

MODULE 5: Photodiodes and VLC

SUMMER CHALLENGE

Electrical Engineering: Smart Lighting

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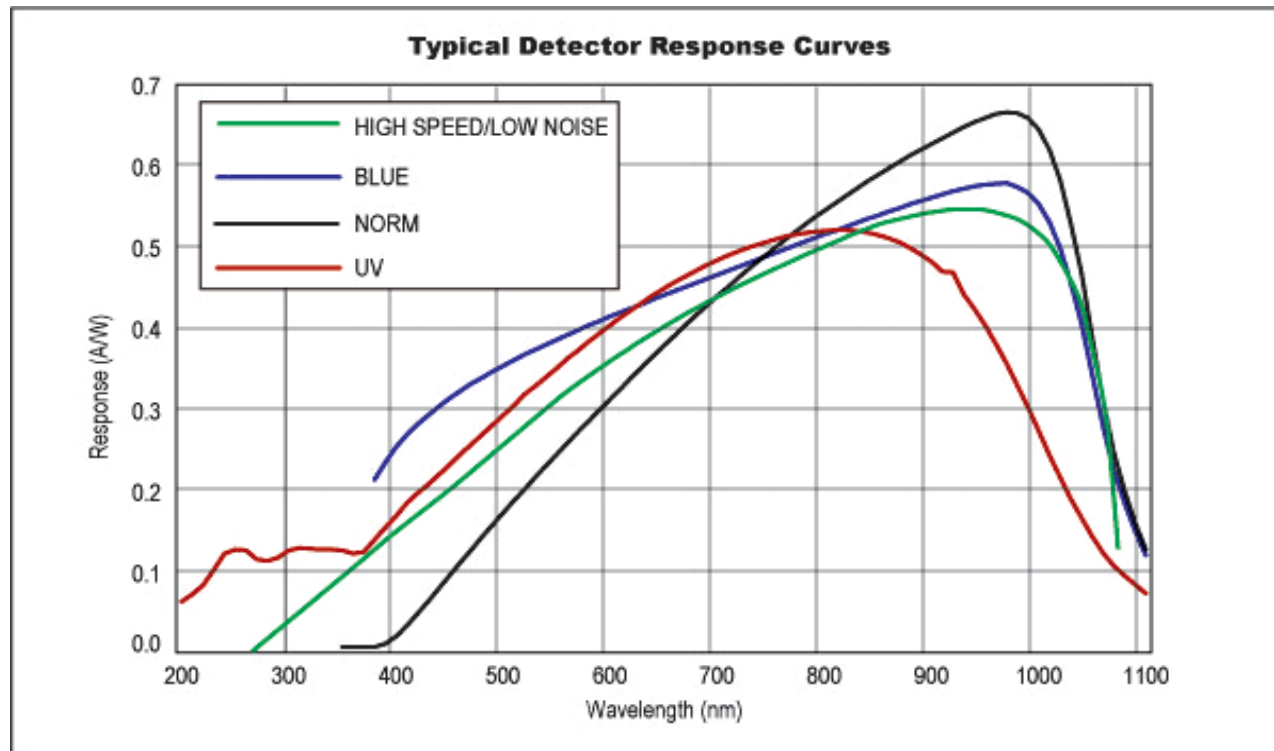
Overview

- Photodiodes
- Integrated Circuits (ICs)
- Visible Light Communication
- Experiment
 - Photodiodes
 - Optical Channel
 - Optical Signaling

Photodiodes

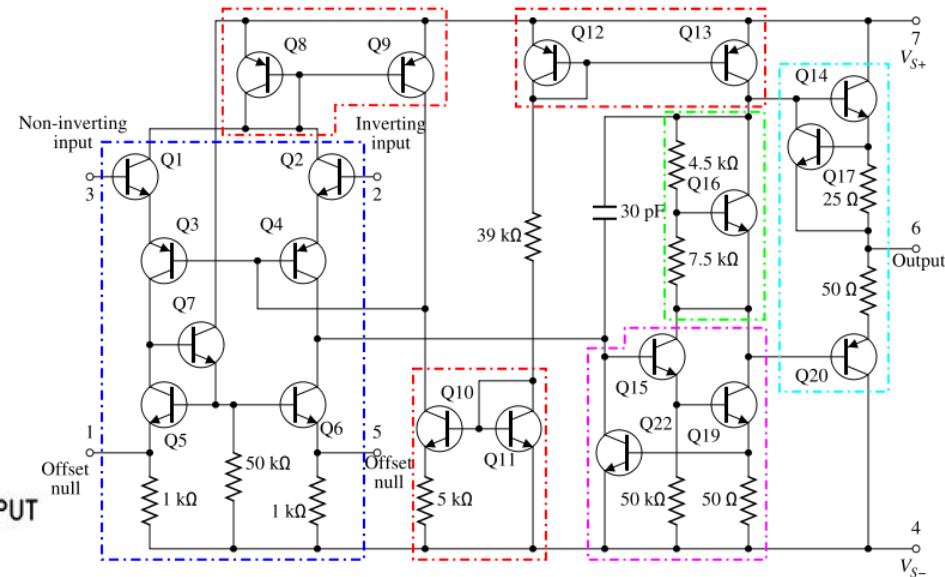
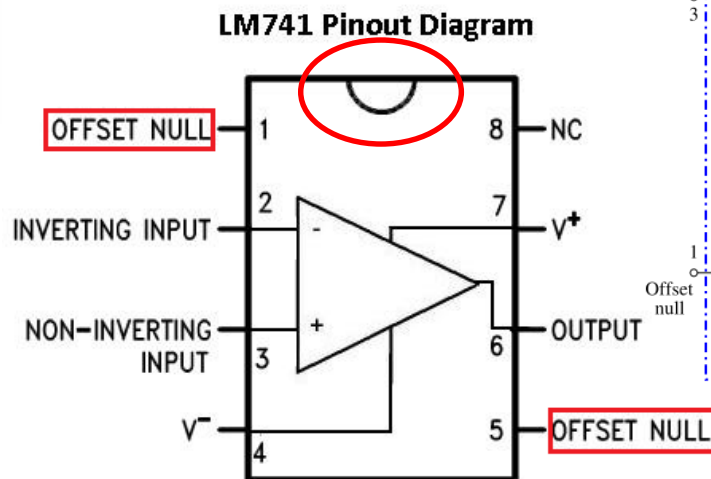
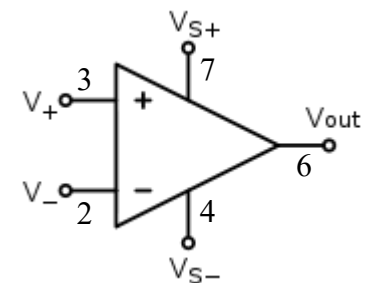
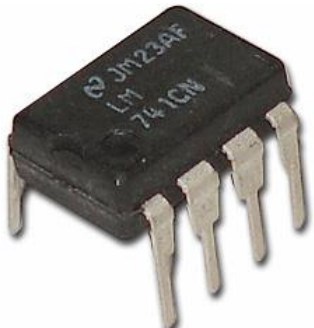


- Current is generated proportional to the received optical power
- *Responsivity* [A/W] is a function of wavelength



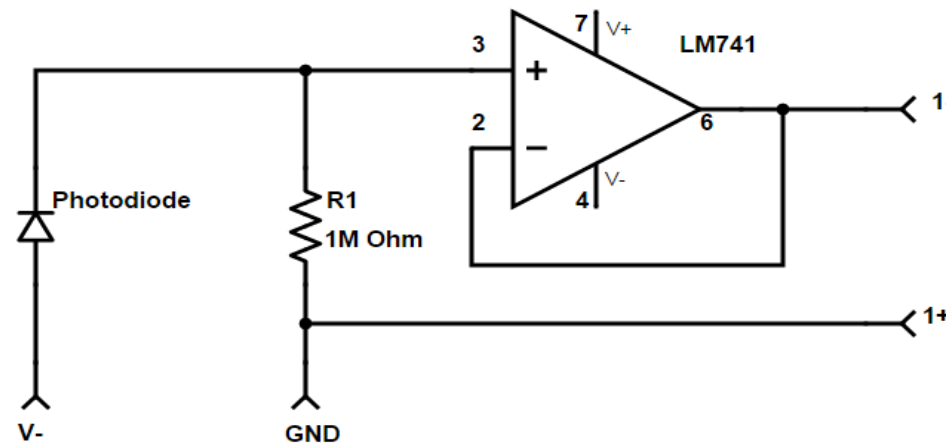
Integrated Circuits (ICs)

- A collection of many electronic components connected together to carry out a common function
- E.g., circuit logic gates, computer memory, operational amplifiers (op-amps)



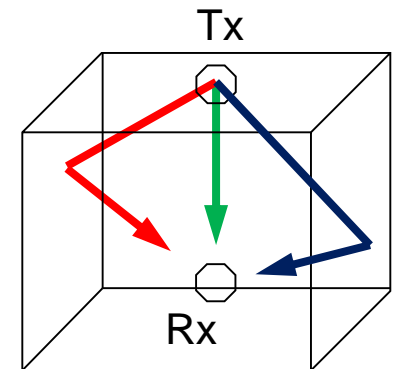
Experiment I

■ Photodiode Circuit



■ Optical Channel

- LEDs have an angle dependent emission pattern
- Photodiodes also have an angle dependent response
- Distance relates to signal attenuation
- Multipath attenuation adds time dispersion



Recap

- What did you **LEARN** today?

