Parallel Battery Management Evaluation Board

“Power to the People”

Team 1
Antonio Alonso, David Liu, Eric Cho, Harry Katsaros, Sunwoo Park

Parallel Battery Management

- Parallel battery management systems are necessary for all devices with two or more batteries powering one device or multiple components of a device

Google Pixel Buds Pro

Ring Camera

Nintendo Switch

Value Proposition

- Who is this for?
  - Analog Devices' Battery Management Team in the Consumer and Cloud Infrastructure Group
- What do they want?
  - A smart system that can dynamically charge two batteries at the same time using their battery management IC (MAX17330) and showcase its parallel battery management capabilities
    - Take our product to trade shows and customer demonstrations
- Our product
  - PCB with Type-C PPS input and software that showcases the parallel battery management functionality of the MAX17330 (charger, fuel gauge, and protector for lithium ion batteries)

What's the Point?

- Through our smart charging system, we are looking to increase the longevity of two batteries in a mobile device
  - Manage simultaneous charging of two batteries utilizing ADI's powerful chips
  - Higher efficiency
    - More power cycles lead to shorter battery life
- Gives our client, ADI, an effective way to showcase their battery management ICs on one platform

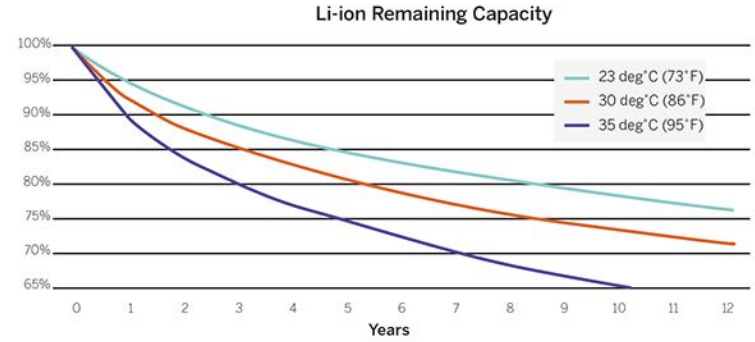
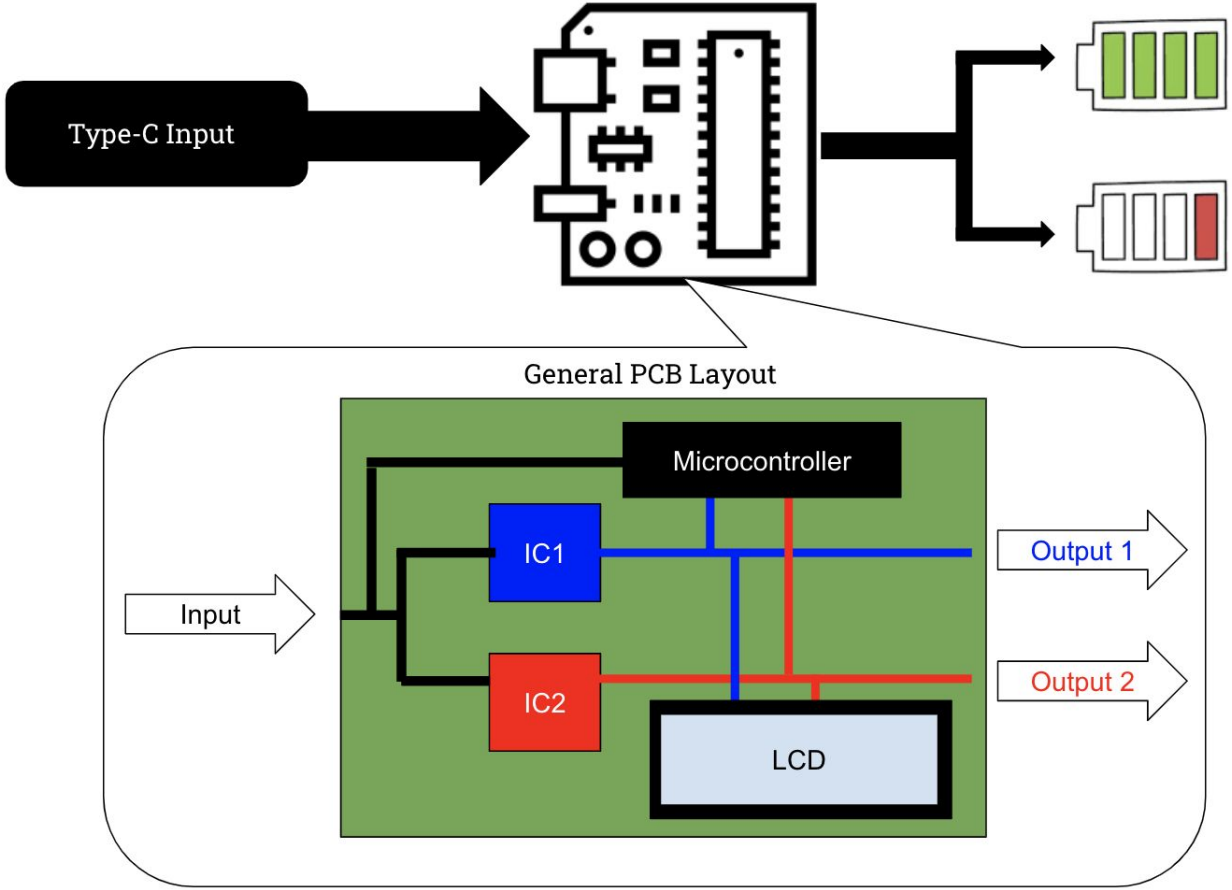


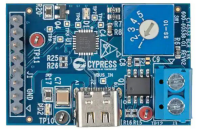
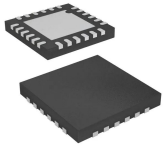
Figure 1. *Lithium-ion battery calendar life chart*

System Overview



Competing Tech



Device:	Texas Instruments BQ25960	Infineon CYPD3177
Similarities:	• Parallel battery charging via switch capacitor • Temperature, overvoltage, & overcurrent protections	• Type-C input • Ability to showcase multiple chips
What ours does better:	• No smart USB powered wall adapter needed • We use a Type-C input and regulate power internally with MAX77958	• Does not require a barrel head to USB-C adapter • Ability for parallel battery charging

Minimum Viable Product

- Physical deliverables
  - PCB that integrates two MAX17330 battery management ICs
  - Software that controls the onboard ICs and sends battery data to the LCD
- Main Goals
  - Showcase the ability to simultaneously charge two batteries within one device using ADI's powerful chip
  - Attract more customers at trade shows and positively influence the minds of potential buyers

Thank you!