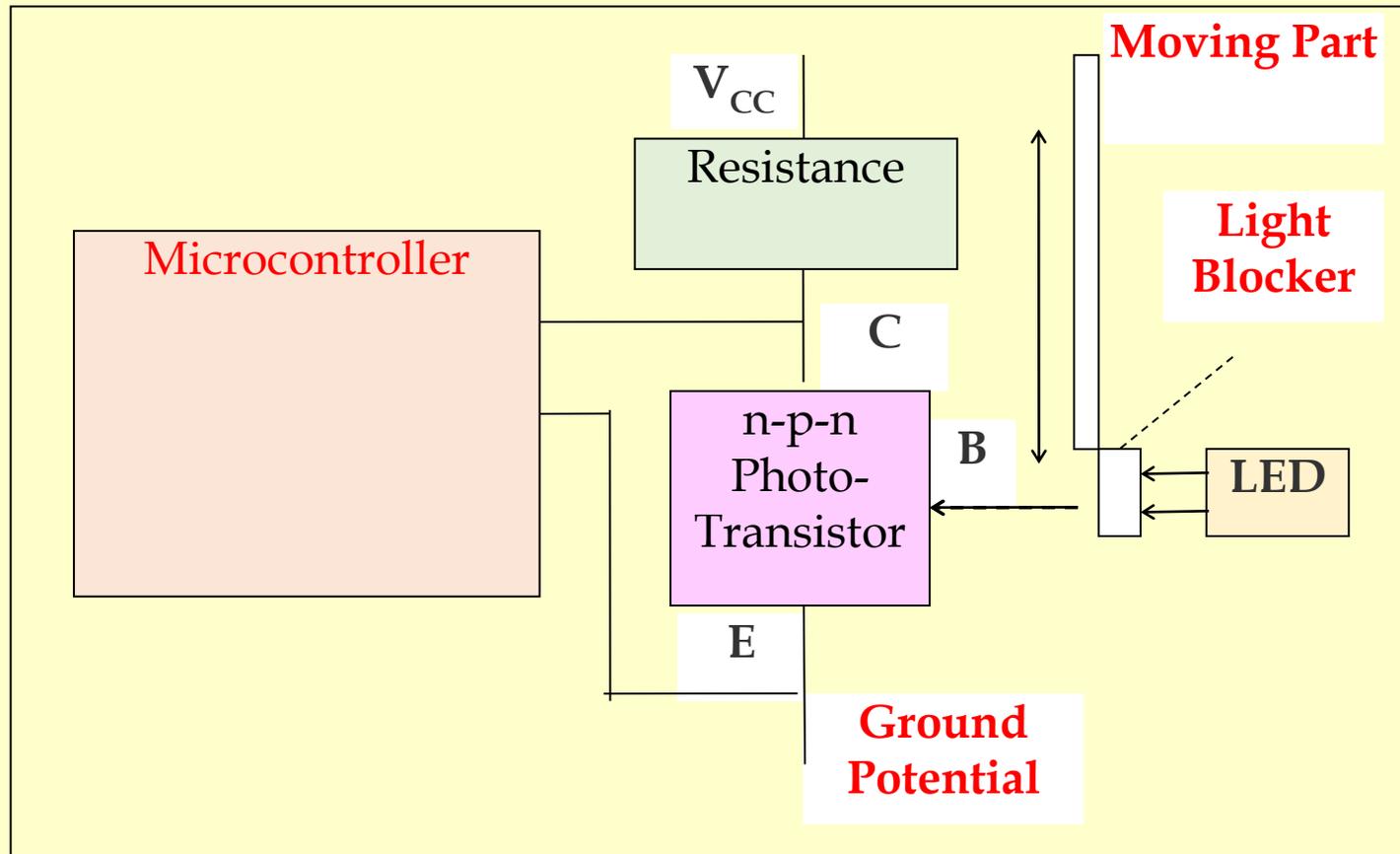
- Sensing wheel rotation for computing the speed of a vehicle



**Fig. 7.5** Microcontroller electronic circuit for a rotating wheel, rotation-completion sensing which senses two states (completion or incomplete) and generate two outputs 1 or 0 for the port pin

# Digital Sensor

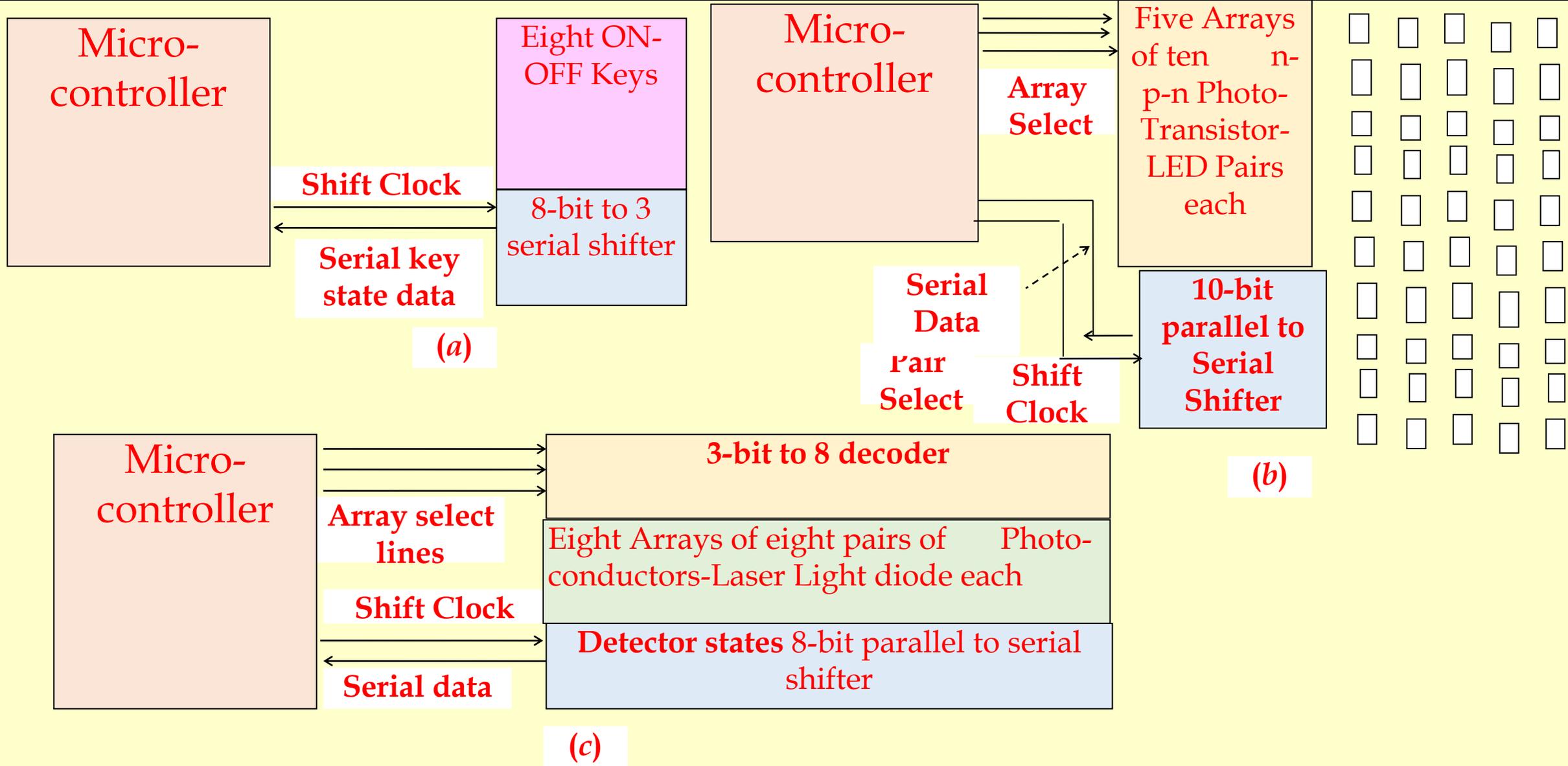
- Sensing linear motion of a shaft using a linear encoder with scale marking



**Fig. 7.6** Microcontroller electronic circuits for sensing that a moving part reaching at a specific location and sensing two states (reached or yet to reach) and generate two outputs 1 or 0 for the port pin

# Digital Sensor

- Sensing array for parking spaces or chocolate sales



**Figs. 7.7)** Microcontroller electronic circuits for sensing ON-OFF states, five arraya of 10- light passing slots each for detecting sales level for five types and ten levels of sales of each type, and (c) array of 64 parking slot sensors

# Summary

We learnt

- Digital Sensors and examples
- ON-OFF keys sensor
- Rotating wheel sensor
- 5 types of Chocolates sales level
- Empty parking slots
- Time Series Data
- Real Time Data

# End of Lesson 3 on Digital Sensors